

A comparative analysis before and after pandemic on environmental accounting public hospital

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Abstract

Purpose: This study conducted a comparative analysis of the application of environmental accounting in hospitals before, during, and after the pandemic.

Research methodology: This qualitative study used a comparative analytical approach. The data used in the research are primary data from interviews with three informants directly involved and secondary data from relevant financial information at the Regional Public Hospital. Mohamad Soewandhie, Surabaya.

Results: The COVID-19 pandemic has impacted hospital environmental accounting. Hospitals commonly charge environmental costs for managing solid, liquid, and gaseous waste. The pandemic has increased hospital waste processing expenditure for these three classes. The growth in hospital waste and vendor waste processing costs due to increased demand, since hospitals cannot yet process their waste, are the main causes of the cost increase. Once the outbreak ended, hospitals could control the costs.

Limitations: Financial data from the hospital was simply an illustration because it had to be integrated with the Surabaya City Government's financial reports and was not published.

Contribution: It can be seen that it is important for hospitals to be able to budget environmental costs more seriously as a preventive measure if similar problems like the pandemic or other forces significantly occur in the future.

Novelty: Previous similar research only studied how environmental accounting is implemented in a hospital and did not compare its implementation before, during, and after the pandemic.

Keywords: *environmental accounting, public Hospital, COVID-19 pandemic*

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1. Introduction

In December 2019, a new coronavirus Disease 2019 (COVID-19) arose in Wuhan City, Hubei Province, China, profoundly altering our way of life (Chinedu et al., 2020; Sánchez-de Prada et al., 2023). According to the Ministry of Health, the virus entered Indonesia for the first time on March 2, 2020. In this study, 6,813,429 people were proven to be infected, of whom 97.6 percent were cured and 2.4%, or 161,918 people, were certified to die (Kemkes, 2023). On Wednesday, June 21, 2023, the President of the Republic of Indonesia, Joko Widodo, formally revoked the COVID-19 pandemic in Indonesia via the Cabinet Secretariat of the Republic of Indonesia. This indicates that COVID-19 will occur between the beginning of 2020 and the end of 2022. Since the outbreak of the COVID-19 pandemic, this disaster has jeopardized the global health system, in addition to having a variety of effects on the environment, economy, and society. Due to the constantly changing genomic sequence of COVID-19

and the enormous risk of infection, the likelihood of verified COVID-19 cases and deaths has grown dramatically (Tushar, Alam, Bari, & Karmaker, 2023).

The pandemic has caused a global crisis in medicine, education, business, social, and personal life (Gumbo et al., 2022; Khan, 2020). This pandemic has also forced hospitals worldwide to deal with new issues and significantly adjust their operations. Cho et al. (2022) mention that the increased use of single-use medical equipment, the amount of medical waste, changes in energy consumption patterns, and the reordering of resource usage priorities have significant repercussions. This necessitates a comparison of the conditions before, during, and after the COVID-19 pandemic. This will enable us to comprehend how these alterations affect hospital environmental accounting practices and identify areas that require more attention. To solve some of the problems that traditional accounting has with environmental accounting, environmental accounting has attempted to build a long-term view, stressing the need to go beyond the short-term view of traditional accounting (Tregidga & Laine, 2022).

Environmental accounting, especially in hospitals, has been directly influenced by the COVID-19 pandemic. In general, environmental accounting in hospitals focuses on managing the solid, liquid, and gas wastes generated by hospitals. Before the pandemic, hospitals managed these three waste categories. Before the pandemic, environmental accounting-related research was conducted by Ratulangi et al., (2018); Indrawati and Rini (2018); Kusuma, Asmeri, and Begawati (2019); Sunaningsih (2020); and Larasati, Rofingatur, and Oeghoede (2020) all research results show almost the same results regarding how hospitals manage the three types of hospital waste they have and the application of environmental accounting. When a pandemic occurs, hospitals also continue to manage these three types of waste, where similar research has been carried out during the pandemic by Maulina, Nugraha, and Ishak (2022); Sánche and-de Prada et al. (2023); Tushar et al. (2023); Tregidga and Laine (2022); and Hirdariani and Fitriyah (2022). What are the differences between waste management and environmental accounting before and during the pandemic? This study will investigate the comparison and its application now that the COVID-19 pandemic has been officially over.

Environmental accounting holds great importance in both national and international contexts, especially concerning the consequences of the COVID-19 pandemic, which have had adverse effects on daily life (Mahamid, Veronese, & Bdier, 2021). Gerald, Obianuju, and Chukwunonso (2020) also stated that a significant magnitude of change characterizes the environment because of this pandemic. Environmental accounting is a vital part of financial information systems and plays a crucial role in understanding and managing the environmental impact of economic activities. The COVID-19 pandemic presents challenges and opportunities for accounting to address complex problems, such as allocating healthcare resources (Vesty, Kokshagina, Jansson, Cheong, & Butler-Henderson, 2023). In their research, Donelli, Fanelli, Zangrandi, and Elefanti (2022) revealed that the COVID-19 pandemic has altered the worldwide economic terrain and presented novel issues that necessitate attention from enterprises and governments across the globe. In addition, this study is anticipated to yield concrete and logical evidence of substantial alterations in global consumption, production, and movement patterns caused by the COVID-19 pandemic. Due to the ongoing discussion surrounding the financial implications of COVID-19, its effects remain a subject of concern (Anoke, Ngozi, Uchekukwu, & Joyce, 2022). These changes have economic and environmental implications. It is important to comprehend these alterations and ascertain suitable accounting remedies to handle their environmental consequences effectively.

This study was conducted at the Regional General Hospital. Mohamad Soewandhie, who operates in the field of public health services. The Regional General Hospital Dr. Mohamad Soewandhie is one of the hospitals owned by the Surabaya City Government. This research was deemed appropriate to be conducted at the Regional General Hospital, Dr. Mohamad Soewandhie because the Hospital is in Surabaya, which received the Global Green City award and has obtained Certification for Environmental Impact Analysis with certificate number 660.1/54/Kep/436.7.2/2015.

1.1 Problem Statement

Several useful formulations of the issue have been identified and initially explored as to how the COVID-19 outbreak has altered the environmental accounting practices of hospitals. The second objective of this study was to determine whether any adjustments have been made to hospital environmental accounting practices due to the pandemic because, according to the Ministry of Environment and Forestry data, medical waste has increased by 30%–50% during the pandemic (Maulina et al., 2022). Therefore, we examine how hospital environmental accounting was conducted before, during, and after the pandemic to identify any patterns or trends affecting hospitals' environmental responsibility. By knowing more about these changes, we can analyze how they affect the environmental sustainability and efficiency of hospitals. Thus, this research can provide a complete picture of the COVID-19 pandemic's effects on environmental accounting in the healthcare industry, especially at regional public hospitals. Mohamad Soewandhie, Surabaya.

The primary challenge encountered is understanding the progress of environmental accounting applications before, during, and after the COVID-19 pandemic. This research examines the emerging practices, problems encountered, and policy implications of the hospital. This research will significantly contribute to the promotion of sustainable development by considering environmental factors. The COVID-19 pandemic has substantially altered global production patterns, consumption, and mobility. In addition to the economic repercussions, these modifications also have significant environmental effects. As a result, it is critical to comprehend these changes immediately and identify suitable accounting solutions to mitigate their environmental impacts that result from them.

1.2 Objectives

1. Environmental accounting was used in hospitals before the pandemic.
2. Implementation of environmental accounting in hospitals during a pandemic
3. After the pandemic, environmental accounting was implemented in hospitals.
4. Comparative analysis of the three implementations prior to, during, and after the pandemic.

2. Literature review

This study examines environmental accounting before, during, and after the COVID-19 pandemic using legitimacy, corporate social responsibility (CSR), environmental accounting, environmental cost, financial statement recognition, measurement, presentation, and disclosure theories. How the Hospital employs legitimacy theory to preserve or increase public support and how environmental accounting will be studied. Additionally, it explores how CSR influences environmental accounting methods and whether it has changed organizational responses to the COVID-19 pandemic. Environmental accounting methods, particularly cost estimation, and how the COVID-19 epidemic has affected them will also be examined. This will also discuss how environmental accounting information is recognized, quantified, presented, and declared in corporate financial statements, and the effects of these changes. This research examines environmental accounting practices during the COVID-19 pandemic and their impact on theory and corporate social responsibility using case studies, financial data analysis, stakeholder interviews, and literature analysis.

2.1 Legitimacy theory

The interaction between organizations and their environments results in a process known as legitimacy (Milne & Patten, 2002). This theoretical perspective emphasizes the importance of resources, the need for management to pay attention to those who control such resources, and, consequently, the power, legitimacy, and urgency of claims as perceived by the management of those constituents. According to the Legitimacy Theory mentioned by Chauvey, Giordano-Spring, Cho, and Patten (2015) and Tadros and Magnan (2019), organizations must continuously strive to conduct their operations following societal restrictions and norms. The assumption that an entity's actions are desirable, appropriate, or follow socially developed systems, norms, values, beliefs, and definitions is considered legitimate. Legitimacy theory is highly applicable to environmental and green accounting because legitimacy is essential for companies that care about the environment. The company can be accepted by the surrounding community and remains sustainable.

2.2 Corporate Social Responsibility

Ratul, Nayma, and Rahman (2023) in their research state that Corporate Social Responsibility (CSR) is vital since it affects the company, customers, and society. Public awareness of corporate social responsibility has grown in recent decades (Tukur, Shehu, Mammadi, & Sulaiman, 2019). CSR is the obligation of organizations to not only provide good goods and services to society, but also to maintain the quality of the social and physical environment and to contribute positively to the well-being of the communities in which they are located. Environmental responsibility refers to the voluntary integration of environmental and social concerns into operations and interactions with stakeholders over legal obligations (Nur & Sukoharsono, 2013). The disclosure of environmental responsibility provides information designed to raise concerns regarding social and environmental accountability. Besides that, Patma, Salle, and Pangayow (2018) disclosure of environmental responsibility demonstrates a company or organization's commitment to managing the environmental impact of operational results. Environmental responsibility is a trait that is gradually becoming an inherent requirement for the sustainability of business operations.

2.3 Environmental accounting

Environmental accounting has several definitions and applications. Environmental accounting can support income, financial, and internal management accounting for businesses. The primary focus is on environmental accounting as a managerial communication tool for internal business decision-making. Environmental Accounting refers to the incorporation of environmental costs into business and governmental accounting practices. Environmental costs are monetary and non-monetary impacts that must be borne by activities that degrade the environmental quality. Environmental cost accounting shows the actual costs of inputs and business processes, ensures cost efficiency, and is used to measure quality and service costs. Environmental accounting identifies, evaluates, and measures significant aspects of a company's socioeconomic activities to maintain environmental quality following predetermined goals, thereby preventing companies from arbitrarily processing resources without considering their impact on society (Patma et al., 2018; Nur & Sukoharsono, 2013).

2.4 Environmental cost

Environmental costs are also referred to as environmental quality costs. Similarly, environmental costs are incurred owing to poor environmental quality. Consequently, costs are associated with production, detection, repair, and prevention of environmental degradation. Hansen and Mowen (2006) classify environmental costs into four categories:

2.4.1 Prevention Cost

Environmental prevention costs are incurred to prevent the production of pollutants and waste, which can cause harm to the environment. Prevention activities include evaluating and selecting suppliers, evaluating and selecting equipment to control pollution, designing processes and products to reduce or eliminate contaminants, training employees, studying environmental impacts, auditing environmental risks, conducting environmental research, developing environmental management systems, recycling products, and obtaining ISO 14001 certifications.

2.4.2 Detection Cost

Environmental detection costs are the expenses incurred to determine whether a company's products, processes, and other activities comply with the applicable environmental standards. The environmental standards and procedures that businesses strive to adhere to are defined in three ways: laws and government regulations, voluntary standards (ISO 14001) developed by the International Standards Organization, and management-developed environmental policies. Examples of detection activities include auditing environmental activities, examining products and processes (for environmental compliance), developing environmental performance measures, verifying suppliers' environmental performance, and measuring contamination levels.

2.4.3 Internal Failure

Internal environmental failure costs are incurred due to toxins and garbage being created but not properly disposed. Consequently, internal failure costs are incurred in removing and managing impurities or waste once they are formed. Internal failure efforts fall into one of two categories: preventing the release of toxins and waste into the environment, and reducing the contaminants discharged to meet environmental regulations. Internal failure operations include the operation of equipment to reduce or eliminate pollution, treatment and disposal of toxic materials, maintenance of polluting equipment, licensing of facilities that produce toxins, and recycling of scrap.

2.4.4 External Failure

Environmental failure costs are incurred when toxins and wastes are released into the environment. The reality of external failure costs is that the corporation incurs and pays them. Unrealized external failure costs (social costs) are incurred and paid for by parties outside the company despite being caused by the company. Social costs can be subdivided into environmental degradation costs and those linked to adverse effects on a person's property or well-being.

2.5 Recognition, measurement, presentation, and disclosure

This research was conducted at a Regional General Hospital owned by the Regional Government so that recognition, measurement, presentation, and disclosure are regulated in Domestic Government Regulation (Permendagri) No. 64 of 2013 concerning the Implementation of Accrual-based Government Accounting Standards in Local Government.

2.5.1 Recognition of environmental cost

Recognition is the process of capturing items for inclusion in the statement of financial position or performance that meet the definition of one of the financial statement elements—assets, liabilities, equity, income, or expenses. Recognition involves describing an item in one of those reports—either alone or combined with other things—in words, with a monetary amount and including that amount in one or more totals in the report. The amount at which an asset, liability, or equity is recognized in the statement of financial position is referred to as the 'carrying amount' (Kieso, Weygandt, & Warfield, 2016).

Any environmental costs incurred related to the waste management process must be recognized using an accrual approach. These charges are recognized as expenses when used in hospital operating activities. The Regional General Hospital recognizes costs on an accrual basis, which relates to the Domestic Government Regulation (Permendagri) No. 64 of 2013.

2.5.2 Measurement of environmental cost

International Financial Reporting Standards mandate that corporations account for and report assets and liabilities based on acquisition prices. This is known as the historical cost concept (Kieso et al., 2016).

Government Accounting Standards Statement Number 01 describes measurement following the Basic Framework for Preparing and Presenting Financial Reports as establishing the amount of money required to recognize and include each part of a financial report. All the costs associated with waste management processes must be measured precisely and independently. They used historical costs and Rupiah for their presentations.

2.5.3 Presentation of environmental cost

Paragraph 15 of the Statement of Financial Accounting Standards No. 1 states that financial reports must accurately reflect an organization's financial condition, financial performance, and cash flows. This fair presentation portrays the impacts of transactions, events, and other factors following the Financial Reporting Conceptual Framework's definitions and recognition requirements for assets, liabilities, revenues, and expenses. Implementing Financial Accounting Standards with extra disclosures, if necessary, is believed to result in a fair presentation of financial statements. The

presentation of financial reports as an alternative to environmental financial reporting can be roughly classified into four models: normative, green, ecologically intensive, and national asset models.

2.5.4 Disclosure of environmental cost

The type of disclosure used to provide users with financial statements with information is separated into two categories: voluntary disclosure and required disclosure.

3. Research methodology

The COVID-19 pandemic has been complex and multidimensional. Ahmed, Islam, Ahmed, Faroque, and Uddin (2021) used a qualitative approach in their research because it was appropriate for exploring its in-depth application. This qualitative technique will reveal contextual determinants and changes in environmental accounting practices before, during, and after the pandemic. Qualitative data, such as interviews, document analysis, and observation, will reveal hospital environmental accounting beliefs and practices (Tadros & Magnan, 2019). Thus, qualitative comparative analysis helps to understand environmental accounting implementation changes in this dynamic and complicated situation. In-depth interviews with three people directly involved in the study were conducted to collect the primary data. These people provided unique personal insights and viewpoints on the topic being studied. These informants, who had in-depth knowledge and experience, provided a nuanced understanding of the subject of the investigation. In addition, secondary data from relevant financial information are added to the study, complementing the research by offering a larger context and allowing for cross-referencing with the interview findings. Comparative analysis, described by Keromytis (2011), attempts to provide a complete and well-rounded examination of the topic by merging primary and secondary data sources, thus providing deeper knowledge of the issues.

The purpose of this study was to address the main research question. The main research question can be answered if the mini-research question is answered. The research question will be analyzed to compare its application during three periods: before the pandemic, during the pandemic (early 2020 to the end of 2022), and after the pandemic. The research questions are listed in Table 1.

Table 1. Research Question

Classification	Research Question
Main	How is the environmental accounting implemented at dr Mohamad Soewandhie Regional Hospital?
Mini	<ol style="list-style-type: none"> 1. What types of waste are produced by hospitals? 2. How is the process of processing hospital waste? 3. What types of costs are incurred by hospitals related to processing hospital waste? 4. How do we recognize, measure, present, and disclose environmental costs carried out by hospitals? 5. How does the Hospital identify environmental costs that have been incurred?

Source: Researchers, data processed (2023)

Three informants who actively use environmental accounting in hospitals answered the research questions. They are the heads of sanitation installations, non-medical support staff, and financial treasurers. These three informants were chosen because they play various roles in a hospital's environmental accounting and financial management operations. The Head of Sanitation Installations drives the sanitation department's hospital waste management and environmental accounting. They reveal the environmental accounting methods in detail. Knowledge of how sanitation installations handle environmental expenses and budgeting requires knowledge of Non-Medical Support Staff budgeting. Their involvement in budgeting all sanitation demands provides a unique perspective on environmental accounting, financial planning, and resource allocation. The Financial Treasurer approves hospital division expenses, including sanitation installations, to ensure environmental

accounting. Their perspectives show how financial decisions and approvals followed environmental accounting principles before, during, and after the pandemic. All three interviewees comprehensively viewed the hospital's environmental accounting methods and financial decision-making processes from operational to high-level financial management. Their perspectives are crucial for studying the impact of the COVID-19 pandemic on hospital environmental accounting and understanding how their roles adjust.

4. Result and discussion

4.1 Results

"What types of waste are produced by hospitals?"

"There is solid, gas, and liquid waste. We also divided this into several categories, namely hazardous and toxic waste and non-hazardous and toxic waste. If waste is not hazardous or toxic, it is certainly not as dangerous as household waste. Later, I will list what is included in the hazardous and toxic materials, how many, and how long it will be stored."

As indicated in that section of the interview, the ideal person to answer this question is the hospital's Head of the Sanitation Installation. In general, hospital waste consists of solid, liquid, and gas wastes, which are categorized as Hazardous and Toxic Materials and Non-Hazardous and Toxic Materials. The hazardous and toxic material waste of the Hospital is listed in Table 2.

Table 2. Identification of Toxic and Hazardous Waste in 2023 based on Characteristics and Stockpile Predictions (after the COVID-19 pandemic)

	Name of Waste	Code	Source of Waste	Characteristics	Stockpile Predictions (kg/month)
1	Clinical waste	A337-1	Category 1 general specific sources	Infectious, toxic	15.000
2	Oil and lubricants used for generator sets	B105D	Category 2 from non-specific sources	Flammable liquids	20
3	Pharmaceutical product packaging	A337-1	Category 1 general specific sources	Toxic	10
4	Laboratory equipment contaminated with Toxic and Hazardous Materials	A337-4	Category 1 general specific sources	Toxic	1
5	Expired pharmaceutical products	A337-2	Category 1 general specific sources	Toxic	0,5
6	Expired chemicals	A337-3	Category 1 general specific sources	Toxic	5
7	Sludge Wastewater Treatment Plant	B337-2	Category 2 from non-specific sources	Toxic	150
8	Used battery	A102D	Category 2 from non-specific sources	Corrosive	15
9	Used majun fabric	B110D	Category 2 from non-specific sources	Flammable solids	1

	Name of Waste	Code	Source of Waste	Characteristics	Stockpile Predictions (kg/month)
10	Electronic waste Luminescent Tube lamps	B107D	Category 2 from non-specific sources	Toxic	40
11	Used packaging of Toxic and Hazardous Materials	B104D	Category 2 from non-specific sources	Toxic or Flammable solids	75
12	Waste contaminated with Toxic and Hazardous Materials	B108D	Category 1 general specific sources	Toxic	1
13	Used filters from air pollution control facilities	B109D	Category 2 from non-specific sources	Toxic	10
14	Used ink packaging	B321-4	Category 2 from non-specific sources	Toxic	0,5
15	Used toner	B353-1	Category 2 from non-specific sources	Toxic	0,5

Source: List from Head of Sanitation Installations, data processed (2023)

Table 2 presents a forecast of the waste generated each month in 2023. Hospitals have produced three to four times the usual amount of waste during the pandemic. The difference between waste before and after the pandemic is the additional equipment used by hospitals during the pandemic. For example, the provision of dialysis, which numbered only eight or nine machines before the pandemic, has now increased to 40. Although the pandemic has passed, the amount of hospital waste has increased; however, it is much more manageable than during the pandemic.

Table 3 shows each waste that must be stored in the media and the maximum storage time for each waste. These data are from when this research was carried out, namely when the COVID-19 pandemic was officially declared. The results of research observations obtained from the head of the sanitation installation also revealed that during the pandemic, the amount of waste produced was much higher; therefore, even though the storage period had been determined, it was still not possible for hospitals to store the waste based on the maximum time limit from the data presented in the Table. 3.

Table 3. Identification of Toxic and Hazardous Waste in 2023 based on Storage Period (after the COVID-19 pandemic)

	Name of Waste	Code	Storage Media	Storage Period
1	Clinical waste	A337-1	yellow plastic 25kg capacity, dropbox capacity 660 liters	2 days
2	Oil and lubricants used for generator sets	B105D	plastic drum with a capacity of 200 liters	365 days
3	Pharmaceutical product packaging	A337-1	plastic drum with a capacity of 200 liters	365 days

	Name of Waste	Code	Storage Media	Storage Period
4	Laboratory equipment contaminated with Toxic and Hazardous Materials	A337-4	plastic drum with a capacity of 200 liters	180 days
5	Expired pharmaceutical products	A337-2	plastic drum with a capacity of 200 liters	180 days
6	Expired chemicals	A337-3	plastic drum with a capacity of 200 liters	180 days
7	Sludge Wastewater Treatment Plant	B337-2	plastic drum with a capacity of 200 liters	365 days
8	Used battery	A102D	plastic drum with a capacity of 200 liters	180 days
9	Used majun fabric	B110D	plastic drum with a capacity of 200 liters	365 days
10	Electronic waste Luminescent Tube lamps	B107D	plastic drum with a capacity of 275 liters	365 days
11	Used packaging of Toxic and Hazardous Materials	B104D	dropbox capacity 660 liters	365 days
12	Waste contaminated with Toxic and Hazardous Materials	B108D	plastic drum with a capacity of 200 liters	180 days
13	Used filters from air pollution control facilities	B109D	plastic drum with a capacity of 50 liters	365 days
14	Used ink packaging	B321-4	plastic drum with a capacity of 50 liters	365 days
15	Used toner	B353-1	plastic drum with a capacity of 50 liters	365 days

Source: List from Head of Sanitation Installations, data processed (2023)

"How is the process of processing hospital waste?"

According to the findings of in-depth interviews with the Head of Sanitation Installation, hospital waste processing has not changed significantly before, during, or after the pandemic because the hospital has always treated waste in compliance with appropriate rules and laws to guarantee that the waste produced by the hospital is not hazardous to the environment. The thing that needs to be paid attention to is that the processing methods for different types of waste are also other.

"How to process each waste is, of course, different. Burning destroys solid waste later, but hospitals cannot burn it directly; thus, a third party does it. Liquid waste can be managed by oneself using a wastewater treatment plant, whereas gas waste certification is performed every six months by the Regional Health Laboratory."

Each type of solid waste requires a specific management approach. Sharp and nonsharp infectious solid wastes must be separated. For example, a needle may enter a sharp infection. Nonsharp infections can also affect human organs. Each type of waste, especially solid waste that is infectious to human organs, is treated differently. This method must wait until the organ is unusable before declaring it waste. All the solid waste was burned in the end. Third parties or vendors handle solid waste destruction. Given

that the Surabaya government operates this hospital, the administration was chosen through an e-catalog.

The Hospital has three wastewater treatment installation units of varying sizes. The resulting liquid waste is handled using aerobic and anaerobic biofilter technologies, in which the management of liquid waste depends on microorganisms, which degrade the waste without the need for chemicals, making it safe for the environment.

Hospitals generate waste gas because of the operation and maintenance of alternative energy sources. The Hospital has four alternative electricity sources or generators that are continuously maintained, resulting in gas waste output while the engine is warmed. This smoke is handled by employing a ducting mechanism to expel it, so that it does not harm the surrounding environment. This is also demonstrated by the regional health laboratory's routine certification of the hospital's air quality every six months.

"What types of costs are incurred by hospitals related to processing hospital waste?"

"The environmental costs incurred by hospitals are the costs of dealing with three types of waste produced by hospitals. Each waste has its cost items, not only waste processing costs but also laboratory test costs to ensure that the Hospital meets applicable standards."

Hospitals incur costs in processing environmental waste, including costs for Sustainable Management, Environmental Communication, Managing Hospital Pollution, Resource Conservation, Water Recycling, and Energy Conservation (Kumar & Chaudhary, 2021). Research conducted by Sari, Pratadina, Anugerah, Kamaliah, and Sanusi (2021) found that environmental costs are frequently concealed and distributed among several categories in the accounting system, even in accounting applications with limited regulation. Management accounting studies indicate that environmental costs are typically incorporated into overhead expenses. Inadequate or deficient communication between accountants and environmentalists leads to the improper allocation or estimation of environmental costs.

"How do you recognize, measure, present, and disclose environmental costs carried out by hospitals?"

The Hospital is a Regional Public Service Agency (Badan Layanan Umum Daerah) that adheres to the financial reporting regulations specific to its agency type. The financial reports of hospitals will not be made public and will be included in the financial statements of all companies held by the Surabaya City administration. The Head of the Sanitation Installation at Soewandhie Hospital is responsible for submitting all environmental and hospital waste expenses. These costs are then forwarded to Non-Medical Support Staff, who prepare a budget based on the unit's existing budget. Finally, the Hospital Finance Treasurer approves the budget request. The following are the results of interviews conducted by non-medical support staff regarding recognition, measurement, presentation, and disclosure:

"Three types of waste are included in the budgeting process: solid, gas, and liquid. During budgeting, it is important to recognize that the largest expenses are associated with managing the most significant amount of waste, specifically solid waste. As a non-medical support staff member, I obtained waste cost proposals from the sanitation installation team in the form of data. My responsibility is to summarize and record this information in the hospital budget proposal system. Expenses can only be accepted if the finance treasurer provides consent. Monthly expenses for each garbage category varied. Once the pandemic is officially over, the allocated budget for waste expenses in 2023 will amount to 2,000,000,000 rupiah."

The Non-Medical Support Staff submits the budget to the Financial Treasurer for approval. The subsequent findings are derived from interviews performed with the Financial Treasurer to authenticate and acquire more information about previously received data.

"I am responsible for all expenses related to the hospital units, not simply those for sanitation installation units. Every document is processed and approved if it adheres to the budget and account line codes. Provided that the application materials are comprehensive and suitable, the money will be authorized for distribution. The primary responsibility of the financial treasurer is to authorize and present data on financial reporting. After that, the accounting department generates financial reports, which include budget realization reports, balance sheets, operational reports, equity change reports, and financial reports. The reports were generated following the hospital standards established by the Regional Public Service Agency (Badan Layanan Umum Daerah), and the recognition of costs is currently based on the accrual method. Which relates to the Domestic Government Regulation (Permendagri) No. 64 of 2013."

Before 2013, hospitals had used cash bases to record their costs. Since 2013, as stated in the Domestic Government Regulation (Permendagri) No. 64 of 2013, the hospital has switched to using the accrual basis. Furthermore, the guidelines governing the format of financial reports for local general hospitals were established according to the Government Regulation of the Republic of Indonesia Number 71 of 2010, which pertains to Government Accounting Standards. These standards are based on the initial Conceptual Framework for Government Accounting, which outlines the fundamental principles and guidelines for preparing and advancing Government Accounting Standards. Furthermore, this Standard Statement aims to govern how financial reports are presented in general-purpose financial statements. This enhances the comparability of financial reports across budgets, periods, and entities. The Cash-based Budget Realization Report serves as the primary means to present the government's financial performance and fulfill accountability requirements as mandated by legislative rules. The results of this research are also in line with research conducted by Rimvano (2019) dan Ariani, Zulhawati, and Darmawan (2021)

"How does the hospital identify environmental costs that have been incurred?"

According to Hansen and Mowen (2006), environmental costs are classified into four categories: prevention, detection, and internal and external failures. Soewandhie Hospital also budgets for costs with a similar aim, but does not explicitly use the same name. The sanitation installation unit classifies these costs as follows:

"Based on the current implementation, the prevention costs refer to the expenses of transporting hospital solid waste necessary to avoid environmental degradation. Detection costs refer to the expenses associated with conducting a laboratory test to identify any discrepancies between the standards and actual implementation of procedures inside the hospital. Internal failure costs encompass all expenses associated with environmental health as well as the maintenance and upkeep of space and building infrastructure. An illustrative instance pertains to the expenditures associated with remunerating cleaning personnel, whose duties encompass ensuring a hygienic and sanitized hospital environment. Specifically, management is responsible for addressing exterior failures since the sanitation installation unit focuses solely on mitigating internal environmental costs."

After confirming the financial treasurer, it was determined that hospital management consistently budgeted for external failure costs. However, it was found that these costs have never been incurred because of the requirement that they can only be released if the hospital is responsible for unanticipated environmental pollution. Given that the Hospital has made efforts to comply with relevant legislation, there is no justification for paying these fees, especially considering the facility's potential internal harm and environmental risks. This finding aligns with the study conducted by Harjanti and Widajantie (2021) on the RSUD dr. Mohammad Zyn Sampang. The research revealed that the hospital allocated funds for certain expenses but ultimately did not utilize them because of the successful implementation of Environmental Management Accounting (EMA). EMA refers to the strategic management of both environmental and economic aspects by establishing and executing suitable accounting systems and

practices (Agung, Srihastuti, & Athori, 2022; Sary, Utami, & Andayani, 2022; Wang, Wang, & Wang, 2019).

4.2 Discussion

They implemented environmental accounting principles in healthcare facilities before, during, and after the COVID-19 pandemic, adhering to relevant regulatory requirements regarding cost disclosure and financial report preparation. Devi and Srivastava (2022) found that the pandemic profoundly affected the social, economic, and environmental aspects of sustainability. Nevertheless, during the COVID-19 pandemic, there was a substantial surge in the volume of patients seeking medical attention at hospitals (Priyan, Matahen, Priyanshu, & Mouqdadi, 2024). This surge can be attributed to the disease being treated as an infectious pandemic that demanded specialized treatment and necessitated the acquisition of supplementary medical equipment including ventilators and portable HEPA filters. Consequently, equipment procurement undoubtedly increased during the pandemic. In addition, consumables such as oxygen cylinders, masks, and hand sanitizers have been utilized. Personal protective equipment (PPE) has also increased during the pandemic. Undoubtedly, an increase in consumable use contributes to a corresponding increase in waste production. As previously mentioned, the volume of waste was multiplied by three to four during the pandemic. This also affected the amount of money spent on waste processing during the pandemic.



Figure 1. Medical Air Sterilization Purifier / HEPA Filter Portable at the Public Area in Hospital
Source: Researcher Documentation

In response to the pandemic, the hospital implemented Portable HEPA Filters in all rooms to maintain optimal air quality. Despite the concurrent procurement of ventilators, procurement was successful

during the pandemic. Naturally, this equipment requires upkeep, which will incur supplementary expenses, notwithstanding the conclusion of the pandemic. In general, when depicted in a straightforward manner, it can be summarized as follows:

Table 4. Environmental costs before, during, and after the pandemic

Before Pandemic	During Pandemic	After Pandemic
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The Hospital has implemented cost and financial reporting principles following applicable regulations.

<p>The environmental cost conditions are as follows:</p> <ol style="list-style-type: none"> 1. Solid waste cost 2. Liquid waste cost 3. Gas waste cost 	<p>The environmental cost conditions are as follows:</p> <ol style="list-style-type: none"> 1. Solid waste costs have increased three to four times compared to normal conditions due to increased use of consumables in the form of oxygen cylinders, personal protective equipment, hand sanitizers, and masks 2. Procurement of additional supporting equipment in the form of portable ventilators and HEPA filters 3. Liquid waste cost 4. Waste gas costs and air quality clinical test costs are more intense than before the pandemic. 	<p>The environmental cost conditions are as follows:</p> <ol style="list-style-type: none"> 1. Solid waste costs are starting to be controlled 2. There are additional maintenance costs and depreciation for equipment procured during the pandemic 3. Liquid waste cost 4. Gas waste costs with intensity returning to normal as before the pandemic.
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Source: data processed (2023)

Hospitals must effectively manage their business activities to prevent environmental pollution from the waste they generate. Several researchers have studied the application of environmental accounting during the pandemic. Ashari and Anggoro (2021) tested the implementation of green accounting in public hospitals in Malang. The implementation at the Ibnu Sina Bukittinggi hospital was carried out by Dahlia, Putri, and Edri (2021), research at the Haji Surabaya General Hospital was carried out by Susanti, Baehaqi, and Firman (2021), research at the Imelda Workers Indonesia Meda General Hospital was carried out by Ramadhani, Nurlaila, and Jannah (2023), research to examine hospitals in Gresik Regency was carried out by Wahyuningtyas (2023). All of their research results were carried out during the pandemic and also showed an increase in environmental costs that occurred during the pandemic.

This study confirms that the COVID-19 pandemic has altered the implementation of environmental accounting in hospitals. The research findings indicate that, in the aftermath of the pandemic, hospitals exhibited a heightened focus on health measures regarding the transmission of infectious disease outbreaks. This heightened concern has also increased the environmental expenses incurred by hospitals. Before the pandemic, hospitals did not bear as substantial an environmental expense as they did during the pandemic. Following the conclusion of the pandemic, efforts were made to manage the

expenses incurred. However, supplementary cost elements were still implemented as a precautionary measure to address potential future occurrences of comparable disasters (Araujo, Fernandes, Reis, & Beaulieu, 2023). Similarly, in parallel research conducted at hospitals in England, Ferry, Midgley, and Green (2023) found that the pandemic raised awareness about the significance of proactively addressing and anticipating similar issues and safeguarding citizens' liberties during future crises. Leoni et al. also studied the function of accounting, especially environmental accounting, during the pandemic. (2021). This study examined its use in Germany, Italy, and England. Research has also found that this pandemic has highlighted the role of accounting in emergencies and the need for better planning.

5. Conclusion

5.1 Conclusion

This study aims to provide a comparative analysis of the implementation of environmental accounting in hospitals before, during, and following the pandemic. This study employed a comparative analysis methodology to examine and analyze the data. The research utilized primary data from interviews with three informants directly involved and secondary data derived from pertinent financial information at the Regional Public Hospital dr. Mohamad Soewandhie, Surabaya. The COVID-19 pandemic has substantially affected hospitals' adoption of environmental accounting. Hospitals regularly face environmental expenses for waste management, which involve categorizing waste into three distinct types: solid, liquid, and gaseous. The pandemic has led hospitals to pay additional expenses to manage these three categories of waste. The overall cost escalation can be attributed to two primary factors: the surge in hospital waste generation and the accompanying surge in vendor waste processing expenses, driven by high demand, as hospitals cannot handle waste processing independently. Upon formal declaration of the end of the pandemic, hospitals regained the ability to manage these expenses.

They incorporate environmental accounting concepts in healthcare institutions before, during, and after the COVID-19 pandemic and comply with the applicable statutory mandates for disclosing costs and preparing financial reports. However, the COVID-19 pandemic has significantly increased the number of hospitalized patients seeking medical care. This increase can be ascribed to the nature of the disease treated, a contagious outbreak requiring specific medical care, and the procurement of additional medical equipment such as ventilators and portable HEPA filters. Consequently, the acquisition of equipment unquestionably increased during the pandemic. Furthermore, the usage of consumable items, such as oxygen cylinders, masks, hand sanitizers, and personal protective equipment, experienced a surge during the pandemic. Undoubtedly, an escalation in the utilization of consumables leads to a proportional increase in waste generation. As stated earlier, the amount of waste increased by a factor of three to four during the pandemic. This also affects the financial resources allocated to waste management during the pandemic. This research shows that the COVID-19 epidemic has changed hospitals' environmental accounting. After the pandemic, hospitals have focused more on infectious illness prevention. The environmental costs of hospitals have increased with this issue. Hospitals spent less time on environmental issues before the pandemic. Hospital expenses could be managed after the pandemic. Nevertheless, additional costs have been added to prevent future disasters.

5.2. Limitation

The Regional General Hospital Dr. Mohammad Soewandhie is a hospital owned by the Surabaya City Government, whose financial information is consolidated with financial reports from all business entities owned by the Surabaya City Government and is not to be published. Therefore, the data presented in this research are merely an example of the hospital's approval. In addition, this study was conducted solely at the Regional General Hospital Dr. Mohammad Soewandhie, which does not rule out the possibility that it would provide different results if the research was conducted at other hospitals.

5.3 Suggestion

Future research could also evaluate the use of environmental accounting in hospitals other than the Regional General Hospital Dr. Mohammad Soewandhie before, during, and after the pandemic. Comparable studies should be conducted in several regional general hospitals and provinces in Indonesia to determine how it is implemented throughout the country.

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References

- Ahung, S., Srihastuti, E., & Athori, A. (2022). Pengaruh Penerapan Akuntansi Lingkungan Terhadap Kinerja Lingkungan Rumah Sakit Umum Daerah Kabupaten Kediri. *JCA (Jurnal Cendekia Akuntansi)*, 3(1), 9-19.
- Ahmed, J. U., Islam, Q. T., Ahmed, A., Faroque, A. R., & Uddin, M. J. (2021). Corporate social responsibility in the wake of COVID-19: multiple cases of social responsibility as organizational value. *Society and Business Review*, 16(4), 496-516.
- Anoke, F., Ngozi, N. H., Uchechukwu, E. S., & Joyce, I. (2022). Entrepreneurial Marketing And SMEs Growth In Post Covid-19 Era In Awka, Anambra State, Nigeria. *International Journal of Financial, Accounting, and Management*, 4(2), 115-127.
- Araujo, R., Fernandes, J. M., Reis, L. P., & Beaulieu, M. (2023). Purchasing challenges in times of COVID-19: resilience practices to mitigate disruptions in the healthcare supply chain. *Journal of Global Operations and Strategic Sourcing*, 16(2), 368-396.
- Ariani, M., Zulhawati, Z., & Darmawan, D. (2021). Penerapan Akuntansi Lingkungan Pada Pengelolaan Limbah Rumah Sakit. *PETANDA: Jurnal Ilmu Komunikasi dan Humaniora*, 3(2), 87-98.
- Ashari, M. H., & Anggoro, Y. (2021). How is the implementation of green accounting in public Hospital? *Journal of Islamic Accounting and Finance Research*, 3(1), 131-154.
- Chauvey, J.-N., Giordano-Spring, S., Cho, C. H., & Patten, D. M. (2015). The normativity and legitimacy of CSR disclosure: Evidence from France. *Journal of Business Ethics*, 130, 789-803.
- Chinedu, O. F., Dennis, M. O., & Chikwemeka-Onuzulike, N. (2020). Impact of Covid-19 on the survival of Igbo owned businesses in Nigeria: the nexus. *International Journal of Financial, Accounting, and Management*, 2(2), 121-130.
- Cho, C. H., Senn, J., & Sobkowiak, M. (2022). Sustainability at stake during COVID-19: Exploring the role of accounting in addressing environmental crises. *Critical Perspectives on Accounting*, 82, 102327.
- Dahlia, D., Putri, E. M., & Edri, F. (2021). Analisis Penerapan Akuntansi Lingkungan Pada Rumah Sakit Islam Ibnu Sina Bukittinggi. *Jurnal BANSI-Jurnal Bisnis Manajemen Akutansi*, 1(1), 28-38.
- Devi, Y., & Srivastava, A. (2022). Addressing sustainability during and post-COVID-19 pandemic crisis: a literature review and bibliometric analysis to explore the future avenues. *Benchmarking: An International Journal*.
- Donelli, C. C., Fanelli, S., Zangrandi, A., & Elefanti, M. (2022). Disruptive crisis management: lessons from managing a hospital during the COVID-19 pandemic. *Management Decision*, 60(13), 66-91.
- Ferry, L., Midgley, H., & Green, S. (2023). Accountability, emergency and liberty during COVID-19 in the UK 2020–22. *Accounting, Auditing & Accountability Journal*.
- Gerald, E., Obianuju, A., & Chukwunonso, N. (2020). Strategic agility and performance of small and medium enterprises in the phase of Covid-19 pandemic. *International Journal of Financial, Accounting, and Management*, 2(1), 41-50.

- Gumbo, L., Margaret, M., & Chagwasha, M. (2022). Personal Financial Management Skills Of University Students and Their Financial Experiences During The Covid-19 Pandemic. *International Journal of Financial, Accounting, and Management*, 4(2), 129-143.
- Hansen, D. R., & Mowen, M. M. (2006). *Managerial Accounting*: Cengage Learning.
- Harjanti, W. N., & Widajantie, T. D. (2021). Analisis Penerapan Akuntansi Lingkungan pada Rumah Sakit Umum Daerah dr. Mohammad Zyn Sampang (Studi Kasus pada Rumah Sakit Umum Daerah dr. Mohammad Zyn Sampang). *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, 5(3), 454-464.
- Hirdariani, B. A., & Fitriyah, N. (2022). Analisis Penerapan Akuntansi Lingkungan di Rumah Sakit Umum Daerah Kota Mataram Selama Masa Pandemi COVID-19. *J-MARKS*, 1(1), 1-12.
- Indrawati, N. M., & Rini, I. G. A. I. S. (2018). Analisis Penerapan Akuntansi Lingkungan pada Badan Rumah Sakit Umum Daerah (BRSUD) Tabanan. *KRISNA: Kumpulan Riset Akuntansi*, 9(2), 85-95.
- Kemkes. (2023). *Infeksi Emerging*: Kementerian Kesehatan RI.
- Keromytis, A. D. (2011). Comparative Analysis. In *SpringerBriefs in Computer Science*.
- Khan, M. R. (2020). Ethical business practice and short term earning intensity during the Covid-19 crisis in Bangladesh. *International Journal of Financial, Accounting, and Management*, 2(2), 79-93.
- Kieso, D. E., Weygandt, J. J., & Warfield, T. D. (2016). *Intermediate accounting*: John Wiley & Sons.
- Kumar, C., & Chaudhary, R. (2021). Environmental sustainability practices in hospitals of Bihar. *Current Research in Environmental Sustainability*, 3, 100106.
- Kusuma, A., Asmeri, R., & Begawati, N. (2019). Analisis Penerapan Akuntansi Lingkungan dalam Pengelolaan Limbah dan tanggungjawab sosial pada Rumah Sakit Stroke Nasional Bukittinggi.
- Larasati, R., Rofingaton, S., & Oeghoede, C. (2020). Analisis Penerapan Akuntansi Lingkungan Terhadap Pengelolaan Limbah Rumah Sakit (Studi Empiris pada Rumah Sakit di Kota Jayapura). *ARU Journal*, 2774-6631.
- Leoni, G., Lai, A., Stacchezzini, R., Steccolini, I., Brammer, S., Linnenluecke, M., et al. (2021). Accounting, management and accountability in times of crisis: lessons from the COVID-19 pandemic. *Accounting, Auditing & Accountability Journal*, 34(6), 1305-1319.
- Mahamid, F. A., Veronese, G., & Bdier, D. (2021). The Palestinian healthcare providers' perceptions, challenges and human rights-related concerns during the COVID-19 pandemic. *International Journal of Human Rights in Healthcare*(ahead-of-print).
- Maulina, V. A., Nugraha, A. A., & Ishak, J. F. (2022). Analisis Perhitungan Biaya Lingkungan Atas Pengelolaan Limbah Padat Covid-19 dalam Mencapai Eco-Efficiency (Studi Kasus pada RSUD Dr. Hasan Sadikin Bandung). *Indonesian Accounting Literacy Journal*, 3(1), 16-27.
- Milne, M. J., & Patten, D. M. (2002). Securing organizational legitimacy: An experimental decision case examining the impact of environmental disclosures. *Accounting, Auditing & Accountability Journal*, 15(3), 372-405.
- Nur, A. K. M., & Sukoharsono, E. G. (2013). Analysis of Environmental Accounting as a Form of Corporate Social Responsibility in Environmental Management Effort to Reduce Externalities Impact (Case Study In Rumah Sakit Islam Malang-UNISMA). *Jurnal Ilmiah Mahasiswa FEB*, 2(1).
- Patma, K., Salle, A., & Pangayow, B. J. (2018). Pengaruh Tanggungjawab Lingkungan, Legitimasi, Dan Peluang Daya Saing Terhadap Penerapan Environmental Accounting Pada Rumah Sakit Di Kota Jayapura. *Jurnal Akuntansi, Audit, dan Aset*, 1(1), 58-73.
- Peraturan Menteri Dalam Negeri Nomor 64 Tahun 2013 tentang Penerapan Standar Akuntansi Pemerintahan Berbasis Akrual Pada Pemerintah Daerah,
- Priyan, S., Matahen, R., Priyanshu, D., & Mouqdadi, M. (2024). Environmental strategies for a healthcare system with green technology investment and pandemic effects. *Innovation and Green Development*, 3(1), 100113.
- Ramadhani, N., Nurlaila, N., & Jannah, N. (2023). Penerapan Akuntansi Lingkungan Pada Limbah Rumah Sakit (Studi Kasus RSUD. Imelda Pekerja Indonesia Medan). *Aksyana: Jurnal Akuntansi dan Keuangan Islam*, 2(1), 78-94.

- Ratul, S. S., Nayma, J., & Rahman, S. B. (2023). An analysis of the perceptions of CSR among Bangladeshi Business School students. *International Journal of Financial, Accounting, and Management*, 5(1), 35-58.
- Rimbano, D. (2019). Environmental Accounting for Waste Processing in Siti Aisyah Hospital Lubuklinggau City. *Jurnal Ilmiah Ekonomi Bisnis*, 24(1), 1-23.
- Sánchez-de Prada, L., Eiros-Bachiller, J. M., Tamayo-Velasco, Á., Martín-Fernández, M., Álvarez, F. J., Giner-Baixaoli, C., et al. (2023). Environmental factors are associated to hospital outcomes in COVID-19 patients during lockdown and post-lockdown in 2020: A nationwide study. *Environmental Research*, 229, 115904.
- Sari, R. N., Pratadina, A., Anugerah, R., Kamaliah, K., & Sanusi, Z. M. (2021). Effect of environmental management accounting practices on organizational performance: role of process innovation as a mediating variable. *Business Process Management Journal*, 27(4), 1296-1314.
- Sary, I. G., Utami, H., & Andayani, E. S. (2022). Analysis of Environmental Management Accounting Implementation in RSUD Dr. Saiful Anwar Malang. *International Journal of Accounting & Finance in Asia Pasific (IJAFAP)*, 5(2), 27-39.
- Sunaningsih, S. N. (2020). Penerapan Green Accounting Pada Rumah Sakit Umum Daerah Muntilan Kabupaten Magelang. *TECHNOBIZ: International Journal of Business*, 3(2), 30-34.
- Susanti, S., Baehaqi, A., & Firman, M. A. (2021). Analisis Penerapan Akuntansi Lingkungan pada Rumah Sakit Umum Haji Surabaya Dalam Pandangan Maqashid Syariah. *Jurnal Akuntansi Dan Keuangan Islam*, 9(2, Oktober), 91-111.
- Tadros, H., & Magnan, M. (2019). How does environmental performance map into environmental disclosure? A look at underlying economic incentives and legitimacy aims. *Sustainability Accounting, Management and Policy Journal*, 10(1), 62-96.
- Tregidga, H., & Laine, M. (2022). On crisis and emergency: Is it time to rethink long-term environmental accounting? *Critical Perspectives on Accounting*, 82, 102311.
- Tukur, S., Shehu, J., Mammadi, A., & Sulaiman, U. A. (2019). An assessment of corporate social responsibility of property developers in Bauchi Metropolis, Nigeria. *International Journal of Financial, Accounting, and Management*, 1(2), 119-129.
- Tushar, S. R., Alam, M. F. B., Bari, A. M., & Karmaker, C. L. (2023). Assessing the challenges to medical waste management during the COVID-19 pandemic: Implications for the environmental sustainability in the emerging economies. *Socioeconomic Planning Sciences*, 87, 101513.
- Vesty, G., Kokshagina, O., Jansson, M., Cheong, F., & Butler-Henderson, K. (2023). Accounting, valuing and investing in health care: dealing with outdated accounting models. *Meditari Accountancy Research*, 31(1), 52-77.
- Wahyuningtyas, S. H. (2023). Penerapan Akuntansi Manajemen Lingkungan Dalam Operasional Rumah Sakit Swasta di Kabupaten Gresik. *Journal of Culture Accounting and Auditing*, 2(1), 1-12.
- Wang, S., Wang, H., & Wang, J. (2019). Exploring the effects of institutional pressures on the implementation of environmental management accounting: Do top management support and perceived benefit work? *Business Strategy and the Environment*, 28(1), 233-243.