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FINANCIAL FEASIBILITY ANALYSIS OF DASAWISMA WASTE BANK AS COMMUNITY-BASED WASTE MANAGEMENT

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Abstract

Municipal solid waste management can be implemented well with community participation through the waste bank program. Dasawisma Waste Bank (DWB) is a business owned by the environmental Service at Labuhan Batu Regency who view waste as a valuable economic product and savings. The study aims to determine the financial profile of the implemented waste bank program at DWB, include calculating capital, revenues and profits later in the analysis using the R/C Ratio to determine the feasibility of DWB. This waste bank managed waste with the percentages amount plastic 21,96%, paper 41,42%, and metal 18,88% . Results of research addressing that average spending for Rp. 6.982.050,00 per year and operating revenues on average by Rp.7.273.900,00 per year with an average gain of Rp.291.850,00 per year. The calculation R/C in the analysis of financial feasibility, with the R/C value are 1,1. The business is feasible to be developed, it is in accordance with the value of R / C ratio is said to be beneficial because the total revenue is greater than the total cost. This value still needs to continue to be improved considering establishing waste banks supports collaborative and efficient environmental management.

Keywords: Waste Bank ; Financial Feasibility ; Waste Management.

INTRODUCTION

Indonesia is facing a critical waste management challenge due to the overwhelming volume of waste that has exceeded the capacity of existing waste management facilities. The traditional collect-haul-dispose model has proven to be insufficient and has led to significant environmental issues such as floods, pollution, and health hazards (Luhar et al., 2022).

To address this pressing issue, the implementation of waste banks has emerged as a crucial solution. Waste banks can effectively manage the ever-increasing waste by incorporating methods such as cost benefit analysis, life cycle analysis, and integrated waste management techniques. These approaches assess waste management based on economic, social, and environmental benefits, and they have proven to be instrumental in countering the challenges posed by excessive waste.

Firstly, waste banks directly benefit the environment by reducing waste generation and promoting recycling and reuse (Setiyaningrum et al., 2022). This helps in conserving natural resources, reducing greenhouse gas emissions, and minimizing pollution caused by waste disposal. Moreover, waste banks contribute to the creation of a healthier and cleaner environment by reducing littering and promoting proper waste management practices. Given these circumstances, there is a rising expectation for government support to enhance waste bank mechanisms and establish better pricing models for waste. By aligning with local needs and priorities and empowering community-based efforts, waste banks can significantly contribute to addressing Indonesia's waste management challenges and fostering inclusive economic growth and environmental sustainability. The financial feasibility of waste banks is a crucial

aspect to consider when establishing and operating such facilities. Waste banks can have a significant impact on the local economy by creating income-generating opportunities and promoting economic empowerment within the community.

The financial feasibility of waste banks is a crucial aspect to consider, as it determines the economic viability and sustainability of these initiatives. Waste banks can be appraised based on their economic, social, and environmental benefits. Various methods such as cost-benefit analysis, life cycle analysis, and integrated waste management techniques are employed to evaluate the economic, social, and environmental impacts of waste banks. In a study conducted for a waste bank in Deli Serdang Regency, the net profit value obtained by BSI-SM in 2021 was impressive, indicating the economic viability of waste banks. Additionally, the calculation results of and R/C in the financial feasibility analysis portrayed significant indicators of success for waste banks.(Auliani et al., 2023)

This reseach is being undertaken at Dasawisma Waste Bank in Labuhan Batu. The waste management model being implemented at Dasawisma Waste Bank aligns with the 3R Model - reduce, reuse, and recycle, which is an alternative approach to solve the waste problem. The waste bank, following this model, collects and manages waste materials from households and businesses, promoting recycling and reuse to reduce the negative impact on the environment. The economic advantages of waste banks extend beyond the environmental benefits. Waste banks can generate income through the sale of recycled materials to manufacturers and the reuse of waste materials for various purposes. Additionally, waste banks can create job opportunities and support economic growth within the community. This demonstrates that waste banks not only contribute to environmental sustainability but also have positive economic implications.

METHOD

To evaluate the financial feasibility of Dasawisma Waste Bank, a comprehensive method can be employed to analyze the economic aspects of their operations. The following steps outline a method to assess the financial viability of waste banks. A fundamental aspect of financial feasibility is conducting a cost-benefit analysis of waste bank operations. This involves identifying the costs associated with waste collection, sorting, treatment, and processing, and subsequently comparing them with the economic benefits derived from the sale of recyclable materials and crafted products. An assessment of the revenue generation and expenditure patterns of waste banks is essential in determining their financial sustainability. This involves evaluating the income sources, such as the sale of recyclable materials or crafted products, and the corresponding operational expenses, including labor, logistics, and infrastructure maintenance costs.

The feasibility of waste banks is calculated using revenue analysis and R/C Ratio to data in waste banks for the last 1 year. Calculations for determining the feasibility of waste banks look at investment costs, variable costs, and fixed costs. Investment costs are a sum of capital or costs used to start a business or develop a business. Variable costs are costs that are routinely incurred every time a production business is carried out where the amount depends on the number of products you want to produce. Fixed costs are another type of cost that is routinely incurred by the company during production activities. However, the amount of fixed costs does not depend on

production capacity, generally consists of labor costs, administrative costs, electricity costs and maintenance costs.

Revenue analysis aims to determine the amount of profit obtained from the business carried out (Elza, Ekayani, and Ismail 2020). Revenue (TR) from the sale of garbage can be formulated as follows

$$TR = W \times Q \quad \text{..... (1)}$$

Where TR is Total revenue, P is price and Q is quantity. In this case, the income of the parent waste bank comes from the number of goods sold to the recycling plant multiplied by the price agreed by the seller (waste bank) and buyer (recycling plant).

Total cost is the sum of variable costs and fixed costs incurred by a business. The total cost formula is as follows:

$$TC = TFC + TVC \quad \text{..... (2)}$$

Where TC is total cost, TFC: total fix cost including depreciation, rental cost, labor cost, and TVC: total variable cost , namely consumables and purchase of production materials. After adding up the total of each component, the income from the waste bank can be calculated. To estimate the income from the main waste bank can be written as follows:

$$\pi = TR - TC \quad \text{..... (3)}$$

Where π is a benefit (Revenue / profit) which is the result of deduction from TR is total revenue (total receipts) with TC which is total cost (total cost). Then to find out the feasibility of a business can be determined using the R/C ratio approach, which is a comparison between total revenue and total costs. Mathematically it can be written as follows

$$R/C\ Ratio = TR/TC \quad \text{..... (4)}$$

Where the R/C ratio is the revenue cost ratio, which is the result of dividing between total revenue (total revenue) and total cost, the greater the R/C result, the greater the profit obtained by the business. Financial feasibility assessment based on revenue analysis and R/C ratio are:

a. $\pi > 1$, then the business is feasible or profitable.

b. $\pi < 1$, then the business is not feasible or profitable.

c. R/C Ratio > 1, then the business is feasible or profitable.

d. R/C Ratio < 1, then the business is not feasible or not

RESULTS AND DISCUSSION

The operation of Dasawisma Waste Bank heavily relies on the participation and involvement of the community. in waste separation and waste management. The success of a waste bank is directly tied to the commitment and cooperation of the local residents in depositing their recyclable materials and supporting the initiatives of the waste bank. The active involvement of the community not only ensures the effectiveness of waste management but also fosters a sense of ownership and responsibility among the residents towards the cleanliness and sustainability of their environment.

Furthermore, waste banks can provide additional income opportunities for the community, especially for urban poor people. By participating in waste separation and contributing to the waste bank, individuals can earn income through the sale of recyclable materials. This extra income can significantly benefit those in need and contribute to poverty alleviation at the grassroots level.

Waste bank operational flow encompasses several key components that contribute to its successful waste management model. By analyzing the operational flow, it is evident that waste banks rely on specific processes and collaborations to ensure efficient and sustainable waste management. The following operational flow provides an overview of the essential steps involved in the waste bank model:

Waste Collection and Sorting

The initial step in waste bank operational flow involves the collection and sorting of waste materials. Community members or individuals deposit their segregated recyclable waste at the waste bank facility. Once deposited, the waste is meticulously sorted based on its recyclability, with a focus on materials such as plastics, paper, glass, and metals.

Material Weighing and Valuation

After the waste materials are sorted, they undergo a weighing process. This step involves determining the weight of each recyclable material. Subsequently, the waste bank assigns a value to the deposited materials, based on the prevailing market rates for recyclable waste.

Deposit and Credit System

Upon valuation, individuals receive a monetary credit or deposit for the recyclable materials they have contributed. The waste bank records these credits, providing individuals with an economic incentive for their waste disposal and recycling efforts.

Transfer to Recycling Facilities

The sorted and valued recyclable waste materials are then transferred to recycling facilities or to potential buyers. Waste banks often form partnerships with recycling centers or companies that utilize the collected materials for repurposing and recycling processes.

Revenue Generation and Community Benefits

As the recycling process takes place, revenue is generated through the sale of the recycled materials. A portion of this revenue is allocated towards operational expenses and maintaining waste bank facilities, while the remaining profits contribute to community development initiatives and the economic upliftment of contributors. This financial cycle supports the waste bank's self-sustainability and the local community's welfare.

Stakeholder Collaboration and Public Engagement

Integral to the operational flow of waste banks is the collaboration with local governments, non-governmental organizations, and other stakeholders. This collaborative approach fosters community engagement, environmental advocacy, and the implementation of effective waste management policies. It ensures that waste

banks play a crucial role not only in economic sustainability but also in strengthening community ties and environmental stewardship.

As waste banks continue to play a vital role in waste management and community empowerment, there is a growing emphasis on sustainable practices to further their impact. One of the innovative approaches that waste banks can adopt is product development through recycling, such as creating items like flowers from plastic.

By incorporating the concept of the 3R principle (reduce, reuse, recycle) into product development, waste banks can not only address environmental concerns but also foster economic sustainability and community welfare. This expansion of waste bank activities to include product development aligns with the commitment to economic viability, community empowerment, and environmental preservation.

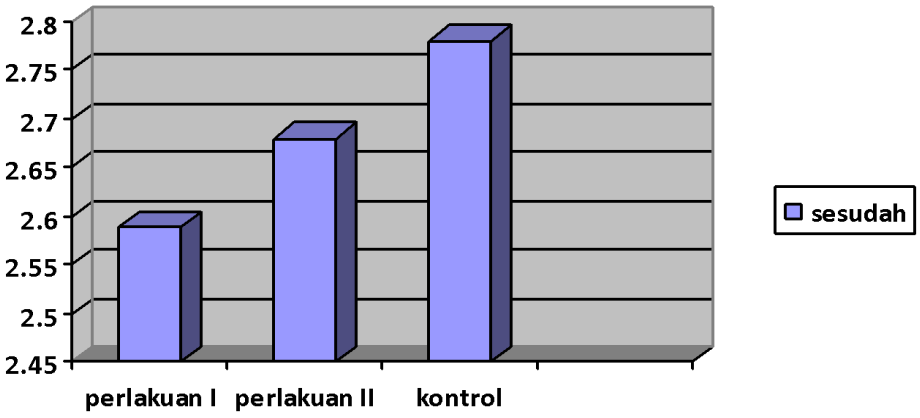
The product development process can involve educating and collaborating with the community to collect suitable plastic waste. Once the waste is sorted and treated, it can be creatively repurposed to produce items like decorative flowers. The synergy of creativity and innovation in the community can significantly enhance the economic value of the recycled waste and empower local artisans to contribute to the waste bank's goals.By incorporating these operational components, waste banks effectively align economic incentives with environmentally conscious practices, promoting sustainable waste management and bolstering community development.

The waste bank program aims to improve effective and innovative waste management while also providing economic benefits (Fatmawati et al., 2022). By focusing on waste management, waste banks address the current environmental problem and increase environmental awareness within the community (Irkham et al., 2019). This leads to a sense of ownership, knowledge, and experience among community members in waste management activities. In conclusion, waste banks provide numerous benefits to both the environment and the community (Setiyaningrum et al., 2022). In conclusion, waste banks provide numerous benefits to both the environment and the community . In conclusion, waste banks are not just about waste management, but also about community empowerment and environmental awareness (Irkham et al., 2019).Waste banks encourage a sense of concern and mutual cooperation within the community by mobilizing public awareness towards clean and healthy living. The program not only reduces waste generation in the community but also contributes to making the environment cleaner and healthier for everyone. By saving and recycling waste, individuals are able to generate income, which can be used for essential needs such as electricity and groceries, while also contributing to environmental health.

The results and discussion section is a unit containing an explanation of the results of the analysis related to the objectives. Each research result is directly discussed. The discussion contains the meaning of research results which include facts, theories and opinions. Tables, pictures or illustrations are written according to the serial number of appearance in the text and given a short title (title of the table or picture is 12 pt), while the contents of the table are 11 pt; long exposure to results and discussion of 50-60% of articles.

Table 1: Respondent Characteristic……(12pt)

Variable	Frequency (n)	Persentage (%)
x	10	11,1
y	30	33,3
z	50	55,6



Picture 1: Pain Scale Mean Difference ……(12pt)

CONCLUSION

The conclusion section contains research findings in the form of answers to research questions or in the form of a summary of the results of the discussion, implications of research results and recommendations can also be added. Narrative writing, a maximum of 5% of the entire content of the article.

Acknowledgement

In this section, thanks are written to various parties who have provided assistance in the research carried out, thanks can be given to laboratory technicians or research fund donors.

References

1) The reference list only contains sources that are referenced in the contents of the article and are in the form of literature published in the last 10 years (for journals). The references used are primary sources in the form of research articles in journals or research reports. The total number of references is at least 15, which comes from a minimum of 12 journals.
2) The writing of the reference list is arranged like the example at the end of the writing guide which shows a list of alphabetical and chronological order. Reference writing and reference list used in this journal is an automatic computer citation writing system with Harvard writing style. Citation manager software can use any of: Mendeley, Refworks, Endnote, and Zotero.

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