
Strategy for Utilizing Household Organic Waste as Compost using Fishbone Diagram and Swot Analysis During Covid-19 Pandemic

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ABSTRACT

Purpose: To maximize the processing of organic waste into compost that is useful for the surrounding community and to find out the cause of the slow processing of waste in Bambe village.

Design/methodology/approach: The method used in this research is Fishbone Methods and SWOT Analisis.

Findings: The main obstacles to poor organic waste management are the lack of knowledge of Bambe village residents in sorting organic and inorganic waste, unavailability of supporting equipment in managing organic waste into compost, lack of TPS-T places and facilities, inadequate waste processing officers, lack of support from the local government. so that the funding factor from the APBN and the provincial APBD is a problem that can hinder the process of processing organic waste.

Research limitations/implications: Can optimize the use of house hold waste in the form of organic waste into compost.

Practical implications: The use of house hold waste that can be converted into compost will reduce the amount of existing waste.

Originality/value: Socialization of the use of processing and addition of waste processing facilities to residents is very useful for solving existing problems and the local government must be willing to support it in terms of funding so that the waste processing process becomes better.

Paper type: Research paper

Keyword: Analysis SWOT, Compost, Fishbone, Garbage, Organic.

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I. INTRODUCTION

The current Head of Bambe village has tried in various ways to overcome the complex problems of the waste sector. Due to the large amount of waste out there, it is difficult to determine the right way to solve the current waste problem. Every day the residents of Bambe village produce waste in the form of organic and inorganic, but what is worrying is that the waste produced is simply thrown away in various places and corners, the resulting impact will damage the surrounding zone. The amount of waste every year will increase along with the increase in the local population and seasonality.

Garbage is a collection of leftover items that are no longer used or used by the owner (Arda et al., 2020). In general, waste is divided into two, namely organic and inorganic waste, both of these wastes have benefits for the residents of Bambe village if processed properly, but also have an impact on the zone if they cannot process it (Cundari et al., 2019). Bambe village is an area located in a Driyorejo Subdistrict, Gresik Regency, East Java to be exact, a prosperous village with the majority of the population living in the form of; rice stalls, coffee shops, basic food shops, home stays and factory workers.

Bambe village has a TPS for the disposal of all their waste called the Bambe village integrated waste disposal site (TPS-T), but the TPS-T is rarely used by Bambe village residents due to lack of awareness and concern for Bambe village residents, to handle local residents' waste. looks still very minimal in knowledge so prefer to make one between organic and inorganic waste this can make a habit and result in less than optimal use of household waste, especially organic waste which can be used for basic ingredients for making compost (Mas'adi et al., 2020).

Not only during this pandemic, many Bambe village residents also don't want to throw garbage at the Bambe village TPS-T for fear of the covid 19 virus outbreak, residents choose to throw garbage around the road and in various corners of the place. It is feared that this will happen continuously and be followed by the children of Bambe village as their successors. This concern can be reduced by providing counseling, socialization, and education to all residents in Bambe village including seasonal residents, both parents, teenagers, and children so that they understand the importance of understanding the sorting and utilization of organic and inorganic waste that can be recycled. use it as compost and dispose of the waste at the TPS-T provided by the head of Bambe village (Fadillah et al., 2019).

II. METHODOLOGY

This research was carried out with counseling and socialization to all residents in the Bambe village area, Driyorejo District, Gresik Regency by:

1. Collecting data by observation, interviews and documentation (Neonufa and Tualaka, 2020).
2. Perform data processing that has been collected (Khasanah *et al.*, 2021)
3. Perform analysis by looking for factors causing problems using fishbone diagrams and SWOT analysis and planning improvement strategies using 5W+IH tools.

A. Fishbone Diagram

Fishbone Diagram as the main goal that shows the effect on quality and has an impact on the questions in this study (Khasanah et al., 2021). With the Fishbone diagram method so that it can analyze the problem of using organic waste in the composting process and it is necessary to analyze the strategy for utilizing organic waste that is able to prepare, operate, evaluate and provide solutions as an effective new discovery strategy for the utilization of organic waste in Bambe village. Stages of fishbone diagram analysis In this case there are several stages carried out by (Mujayyin et al., 2020), yakni:

- a. Preparing for the fishbone analysis session.
- b. Identify consequences or problems.
- c. Identify the main reasons for the main categories.
- d. Brainstorm potential causes.
- e. Review each major category reason.
- f. Agree on the main cause.

B. SWOT Analysis

SWOT analysis based on (Mas'adi et al., 2020) is a classic strategic planning tool. Using a framework of strengths and weaknesses, as well as external opportunities and threats, this tool provides an easy way to estimate how best to execute a strategy. SWOT analysis is the systematic identification of various factors to develop a logic-based strategy that maximizes strengths and opportunities while minimizing weaknesses and threats. Therefore, the SWOT analysis compares external factors with internal factors in the form of opportunities and threats. The steps in determining the score for determining the importance or urgency of handling a scale of 1 to 4, (1 = not important, 4 = very important) using IFAS (Internal Strategic Factor Analysis Summary) and EFAS (External Strategic Factor Analysis Summary) Assessments. (Arda et al., 2020).

III. RESULTS AND DISCUSSION

Looking for the causal factors and problems of waste utilization that are currently being experienced using the fishbone diagram method and SWOT analysis, with this method in finding the most dominant factors causing the problem and planning improvement strategies using 5W + 1H tools (Hannandito and Aryanto, 2020).

A. Fishbone Diagram

Analytical results obtained in the use of household waste that can be used as compost using the Fishbone Diagram method in Figure 1.

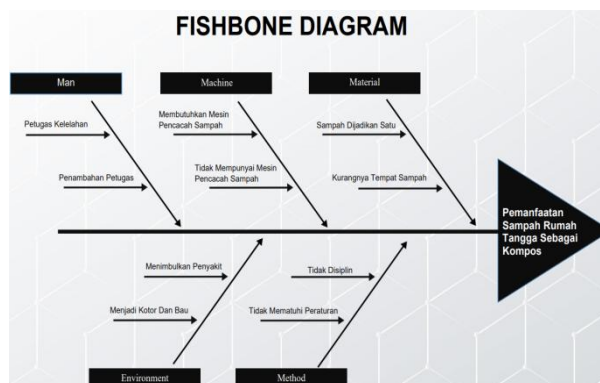


Figure 1. Analysis Results Fishbone Diagram.

Based on the analysis of the fishbone diagram method above, it can be seen that all the problems that are currently being faced starting from Man, Machine, Material, Zone, Method.

B. SWOT Analysis

Based on the results of the assessment using SWOT analysis, it can be seen in table 1 below;

Table 1. IFAS Assessment (Internal Strategic Factor Analysis Summary)

No.	Internal factors	Score				Number
		1	2	3	4	
<i>Strength</i>						
1	Organizational structure of waste disposal sites and division of work desk obligations at TPS-T		V			2
2	Support and approval of residents around TPS-T, and waste disposal activities		V			2
3	The existence of communication media that can be used in socialization		V			2
4	Employees who are easy to recruit		V			2
5	Government support by completing facilities and infrastructure			V		3
6	There are media available for socialization			V		3
7	The need for human resources that support waste management			V		3
8	There is already a regional regulation on waste service levies			V		2
9	The existence of human resources that support waste management			V		3

10	<i>The existence of interaction media that can be used in counseling</i>	V	4
<i>Sub Total Strength</i>		10 12 8	30
<i>Weakness</i>			
1	<i>Self-funding from residents and managers</i>	V	3
2	<i>Residents do not yet know the sorting of organic and inorganic waste from home</i>	V	4
3	<i>Garbage that is too long stored in TPS-T</i>	V	4
4	<i>Waste management planning and strategy documents are not yet optimal, including institutions and arrangements</i>	V	3
5	<i>Garbage transport fleet is still lacking</i>	V	3
6	<i>Lack of solid waste planning system including solid waste database</i>	V	3
7	<i>Lack of understanding of the health aspects of local government budget team members</i>	V	4
8	<i>The existing waste management facilities are not well maintained</i>	V	4
9	<i>Overcapacity landfill</i>	V	3
10	<i>Unattractive social media and promotions</i>	V	4
<i>Sub Total Weakness</i>		15 20	35
<i>Total Strength Score – Weakness Score</i>			-5

Table 2. Rating Table EFAS (External Strategic Factor Analysis Summary)

No.	External Factors	Score				Number
		1	2	3	4	
<i>Opportunity</i>						
1	<i>There is a Provincial/Central Waste Management Agency</i>	V				3
2	<i>Training, outreach and assistance to the community</i>			V		4
3	<i>Compost sales that still get additional income</i>	V				2
4	<i>The use of methane gas, its economic value is still under study</i>	V				2

5	<i>Managing non-organic waste that has economic value, thereby increasing TPS-T revenue</i>	V	3
6	<i>Provincial APBN and APBD offer funding opportunities at TPS</i>	V	3
7	<i>The existence of a cooperation program with the private sector (CSR)</i>	V	3
8	<i>Opportunity to use a wider variety of media to promote the importance of hygiene</i>	V	2
9	<i>The existence of mutual cooperation behavior by the community</i>	V	3
10	<i>Presence of private mass media available for publicity</i>	V	2
<i>Sub Total Opportunities</i>		10	12 4 26
<i>Threats</i>			
1	<i>Public insight about the correct and proper waste sorting</i>	V	3
2	<i>People's habit of throwing garbage on the side of the road</i>	V	3
3	<i>With increasing population, the pile of garbage is getting higher</i>	V	3
4	<i>The road becomes dirty and shabby</i>	V	3
5	<i>Disturbing health</i>	V	3
6	<i>No urban sanitation information system built for stakeholders</i>	V	2
7	<i>The company already has several CSR projects, but the coordination is poor, especially in the sanitation sector</i>	V	2
8	<i>Public awareness is still lacking in waste management</i>	V	4
9	<i>The role of the private sector is still limited for waste management</i>	V	3
10	<i>Lack of public knowledge about zone al sanitation</i>	V	4
11	<i>Limited waste collection facilities (TPS, containers and transfer stations)</i>	V	3
12	<i>There are still people who have not been reached by solid waste services</i>	V	3
<i>Sub Total Threats</i>		4	24 8 36
<i>Total Opportunity Value – Threat Value</i>			-10

From the results of the internal factors in the waste sub-industry mentioned above, the total score of strength: 30, total score of weakness: 35, and position -5 (internal factor). The scoring results for the waste subsector external factors above produce a total opportunity value: 26, a total threat value: 36, and thus a position of -10 (external factor). The location of internal and external factors in the solid waste sub-sector is in the following quadrant:

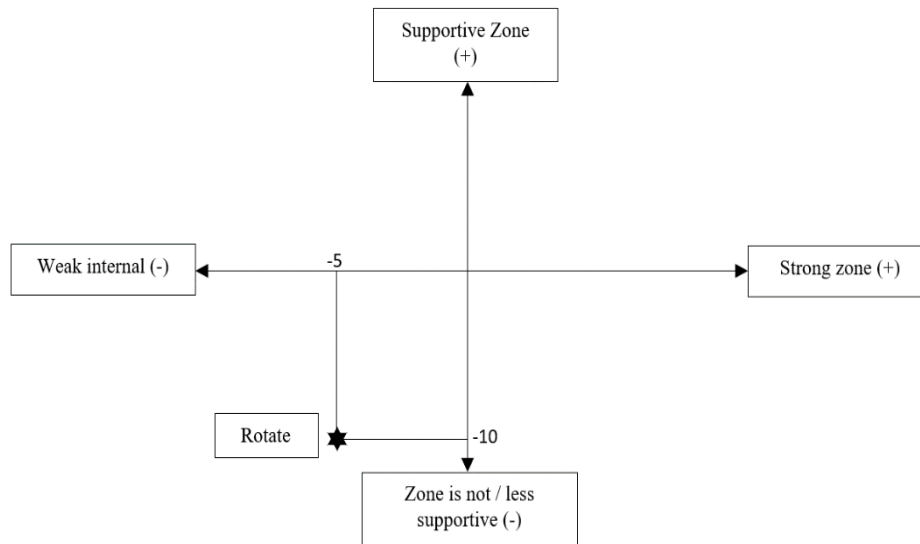


Figure 2. Garbage SWOT Analysis Quadrant.

The waste sub-industry in Bambe village is in quadrant IV, endogenous factors are weak, the Zone is not supportive, and the difference in strength of endogenous factors is negative. The difference between opportunities and threats also shows a negative value to the value of the external factor, namely position, so that the strategy developed to overcome the strategic problems that arise in achieving the objectives of the solid waste subsector is a defensive strategy. This strategy is also known as minimizing weaknesses to defend against threats. The defensive strategy for domestic waste management is based on several urgent and strategic issues of waste development in Bambe village.

Based on the current condition of waste sanitation, namely;

1. People's knowledge and awareness in waste management is still inadequate.
2. Waste management is not optimal.
3. The role of waste management institutions has not been effective.
4. Waste management is not implemented effectively.

C. Take Corrective Action With 5W+1H

The next step is to take corrective action using the appropriate 5W+1H tool from the results of the Fishbone Diagram and SWOT analysis method. The corrective actions are in Table 3.

Table 3. Proposed Corrective Action 5W+1H.

No.	Causative factor	Why	What	When	Where	Who	How
	Garbage made one	So that waste is separated between organic and inorganic	Garbage sorting	Quick	TPS-T Bambe village	Villagers of Bambe	Provided socialization on the use of organic and inorganic waste
	No garbage processing machine	Facilitate organic waste shredder	Buying a garbage processing	Quick	TPS-T Bambe village	Head of Bambe village	Bringing the trash crusher

machine

<i>Lack of cleaning staff</i>	<i>Providing additional Officers</i>	<i>Adding officers</i>	<i>Quick</i>	<i>TPS-T Bambe village</i>	<i>Janitor</i>	<i>Added two cleaners</i>
<i>Too much trash</i>	<i>Give more space</i>	<i>Add a trash can</i>	<i>Quick</i>	<i>TPS-T Bambe village</i>	<i>Warga Desa Bambe</i>	<i>Given a wider location</i>
<i>TPS-T is not sufficient</i>	<i>So that TPS-T provides waste processing facilities</i>	<i>Added TPS-T facility</i>	<i>Quick</i>	<i>TPS-T Bambe village</i>	<i>Head of Bambe village</i>	<i>Addition of waste processing facilities</i>

From the results of the analysis that it is known that there are corrective actions using the 5W + 1H tool, it can be seen that very significant results regarding the waste problem in Bambe village are shown in table 3, where all problems and solutions in overcoming the use of household waste as a compost base can be resolved by good.

IV. CONCLUSION

Based on the results of observations using the Fishbone Diagram and SWOT analysis method combined with planning a repair strategy using the 5W + 1H tool, it can be concluded that regarding the use of household waste that can be used as compost, namely: Lack of knowledge and the low level of Bambe village residents in sorting organic waste and inorganic so that counseling and socialization are needed about processing organic waste that can be used as compost, there are no tools or machines to support processing organic waste into compost, Lack of support from the government so that the funding factor from the State Budget and Provincial Budget is a problem that can hinder the processing process organic waste, the lack of space and facilities have created a new problem at the Bambe village TPS-T, the addition of a janitor in the processing of waste in the TPS-T can support the realization of the utilization of organic waste into compost, because considering every the organic waste produced is always increasing and waste management can be well coordinated so as to make Bambe village is a clean and beautiful zone.

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My name is Manggi Dwi Cahyono, currently I am 29 years old, I was born on April 16 to be exact, 1993, now I live in a border area between Surabaya and Gresik, the area is called Bambe village with Driyorejo District, Gresik Regency. I am currently working in the industry, specifically in the manufacturing world, as well as being an academic, namely as a lecturer at the University of 45 Surabaya with a Mechanical Engineering study program. Since I was a child, I lived in Bambe village, there were so many residents who threw their garbage carelessly so that Bambe village looked very shabby, that's what made my heart move to make all residents aware of the importance of disposing of garbage in its place, with this paper so that residents begin to understand so as not to littering so that it can be used as compost that is useful for the residents.