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RESEARCH ARTICLE

IFAS AND EFAS ANALYSIS IN WASTE MANAGEMENT IN SUMOMPO, MANADO LANDFILL

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Abstract

Waste management is still a major problem in Indonesia, this condition also occurs in Manado City. The discourse to make TPA as an educational tourism destination is very new and needs to be supported by all parties to create sustainable development. This study aims to analyze IFAS and EFAS in waste management in Sumompo, Manado Landfill. Using SWOT analysis, it was found that the community had welcomed the purpose of establishing Sumompo Landfill as an educational tour in Manado. Externally the government's support is also very large to make the TPA Sumompo one of the educational tourism destinations in Manado.

Introduction:-

One of the main problems faced by Indonesia is how to deal with the increasing amount of household waste in urban areas, lack of resources and infrastructure, implementation of the 3R program that has not been optimal. Another problem is that environmental policies are not appropriate and there are still many stakeholders and policy makers in cities that do not care about hazardous waste in their efforts to increase economic growth (Ahemka, 2015). Another problem that becomes a problem according to Zubair and Haeruddin (2012) is in terms of management and efforts to reduce the volume of waste to be processed into useful and valuable goods and objects.

Settlements either near or far from waste processing sites are suffering from diseases related to the location of their homes which are close to waste processing sites. It was found that people who live less than 50 meters from a landfill are most affected by rubbish and are often affected by malaria, chest pain, diarrhea, cholera, skin, nose and eye irritation (Sanko, et al., 2012). This study provides input to researchers that people who live less than 50 meters from landfills are often affected by malaria, chest pain, diarrhea, cholera, skin, nose and eye irritation compared to other communities. Furthermore, this study is able to provide recommendations to researchers related to appropriate alternative handling in landfill management; the waste processing site must be in a proper and well-managed place to minimize its influence / impact on the environment and seek the government's participation in moving people who live too close. with landfill, providing low-cost housing in a clean environment, and conducting socialization of the negative impact of landfills (TPA) for the health of the surrounding community.

Table 1:- First Field Survey Results

No.	Survey	Observation result
1	Data of residents who dispose of garbage at Somompo Landfill	According to the relevant Officer that researchers are currently meeting at the site, only field workers are supervising the process of transporting and processing waste. The number of garbage dumpers in the TPA is said to be quite large because the Sumompo TPA has a large

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		land area and a very dense population.
2	Laws and regulations on waste	The existence of the existing law but in its implementation in the field it is clear that the community has not carried out sorting activities and has not kept the garbage disposal schedule so that it is often found rubbish strewn on the side of the road because the community put the garbage to be taken by the garbage truck outside the specified hours
3	Responsibility for waste management in Landfill	The less of supervision on the management of the landfill makes some parts in the landfill area look very dirty because there is rubbish that has not been sorted and is still neglected.
4	Sustainability around the landfill environment	The people who live around the landfill and scavengers who have houses around the landfill area have tried to organize the environment and the area around the landfill site but there are still some that seem abandoned. The smell of garbage is quite strong considering the large volume of waste dumped at the landfill
5	The benefits of the rules and legislation on environmental conditions and the community around the landfill	Existing rules should be socialized to the community especially the community around the landfill area so as to create a sense of concern and responsibility in waste management
6	Awareness about the importance of caring for the environment and being aware of waste disposal and waste management	The people of Manado City still underestimate the rules and methods of garbage disposal. This complicates the work of the cleaning service workers in the TPA because they have to re-select the waste that has been thrown away. On the other hand, the presence of scavengers is quite helpful to the officials, but it raises slum waste areas around the landfill site
7	What is the condition of security and welfare of the community around the TPA	Some people who live in the landfill area say that they are used to the smell and scenery of the garbage mountains in their area. Some argue that they have occupied the house down and down. Even so, the surrounding community claimed that during the rainy season, the odor generated could be very strong and very disturbing
8	Economic activities that have economic value around the landfill site	Garbage is only collected, sorted like bottles, etc.
9	Government Assistance	For the community around the government assistance is quite a lot but the management and supervision is not optimal
10	The obstacles	Lack of energy in the field makes garbage sometimes have to accumulate a long time because they have to wait to be processed for organic and non-organic waste to be neatly arranged by the scavengers to be sold to collectors
11	Residents' habits	The habits of the surrounding residents who regard rubbish as merely residual household excrement cause the Manado people to become unconscious in managing waste. Especially in using products that are difficult to recycle that cause waste to become a problem in the city of Manado

In broad outline from Table 1 it can be seen that the community around the landfill are still not aware and are still indifferent to the ways and habits of disposing garbage. Even littering behavior is still found in the city of Manado. Problems around the landfill also arise because of the unpleasant odor and disturbance of ground water. There are rules and legislation in force that have not been enforced and socialized to the public. The transportation system and rubbish from landfill are still not good with container cars that are still undisciplined and cause rubbish that is still often flying and scattered on the road.

Based on observations of the first observations of the research at the location of the Garbage Landfill in the Sumompo village of Manado, there are several reasons for the community choosing to stay around the landfill site, the reasons are:

1. Residential houses are inherited from parents, so they are reluctant to move to other places even though they feel disturbed by the smell of garbage but for this reason they choose to remain in the location
2. Poor financial condition and the existence of cheap raised houses that they can rent are also the reasons for several household heads in these locations
3. Some households do work as scavengers and collectors of used, plastic and other items. Choosing a location around the landfill is a choice they consider appropriate to support their main livelihood.

Sumompo landfill is a final waste processing facility provided to the people of Manado City. Sumompo landfill is domiciled in Tuminting District, Manado City, North Sulawesi Province. Since its inception in 1971, Sumompo Landfill has a land area of 6 hectares with the location of the cliff and opened. At that time the waste management operation at the Sumompo landfill was carried out by open dumping system. In 2008 the Government of Manado changed the pattern of waste management in Sumompo landfill from an open dumping system to a sanitary landfill system. In line with the change in the management system, the Manado Government increased the area of Sumompo landfill land area by 4 hectares. This study aims to formulate IFAS and EFAS waste management in Sumompo Manado Landfill.

Research Method:-

The existence of several types of data, the data to be used in this study are primary data sourced from direct informants. Primary data is data obtained from first hand in the field (Kriyantono, 2006). So the primary data in this study were sourced from questionnaires and interviews. EFAS is used to find out how External Factors of waste management, both from the government and the community.

Results and Discussion:-

Internal factors in a SWOT analysis are internal factors consisting of two things: strengths and weaknesses. Both will have a better impact in a study when strength is greater than weakness. Thus the maximum internal strength will clearly provide much better research results. As for the part of the internal factors that include resources owned, financial or financial, i nternal strengths or weaknesses of the organization, as well as previous organizational experiences (both successful and failed).

External factors from the SWOT analysis are factors from outside the entity, where this factor is not directly involved in what is being studied and consists of 2 things: threats and opportunities. These opportunities and threats will certainly provide data that must be included in a research journal so as to produce a strategy to deal with them. Some things that are included in external factors are trends, culture, social politics, ideology, economy, sources of capital, and government regulations. There are 7 opportunities, such as the central government supporting the construction of the Waste Power Plant (PLTSa), the local government supporting the improvement of the landfill, available waste management regulations, economic growth in the city of Manado, active participation from the surrounding community, wide public interest in educational tourism, and many scavengers the garbage that is around the Sumompo landfill. In addition to opportunities, there are 5 threats, like increasing the amount of waste input to the landfill, low budget or financial support for operational facilities, lack of public awareness about waste segregation, 3R efforts at the community level are not optimal, and the difficulty of finding alternative locations for new landfills. Exposure of these two factors is how strengths on internal factors are able to deal with threats that exist and how to overcome weaknesses on internal factors that can make threats become real or create a new threat.

Table 2:- Internal factors for Sumompo landfill management.

Internal Factors	
Strengths	
S1	Good waste management system (landfill controlled)
S2	The existence of an integrated methane gas purification system
S3	Availability of basic facilities, support, and environmental protection for the community and visitors
S4	There is an independent community group
S5	Learning curriculum in 2013 there is waste processing material (sorting to make skills)
S6	There is support from state media
Weaknesses	
W1	Some operational facilities are inadequate
W2	Field facilities and infrastructure that are not supportive

W3	Some operational human resources are poor
W4	Reduced TPA area
W5	Shelter capacity has become increasingly critical
W6	The reduced capacity of the landfill
W7	Evaluation of the management of the landfill has not been involved yet by an independent consultant

Table 3:- External factors for Sumompo landfill management.

External Factors	
Opportunities	
O1	The central government supports the construction of Waste Power Plant (PLTSa)
O2	Local government supports improvement of landfill
O3	A waste management regulation is available
O4	economic growth in the city of Manado
O5	Active participation from the surrounding community
O6	Broad public interest in education tourism
O7	The number of garbage scavengers
Threat	
T1	Increasing the amount of waste input to landfill
T2	Low budget or financial support for operational facilities
T3	The lack of public awareness about waste segregation
T4	Not yet optimal 3R efforts at the community level
T5	The difficulty of finding alternative locations for new landfills

This identification uses a SWOT matrix which consisting of 4 cells. Each cell will produce a strategy such as SO strategy, ST strategy, WO strategy, and WT strategy. The results of this study will be used to formulate alternative waste management strategies.

Table 4:- IFAS assessment of internal factors identified from Sumompo Landfill.

Internal Factors		Weight	Ranking	Score
Strengths				
S1	Good waste management system (controlled landfill)	0.086	2.567	0.221
S2	The existence of an integrated methane gas purification system	0.089	2.367	0.210
S3	Availability of basic facilities, support, and environmental protection for the community and visitors	0.088	2.667	0.234
S4	There is an independent community group	0.087	2.667	0.232
S5	Learning curriculum in 2013 there is waste processing material (sorting to make skills)	0.092	2.867	0.265
S6	There is support from state media	0.089	2.867	0.254
				1.415
Weaknesses				
W1	Some operational facilities are inadequate	0.082	2.667	0.219
W2	Field facilities and infrastructure that are not supportive	0.083	2.800	0.233
W3	Some operational human resources are poor	0.084	2.633	0.221
W4	Reduced landfill area	0.053	2.867	0.152
W5	Shelter capacity has become increasingly critical	0.053	3.067	0.163
W6	The reduced capacity of the landfill	0.049	2.767	0.137
W7	Evaluation of the management of the landfill has not yet been involved by an independent consultant	0.065	2.833	0.184
				1.309

Table 4 shows the results based on an analysis of previous internal factors (strengths and weaknesses). This is demonstrated by IFAS Analysis, mainly carried out on internal factors identified at the Sumompo landfill

Table 5:- Assessment of EFAS on external factors identified from the Sumompo landfill.

Internal Factors		Weight	Ranking	Score
Opportunities				
O1	The central government supports the construction of the Waste Garbage Power Plant (PLTSa)	0.093	2.700	0.250
O2	Local government supports improvement of landfill	0.094	2.867	0.268
O3	A waste management regulation is available	0.092	2.867	0.263
O4	economic growth in the city of Manado	0.086	3.033	0.262
O5	Active participation from the surrounding community	0.083	2.900	0.240
O6	Broad public interest in education tourism	0.089	3.067	0.273
O7	The number of garbage scavengers	0.077	3.100	0.240
				1.796
Threats				
T1	Increasing the amount of waste input to landfill	0.067	3.033	0.202
T2	Low budget or financial support for operational facilities	0.085	2.967	0.253
T3	The lack of public awareness about waste segregation	0.082	3.067	0.251
T4	Not yet optimal of 3R efforts at the community level	0.088	3.000	0.264
T5	The difficulty of finding alternative locations for new landfills	0.062	2.800	0.174
				1.144

Table 5 shows, in this analysis, the weighting of internal factors identified was carried out. The results showed that the strength factor has a higher value than the weakness factor. Similar to the IFAS matrix, the EFAS matrix analysis is also carried out in the same way. For EFAS analysis, the external factors studied are opportunities and threats to the Sumompo landfill management system.

The position of Sumompo landfill in the IFAS-EFAS quadrant is determined by calculating the value on the x axis (abscissa) and the y axis (ordinate) referring to the total value of each factor. Based on calculations with IFAS and EFAS scores above, it can be seen the values of X and Y as follows:

X = Strength + Weakness Y = Opportunity + Threat
= 1.415 + (-1.309) = 1.796 + (-1.144)
= 0.106 = 0.652

Based on the mapping of strengths, weaknesses, opportunities and threats identified in the Sumompo landfill waste management, the position of the landfill is obtained in the IFAS-EFAS quadrant. A description of the Sumompo landfill management policy quadrant from the EFAS IFAS matrix is shown in Figure 1 below.

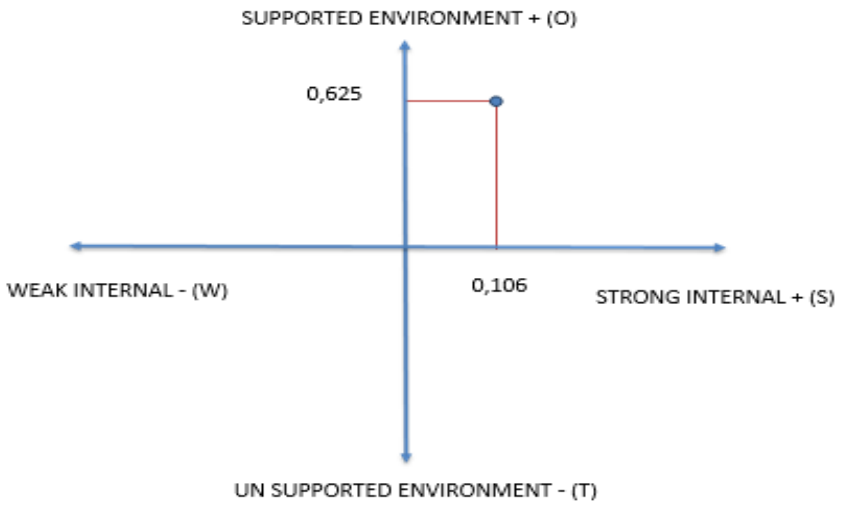

Figure 1:- Sumompo Landfill quadrant position based on IFAS-EFASs analysis.

The first quadrant means the strength and market opportunity of the company. Companies in this quadrant can use their strengths to adopt strategies, such as market penetration, market development, and product development to form competitive forces. If the company in the first quadrant has additional resources, forward, backward and horizontal integration might be an efficient strategy.

At present, Sumompo Landfill is in quadrant I which is a growth quadrant. Quadrant I shows the situation or conditions that are very good because there are strengths that can be utilized to seize profitable opportunities. The strategy that can be applied to this condition is to support progressive growth policies. This means that Sumompo landfill is in prime and stable condition so that it is possible to continue to grow and achieve maximum progress.

Conclusions:-

1. Internal factors consist of strength and weakness factors. The strength factor that has the highest score is the 2013 learning curriculum, which includes waste processing materials (sorting to making skills). The surrounding community has become aware of the importance of education for future generations. While Sumompo Landfill is being made as an educational tourist attraction, the community and students are very enthusiastic, so that it can increase the treasury of knowledge. While the weakness factor is the facilities and infrastructure that do not support the Sumompo landfill. This condition is exacerbated by the amount of waste that is increasing day by day.
2. External factors consist of opportunities and threats. The opportunity factor that has a high score is that the local government supports the improvement of the TPA. The government wants a new breakthrough, so that it can provide solutions to the waste problem in the city of Manado. By becoming an educational tourist attraction, it is one alternative that can be implemented by the government. While the threat factor is coming from the community itself who has not been able to optimize the 3R efforts at the community level. The level of public awareness is still relatively low. So that the 3R program that has been launched by the government for a long time is still not going well.

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