Community Based 3R Waste Management Strategy (Reduce, Reuse, Recycle) Bantas Village, Selemadeg Timur District, Tabanan Regency

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Abstract:

Garbage can be interpreted as a consequence of the activities of human life. It is undeniable, garbage will always be there as long as life activities continue to run. Every year, it can be ascertained that the volume of waste will always increase along with the increasing pattern of public consumerism. The landfill which is increasingly polluting the environment requires a technique and management to manage waste into something useful and of economic value, Bantas Village, Selemadeg Timur District, Tabanan Regency currently has a Waste Management Site (TPS3R) managed by Non-Governmental Organizations (KSM) The source of waste comes from Households, Stalls, Restaurant Entrepreneurs, Schools, Offices and Ceremonies which are organic and inorganic waste. The waste management system at Bantas Lestari TPS with 3R system is Reduce (reduction of waste products starts from the source), Reuse (reuse for waste that can be reused) and Recycle (recycling waste) to date it is still running but not optimal. The method used in this research is descriptive quantitative with data analysis using SWOT analysis. This study produces a Waste Management Strategy which is the result of research from the management aspect, aspects of human resources and aspects of infrastructure facilities.

Keywords: Waste Management, Management Management, Resources, Humans, Waste Management Infrastructure

Pendahuluan:

Increasing urban activity in various sectors, especially the housing sector, tourism industry, and trade has the potential to increase waste production (Sugiarto, 2001; Sejati, 2009; Damanhuri, 2010). Population growth in Indonesia, which is so fast, especially in urban areas, has a very serious impact on reducing the carrying capacity of the environment. Government Regulation Number 81 of 2012 mandates the need for a fundamental paradigm change in waste management, namely from the paradigm of gathering-transport-waste, to processing that relies on reducing waste and handling waste (Wahyono, 2011; Wardi, 2011; Paramitha, 2007; Novianti, 2011 ; Dwiyanto, 2011;

Jati, 2011; Mulasadi, Husodo, and Muhadjir, 2014; Pramudito, 2014; Suryani, 2016).

One way that can be done in order to reduce domestic waste is to apply the 3R concept. However, it cannot be denied that the application of the 3R concept in the effort to reduce waste disposed of the landfill has not been implemented seriously because it is not an easy thing to do. All of this depends on the willingness of the community to change behavior, and the difficulty of changing the perspective / paradigm of the community that 'Waste as a Resource' (Artiningsih, 2008; Surjandari, 2009; Subekti, 2010; Yogiesti, et al, 2012; Yuliastuti, 2013; Wijayanti, 2013; Adiati, Syafrudin, and Hadiwidodo, 2015; Asteria, 2016).

Bantas Village currently has Bantas Lestari Waste Management Site (TPS3R) managed by Community Self-Help Groups (KSM). Waste Management in Bantas Village has carried out the sorting of organic and inorganic waste for the waste management is expected to be able to overcome the generation of waste originating from its source and process it again into the economic value of the community. Based on this, the researchers want to see how the Community Based Waste Management Strategy in Bantas Village.

Research Methods:

Research Instruments:

This research according to the method includes evaluation research. Because it intends to compare an event or activity with a predetermined standard. Evaluation as a research means that it will function to explain the phenomenon (Sugiyono, 2004). This research explains the level and type of data and analysis including qualitative descriptive research, which is a study that intends to describe the phenomenon that occurs based on the results of community-based waste management exploration in Bantas Village. The use of this descriptive qualitative method has the advantage because exploration of the problem being studied is not only based on the report of an event or phenomenon but also with other relevant sources.

Location and Time of Research:

The research location is located in Bantas Village, Selemadeg Timur District, Tabanan Regency at 08o30'04.9 "South Latitude and 115o03.53'3" East Longitude. Geographically, Bantas Village, Selemadeg Timur District, Tabanan Regency is an area that has a sloping physical condition, at an altitude of + 250 to 500 meters above sea level, relatively moderate rainfall (Profile of the Village of Seminyak, 2017). The time to conduct this research was carried out for 2 (two) months, namely January 2018 until February 2018 in Bantas Village.

Research Data Sources:

In this study, as a data source there are three sources, (1) Personal, (2) Place, and (3) Paper. Personal data sources, namely people who have the competence to provide information relevant to the research theme, such as banjar / village administrators, waste managers and the community as informants. Data collection was conducted through interviews.

To determine the number of respondents filling out the questionnaire was determined using the Slovin Formula (Sevilla 1993), namely:

$$= 994 / (1 + 994.0, 1^2) = 90$$

Information:

n = number of samples (respondents) needed

N = total population of 994 households

e = sample error (10%)

Data collection techniques in this study are limited to primary data and secondary data. (Sugiarto, et. Al 2001). The primary and secondary data collection techniques are carried out in several ways, namely interviews, questionnaires, observation and documentation.

In this study data analysis included: SWOT analysis as a strategy formulation tool for SWOT analysis. SWOT analysis as a strategy formulation tool, where SWOT analysis is a systematic identification of various factors to formulate the

company's strategy. Research shows that company performance can be determined by a combination of internal and external factors.

External Strategy Factors (EFAS), in this section the manager examines the external conditions and work environment, and identifies the strategic factors for operations.

Internal Strategy Factors (IFAS), in this section managers observe the internal environment and identify strategic factors for operations. To determine categories with class intervals using the Sturges formula (Dajan, 1984).

Class interval = Highest score - lowest score

Number of classes

Class interval = (11-0) = 3,663 Rounded to 4.

Discussion:

No	Hamlet / Household	Waste generation by type of waste (%)							
		Organic	Paper	Plastic	Plastic	Glass	Metal	B3	Residu
1	Bantas Tengah Kelod	54.98%	-	19.64%	20.02%	-	-	-	4.68%
2	Bantas Tengah Kaja	69.43%	1.14%	10.93%	7.62%	-	-	-	10.92%
3	Gelogor	91.76%	0.29%	4.02%	3.53%	-	-	-	0.41%
4	Bunut Puhun	68.93%	5.76%	3.18%	17.14%	-	-	0.28%	4.72%
5	Bantas Bale Agung	68.78%	15.11%	4.60%	10.44%	-	-	-	1.42%
6	Pucuk	88.45%	3.07%	3.64%	4.85%	-	-	-	-
Total		**73.72%**	**4.23%**	**7.67%**	**10.60%**	**-**	**-**	**0.05%**	**3.73%**

Based on the data recapitulation obtained from the survey results as illustrated in the table above. The garbage collection system that is released by the community / household is only collected Rp. 10,000 per household / month, for business fees or food stalls Rp. 20,000 to Rp. 30,000 per month, school waste fees Rp. 100,000 to Rp. 600,000 per month, social foundation contributions Rp.100,000 per month where garbage is collected every 2 (two) days and for waste on call Rp. 25,000 to Rp. 50,000 per ha ha. (according to interviews conducted with several respondents). The management of financial administration is carried out by KSM Bantas Lestari both paying the salaries of the operator's personnel and operating expenses for the 3R TPS every month. The source of monthly waste management income from the village government is Rp. 2,000,000, garbage retribution (community cleanliness) of Rp. 4,135,000, sales of organic compost Rp. 550,000 and inorganic stall Rp.1,260,000, recycled craft Rp. 200,000, APBN assistance amounting to Rp. 6,433,000 and assistance from Tabanan Regency APBD of Rp. 1,860,000. So the total income for the waste management of 3R TPS KSM Bantas Lestari Desa Bantas as of February 2018 is Rp. 16,438,000, with the total expenditure of Rp. 6,430,000, so that a surplus of Rp.10,008,000.

In the data in Table 2 the IFAS matrix performed shows that the dominant force in TPS3R Bantas Village is the Cooperation Agreement between the Prov. PSPLP Work Unit. Bali with Bantas Village

SK: KU.03.03 / PSPLP-BALI / PSPLP-I / KSM-BL / 2017.27 concerning Making TPS3R with weight (0.10) rating (4) and total weighting (0.40). From the results of the analysis on IFAS matrix, the strength factor has a total value of 2.05 while the weakness factor has a total value of 1.05.

IFAS (Internal Factory Analysis Summary)				
No	**(*Strength* = S)**	**Score**	**Rating**	**Score x Rating**
Management				
1	Organization Structure	0,05	3	0,15
2	Decree : KU.03.03/PSPLP-BALI/PSPLP-I/KSM-BL/2017.27 about TPS3R	0,10	4	0,40
3	Financial Administration	0,05	3	0,15
4	Statutes and bylaws	0,05	3	0,15
5	Business networking	0,05	3	0,15
Human Recourses				
6	Skill Employee	0,05	4	0,20
7	Timely garbage collection	0,05	4	0,20
8	Team working	0,10	3	0,30
	Facilities and infrastructure			
9	Garbage transport fleet	0,05	3	0,15
10	Waste processing place	0,05	4	0,20
Sub Total		**0,60**		**2,05**
No	**(*Weakness* = W)**	**Score**	**Rating**	**Score x Rating**
Management				
1	there are no sanctions for those who pay late	0.05	3	0,15
Human Recourses				
2	Dual Position	0.05	3	0,15
3	There is no health insurance	0.05	4	0,20
4	The community has not done waste sorting	0.10	4	0,40
Facilities and infrastructure				
5	Not yet available trash cans in every household.	0.05	3	0.15
Sub Total		**0,40**		**1,05**
Total		**1,00**		**3,10**

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In this section the author makes observations through interviews with managers and the community to find out about the external organizational environment they have. In addition, look for opportunities and threats they have.

Table 3 Matric EFAS (*Eksternal Factory Analysis Summary*)

EFAS (Eksternal Factory Analysis Summary)		Score	Rating	Score x Rating
No	**(Opportunities = O)**	**Score**	**Rating**	**Score x Rating**
Management				
1	Attention of local government related to TPS3R	0,15	3	0,45
2	The Lab quality of compost produced	0,15	4	0,60
Human Resources				
3	HR opportunities to attend education and training in waste management	0,20	4	0,80
Facilities and infrastructure				
4	Perhatian bagi pengusaha swata, Corporate social responsibility (CSR) terkait bantuan sarana pengolahan sampah yg tepat guna dan rendah biaya operasional	0,10	3	0,30
Sub Total		**0,60**		**2,15**
No	**(*Threats* = T)**	**Score**	**Rating**	**Score x Rating**
Management				
1	There is no sanction for customers who are in arrears	0,10	1	0,10
2	Not all farmers use TPS3R compost	0,10	2	0,20
Human Resources				
3	Environmental pollution where there are still people who are not yet customers and still littering	0,10	4	0,40
Facilities and infrastructure				
4	Many of the facilities for operating costs are high and less effective.	0,10	3	0,30
Sub Total		**0,40**		**0,90**
Total		**1,00**		**3,05**

In the data in Table 3 the EFAS matrix performed shows that the dominant opportunity in the Bantas TPS3R Village is the HR opportunity to attend education and training in waste management with a weight (0.20) rating (4) and total weighting (0.80).

From the results of the analysis in the EFAS matrix, the opportunity factor has a total value of 2.15 while the threat factor has a total value of 0.90. From the results of the merger of IFAS and EFAS, the following results are obtained:

Sub total (*Strnght*=S) = **2,05**	Sub total (*Wekness*=W) = **1,05**
Sub total (*Opportunit*y=O) = **2,15**	Sub total (*Threat*= T) = **0,90**
Sub total S + O = **4,15**	Sub total W + T = **1,95**

It is known that Strength + Opportunities > Weakness + Threats. Then the strategic factors of strength and opportunity support the achievement of solutions to existing problems to get the expected recommendations. From the results of the identification of these factors it can be seen in Table 4.4 SWOT Analysis Diagram.

(IFAS)		(STRENGTH = S)		(WEAKNESS = W)	
		1	Organization Structure	1	Do not have sanctions for those who are delinquent in paying their monthly dues.
		2	Decree : KU.03.03/PSPLP-BALI/PSPLP-I/KSM-BL/2017.27 about TPS3R	2	There is still a double employment position
		3	Financial Administration	3	Workers have not provided BPJS health insurance
		4	Statutes and bylaws	4	The community has not sorted from the source
		5	Business networking	5	There is no available trash can in every household.
		6	Skill Employee	6	The absence of regulations that bind all communities to become TPS3R customers
		7	Timely garbage collection	7	There are still some people who still throw garbage into the river and drainage systems
		8	Team working	8	The community is less educated regarding waste management
		9	Garbage transport fleet		
(EFAS)		10	Waste processing place		
(*OPPORTUNITES* = O)		**STRATEGI S - O**		**STRATEGI W - O**	
1	Attention of the relevant regional government TPS3R	1.Optimizing the Cooperation Agreement between the Prov. PSPLP Work Unit Bali with Bantas Village SK: KU.03.03 /		1.Increasing the ability of the community to pay for customer waste by optimizing providing garbage storage	
2	The Lab quality of compost produced				

3 4	HR opportunities to attend education and training in waste management Attention to private entrepreneurs, Corporate social responsibility (CSR) related to the assistance of appropriate waste processing facilities and low operational costs	PSPLP-BALI / PSPLP-I / KSM-BL / 2017.27 concerning TPS3R and maximizing the managerial organizational structure for success in village waste management and a reference for other villages and government. 2.Optimizing public awareness in 3R system waste management with HR resources who have skills in waste management procedures obtained from attending education and training to make crafts using materials from waste and marketing. 3.Maintain and improve the timeliness of customer waste collection so that community relations and awareness are established to fulfill their obligations to pay waste distribution fees that can be used in operations and maintenance of facilities and infrastructure.	places for each customer 2.Workers have not yet provided BPJS health insurance with the attention of the local government and private sector related to the cooperation of the workforce health insurance for garbage managers 3.Village regulations are immediately made or customary regulations that bind all communities to become TPS3R customers due to the need for local government attention regarding TPS3R operations and the environment.
	ANCAMAN (**_THREATS_ = T**)	**STRATEGI S - T**	**STRATEGI W- T**
1 2 3 4 5	There is no sanction for customers who are in arrears Not all farmers use TPS3R compost Environmental pollution where there are still people who are not yet customers and still littering Many of the facilities for operating costs are high and less effective. Funds available from the collection of waste fees and compost sales cannot be used for operational costs	1.Optimizing the availability of appropriate equipment and the place of making compost according to quality in increasing the production of compost fertilizer to be acceptable to meet the needs of farmers and avoid buying out of the village. 2.Increase income through increased contribution to household waste distribution and compost fertilizer production volume and optimize operational expenditures so that the payment of employee salaries is paid and additional facilities have been supported by DLH Districts and Village Governments.	1.Increasing the knowledge and skills of human resources in waste management regarding the process of making compost and the solution to fulfill the needs of organic waste from outside the village to be able to produce compost according to the demand of farmers. 2.Carry out sanctions against delinquent waste distribution contributions with the aim of being able to provide facilities and infrastructure as needed 3.There are still some people

		who still throw garbage into the river and drainage systems and have an impact on environmental pollution

Conclusion and Suggestion:

Conclusion:

Community-Based Waste Management Management System KSM Bantas Lestari has been operating properly, the Human Resources System for workers has been skilled and competent in managing waste processing and processing, the use of Facilities and Infrastructure in TPS3R Bantas Lestari Desa Bantas for the garbage transport fleet is adequate with good conditions, where the shortcomings in the customer's home have not all trash cans

Suggestion:

Need to be socialized continuously related to changes in increasing household waste retribution and applying sanctions, increasing the production of compost fertilizer with market quality so that farmers in Bantas Village buy kospos fertilizer processed by organic waste recycling.

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