

Strategy of Optimization Integrated Waste Management in Sanur Kauh Village - Denpasar

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Abstract:

The increase in waste production is directly proportional to the increase in population and the level of public consumption, because waste is the remnant of human activities. This is also an exception in the village of Sanur Kauh, South Denpasar District, Denpasar City. Sanur Kauh Village, currently has a Waste Management Site (TPS3R) managed by a Self-Help Group (KSM). The waste management system at Sekar Tanjung TPS with a 3R system, namely Reduce (reduction of waste products starting from the source), Reduce (Recycling for waste that can be reused) and Recycle (recycling waste) until now has been running but not optimal. The purpose of this study was to analyze the economic value of waste generated from waste management in Sanur Kauh Village, and also formulate a strategy to optimize the management of TPS 3R right in the tourist area of Sanur Kauh Village. The method used in this research is quantitative descriptive with data analysis using SWOT analysis, and using EFAS IFAS quadrant so as to produce a Waste Management Optimization Strategy which is the result of research from management aspects, aspects of human resources and aspects of infrastructure. The strategy generated from the SWOT analysis is the S-O strategy, namely Optimizing the Cooperation Agreement between the PSPLP Working Unit Prov. Bali with Sanur Kauh Village, and maximizing the organizational structure.

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

I. Introduction:

Increasing population and the rapid rate of industrial growth will have an impact on the amount of waste produced including plastic waste, paper, packaging products that contain B3 (Hazardous Toxic Material). The amount and type of waste depends on the lifestyle and the type of material we consume, which increases the economy in the household, the more varied the amount of waste produced. In addition, these conditions are still found in waste or waste disposal in the river so that it has a negative impact on the environment which ultimately disrupts human health (Subekti, 2010).

Sanur Kauh Village is a part of Denpasar City, with a portion of the community being private employees working in the tourism sector. At present the village has managed its own waste even though it is not yet

optimal, because there are some that have not been served by transportation due to the limitations of the transportation fleet. In addition, the capacity of the waste processing depot is not sufficient to process all incoming waste transported by trucks and trash-tricycle motorbikes. Residents of Sanur Kauh Village can become customers for transporting garbage by paying monthly fees, the amount varies depending on the type of household or business being run.

Sanur Kauh Village currently has a Waste Management Site (TPS3R) Sekar Tanjung managed by a Self-Help Group (KSM). The source of garbage comes from Households, Stalls, Entrepreneurs of Restaurants, Offices, Villas / Hotels, and Traditional Ceremonies which are organic and inorganic waste. The waste management system at Sekar Tanjung TPS with a 3R system is Reduce (reduction of waste products starting from the source), Reuse (reuse for waste that can be reused) and Recycle (recycle waste). Domesticated household waste and stalls are transported every day by using their fleet to the Waste Management Site. The subsequent sorting process in the Waste Management Site, for organic waste is processed into compost using a chopper and sold while inorganic waste is sold to recycled organic waste business actors.

II. Research Method

Research Instrument:

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 phenomena (Sugiyono, 2004). This research level of explanation and type of data and its analysis include descriptive qualitative research, namely research that intends to describe the phenomenon that occurs based on the results of exploration of community-based waste management in Bantas Village. The use of this qualitative descriptive method has advantages because exploration of the problem under study is not only based on reports of an event or phenomenon but also examined with other relevant sources.

Location and Time of Research:

Sanur Kauh Village has a land area of 386 Ha which is part of South Denpasar District, Denpasar City, with the following boundaries, namely North Side: Sanur Kaja Village, South Denpasar District, South Side: Indonesian Ocean, East Side: Sanur Village, District South Denpasar, West: Sidakarya Village and Renon Village, South Denpasar District.

There are 11 banjars in Sanur Kauh Village, namely Banjar Puseh Kangin, Banjar Puseh Kauh, Banjar Tanjung, Dangin Peken Banjar, Banjar Pekandelan, Banjar Abiantimbul, Banjar Tewel, Ngandang Bet Banjar, Banjar Penopengan, Banjar Blanjong, Banjar Medura (RKM TPS3R Sanur kauh)

These Banjar-Banjar are included in two Adat / Pakraman Villages namely Pakraman Intaran Village and Pakraman Penyaringan Village. Sanur Kauh village is inhabited by 8,076 people (4,342 men and 3,734 women) from 1,987 households (Profile of Sanur Kauh Village, 2015).

Research Data Sources:

Data sources are everything that can provide information about data Based on the source, the data can be divided into two, namely primary data and secondary data. Primary data is data created by researchers for the specific purpose of resolving problems that are being handled. Secondary data is data that has been collected to solve the problem at hand. Data collection methods carried out in this study are in several ways, namely: interviews; questionnaire, and observation.

Data analysis technique:

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

factors systematically 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 managers examine external conditions and the work environment, and identify 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).

$$\text{Class interval} = \frac{\text{Highest score} - \text{lowest score}}{\text{Number of classes}}$$

$$\text{Class Interval} = \frac{(11-0)}{3} = 3,667$$

Rounded to 4.

For other data collected will be analyzed using qualitative methods, namely the study procedure that produces descriptive data in the form of written words about something that can be observed and linked to literature studies.

III. Research Result and Discussion:

Based on the results of the waste survey in Sanur Kauh Village, it can be known as follows (RKM TPS 3R Sanur Kauh Village):

- The average generation of mixed waste is 3.46 kg / kg / day
- The average generation of organic waste is 1.95 kg / kg / day
- Average composition of waste:
 - organic = 56.4%
 - paper = 11.2%
 - plastic = 6.3%
 - plastic bottles = 5.52%
 - glass = 8.58%
 - residue = 12.1%
- The average organic waste density is 8.72 kg / m³.
- The average mixed garbage density is 6.875 kg / m³

For 400 kk, the estimated generation of organic waste is = 780 kg / day or around 89.5 m³ / day.

From the data in the table below, it can be concluded that TPS 3R Sanur Village Gets Income from waste levies and stall sales. The lapak sale in question is the sale of plastic waste to collectors, and the sale of leftover food (organic) to pig farmers. Based on this data, it is found that the total income from January 2018 to July 2018 is Rp. 57,748,229.00, and expenditure of Rp. 78,383,459.00. Based on the above data it can be concluded that while running from January 2018 to July 2018, TPST 3R is a deficit or minus of Rp. 20,635,230.00, the largest amount of expenditure is maintenance and salary costs & Kasbon Employees, Until now TPST can run using the remaining development funds, but if this TPST is not optimized, there is a possibility that TPST cannot operate due to lack of costs. As seen in Table 4.1 below.

INCOME		EXPENSE	
CASH	Rp 3,107,500.00	SALARY	Rp 43,005,000.00
BANK INTEREST	Rp 51,554.00	MAINTANANCE EXP	Rp 30,232,870.00
RETRIBUTION	Rp 23,035,000	EQUIPMENT	Rp 3,864,042.00
SOLD	Rp 31,554,175.00	STATIONARY	Rp 1,234,165.00
SUBSIDI		TAX	Rp 8,874.00
TOTAL INCOME	Rp 57,748,229.00	ADMINISTRATION	Rp 38,508.00
		TOTAL EXPENSE	Rp 78,383,459.00

Discussion:

In this section the author makes observations through interviews with the manager and the community to find out the internal organizational environment that is owned. In addition, it looks for the strengths and weaknesses it has, such as Table 4.2 IFAS Matrix (Internal Factory Analysis Summary).

IFAS (Internal Factory Analysis Summary)

No	(Strength = S)	Weight	Rating	Weight Rating	x
Management					
1	Has an organizational structure	0,05	4	0,20	
2	Already have (AD / ART)	0,05	4	0,20	
3	Have SK	0,10	4	0,40	
4	Have a good business network	0,05	3	0,15	
5	Have a Savings Book and administrative census	0,05	3	0,15	
6	Timely Honor Workforce Payment	0,05	3	0,15	
HUMAN RESOURCES					
7	Workers who are skilled in waste management	0,05	3	0,15	
8	Citizen's awareness	0,05	3	0,15	
9	Timely for picking up customer trash	0,05	3	0,15	
10	The management and coordination of the management is very good	0,05	3	0,15	
FACILITIES AND INFRASTRUCTURE					
11	Has an adequate fleet of garbage carriers	0,05	3	0,15	
12	Facilities in processing waste are adequate	0,05	3	0,15	
Sub Total		0,65	39	2,15	
No	(Weakness = W)	Bobot	Rating	Bobot Rating	x
Management					
1	Do not have sanctions and socialization for those who are in arrears to pay garbage contributions every month	0,05	2	0,10	
2	Operational costs are greater than income	0,10	4	0,40	
HUMAN RESOURCES					
3	Lack of HR in Waste Management	0,05	3	0,15	
4	The community has not yet made sorting from the source	0,10	4	0,40	
FACILITIES AND INFRASTRUCTURE					
5	There are no trash cans in every alley	0,05	4	0,20	
Sub Total		0,35	16	1,25	
Total		1,00	45	3,40	

In the data in Table 4. the IFAS matrix conducted shows that the dominant power in the Sanur Kauh Village TPS3R is the Cooperation Agreement between the PSPLP Working Unit Prov. Bali with Sanur village, namely SK: KU.03.03 / PSPLP-BALI / PSPLP-I / KSM-ST / 2017.28 concerning Making TPS3R with weight (0.10) rating (4) and total weighting (0.40). The reason for weighting is high because formally the existence of the TPS3R is considered legal in the eyes of the law so that the district government can provide TPS3R supporting facilities and infrastructure. The weaknesses of community-based Waste Management with the 3R pattern of Sanur Kauh Village are that the community has not yet done the sorting from the source. With weight (0.10) rating (4) and weighting total (0.40). The reason for weighting the highest weaknesses due to the operation of TPS3R (Waste Management Site, Reduce Reuse Recycle) is strongly supported by the participation of the community in sorting out garbage, this is stated in Minister of Public Works Regulation No. 3/2013 on "Implementation of waste infrastructure and facilities and emphasizes that waste reduction starts from the source is the responsibility of all parties both the government and the community ". Another disadvantage is that Operational Costs outweigh revenue. With weight (0.10) rating (4) and total weighting (0.40). The highest weighting reason is because the TPST 3R in Sanur village was once a place of refuge for the victims of Mount Agung, so that composting activities stopped, so until now TPST has survived with excess funds from the cost of development, if this continues, TPST will experience a shortage of operational funds. From the results of the analysis on the IFAS matrix, the strength factor has a total value of 2.15 while the weakness factor has a total value of 1.25.

EFAS (<i>Eksternal Factory Analysis Summary</i>)				
No	(<i>Opportunities = O</i>)	Weight	Rating	Weight x Rating
Management				
1	Attention of the relevant TPS3R regional government	0,15	3	0,45
2	The compost quality Lab results are produced	0,15	4	0,60
Human resources Management				
3	HR opportunities to take part in education and training in waste management	0,20	4	0,80
Facilities and infrastructure				
4	Attention for private entrepreneurs, Corporate social responsibility (CSR) related to the assistance of appropriate waste management facilities and low operational costs	0,10	3	0,30
Sub Total		0,60		2,15
No	(<i>Threats = T</i>)	Weight	Rating	Weight x Rating
Management				
1	There is no sanction for customers who are in arrears	0,10	1	0,10
2	There are no buyers of 3R TPST fertilizers	0,10	2	0,20
Human Resources				
3	Environmental pollution where there are still people who have not become customers and are still littering	0,10	4	0,40
Facilities and infrastructure				
4	Some of the means of 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 4.3 the EFAS matrix conducted, it can be seen that the dominant opportunity in Sanur TPS3R is the opportunity for HR to take part in education and training in waste management with a weight (0.20) rating (4) and total weighting (0.80). The reason for high weighting is because now TPS3R already has the facilities and infrastructure for the waste management process which strongly supports HR to innovate making crafts that use materials from waste and marketing them with the skills they have. The threat posed by community-based Waste Management with the 3R pattern of the Village of Bantas is that the community is not yet a customer and is still littering. With weight (0.10) rating (4) and weighting total (0.40). The reason for weighting the highest threat is because the community still has land to dispose of waste improperly and the community still burns waste where it is done that endangers the environment and impacts on pollution of the added environment can have an impact on reducing health. from the results of the analysis on the EFAS matrix, opportunity factors have a total value of 2.15 while the threat factor has a total value of 0.90. From the results of combining IFAS and EFAS, the following results are obtained:

Sub total Kekuatan (<i>Strnght=S</i>) = 2.15	Sub total Kelemahan (<i>Wekness=W</i>) = 1.25
Sub total Peluang (<i>Opportunity=O</i>) = 2.15	Sub total Ancaman (<i>Threat= T</i>) = 0.90
Sub total S + O = 4.30	Sub total W + T = 2.15
Sub Total S + T = 3.05	Sub total W + O = 3.40

It is known that Strength + Opportunity emahan Weakness + Threat. Then the strategic factors of strength and opportunity support the achievement of a solution to the existing problems to get the expected recommendations.

		(<i>STRENGTH = S</i>)	(<i>WEAKNESS = W</i>)
INTERNAL FACTOR (IFAS) EKSTERNAL FACTOR (EFAS)	1	Has an organizational structure	1 There are no delinquency
	2	Have SK	2 sanctions
	3	Have financial administration	3 Composting is not yet running
	4	Have AD / ART	4 The absence of BPJS
	5	Citizen's awareness	The community has not yet
	6	Have a good business network	5 made sorting from the source
	7	Skilled workforce	The unavailability of garbage
	8	Timely collection of garbage	6 cans in each household.
	9	Good cooperation	The absence of regulations that
	10	Has a garbage transport fleet	bind all communities to
	11	Adequate Waste Processing Site	7 become TPS3R customers
			8 There are still some people who still throw garbage into rivers and drainage systems
			Less educated communities related to waste management
(<i>OPPORTUNITES = O</i>)		S - O STRATEGY	W - O STRATEGY
1	Attention of local	1. Optimizing the Cooperation	1. Increasing the ability of the
2	government	Agreement between the PSPLP	community to pay customers'
3	Quality compost lab results	Working Unit Prov. Bali with	waste contributions by
4	HR opportunities to take part	Sanur Kauh Village, and	optimizing providing waste
	in education and training in	maximizing the managerial	materials for each customer
	waste management	organization structure for	2. The BPJS health insurance
	Attention for private	success in village waste	has not been available with
entrepreneurs, Corporate	management as well as being a	the attention of the regional	
social responsibility (CSR)	reference for other villages and	and private government	
related to the assistance of	the government.	related to the cooperation of	
appropriate waste	2. Optimizing public awareness in	the manager of the health	
management facilities and	waste management in the 3R	workforce management	
low operational costs	system with HR Resources who		

		<p>already have skills in waste management procedures obtained from attending education and training to make crafts using materials from waste and marketing them.</p> <p>3. Maintain and improve the timeliness of customer waste collection so that the relationship and awareness of the community is established to fulfill their obligations to pay contributions for waste distribution that can be used in the operation and maintenance of facilities and infrastructure.</p>	<p>3. As soon as village regulations are made or customary regulations that bind all communities to become TPS3R customers are due to the need for the attention of the local government regarding TPS3R operations and the environment.</p>
	(THREATS = T)	S - T STRATEGI	W- T STRATEGI
1 2 3 4 5	<p>There is no sanction for customers who are in arrears</p> <p>Compost fertilizer results from 3R have never been used</p> <p>Environmental pollution where there are still people who have not become customers and are still littering</p> <p>Some high operational cost facilities.</p> <p>Funds available from the results of the Collection of garbage fees are not enough for operational costs</p>	<p>1. Optimizing the availability of appropriate equipment and the place to manufacture compost according to quality in increasing the production of compost fertilizer to be acceptable to meet farmers' needs and avoid purchasing out of the village.</p> <p>2. Increasing income through increasing contributions to household waste distribution and compost production volume and optimizing operational expenditures so that workers pay honorarium payments and add sarpras</p>	<p>1. Increasing the knowledge and skills of HR in waste management regarding the process of making compost fertilizer and the solution to meeting the needs of organic waste from outside the village to produce compost at the request of farmers.</p> <p>2. Carry out sanctions against those who are in arrears in the contribution of garbage distribution with the aim of being able to fulfill the facilities and infrastructure as needed</p>

		<p>which have been supported by DLH Regency and Village Government</p>	<p>3. There are still some people who still throw garbage into rivers and drainage systems and have an impact on environmental pollution</p>
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IV. Conclusion And Suggestion:

Conclusion:

The KSM Sekar Tanjung Community Based Waste Management Management System Sanur Kauh Village has been operating well, the Human Resource System for workers has been skilled and competent in managing and processing waste, the system for using facilities and infrastructure at Bantas Lestari TPS3R Bantas Village for waste transport fleets already adequate with good conditions, where the shortcomings in the customer's house are not all garbage cans

Suggestion:

It needs to be continuously socialized regarding changes in the increase in household waste retribution and applying sanctions, increasing compost production with market quality so that farmers in Sanur Kauh Village buy kospos fertilizer processed from recycled organic waste.

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