

ANALYSIS OF FACTORS AFFECTING COMMUNITY PARTICIPATION IN WASTE BANK

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Abstract. The objective of this research is to determine the factors that influence community participation in waste banks. This objective was chosen because as a community movement, the sustainability of waste banks is largely determined by the participation of the community as its customers. The research was conducted quantitatively. The data collected is primary data obtained through interviews with respondents who are members of the Macodes waste bank located in Kedung Waringin Village, Tanah Sareal District, Bogor City. There were 30 respondents selected using simple random sampling. Data were analyzed using correlation and regression methods. There are 3 (three) factors that are thought to influence community participation in waste banks, namely understanding about waste, the economic benefits of waste banks, and professional and accountable management. The research results show that professional and accountable management is a factor that influences community participation. The other factors are the initial factors or drivers for the community to join as waste bank customers. The implication of this research is to ensure the sustainability of waste banks through community loyalty towards waste banks by having professional and accountable waste bank management. For this reason, it is necessary to provide guidance to waste bank managers.

Keywords: Waste Bank; Community Participation

I. INTRODUCTION

Waste is one of the environmental problems faced by the Bogor City government. Based on data, the amount of waste production in the Bogor city in 2022 is 991 tons/day. Various efforts have been made to reduce waste production and reduce waste disposed of in landfills, one of which is through the development of a Waste Bank.

Waste Bank is a facility for managing waste using the 3R principles (Reduce, Reuse, and Recycle), as a means of education, behavior change in waste management, and implementation of a circular economy, which is formed and managed by the community, business entities, and/or local government (Minister of Environment Regulation No. 14 of 2021). Currently, there are 127 waste banks operating in Bogor City. The existence of 127 waste banks has been able to reduce the production of waste disposed of in landfills by 20 percent. Several research results show that the existence of waste banks is quite effective in reducing waste production

The problem is how to ensure that the existence and role of this waste bank can be optimal and sustainable in reducing waste production. Several studies that have been conducted mostly highlight the effectiveness of waste banks in reducing waste or their contribution to the environment. For example, research by Makmur Selomo et al (2016) on waste banks as a solution for handling waste in Makassar City. Other research

highlights the economic benefits of waste bank management. For example, research by Dwi Pujianto et al (2021) which examined the role of waste banks on the economic income of the community in Loa Ulung Village, Tenggara Seberang District, Kutai Kertanegara Regency.

As a community movement, waste banks can operate because of community participation. Therefore, it is important to know the factors that influence community participation in waste bank operations so that optimization and sustainability of the role of waste banks can be achieved. To identify the factors that influence community participation in waste bank operations, a case study was conducted on the Macodes Waste Bank which is located in RW 10, Kedung Waringin Village, Tanah Sareal District, Bogor City. Macodes Waste Bank has been established since July 6 2020 and currently serves 90 customers.

This research aims to determine the factors that influence the community to participate in waste banks so that waste banks can function optimally and sustainably.

A. Benefits of Waste Banks

Waste Banks have several benefits for humans and the environment, such as making the environment cleaner, making people aware of the importance of cleanliness, and turning waste into economic goods. Another benefit is that it can increase people's income because when they exchange waste they will get a reward in the form of money collected in the

account they have (Anih Sri Suryani, 2014). With these benefits, it is reasonable to assume that the factor that can encourage people to participate in waste banks is to overcome environmental problems. Of course, this is based on the awareness that waste is an environmental problem that must be addressed. Apart from that, economic motives are also thought to be a reason for people to participate as waste bank customers.

B. Waste Bank Manager Professionalism

Like banking services, waste bank customers also expect good service from waste bank managers. In accordance with waste bank operations, services include sorting, weighing, calculating prices for each type of waste, and recording in savings books. In the Minister of Environment and Forestry Regulation No.14 of 2021, it is stated that waste bank managers need to have competence. The required competencies include knowledge, skills and behavioral attitudes so that each waste bank administrator can carry out their duties according to the desired standards. Based on this, the professionalism and accountability of waste bank managers will influence community participation in waste banks

Based on the description above, there are 3 (three) hypotheses that can be developed, namely:

H1: Community understanding of waste influences their participation in waste banks

H2: The economic benefits of waste banks influences participation in waste banks

H3. Waste bank management influences participation in waste banks

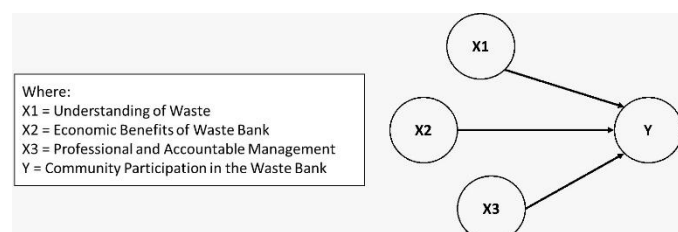


Figure 1. Framework

C. Waste Bank Customer Loyalty

The measure of community participation in waste banks is customer loyalty to waste banks. According to Tjiptono (2005), there are 6 (six) indicators of customer loyalty, namely repeat purchases, habit of consuming the product, liking the product, still choosing the product, believing the product is the best, and recommending the product to others. The indicators used in the research are 3 (three) indicators, namely increasing savings at the waste bank, remaining a customer of the waste bank, and recommending the waste bank to others.

D. Sustainable Development Pillars

Waste management is part of efforts to control environmental pollution. An environment that is clean and free from pollution is one of the goals of sustainable development. According to Munasinghe (1993), there are 3 (three) pillars of sustainable development, namely social, economic and environmental (triple bottom line).

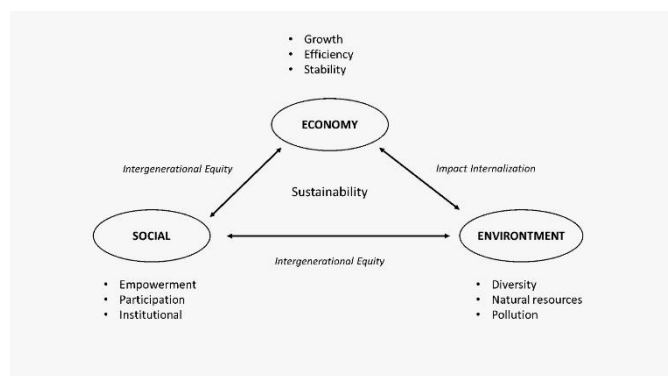


Figure 2. Sustainable Development Pillars (Munasinghe, 1993)

II. RESEARCH METHODS

This research was conducted quantitatively. The data to be collected is primary data obtained from respondents through face-to-face interviews guided by a structured questionnaire. Respondents in this research are members of the Macodes waste bank located in RW 10, Kedung Waringin Village, Tanah Sareal District, Bogor City and have been customers for at least 3 (three) months. The number of respondents was 30 people and were selected using a simple random sampling method.

This research tests the hypothesis that understanding about waste (variable X1), economic benefits received by customers (variable X2), and professional and accountable waste bank management (variable X3) will influence community participation in waste banks (variable Y). Data will be analyzed using correlation and regression techniques.

III. RESULTS AND DISCUSSION

A. COMMUNITY UNDERSTANDING AND BEHAVIOR TOWARDS WASTE

The results of research regarding understanding and behavior towards waste, the majority of respondents stated that they strongly agree that waste must be managed better, waste management is not only the government's responsibility but also the responsibility of citizens, and waste banks are a form of citizen participation in managing waste. In terms of behavior, respondents have provided waste bins at home, disposed of waste in the right place and have sorted waste, as shown in the following table

Table 1. Community Understanding and Behavior Towards Waste

No	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1	Waste is an environmental problem that must be managed well	0.00%	0.00%	16.67%	83.33%
2	Waste management is not only the government's task, but also the community's	0.00%	0.00%	13.33%	86.67%
3	Waste banks are a form of community participation in managing waste	0.00%	0.00%	23.33%	76.67%
4	Provide a waste can at home	0.00%	0.00%	0.27%	73.33%
5	Sorting waste at home	0.00%	0.00%	33.33%	66.67%
6	Always throw waste in the right place	0.00%	0.00%	26.67%	73.33%

B. Economic Benefits From Waste Banks

Meanwhile, in terms of economic benefits, only 50% of respondents agreed that waste banks support the family economy. This is likely because the value of the savings obtained is not significant compared to household needs. Where 50% of respondents had a savings balance of less than 500 thousand rupiah. However, most agree that waste banks provide other economic benefits, especially being able to travel/tour with waste bank customers

Table 2. Economic Benefits From Waste Banks

No	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1	The waste bank supports the household economy	26.67%	23.33%	50.00%	0.00%
2	There are other economic benefits from waste banks	0.00%	0.00%	93.33%	6.67%

C. Professional and Accountable Waste Bank Management

Regarding perceptions of the performance of waste bank managers, the majority of respondents agreed that waste bank managers were professional and accountable. This can be seen from good planning and scheduling, keeping records neatly, carrying out precise weighing and being transparent in determining prices. For more details, see the following table:

Table 3. Professional and Accountable Waste Bank Management

No	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1	The waste bank manager makes work planning and scheduling	0.00%	0.00%	40.00%	60.00%
2	Waste bank managers keep records neatly	0.00%	0.00%	33.33%	66.67%
3	Waste bank managers weigh waste appropriately	0.00%	0.00%	33.33%	66.67%
4	Waste banks manager are transparent in determining the waste prices	0.00%	0.00%	33.33%	66.67%

D. Community Participation in the Waste Banks

The research results also show that the majority of respondents are still willing to become waste bank customers and try to increase their waste bank savings and are willing to recommend others to become waste bank customers. This shows the benefits of waste banks for their customers. Here's the table:

Table 4. Community Participation in the Waste Banks

No	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1	Willing to continue adding to waste savings	0.00%	0.00%	30.00%	70.00%
2	Willing to remain a waste bank customer	0.00%	0.00%	26.67%	73.33%
3	Willing to invite others to become waste bank customers	0.00%	0.00%	36.67%	63.33%

E. Factors That Influence Community Participation in the Waste Banks

Based on data analysis, of the three variables that are assumed to influence community participation in waste banks, the one with a probability $[P > |z|]$ smaller than 0.05 is variable X 3, namely Professional and Accountable Waste Bank Management. This indicates that community participation in this research was not influenced by economic benefits or understanding of waste. The complete results of the correlation analysis of research variables are presented in the following table.

Table 5. Results of Correlation Analysis of Research Variables

Variable	Coefficient	Std Error	Z	P> z	Level of Confidence 95%	
X1	0,2013956	0,439547	0,46	0,647	-0,660100	1,062892
X2	0,4340933	0,7012502	0,62	0,536	-0,940331	1,808519
X3	1,014012	0,3716069	2,73	0,006	0,2856762	1,742348
	19,77742	11,54582			-2,851962	42,40681

Mathematically, the correlation model (equation) of community participation in waste banks is as follows:

$$Y = 0,2014X1 + 0,4341X2 + 1,0140X3$$

Notes:

Y = Community Participation in the waste bank

X1 = Understanding of the waste

X2 = Economic benefit of the waste bank

X3 = Professional and accountable management

These results indicate that understanding waste has no effect because this factor is possessed before becoming a waste bank customer. This means that an understanding of waste has been formed before becoming a waste bank customer. Economic benefits have no influence, this means that the economy is not the main motive for becoming a waste bank customer. Especially if you refer to Table 2 where some respondents admitted that they did not agree that waste banks help the family economy. Another thing that is thought to support this result is that the customers are citizens who economically come from the middle class. The professionalism

and accountability of waste bank management will have an influence because as customers they expect good service from waste bank managers.

To strengthen the results of this research, respondents were asked about people's preferences regarding the level of importance of the triple bottom line aspects, namely: 1) economic interests (Profit); 2) environmental interests (Planet); and 3) social interests (People). For this reason, a weighting analysis has been carried out by adopting the delphy analysis technique. Based on the results of data analysis, it is known that the environmental aspect occupies the highest position, namely 48.64%, then the social aspect at 37.50%, and finally the economic aspect. The complete results of the analysis of people's preferences for triple bottom line aspects are presented in the following table.

Table 6. Results of Weighting Analysis of the Level of Importance of Triple Bottom Line Aspects

No	Triple Bottom Line Aspect	Score	%
1	Economy	2,03	13,86
2	Environment	7,13	48,64
3	Social	5,50	37,50
	Total		100

These results confirm that the most important aspect is the environmental aspect and the second is the social aspect. The economic aspect was considered not too important for respondents.

Meanwhile, based on the marginal effect analysis of the model above, it is known that a decrease in professional and accountable management will have the effect of decreasing opportunities for community participation in waste banks by 11.8 percent. The complete marginal analysis of model effects is presented in the following table.

Table 7. Coefficient of Marginal Effect Model

Variabel	dy/dx	Std Error	Z	P> z	Level of Confidence 95%	X
X1	-0.0234872	0.05286	-0.44	0.657	-0.127097 0.080123	22,5
X2	-0.0506249	0.08487	-0,60	0,551	-0.216976 0.115726	1,8
X3	-0.1182562	0.05475	-2,16	0,031	-0.225572 -0.01094	14,6

continue to participate as waste bank customers, it is necessary to strengthen the capacity of waste bank managers so that they can carry out their functions according to standards and can provide good service to their customers. With high community participation, it is hoped that the waste bank can function optimally and sustainably. From this research, the following can be recommended: 1) Efforts are needed to increase public awareness and understanding of waste as an environmental problem that must be addressed by the government together with the community; 2) It is necessary to continue educating the public about sorting waste at home; 3) Promoting the role and benefits of waste banks, especially in improving environmental quality; And 4) Organizing capacity building programs for waste bank managers.

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IV.CONCLUSION

Of the three variables indicated to influence community participation in waste banks, it was concluded that the factor that significantly influenced community participation was professional and accountable waste bank management. Meanwhile, the other two variables, namely understanding of waste and the economic benefits of waste banks, are considered not to have a significant influence. In this study it was also concluded that the marginal effect if there was a decrease in professional and accountable management would reduce participation by 11.8%. The implication of this research is that to encourage people to become waste bank customers, a correct understanding of waste is needed and the formation of behavior, especially in waste sorting. However, so that customers