

Optimization of the Bersih Indah Muja Muju waste bank management system

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Abstract. The Bersih Indah Muja-Muju Waste Bank has a problem that is not having a good management system. The team divided the problem into three parts, namely the absence of procedures at the Bersih Indah Muja Muju waste bank, untidy and disorderly administrative records, and no procedure for collecting garbage. The solution the team made to overcome these problems was counseling and mentoring to residents regarding the waste bank management system, administrative records and waste collection procedures. The result of this activity is that the Bersih Indah Muja Muju Waste Bank can apply standard operating procedures that have been designed by the team, can carry out administrative records neatly, and waste can be classified according to its type. The hope is that the Bersih Indah Muja Muju waste bank can implement a good management system consistently so that it can develop progressively.

1. Introduction

The problem of waste in Yogyakarta City has been very serious since the accumulation of excess waste in the Piyungan Landfill. Quoted from Tribunjogja.com, "According to the Yogyakarta City Environmental Service, the city of Yogyakarta can produce up to 300 tons of waste in one day. One resident in the local area can produce 0.7 kilograms per day. Meanwhile, the waste transported to the final disposal site is in the range of 270 tonnes a day" [1]. This shows that public awareness of the importance of waste management is still low. The accumulation of garbage at the landfill causes various problems to arise. Garbage has the potential to cause social conflict with regard to causes that endanger health, safety, reduced comfort and limited land, especially for the placement of landfills[2].

Waste management needs to be done by all levels of society. Garbage is the remains of human daily activities and / or natural processes in solid form [3]. According to Daniel (2009), waste is categorized into three types, namely[4]:

- Organic waste, namely waste consisting of materials that are biodegradable.
- Inorganic waste, namely waste consisting of materials that are difficult to biodegrade biologically.
- Hazardous and toxic waste, namely waste from hazardous and toxic materials.

Inorganic waste requires management such as the 3R movement namely; reduction of waste (*Reduce*), reuse of waste (*Reuse*), and recycling of waste (*Recycle*). Garbage reduction can be done by limiting waste generation, recycling waste, and reusing waste [5]. The waste bank in this case plays a major role in accommodating waste management with the 3R movement. According to the Regulation of the State

Minister for the Environment of the Republic of Indonesia Number 13 of 2012, a waste bank is a place for selecting and collecting waste that can be recycled and / or reused which has economic value[6]. All activities in the waste bank are carried out by and from the community, role as customers and managers. Thus, the benefits of the waste bank will be felt by the community directly, such as economic benefits and a clean environment.

The Bersih Indah Muja Muju garbage bank is located at RT 028 RW 09, Muja Muju village. Muja - Muju is a sub-district in Umbulharjo sub-district, Yogyakarta City. The garbage bank has been around for 4 months, which was founded by the head of the local citizens Association (Rukun Warga). The waste bank is managed by the members of local women association namely PKK. Currently, the Bersih Indah Muja Muju waste bank sells garbage to collectors once a month at the end of the month. The garbage that collectors buy from the waste bank is not much and only certain rubbish. This causes garbage to pile up in people's homes.

Based on the analysis of the situation is done, The Bersih Indah Muja Muju garbage bank have a problem that is not have good management systems. The problem is divided into three parts, namely the absence of clear procedures at the Bersih Indah Muja Muju waste bank, untidy and disorderly administrative records, and the absence of procedures for garbage collection. Thus, the service aims to optimize the waste bank management system by building management procedures, improving records, and building waste management procedures at the Bersih Indah Muja Muju waste bank.

2. Methodology

Based on the background above, this activity can be carried out in several stages, namely:

2.1. Preparation Phase

At this stage, observations are made to identify problems that are the focus of this activity. After that, discuss solutions that can be done to solve problems with partners.

2.2. Implementation Stage

This stage implements the solution that has been designed, with several methods, namely lectures and practices.

2.2.1. Lecture Method

This method is used in providing counseling which is carried out twice, namely at the beginning of the implementation. The purpose of this method is to convey knowledge related to a good waste bank management system so that participants understand how waste management is proposed by the service provider. This method is also used in counseling on waste management addressed to members of the waste bank.

2.2.2. Practice Method

This method is used in mentoring partners who are a continuation of extension activities. This activity aims to deepen the knowledge that has been given. This method is used in assisting the waste bank management system, assisting in recording transactions, and assisting in waste management.

3. Results and Discussion

The results of the implementation of activities that have been carried out at each stage can be explained as follows:

3.1. Preparation phase

On May 16, 2020, observations were made at the Bersih Indah Muja Muju waste bank to identify problems and discuss solutions to be carried out. Observations were made by discussing for approximately 45 minutes. From the results of the observations made, the problems that become the focus of this dedication activity can be taken, namely: the absence of clear procedures at the waste bank,

untidy administrative records, and no waste collection procedures. Solutions that can be offered include counseling and assistance regarding waste bank management procedures, recording transactions and waste management. The chairman of the partners was very enthusiastic about accepting the goal of the service team to optimize the management of the waste bank which they managed with the residents and to allow the team to carry out this activity. After the observations were made, the team designed a system that could be implemented in the Bersih Indah Muja Muju waste bank to address the problems that had been identified. The team designed a waste bank implementation module as well as a flowchart. The flowchart shown in appendix 1. Flowchart is a visualization of the steps - the steps and the order of procedure in a system [7].

3.2. Implementation Stage

3.2.1. Lecture method

3.2.1.1. Socialization of the Partners Regarding the Waste Bank Management System

Information systems are systems that can be defined by collecting, processing, storing, analyzing and disseminating information for specific purposes [8]. The waste bank system starts from collection, weighing, and distribution carried out by the community. Good waste bank management will make the waste bank sustainable and can provide benefits for all parties [9]. The waste bank manager must also have a complete administration book. Complete administration functions to keep the waste bank system running well. The must-have books are a special savings book for members, a list of members, a large financial ledger for a waste bank, a recap book for depositing members and finally a book containing the attendance list of members who deposit waste [10].

Counseling to waste bank management regarding waste bank procedures which lasts for approximately 1 (one) hour. The purpose of the implementation of this activity is to increase participants' knowledge about a good waste bank governance system and administrative records that can be applied to waste banks. This activity was attended by actively participating waste bank management. The service provider provides a *printout* module that can be used as a guide in implementing the waste bank. The module in it also contains a flow chart that the servant has designed (Figure 1). Participants enthusiastically received the material presented so that the activity went well.



Figure 1. Documentation of Submission of Waste Bank Modules and Flowcharts

3.2.1.2. Waste Management Counseling

The most important thing in managing a waste bank is the waste collection process. If the garbage collection has been classified by type, the waste bank will run well. The community must have an

understanding of how to classify waste based on its type so that it will make it easier for waste bank officers to sell it and add economic value. Household waste is divided into two types, namely Organic and Non-Organic waste. Organic waste is waste that comes from living things and can be broken down again, while non-organic waste comes from materials processed by humans. Through a waste bank, non-organic waste will be sorted and then sold to collectors [9]. Non-organic waste can be classified based on the type of material; plastic, paper, metal, and others. In addition, giving identity to garbage bags collected by residents will make it easier for officers in the administrative process.

This activity was carried out on June 6, 2020 at the garbage bank post. This activity lasted for approximately 45 minutes which was attended by representatives of members of the waste bank. The purpose of this activity is that the participants understand the classification of waste so that it is easier to sell to collectors and the function of providing garbage bag identities to make it easier for officers to identify the owner of the waste. This activity is carried out using the lecture method and is followed by questions and answers with the participants. This activity Participants enthusiastically received the material presented so that the activity went well (Figure 2).



Figure 2. Documentation of Waste Management Extension

3.2.2. Practice Method

3.2.2.1. Assistance to Partners Regarding the Waste Bank Management System and Transaction Recording

This activity is a continuation of the waste bank management system extension activity which aims to deepen knowledge by simulating the application of a waste bank management system so that it can be applied. This activity lasts for 2 (two) meetings within 1 (two) months, namely:

1. The first meeting was held shortly after counseling on June 6, 2020 with a duration of approximately 1 (one) hour for simulating the flow chart and recording proposed by the servant. The service provider accompanies the participants to take notes according to the guidelines given and the participants enthusiastically follow. At this stage, participants are able to follow directions well (Figure 3).
2. The second meeting was held on June 27, 2020 with a duration of approximately 1 (one) hour, the aim of which is to see the development of the implementation of the waste bank management and recording system whether it is running well in accordance with the training that has been given. This activity also discusses the barriers to applying flowcharts and recording as evaluation. At this stage the waste bank management and recording system proposed by the service provider can be implemented by partners well as shown in figure 4 and 5.



Figure 3. Documentation of Recording Assistance

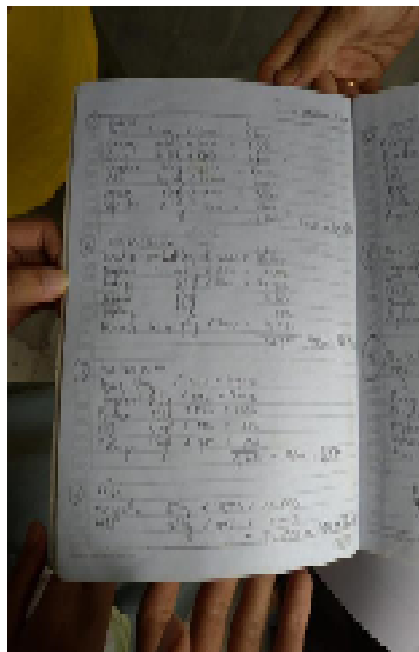


Figure 4. Documentation of Waste Bank Transaction Report (Before)



Figure 5. Documentation of Waste Bank Transaction Report (After)

3.2.2.2. *Waste Management Assistance*

This activity is a continuation of the waste management counseling activities that have been carried out. The purpose of this activity is to deepen the knowledge of waste classification so that it can be applied. This activity lasts for 2 meetings for 1 month, which consists of:

1. The first meeting was held shortly after the socialization on June 6, 2020. This activity was a simulation of waste classification and distribution of garbage bags to members of the garbage bank as well as giving identity to garbage bags. At this stage the participants understand and are able to classify waste and together with the service team give an identity to the garbage bag.

2. The second meeting was held on June 27, 2020 to see if the program was going well. At this meeting, it was found that the members of the waste bank had properly separated the waste before it was deposited into the waste bank (Figure 6).



Figure 6. Documentation of Waste Management Assistance

4. Conclusion

This activity aims to solve the problem of the Bersih Indah Muja Muju waste bank. The Bersih Indah Muja-Muju Waste Bank has a problem that is not having a good management system. Problems can be broken down into the absence of clear management procedures, untidy administrative records, and no waste collection procedures. As a solution, the Team provided assistance in the form of counseling to partners regarding the waste bank management system by providing modules and flowcharts. Activities run well, partners can apply the flowchart that has been designed and can record transactions properly. So, the waste bank governance will be better. This can be seen from the reports made at the service. The community service team conducts counseling and assistance for waste management to waste bank members by separating waste by type and giving identity to members' trash bags. This activity is going well, partners can separate the collected waste based on its type. With this activity, it is hoped that the Clean Indah Muja - Muju garbage bank in Yogyakarta can improve governance so that the waste bank will continue to be sustainable as a solution to the problem of waste that has not been decomposed.

5. Suggestions

From the conclusion above, the suggestions from the servant are as follows:

1. The management of the Bersih Indah Muja Muju Waste Bank continues to develop a waste bank management system
2. The management of the Bersih Indah Muja Muju Waste Bank keeps administrative records and transactions consistently
3. Waste bank members collect and deposit waste according to the types of waste continuously

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Appendix 1. Flowchart of Waste Bank Management System

