The role of waste bank partnership in efforts to decrease waste volume in urban: A case study at a waste bank in Kalibaru, Cilodong, Depok City

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Abstract. Waste Bank is a program that the government uses as one of the efforts to tackle the increasingly growing garbage day. The Waste Bank in Depok City serves as a collection of non-organic waste that still has economic value. This study attempts to examine the factors that make Depok City Waste Bank play its role today and its relationship with the community involved in the activities of the Waste Bank. Through qualitative approach with a case study, the authors make observations on the object and conduct in-depth interviews with some informants. This study found four factors that make a Waste Bank continues to play a role, namely the presence of leaders who are reliable (leadership), good management (management), incentive (incentive) and the involvement of partners (partnership). While the characteristics of community-based on the level of education, income levels also affect the community participation in receiving the Waste Bank as a form of waste management in the city of Depok.

Keywords: waste bank, waste management, urban community

1. Introduction
Talk about garbage as if it never ends. Trash can be related to many things, such as the type of garbage, the volume, the handling, the disposal, the final landfill (TPA), the individuals, groups and institutions involved in it. It is also often associated with the creation of new models to manage waste that is always pursued, including innovations for waste to be a minimalist product that is easy disposal so that the environment becomes healthy and the city face becomes beautiful.

The amount of garbage produced by the population of Indonesia has been increasing due to the consumption needs of the growing population as well. Organic waste dominates the type of waste produced. It contributes 60% of the total, while another type, that is non-organic waste, including plastic and paper, accounts for 15% and 10% respectively. The rest, such as metal, glass and leather, reaches 25%. According to Hermansyah [1], until today, people are still processing waste in the traditional ways: waste is disposed of by disposing it to a landfill (waste disposal site) of 60%, dumped (10%), burned (5%), recycled (7.5 %) and unidentified 8.5%. But there are actually other ways that people do to get rid of these garbages, among others by throwing them to the river, dumped in the edge of the road or in an empty field, or left to sit on the street and reduce the aesthetics of urban space.

Since the existence of Law no. 18 of 2008 [2] on Waste Management and Government Regulation No. 18 of 2012 on the Management of Household Wastes and Similar Rubbish, the participation of the community is expected to reduce the amount of waste generated.
The emergence of the Waste Bank Program in Depok City is one of the efforts of the Regional Government of Depok City to manage the increase of waste production in Depok City which was barely handled in 2009 (Buana) [3]. As a city with an area of 200.29 square kilometers (km2) and has 11 Districts and population of 2,114,152 people, it is estimated that the people of Depok City produce garbage every day an average of 0.5 kilograms (kg) per person, so that when the waste generation calculated, it reaches more than 1,321,000 tons per day or more than 190,227.57 tons per year (Projection of Depok City Population, 2015).

By the Regional Regulation (Perda) of Depok City No. 5 of 2014, up to 2015, the Local Government of Depok City has utilized the waste management facility or also known as the Waste Management Unit (UPS) of 42 UPS and spread in 11 districts in Depok City. Halimatussadijah [4] states, only 32 UPS are considered to be operating properly, so waste management conducted by the Local Government of Depok City to overcome the amount of "booming" garbage, has not run optimally.

The abundance of garbage which the Local Government of Depok City is finally difficult to handle also makes TPA Cipayung, the final dumping place of the people of Depok City, no longer able to accommodate (over capacity) waste disposed to the landfill.

Table 1. Evaluation of Cipayung Landfill Capacity 2015 and 2016.

| Year | Population (people) | Dumps (ton/ day) | Accumulated TPA Load (ton/ year) | Landfill Capacity (m3) | Time Capacity (m3) |
|------|---------------------|----------------|---------------------------------|------------------------|-------------------|
| 2015 | 2,114,152           | 1,321.34       | 190,227.57                      | 450,000                | 259,772.43        |
| 2016 | 2,197,999           | 1,373.75       | 191,905.40                      | 450,000                | 67,867.02         |

Source: Bappeda Depok City, 2016

Table 1 demonstrates the cumulative load of increasing Depok garbage every year. In 2015, the waste produced was 190,227.57 tons per year, while in 2016 it increases to 191,904.40 per year. The increase of waste continues to occur because there has not been any effort to maximize waste processing. Scavengers help reduce the waste as they do a lot of waste segregation directly at the location as their daily livelihood.

TPA Cipayung becomes "overloaded" because the amount of waste that comes unbalanced with the capacity of the TPA is relatively fixed that is 450.00 m3 (in 2015). It is conceivable that the next year 2016 with the same one, the TPA is burdened with a higher volume of waste than before. What about the year 2017 and so on? Cipayung landfill land will be increasingly narrow for the final dumping of garbage, and Depok City local government should start looking to replace the location of TPA Cipayung.

Then came the effort to overcome it, namely the idea of the Waste Bank program (BS). Waste Bank is a container that manages dry or non-organic waste by a 3R method of reducing, reuse and recycle garbage. According to Halimatussadijah [5], Waste Bank is a place to store domestic waste (household) which then can be recycled into reusable goods. Customers can periodically collect their savings, as a guarantee of incentives for those who participate. The definition of waste is a waste product that can no longer be used (Regional Regulation No. 5 Year 2014) and the type of waste is divided into two, namely organic and non-organic waste.

Organic waste is a type of waste that is used as the material for composting because it comes from vegetable waste or from materials that can be processed into compost fermentation. While non-organic waste (dry waste) is the remaining household consumption in the form of cardboard, plastic, iron, and glass. These four categories of dry waste can be utilized for industries in need. Through the role of collectors or owners of stalls, the garbage has economic value. Although the Waste Bank program is currently regarded as an alternative to addressing waste issues in Depok City, in reality not all Waste Bank establishments that are driven by local community can work well. From 500 points of Waste Banks that stood in Depok City, some are no longer working, some are "going nowhere," and others show the rapid development as expected. This research not only observing the existence of
leadership, management and incentive factors in influencing the role of Trash Bank in Depok City, but also studying the role of partnership; other factors that are not less important in efforts to reduce the volume of waste in the city of Depok.

Below is a description of the Framework for Thought underlying this research. There are four factors that influence waste management in Depok City urban community.

![Figure 1. Framework for thinking: Four factors affecting the role of Garbage Bank in Waste Management in Depok City (Source: data processing, 2017)](image)

2. Literature Review

2.1. Waste Bank description

The Minister of Environment of the Republic of Indonesia Regulation No. 13 The Year 2012 on the Implementation of Reduce, Reuse and Recycle through Waste Banks, mentions the meaning of as a place of waste sorting and collecting that can be recycled and or reused which has economic value. Others stated that the Waste Bank has the similar function as the conventional bank; as a depository of money (Suryani) [6]. Waste Bank is a place where Waste Bank tellers provide service activities to waste depositor. The garbage management mechanism in Waste Bank is almost the same as a conventional bank. So through the Waste Bank, people save the waste and obtain the money (Suwerda) [7].

2.2. Social interaction

According to Soekanto [8], social interaction is the relationship between individuals and human groups or groups of people. The interaction that has taken place will create an impression in the mind of a person, so then determine what action to take next. Another concept of social interaction as proposed by W.I. Thomas in Sunarto [9] mentions that one's interaction is always preceded by the assessment and consideration stage, or selected first through the interpretation of the situation. There are rules that guide the behavior of individuals behaving, mentioned as three types of rules which are rules about space, time and motion & posture.

Individual or community response to the idea of Waste Bank establishment is not always the same or the given response depends on the stimulus received by the individual. Some can immediately believe that Waste Bank can help manage waste by reducing the volume of dry waste into goods that have economic value. The speed of an individual to capture the stimulus to become a form of positive interaction (positive behavior) can depend on the environment it faces. The result will be different according to space, time, socialization obtained by individuals at the time.
2.3. Leadership

All Waste Banks have leaders who have an important duty to carry out all Bank Junk activities. The definition of leadership is the process of influencing in determining organizational goals, motivating follower behavior to achieve goals, persuading to improve groups and culture. Schein [10] mentioned, the role played by a leader must be able to create and instill culture towards the group. Aside from being a regulator, sometimes a leader can change the existing culture (2010: 195).

The responsibility of a leader in a Waste Bank is to improve the waste management system in his / her community, because in some situations a Waste Bank leader must become a socialization agent, incorporating new values in his community knowledge system, so that the goal to reduce the volume of waste through Waste Bank program mechanisms can be achieved. "... as a regulator, sometimes a leader can change the existing culture".

2.4. Management

Understanding management according to Nichels and McHugh [11] is a process undertaken to realize organizational goals through a series of activities in the form of planning, organizing, leading and controlling people and other organizations. Planning involves the determination of strategies to achieve the target, while the definition as the organization (management) is to create the condition of all people involved, in it can work together.

Direction or leading refers to directing, guiding and motivating other individuals to work effectively for their purposes. And the last is controlling or controlling which is one of the management functions that involve an organization set clear standards against its goals.

As this concerns waste management at Waste Bank or how to manage waste through Waste Bank well to fit the expected objectives, the waste management through Waste Bank in the urban community is done comprehensively.

2.5. Partnership

The relationship contained in the Garbage Bank is a bond that occurs between the Waste Bank management with several collectors or owners of stalls. The collectors receive goods in the form of waste that has been sorted according to type and purchased based on the agreed price.

In this partnership, the two are intertwined to form patron-client relationships; namely the relationships between capital owners (employers) and workers (clients). This concept mentions the existence of elements of exploitation and domination, in which the patron refers to a more dominant status than the client. And as his client must be "submissive" to his patron, because it is considered patron has the services, so that his position becomes higher than his client. This relationship can be called a "repayment" relationship because indirectly, the patron can master his client who is considered as his subordinates. James C. Scott in Ramli [12] mentions the underlying characteristics of patron-client relationships, namely the presence of social inequality, the face-to-face relationship, and the occurrence of diffusion.

The patron-client bond may also refer to patron and patron (client) relationships, or it is a form of social insurance, where less chance of protection is given by patrons, the greater the self-reliance to attempt.

2.6. Community

The mention of a community can be defined as "local community," a community can refer to a large or small group living in the same area and feel the group can fulfill the major life interests. Similarly, Robert King Merton defines the word community as a group of people interacting with established patterns and has three criteria: (1). Frequent interactions, (2). Claiming themselves as members and (3). By others defined as group members.

As a Waste Bank group consisting of more than two customers, the members of the Waste Bank have loyalty to their group, even within the same territory or adjacent to other Waste Banks.
Generally, as a community of Waste Bank, they have an orientation towards the purpose of Waste Bank established with the same perspective.

3. Research Method

3.1. Approach and research technique
The approach used in this research is qualitative through case studies of Waste Bank Center of Yayasan Rumah Harum (BSI Yayasan Rumah Harum) at Jalan Haji Sikam No. 25, RT. 04 / RW 05, Kalibaru Village, Cilodong District, Depok City. The case studies, according to Creswell [13] are: "research that explores a particular phenomenon (case) in a time and activity (programs, events, processes, institutions or social groups) and collects detailed and in-depth information using various data collection procedures over a period.

Through case studies, researching traces Waste Bank, community activities (customers of Waste Bank and Non-Waste Bank customer), Waste Bank management (management), Waste Bank partner involved in buying and selling waste, by using observation method and in-depth interviews) with both key and supporting informants. In the research object is observed directly in the daily activities, so that often found things that are beyond the informant estimates, to obtain a more comprehensive picture of research (Sugiyono) [14].

As a counterweight, this research also uses another Waste Bank (BS) with different BS characteristics, namely "Sakinah" Tugu 16 "Waste Bank" in Tugu Village, Cimanggis Sub-district, Depok City (BS-2). It aims to explain the factors influencing the role of Waste Bank in waste management in Depok City show the influence of socio-economic status of society to the existence of Waste Bank and to examine the extent to which patron-client relationship affects the partnership of Waste Bank in order to assist the reduction of waste volume in Depok.

4. Result and Discussion
Through research observation on Harum House Foundation Waste Bank Center (BSI Yayasan Rumah Harum), Kalibaru Urban Village, Cilodong Sub-District, Depok City, there are four factors that influence the function of Waste Bank in Depok City, namely reliable leadership, management or arrangement of good Waste Bank operations (management), incentives as an appeal to inclusion Bank membership (incentive) and equally important is a harmonious partnership relationship between Waste Bank and collecting partner or stall owner, as the party buying "garbage disbursement "and waste distributors divide into industries that need" disposable waste "as raw material for recycling products.

And as a balance of data, we conducted observations on the Waste Bank "Sakinah" Tugu 16, Tugu Village, District Cimanggis, Depok City. As a new BS established by its management (established in 2016), BS Sakinah, Tugu 16 has different characteristics from BSI Yayasan Rumah Harum which has already been operated, even now it has become a Waste Bank for other 191 BS in six districts in Depok, namely the sub-districts: (1) Sawangan, 7 units of BS; (2) Pancoran Mas, 8 BS units; (3) Cipayung, 48 BS units; (4) Cilodong, 28 BS units; (5) Cimanggis, 47 BS units; (6) Tapos, 53 BS units.

By definition, Waste Bank can be understood as a dry waste management system that people do collectively or together. It requires the active participation of the community to sort out and deposit the garbage that still has economic value so that people save the garbage and get the economic benefit from it (Guide of Garbage Bank System) [15]. With the Waste Bank Center like BSI Yayasan Rumah Harum , waste management with the mechanism of sale of "trash divide" organized (through one door) to be more efficient, because the BS under the parent BSI Yayasan Rumah Harum to collect dry waste that has been sorted by Customers and BSI Yayasan Rumah Harum who will send it to the collectors. Negotiation of garbage and technical cost of garbage transportation which often becomes an obstacle for BS non BSI becomes the responsibility of BSI Yayasan Rumah Harum.
4.1. Matrix of Two Characteristics of Waste Bank; BSI Yayasan Rumah Harum (BSI) & BS Sakinah, Tugu 16 (BS-2)

Table 2. Two characteristics matrix of Depok Municipal Waste Bank.

| Factors Affecting the BS Function | BSI | BS-2 |
|-----------------------------------|-----|------|
| **Leadership**                    |     |      |
| Managers have good leadership skills. |     | Managers have good leadership skills. |
| Able to educate the community about 3R methods of waste management. |     | Managers have good leadership skills (3R). |
| Have a mental endurance, because of experience as an activist. |     | Experienced in organizing |
| Struggle persistently, start with personal capital. |     | Supported by family |
| • Highly educated                 |     | • Highly educated |
| **Management**                    |     |      |
| All activities are well planned by other managers and administrators | Activity plan discussed with the board. |
| Organizing activities arranged according to task | Task settings are tailored to the board function |
| Managers are the highest activity and decision makers in the BS. | Although the manager is female, but he can be assertive. |
| Control of the BS program conducted jointly by the board | The program's direction is the empowerment of women, according to the early self-defense mission. |
| • Control is done together.       |     | • Control is done together. |
| **Incentive**                     |     |      |
| Negotiated selling price of “garbage collection” is done by the manager | BS entrust BSI to determine the selling price |
| Selling price is relatively stable. | Customers benefit from the incentives that are acquired with certainty and stability |
| Customers benefit from price stability and incentives received |     |     |
| **Partnership**                   |     |      |
| The manager's position is patron, and the collector is the client | Partners are not owned by BS-2 |
| Patron domiciled as regulator     | Entrusted to BSI |
| Managers have the freedom to choose the choice of collectors | The disadvantage, BS-2 cannot be independent |

Source: Results of data processing, 2017

4.2. Leadership, Management and Incentives in Waste Banks

BSI Yayasan Rumah Harum is a Waste Bank established in 2013. The establishment of BSI Yayasan Rumah Harum is supported by "local community" or community in Kalibaru Urban Village. The reason is to improve the surrounding environment that is considered local people increasingly uncomfortable due to piles of garbage that gradually accumulate without the appropriate handling. With the inclusion of the Waste Bank program conducted by the Local Government of Depok City, the manager of BSI Yayasan Rumah Harum started educating the community with matters relating to the 3R method of dry waste handling method by reducing, reuse and recycle (Recycle). BSI Manager of Yayasan Rumah Harum includes a reliable manager in educating the community about the importance of sorting waste from its source to reduce the volume of dry waste, attracting prospective BS customers and negotiating on the selling price of waste disbursement into BS commodity to the collectors.
In the operational arrangement of BS activities; starting from planning, organizing, leading and controlling, BSI Yayasan Rumah Harum show ideal BS characteristics. Under the leadership of an experienced BS organizing in a Non Government Organization (NGO) and accustomed to working independently, it becomes the manager's main asset to run its activities well. BSI Yayasan Rumah Harum Manager is supported by the board, BSI customers and BSI members who are the customers of BS in six other districts that become synergies. The role of leadership looks dominant in the arrangement of work plans BSI Yayasan Rumah Harum. The forms of financial statements issued by the manager as accountable to the sale of "rubbish sorting" which will be returned to customers as an incentive.

Incentives become important for BS customers, because no matter how small the amount of rupiah becomes a form of appreciation for the customer's efforts in sorting the non-organic waste. Asteria [16] states, when associated with the socioeconomic status (SSE) of society in the form of educational level or income level owned by BS customers, those who are lowly educated and have low income are enthusiastic to become BS members, with the hope of incentives they will get. Incentives or proceeds from the sale of the garbage they disaggregated were added to this group.

As for the highly educated and high-income groups, their non-organic waste sorting results are not a priority, even to become members or BS customers once. But the awareness to preserve their environment, managing non-organic waste through the concept of 3R becomes their concern. So there is the term "alms garbage" is non-organic waste that is deliberately given to BS for additional BS operational costs. And the donor does not expect the incentives from the trash. This shows that these groups remain concerned, still have high participation in environmental management without having to become BS customers.

4.3. Partnership in the Waste Bank
The selection of collecting partners is important in addition to the other three factors affecting the role of Waste Bank in Depok City. BSI Harvesters Yayasan Rumah Harum comes as a business partner and not only as a complement to buyers of non-organic waste from BS. By the manager of BSI Yayasan Rumah Harum negotiating the price remains tight and managers can choose wholesalers who can buy their waste products. BSI Manager of Yayasan Rumah Harum has a favorable bargaining position. BSI Yayasan Rumah Harum has a number of collecting partners with specialization of waste paper, plastic, iron and glass, so he can choose which collectors offer the highest price. Based on patron-client bonds that occur during a cooperative relationship such as BS and its collectors, BS's position of Yayasan Rumah Harum is dominant as a patron. This relationship is considered beneficial because BSI Yayasan Rumah Harum has responsibility as coordinator 119 other BS units, giving incentives to customers can be more consistent. While BSI Yayasan Rumah Harum there is no obligation to sell it to certain collectors in particular (monopoly). BSI Yayasan Rumah Harum only chooses which collectors can provide the highest profit.

The usual relationship between patron-client BS and the collector is that BS is highly dependent on the collectors, so often the selling price agreement of the "rubbish" is determined by the collectors. The helplessness of the BS as the owner of the waste product harms the customers, as it makes the incentive acceptance smaller. There is even a tendency of BS objectives as an institution that helps the management of garbage (reducing the volume of dry waste) is not achieved because the garbage that has been disaggregated by the customer actually fell into the hands of the traveling collectors, because BS managers did not succeed to have a good partnership relationship.

5. Conclusion
Based on research objectives, the conclusions of the analysis and discussion are:

- There are four (4) factors that influence the function of the Waste Bank; leadership, management, incentive and partnership. With these four factors, the Waste Bank can survive in its role as an organization capable of helping to reduce waste volume in Depok City.
• Socioeconomic Status (SSE) of society through education and income level influence the enthusiasm of Waste Bank membership (become customer). Groups with low education and low incomes tend to accept the Waste Bank program on the grounds of incentives from its members in the Waste Bank. While groups with higher education and high income levels tend to receive Waste Bank programs because of the awareness and knowledge they own about the importance of managing waste, but not necessarily a member of Waste Bank.

• Between Waste Banks and collectors there are bonds called patron-client bonds. In this case, the position of **BSI Yayasan Rumah Harum** is called patron or the dominant party, so it is in a favorable state because it is able to determine the price of waste that will be returned to the members of BSI Rumah Harum as an incentive. BS relationship and collective counseling will help accelerate the distribution of waste to the industries in need, thus helping to reduce the volume of non-organic waste in Depok City.

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