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Waste Bank: Waste Management Model in Improving Local Economy

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ABSTRACT

The aim of this study is to explain waste management model through waste bank and explain how households increase their welfare through this model. The findings from this study can be an alternative for other cities in other countries especially developing countries in overcoming waste problems. This research is a descriptive qualitative research with the purpose to get an explanation through indepth interview from stakeholders, households and waste bank managers. The data is analyzed using Huberman and Miles models and the process including data reduction, data display, and verification. The result reveal that waste bank management model not only beneficial in making a clean environment but also has an impact on local economy by increasing the income of housewives around the waste bank. The community expected more support from the government to improve the mechanism of waste bank and a better pricing model for the waste.

Keywords: Waste Bank, Community Economics, Indonesia, Waste Management

JEL Classifications: O13, R11

1. INTRODUCTION

The classic problem of waste has continued to be the cause of some problems such as flood, dirty environment and has an impact on poor health of the society. A good life will emerge when there is a condition that is in harmony with the environment but many people do not realize the importance of harmony with nature and the environment. The behavior that appears in the community is by burying or burning trashes. The condition is far from harmonious with nature. The development of waste management model collect-haul-dispose waste has not been the solution of the problem of waste. It is based solely on the uncomfortable attitude towards waste and the creation of final disposal place, but the waste problem has not been solved.

The waste management has been developed with the creation of final disposal place which this model can be used by some people to sort the waste for resale to manufacturers (e.g. manufacturers of plastic). The waste management model has drawbacks including the narrow land disposal, waste disposal costs and environmental

impact. In the Indonesian context, waste management mandated in Law No. 18 of 2008 which changed the paradigm collect-haul-dispose into a treatment that relies on waste reduction and handling. The 3R Model (Reduce, Reuse, Recycle) is an alternative to solve the waste problem. The development and strengthening of public awareness through the local community will resolve waste problems with waste bank management model.

The term waste bank consists of two words. Bank is an intermediary institution that has a function as a place to save and lend money and also financial transactions. Waste is defined as all unwanted or unusable material, which is usually discarded by its owner (Pineiro, 2015). Waste bank is a campaign for handling waste by buying back waste in terms of a deposit like banking system (Pariatamby and Tanaka, 2014). Waste bank operates like a bank which people in a community, subdistrict, and district can use to deposit their garbage or extract money from the value of the garbage the provide to the facility (Friedberg and Hilderbrand, 2017). Waste Bank began to develop in various cities in Indonesia such as in Bantul (2008), Malang (2010), Surabaya (2010), Gresik

(2012), Cilacap (2012), Barat (2012) and growing to almost every city and regency in Indonesia. It was a good effort, especially in managing waste problems.

Waste bank management model is not only helping to clean the environmental but also has an economic benefit. Waste bank management model is also associated with the local community to take on and manage their own waste to reduce waste and also received economic benefits. Pariatamby and Tanaka, (2014) describe the benefits of the waste bank to society not only helps to clean the environment but also extra cash for the society. Waste bank teaches people to sort the waste, raising public awareness to process waste wisely in order to reduce waste going into landfill (Asteria and Heruman, 2015). The innovation of waste management through waste bank at the grassroots level can increase the income of poor people in the city (Winarso and Larasati, 2011).

Malang Waste Bank (BSM) is a successful waste bank management model in Indonesia. In 2014 the development of BSM consists of 320 community BSM, 176 School BSM, 35 agencies BSM, 670 Individual Customer, 15 unit of collectors with a total of more than 23,000 customers (<http://www.unescap.org>). Recycling behavior of household is influenced by the attitude, environment, knowledge and psychological perspective such as social norms and peer pressure (Nixon and Shapores 2009; Singhirunnusorn et al., 2012). The study of the waste bank in Malang has done by researcher such as Suryani (2014); Arief (2013) but they mostly examine the impact of environmental hygiene, waste management models innovation and effectiveness of the waste management. On the other hand, this study will focus on models of waste banks in relation to the social economic condition.

2. THEORETICAL FRAMEWORK

2.1. Waste Bank: An Overview

The term waste bank consists of two words. Bank is an intermediary institution that has a function as a place to save and lend money and also financial transactions. Waste is defined as all unwanted or unusable material, which is usually discarded by its owner (Pinheiro, 2015). Waste bank is an intermediary institution to transform trash into cash. Waste Bank is a campaign to tackle the waste problem by buying back and save the money from the waste properly in the banking system (Pariatamby and Tanaka, 2014). The management model of waste bank is almost the same as the commercial banks where there are customers, bookkeeping and its management, in commercial bank, customer deposits money but in waste bank customers deposit is waste that has an economic value, while waste bank managers need to be creative and innovative, and have an entrepreneurial spirit in order to increase income. Waste bank working system based on household, by giving rewards to people who managed to sort and deposit the waste.

Waste bank operated as a bank in the public sphere, districts can use to store their waste into the deposit or get the extra money from the trash to get the value of certain facilities (Friedberg and Hilderbrand, 2017).

Waste bank began to develop in various cities in Indonesia such as in Bantul (2008), Malang (2011), Surabaya (2010), Gresik (2012), Cilacap (2012), Barat (2012) and growing to almost every city and regency in Indonesia. It was a good effort, especially in managing waste problems.

Waste bank teaches people to sort the waste, raising public awareness to process waste wisely in order to reduce waste going into landfill (Asteria and Heruman, 2015). Innovation of waste with waste bank has become innovation programs at the grassroots level to increase the income of the urban poor (Winarso and Larasati, 2011). While Purba et al. (2014) explained that the development of this waste bank will also assist local governments in empowering communities to manage waste wisely and reduce waste transported to the final disposal (landfill).

2.2. Community-Based Waste Management

Community-based waste management approach is based on the concept of cooperatives. The purpose of this approach is to make changes in the communal waste management, in terms of source segregation, recovery of recyclable materials, and storage before collection (Visvanathan, 2006). Under this approach, a community project can create a sense of belonging and involve all members of the community to participate. In many projects, community organizations have been established in the form of cooperatives (Singhirunnusorn et al., 2012).

Suryani (2014) defines community-based waste management as an approach to waste management that is based on the active participation of the community. Government and other agencies are just as motivator and facilitator. Douglas et al. (1994) stated that environmental management requires facilitation and implementation of community-based efforts as a strategy to empower and increase their access to environmental resources are important, especially land, infrastructure, and services. Community-based waste management is very important because the activities are performed by members of the community itself. They make decisions related to their own lives. It would be more effective if tailored to local needs and priorities and their capacity (Suryani, 2014).

2.3. Local Economic Development (LED)

LED is the process where local community members can share and think of the future on their region. We can define it as a participatory process that encourages and facilitates partnerships between local stakeholders, enabling the joint design and implementation of the strategy, mainly based on the use of competitive local resources, with the ultimate goal of creating decent jobs and sustainable economic activity (Canzanelli and Giordano, 2001).

LED offer local governments, the private sector, the non-profit sector and the local community the opportunity to work together to improve the local economy. It aims to improve the competitiveness and thus encourage sustainable inclusive growth. The purpose of LED is to build the capacity of local economies to improve the future of the economy and quality of life for all. This is a process in which the public sector partners, businesses, and non-government work collectively to create better conditions for economic growth and job creation (Swirburn et al., 2006).

Further Zaaijer and Sara (1993) emphasized the LED is a process where the local government and/or community-based groups to manage the existing resources and enter into partnership arrangements with the private sector, or with each other, to create new jobs and stimulate economic activity in the economic area

2.4. Community Economic Development (CED)

CED is a spatial development resulting from the community or people, who started from the problems experienced, focus on the benefits are limited to a nearby area or directly related to the region in which the community exists. Witjaksono (2009) said that CED is a process when the public has been initiated by their own to find the problem so that they can build an adequate long-term capacity and encourage an economic, social, and integrated environment. CED aims mainly in public support and reduces vulnerability. Despite the economic initiative is considered an important aspect, they are viewed as a means for a variety of purposes, not as an end in itself (Ashton, 1999). CED can be implemented through two alternative models: Siparti 3S and triple helix (TH). Siparti 3-S is internal to a specific location or industry (reach-in), the TH will be external synergies in three participants: Local governments, universities, and local industries (Witjaksono, 2014). In the implementation of CED funds or LED there is an attention to several important principles, among others such as for the common good, an integrated holistic approach, meet unmet community needs, building and improving social capital, and community centred development (Birkhölzer, 2009).

3. METHODS

This research is descriptive qualitative research. The approach in this study is a qualitative approach and describes the waste bank as a model of managing waste to improve community economics. The survey consists of in-depth interview and questionnaires while the observational method includes the close observation on the object of research. The location of this research is in Malang Waste Bank. Samples are taken at Malang Waste Bank and Diamond Waste Bank, Malang. We took samples in Malang Waste Bank because it is the central waste bank in Malang, while the sampling took in Diamond Waste Bank in Malang Regency with the rationale that this place is currently initiated waste bank. Interviews conducted directly with the respondent (manager of waste bank, the customers and also the government) in-depth interview about the phenomenon of research assessed. We also distribute questionnaires to the respondents directly to determine the extent of the application of the waste bank from the customer/community. The qualitative analysis of data models used in this research is the analysis of the data developed by Miles and Huberman (1984) performed with interactive models through the process of data reduction, display data, and verification.

4. RESULT AND DISCUSSION

4.1. Waste Management Model through Waste Bank

Management has a purpose and is divided into five aspects: (1) The environmental aspects of helping the Government of Malang in reducing the volume of garbage in the city of Malang, especially in tissue polypeptide specific antigen and tissue polypeptide

antigen, (2) the social aspect that comes from a sense of concern and cooperativeness from society to form BSM unit in every RT/RW and villages to make their environment clean and cool, (3) the environmental educational aspects in the community and students who are members of the BSM, they will know the dangers of the waste that is not processed and the benefits of waste management directly from the source (domestic), (4) the aspect of empowerment that there's empowerment in all elements of level family (father/mother, children) reached the level of RT/RW, (5) the economic aspects of democracy which consists of saving trash that is appreciated by BSM in all communities and borrowing money and pay it with trash.

Waste management model through BSM received almost all the waste not only municipal solid waste but also from industrial garbage and trash from electronics. In detail there are 70 different types of plastic waste in the group, the group of paper, and a group of glass bottles. The purchasing price at BSM adjust on the market that can fluctuate according to the market and prices with the money saved in the waste bank has a higher value.

4.2. Public Perception

The majority of people who become customers of waste bank are housewives. Starting from the desire for a clean environment around them. Their perceptions of waste bank are very positive. Compared to the model of second hand that is limited to certain items such as paper, plastic, cans but did not want to accept other trashes unlike at the waste bank where almost all the waste has an economic value. From an economic standpoint in average they produce Rp. 100-400 out of the garbage they collect. With the waste bank communities, they're no longer consider waste as a problem but as a money making tools.

People get many benefit from the presence of this waste bank, in addition to make them earn additional income, they are more excited about cleaning up the environment so that it has the impact on the environment. Currently, waste is no longer something that is ugly and harmful but has become something valuable that has economic value for local residents. Residents hope that waste bank will continue to develop various mechanisms that is more favorable and expect a better service and hope that the price of waste continue to rise or follow market prices so that the spirit of the local people to continue to collect trash and maintain environmental hygiene can be maintained or even increased rapidly.

Socialization of waste bank is also expected to continue to encourage more citizens to participate in collecting garbage and earn income from the waste bank. Additional income is very important for the housewives mainly to help the family economy because most local residents have a mediocre income and just enough to meet their daily needs.

Another motive for being active in this waste bank is the motive of keeping the environment clean and the preservation of the environment, although initially this was not the dominant motive. Over time, people's awareness to protect the environment has increased. They realized with a clean environment, the health of

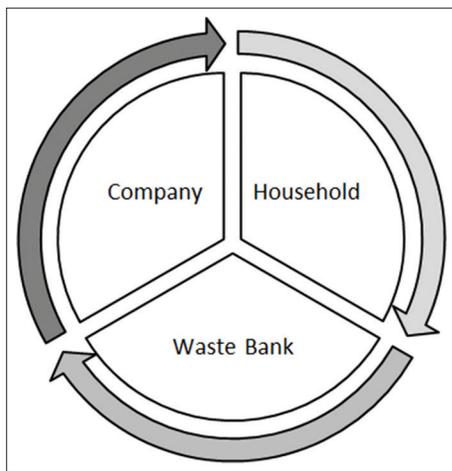
families is also increasing and reducing the risk of flood and other environmental damage.

4.3. The Impact of Waste Bank to Local Economy

The implementation of Malang Waste Bank has an impact for the community and BSM customers. Through the proposed model of management that provides interaction between customers, customers with BSM in a reciprocal relationship management and community empowerment. The impact felt by the community and customers is the additional income from the trash and clean environment.

BSM community economic empowerment programs have increased public income. Although it has not yet fully lift them out of poverty, but the surrounding communities still follow the BSM program because it provides a good impact for themselves and the environment around them.

Figure 1: Waste circulation through waste bank



Source: Data processed, 2017

Figure 1 shows the circulation of garbage originating from households processed by the company that will be consumed by household.

Figure 2 shows the process waste bank management model starting from household waste, sorting, and reuse by household making craft to empower the community.

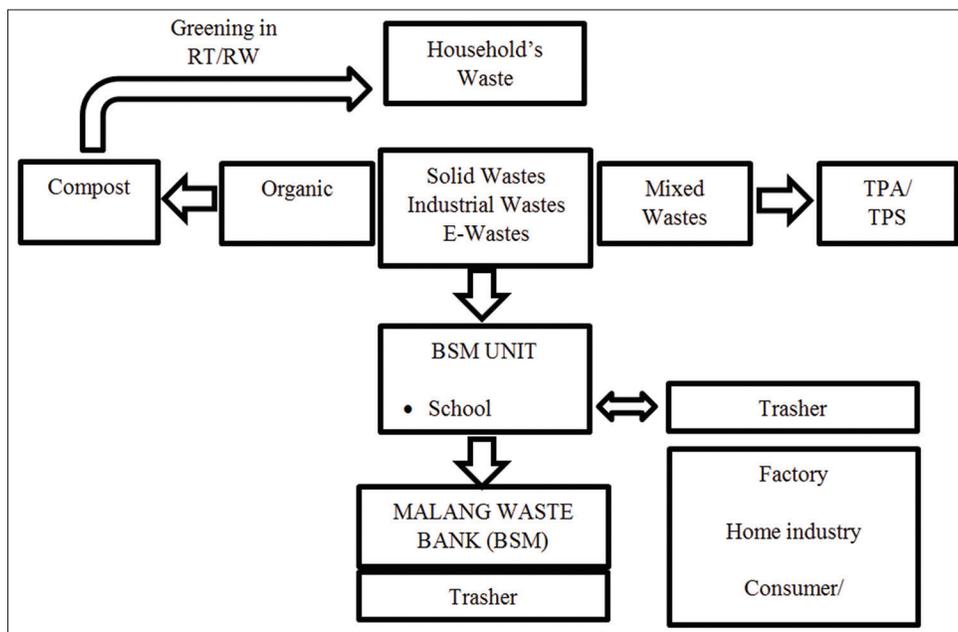
The process of community empowerment/BSM customers in improving the local economy embodied in the Figure 3. Details are described as follows:

- An input (garbage) of household waste is coordinated in the BSM unit. The BSM unit contains a group of people who are members of the community. At this stage of waste will be sorted and collected to be brought to BSM (centre).
- At this stage trash that has been entered in the BSM will be removed again then it will be given a treatment to be processed and made into crafts. If it enters into the category of waste that will be processed it will be brought to the company.
- At this stage, proper garbage that is categorized to be craft brought to the community/BSM unit. This stage requires creativity of households/groups in improving the economic value of the waste.
- At this stage there is a synergy of people or of BSM in making handicrafts. The form of assistance synergies of BSM and the Government in an effort to empower the local economy.

The pattern of development through this waste banks not only raise local initiative of the community but it needs the synergy of community, waste banks, and governments.

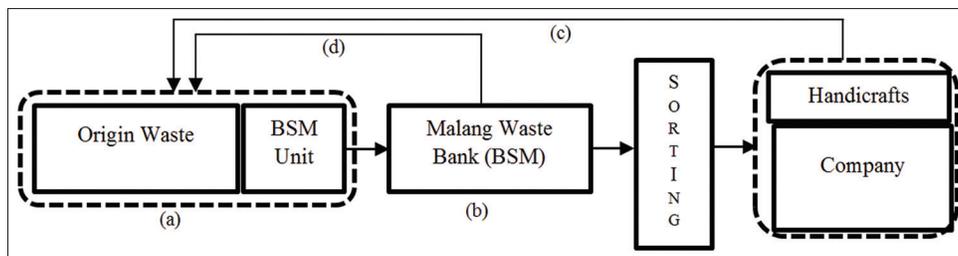
The synergy of the Community, Waste Bank, and local government manifested itself in the intercept (A), (B), (C) and (D). Intercept (A) shows the cooperation between the Community and Waste Bank. Such cooperation is manifested in the effort to support and

Figure 2: Waste management model at BSM



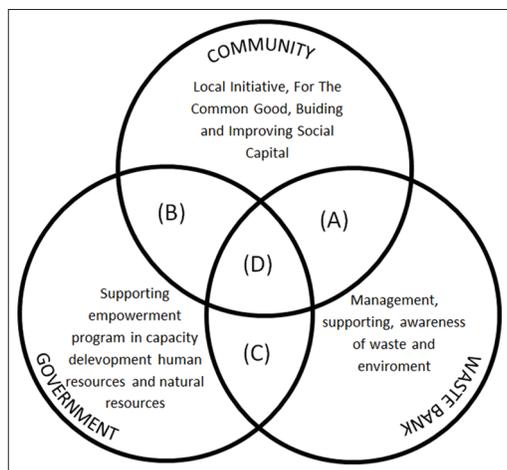
Source: Data processed, 2017

Figure 3: Community empowerment flow through waste



Source: Data processed, 2017

Figure 4: The synergy of community, waste bank and government



Source: Adapted from Witjaksono, 2014

participation in efforts to waste management through waste bank program. Through such participation is not only benefiting from the economic side, the empowerment of the local economy but also in terms of environmental and social issues. Figure 4 show the pattern of development local economy through waste bank not only based individual but need s synergy between community, waste bank and governments through triple helix model above.

Intercept (B) is a community collaborative and cooperative relationships with government and public and is a form of active participation of the community/society in an effort to support Government Programs in local economic empowerment and environmental programs. Instead, Government support to the community manifested itself in support of the program to increase human resources in the form of mentoring, training, and dissemination.

Intercept (C) is a collaborative between the waste bank and the Government. This is manifested in the collaborative in realizing the local economy, community empowerment, and also an alternative model to overcome the problems of garbage, social and economic. Intercept (D) is a third-party collaboration (communities, waste banks, and government) in realizing an improved local economy. Through the synergy of these elements, the economic empowerment program makes a more self-sufficient communities and improve the economic, social and environmental.

In accordance to Birkhölzer (2009) describes the local community needs a common purpose not only individual purposes (for the

common good). the local economy was initiated based on the commitment of the people or the local community. Moreover, an integrated holistic approach is important in defining economic problems. It meant not only resulted in the production of goods and services but also taking environmental, social and cultural into account. Building and improving social capital is important for increasing the capacity, knowledge, and ability of local communities.

5. CONCLUSION

Waste Bank is an alternative model for waste management in an effort to reduce the waste problem and improve the local economy. This management model involves the role of the community/society in the joint participation in creating better local economy. Waste management model emphasizes the active role of the community, both as a customer, waste bank managers and also driving community in improving the local economy. Public perception of the Waste Bank management model is an alternative model to overcome the problems of garbage and community empowerment. The majority of people benefit from this waste banks though not too large but their impact is felt directly and their surroundings become clean and green. The impact that obtained in the presence of waste bank is realized in synergy between communities, waste banks and governments in realizing the government’s program and community empowerment. With the synergy effect obtained by increasing the local economy, a clean environment, and community empowerment through specific communities through a craft that has an economic value.

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