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Knowledge of solid waste management through composting: A comparative study of rural communities in Malaysia and Indonesia

A Anwar^{1,*}, R Amaranti¹, M Satori¹ and N A Salleh²

¹ Departement of Industrial Engineering Universitas Islam Bandung, Jl. Tamansari No. 1 Bandung, West Java, Indonesia

² School of Technology Management and Logistics College of Business, Universiti Utara Malaysia, 06010 UUM Sintok, Kedah Darul Aman, Malaysia

*aviasti82@gmail.com

Abstract Along with increasing human activity, the waste generated from these activities more and more. Waste at this time has become one of the causes of disasters in the world. One type of waste produced is organic waste. Organic waste is one of the solid wastes produced from domestic waste. Research is conducted to understand how people carry out organic waste processing into compost, to improve the quality of life, especially in economic terms. In addition, it can be identified factors and obstacles that affect the community when processing organic waste into compost. Primary data collection is done through interviews and field observations in selected rural communities. While secondary data collection is done by literature study. This research was conducted by taking samples in rural communities in Indonesia and Malaysia. The results obtained show a comparison of the patterns of success of rural communities in Indonesia and Malaysia in processing waste into compost.

1. Introduction

At this time waste management has become a major concern because it is already a disaster for humans. Types of waste that must be dealt with from the source is household waste. Research to be conducted to understand how people perform processing organic waste into compost, so as to improve the quality of life particularly in economic terms. Moreover, it can be identified factors and constraints that affect the community at the time of processing organic waste into compost. Organic waste is one of the solid wastes produced from household/domestic waste.

Some research that has been done about composting shows the following results. Composting is one of the important and economical method of recycling organic waste [1]. The study findings indicated a low uptake of composting, adequate knowledge, and unsatisfactory perceptions about composting at the household level. Our study also showed that possession of a garden, age of the participant, waste segregation behaviour, and periurban residence were significantly associated with engaging in the household level composting [2]. Organic wastes are produced from many sources Such as agricultural waste, market waste, kitchen waste, urban solid waste and municipal solid waste. Without proper management, this waste could create several environments problem. Therefore, composting is the best low-cost alternative solution to overcome this problem [3].



The aim of this research is to identify the critical success factors toward of improving the quality of life and economy of rural communities through solid waste management by composting and also to identify the barriers in implementing solid waste management by composting among rural communities. One of the critical success factors is the knowledge factor, it is hoped that the community's knowledge of the composting process can change behaviour in disposing of waste.

2. Method

In the old paradigm, waste is often only seen as residual material resulting from human activities that are usually discarded because they are no longer in use or are considered no longer useful [4]. In Indonesia the scope of waste managed is as stated in Law No. 18 of 2008 concerning Waste Management [5], which consists of:

- Household waste, which is waste originating from daily activities in the household, excluding faces and specific waste;
- Waste similar to household waste, namely garbage originating from commercial areas, industrial areas, special areas, social facilities, public facilities, and / or other facilities;
- Specific rubbish, which consists of: rubbish containing hazardous and toxic materials, rubbish containing hazardous and toxic waste, rubbish arising from disasters, debris demolition of buildings, rubbish that cannot be treated technologically; and / or waste that arises not periodically

Judging from the physical-chemical characteristics, garbage is divided into two groups, namely: organic waste and inorganic waste. Organic waste is a type of waste with the greatest composition of household waste, especially in developing countries. The composition of organic waste (decomposable organic waste) in developing countries is between 42% - 80.2% [6]. Other research related to the composition of organic waste in Indonesia is around 80% and it is estimated that 78% of the waste can be reused [7].

Organic waste is generally rubbish consisting of kitchen waste, food scraps, fruit skins and garden waste, which is easily destroyed and easily decomposed. In natural, organic waste decomposes or decomposes by microbes or microorganisms such as bacteria, fungi and so on. In the decomposition process, optimal environmental conditions are needed so that better the quality of the compost [8].

Primary data collection is done by means of interviews and field observations in selected rural communities. While the secondary data collection is done with literature studies. The study is expected to be a reference to the relevant institutions in the process of training to the community, especially in the processing of organic waste. This research was conducted by taking samples in rural communities in Indonesia (Cimahi City) and Malaysia (Kedah).

Sample location to research in Cimahi is one of the Citizens Association (RW) contained in Tanimulya Village, District Ngamprah, West Bandung regency namely RW 22 which is located in Puri Indah Cipageran 2. Administratively RW 22 consists of 5 Neighbourhood Association (RT) with a population of approximately 800 people out of 250 households (KK),

A village selected for composting study in the State of Kedah located in a rural area near a small town with a total of 55 houses with 55 residents involved in the study.

3. Result and discussion

Based on the results of research conducted at RW 22 Puri Cipageran Indah shows the following matters: When using the garbage generation figure of 0.6 kg per person per day, the total garbage generation in RW 22 is estimated to be 0.48 tons per day or around 14.4 tons per month. Using the assumption of 60% organic waste composition, it is estimated that organic waste generation in RW 22 is 0.29 tons per day or around 8.64 tons per month [9].

Related to the implementation of 3R in waste management in RW 22, it has both organic and inorganic waste treatment facilities, although in a very limited capacity. The processing of organic waste is done by composting, bio digesters and bio pores, while inorganic waste is managed through the "Sahdu" Waste Bank. Waste that is currently being processed is estimated to be only 2% or around

10 kg per day. Waste that is not processed is transported by the KBB Ciptakarya Service cleaning staff to be disposed of at the Sarimukti TPA.

Based on the results of research conducted at RW 22 Puri Cipageran Indah 2, it was found that 38% of residents did not practice composting solid waste management while 14% of residents said that composting was not beneficial to them. 19% of residents stated that they did not know about solid waste management in composting. 24% of residents do not like solid waste management in composting. From this study it was also found that 67% of the population had no problems with composting and did not agree that this was not their responsibility. The attitude of respondents who agreed to process organic waste into compost was 62%.

The findings of this study show that the respondents are from Malaysia race with 78.19% is over the age of 41 and most of them were 60% female and 85.45% were married. The results of this study also found that 58.18% of the residents had a high school education level and 38.18% of the residents were self-employed and not working and 47.27% having more than 5 people in households.

This study has revealed the results of the study on solid waste management in composting. Overall, it found that 74.5% residents did not practice compost solid waste management while 47.3% the residents said that composting activities did not benefit to them. Also, 72.7% residents stated that they were unaware of solid waste management in composting. In fact, 47.2% residents did not like solid waste management in composting. However, this study found that 65.5% of the residents was not a problem in composting activity and did not agree that it was not their responsibility.

Besides, this study also conducted the interview session in pre-test on 10 villagers on the practice of solid waste management in composting. The results of the interviews showed that only 5 villagers were practicing the composting. However, the rest of the population interviewed said they were less aware of the true practice of composting because lack of the information.

In addition, the interviews in post-test conducted on level of knowledge of solid waste management also found that the entire population interviewed knew about the composting after information was provided to them in terms of information, benefits, actual methods and the types of materials involved in composting activities include knowing about the program and the from party implementing the composting.

The study revealed that about 60% of citizens do not practice organic waste management, they consider composting is not beneficial to them. This assumption arises because they do not know the management of organic waste to be composted. However, this study also found that citizens were not a problem if there was composting and did not agree that it was not their responsibility. The obstacle faced is the level of knowledge about managing organic waste into compost. Moreover, in fact, citizens did not like solid waste management in composting, because they think garbage is dirty.

4. Conclusion

The results of the research showed a comparison of the success patterns of rural communities in Indonesia and Malaysia in processing waste into compost. Based on research that has been done, there are significant differences between Indonesian and Malaysian respondents, namely in the process of processing organic waste into compost. Indonesian respondents 38% did not know about the composting process, while 74% Malaysian respondents did not know the composting process. But the two respondents have the same answer that about 60% do not mind if there is an activity for the process of making compost from organic waste

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