

## Community's Attitude and Behavior towards Food Waste in Composting

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**Abstract:** Huge increases in the production of the food waste have a direct effect on human life. The separation sources method was established by reusing it as a feedstock for downstream treatment processes, including composting or anaerobic digestion, in order to minimize the amount of food waste sent to the landfill. However, these attempts only succeed with constructive public attitudes and actions towards the system. Thus, a social survey (using questionnaire) was conducted to examine the lifestyle of the population and influence factors against food waste in households. In November 2020, the questionnaire was conducted among 50 respondents in Malaysia, especially in the 20's above. The survey found that 55.0 % of respondents with low income with a high member in-house (more than five) discarded more food waste compared to 12.00 % of respondents with high incomes with a high member in-house (more than five) discarded less food waste. Therefore, the observation of the respondents of the issue of the kitchen waste separation and composting revealed that 90.00 % of respondents did not distinguish their food waste from other waste, while 84.00 % of respondents had knowledge of the issue of composting. This showed that lifestyles affect the understanding of the public and the amount of food waste produced.

**Keywords:** Food Waste, Lifestyles, Attitude, Food Compost

### 1. Introduction

Compared to other wastes, which is 30.00 % or 40.00 % of the food waste that goes to the bin each year, the volume of food waste on Earth is the highest. Food waste, however, which is higher in quantities discarded per year, comes from various retail outlets, local shops, residence, and catering. The Food Aid Foundation (Food Aid) estimated in 2016 that Malaysia has wasted almost 15,000 tons of food every day, which include 3,000 tons of edible food. 50.00 % of the world's food waste has lost. It noted that over 930 tons of unconsumed foods per day are processed in Malaysia, equivalent to 93,000 kg of rice bags per day [1]. As it causes a serious concern among consumers, the problem of food waste has become serious. In 2012, Malaysia reported 33,000 tons of solid waste per day and

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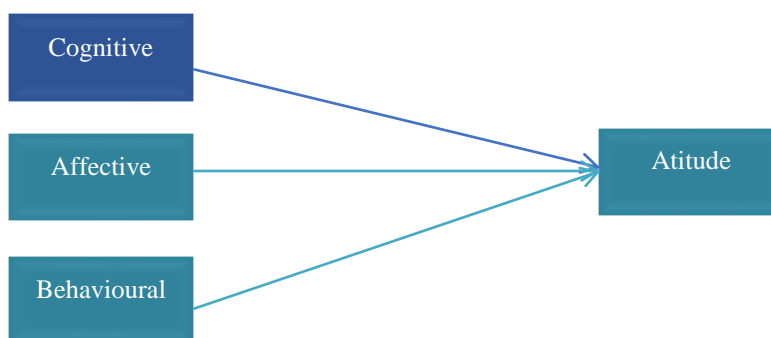
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will surpass 30,000 tons by 2020 [2]. It is also recorded that every month, Malaysia waste about RM225.00 on garbage, which amounts to RM2,700.00 in a year in total [3]. However, the intake of food waste varies between areas, but will increase during the festive seasons. Table 1 offers a description of different rate generations in different locations in Malaysian 1 [1].

**Table 1: Summary of different generation of rate in Malaysia**

Sources of food	Generation Rate		
	(tones/day)	(tones/year)	percents, %
Wet and night markets	5,592	2,040,929	24.5
Households	8,745	3,192,404	38.24
Hotels	1,568	572,284	6.87
Food court/restaurants	5,319	1,941,908	23.35
Shopping Mall	298	108,678	1.30
Food and beverages industries	854	311,564	3.41
Hypermarkets	291	106,288	1.28
Schools	45	21,808	0.30
Fast food	2,521	808	0.26
Institutions	55	26,962	0.32
<b>Total</b>	<b>22,793</b>	<b>8,331,589</b>	<b>100</b>

Food waste is, however, not produced by itself. It was from the attitude and behavior of the community from all over the world. The term ‘food waste’ surely related to the attitude and behavior of consumers as it related to the moral effect [4]. Attitude was something that we believe and make it as a routine. Attitudes can be differentiating into three components which were cognitive, affective, and behavioral. Attitudes consist of ABC Model as shown in Figure 1, Affective Component that involves in person’s feelings or emotions, Behavioral Component that involves in the attitude that influence from the behavior, and lastly the Cognitive Component that involves in person’s belief [5].



**Figure 1: ABC Model of Attitude**

As regarding based on Figure 1, children always taught since childhood to have respect for food as it may lost in future, and Islam taught that it is a sin to discard the food. Based on the parenting from childhood, children absorb it in their life and turn it to the attitude. In other hand, attitude can be defines as a deep root concept in person’s. These attitudes create an example of attitudes which are not reflected in behavior. Meanwhile, in order to reduce food waste, home composting is one of the best methods that can be applied. Home composting can be a success method as 44.8 % waste in Malaysia is created by of organic waste [7]. As from that, in order to prevent the pack in landfill, home composting is the best technique to overcome the household waste issues.

## 2. Research Methods

Research is a systematized effort to gain knowledge [8]. It is a systematic way of solving problems that showed on how the research conducted. In this research, the questionnaire survey was conducted in both rural and urban areas in order to clarify the impact of consumer lifestyle and behavior towards food waste. The research design used was survey descriptive method that used 50 respondents age 20's above from all over Malaysia as research samples. The quantitative data was collected from respondents from all over Malaysian through questionnaire. The three main sections of the questionnaire are shown in Table 2.

**Table 2 : Main Sections of Questionnaire**

Section`	Item No	Data Analysis Method
A: Background	1 - 5	Percentage
B: Types and Quantity Garbage Discarded	6 - 14	Percentage
C: Opinion on eco-compost Products	15 - 21	Percentage

The questionnaire consisted of three sections that covered from the respondents self-demographic, to the daily activities of respondents regarding food waste. The first section covered respondent self-demographic information such as age, quantities of people in-house, and household income. The second section will covered on respondents daily food activities such as their trends in eating, cooking, food management habits, waste separation habits and food waste disposal in households. The last section covered on the respondents' idea on composting products.

## 3. Results and Discussion

The frequency methods (nominal data) will be used during tabulating the data. This data will be used in order to define the basic characteristics of the data and provide a simple description about the sample and steps, such as the socio-demography of respondents [9]. These nominal data is the data that based on observations and grouped that can only be viewed in terms of frequency, proportions, percentage, and central point.

### 3.1 Respondents Demographic Information

Table 3 showed a detailed of respondents, including age, residence income, house types, house location, and c use to collect waste. The questionnaire survey was conducted through online that collected response 100.00 %. In total, the survey collected data from 50 respondents (27 in the rural area and 23 in the urban area). Ages considered in answered the questionnaire from range of 20 to 76 years, with the largest group answered below 23 years of age (52.0 0%). Quantities of people in the house were calculated from the age below 12 to over 51 years old where majority of the participants stated that the quantity of the people in the house were (38.00 %) senior citizen that age more than 51 years old. Monthly household income range from below RM2500.00 to over RM15,041.00. Among them, 22 respondents (44.00 %) earn from RM2,501.00-RM4,850.00. House types were observes from the bungalow, terrace, condominium/flat, and village house. Among them 28 respondents (56.0 %) reside in a terrace houses while 32 respondents (44.00 %) reside in bungalow, flat and village. Hence, 21 respondents (42.00 %) used 7 L of container used in collect waste.

**Table 3: Respondents Socio-Demographic**

Demographic Attitude	Frequency, n	Percent, %
Age		
Below 23	26	52
24 - 39	21	42
40 - 55	0	0
56 - 74	3	6
Quantity people in House		
Kids (<12 years old)	15	11
Teenager (13 - 18 years old)	18	14
Adult (19 - 50 years old)	49	37
Senior Citizen (>51 years old)	50	38
Income Rate		
< RM2,500.00	20	40
RM2,501.00 - RM4,850.00	22	44
RM4,851.00 - RM10,970.00	7	14
RM10,971.00 - RM15,040.00	1	2
> RM15,041.00	0	0
House Type		
Bungalow	4	8
Terrace	28	56
kondominium/ Flat	4	8
Village (Traditional)	14	28
Location		
Rural	28	56
Urban	22	44
Container used collect waste		
4L	7	14
7L	21	42
12L	10	20
>20L	12	24

### 3.2 Types of Waste Generate in Households

Generally, households generated a lot of wastage all time. The wastage produce came from lot of sources. These include food, vegetables, plastic, glass, or others. Based on the survey recorded 43 respondents (86.00 %) of waste discarded from households were food waste and 7 respondents (14.0 %) answered vegetables, paper, plastic, and glass. The higher number of food waste discarded was proven where the volume of food waste discarded in Malaysian in 2012 was (53.00 %) which put the food waste as the number one ranking rather than other waste [10].

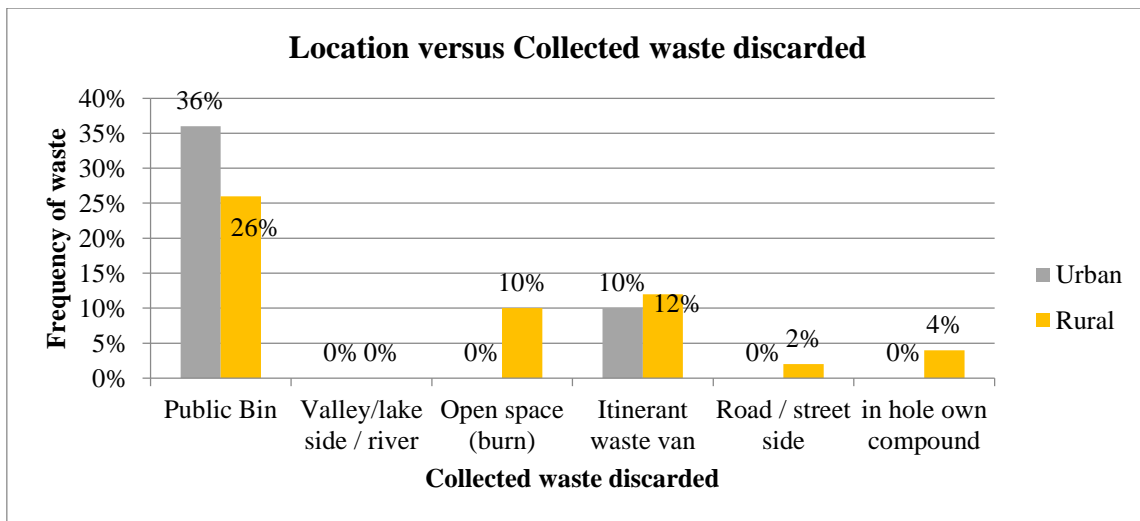
This clearly showed that Malaysian rich and blessed with food. Hence, 50.00 % of the world's food waste was wasted [1]. However, the level of awareness among respondents on the separation of food waste from the other waste is still low. 45 respondents (90.00 %) not separated the food waste that can be recycles using compost rather than 5 respondents (10.00 %) that separate their food waste from other waste. Table 4 present the types of waste discarded among households.

**Table 4: Types of Waste Discarded**

What is the type of waste that always discarded to your garbage	Frequency,n	Percents, %
Food waste	43	86
Vegetables	1	2
Paper	1	2
Plastic	5	10
Glass	0	0
Do you separate your kitchen and vegetables waste from other wastage.		
Yes	5	10
No	45	90

3.3 Collected Waste Discarded

The location of waste discarded were listed between public bin, valley/lake side/river, open space (burn), itinerant waste van, road/street side, or bury in own compound. The total respondents that discarded waste in public bin recorded (36.00 %) urban areas while (26.00 %) in rural areas. However, at a 10.00 % difference, there will be no difference between urban and rural areas. Based on the data, urban areas only discarded waste using two methods which through public bin and itinerant van. This may cause from the legislation of the urban city stated which compulsory for the urban to discarded waste using public bin or itinerant van. Meanwhile, the rural area that have access to lot of area able them to throw the rubbish in many ways such as burn (10.00 %), waste van (12.00 %), street side (2.00 %) and hole compound (6.00 %).



**Figure 2: Location versus collected waste discarded**

3.4 Summary of Lifestyle Consumer

This paper use questionnaire as a method compared the current situation of foods consumption in households, the way on how the food wasted generated, and the level of community awareness regarding food wastes in households. The studies find that the analysis from the questionnaire achieves the objectives created which objective 1 in analyzing on how the lifestyle of consumers affect the quantity of food waste disposed from household. In order to achieve objective 1, several analytical methods have been used according to their suitability. Figure 3 show how the range income vs quantity of food waste discarded in a week.

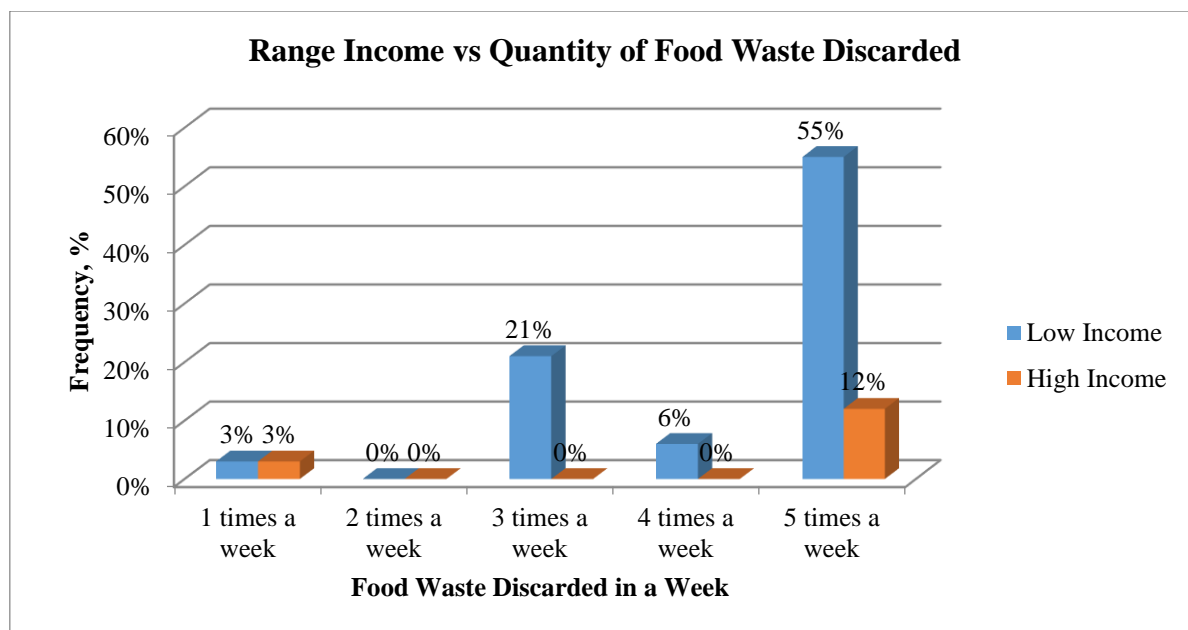


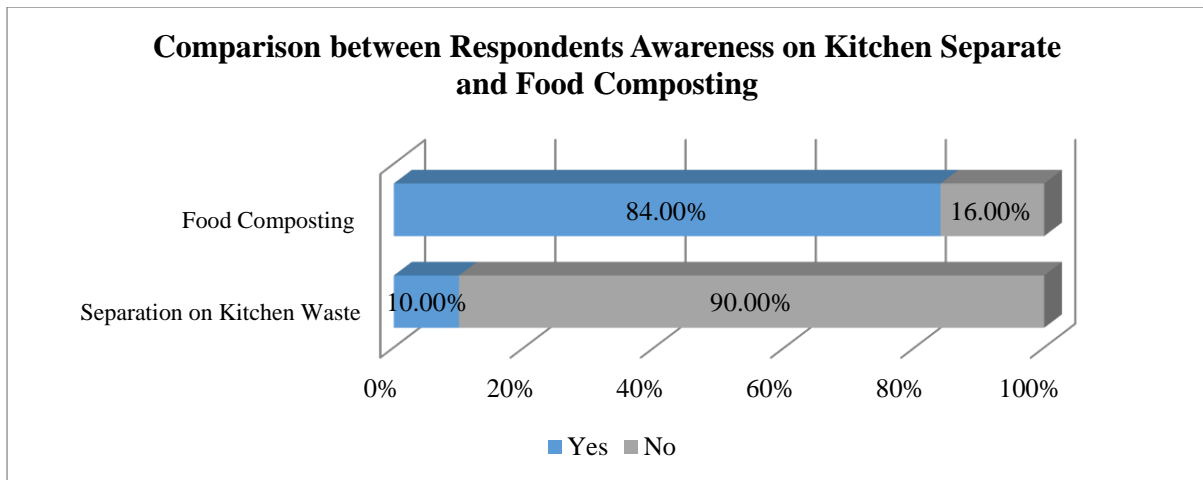
Figure 3: Range Income vs quantity of food waste discarded

Table 5: Range Income vs quantity of food waste discarded

Income (High Members)	Frequency rubbish throw in a week				
	1 times a week	2 times a week	3 times a week	4 times a week	5 times a week
Low Income (RM2,500.00 - RM4,850.00) High Members (More than 5)	3%	0%	21%	6%	55%
High Income (RM4,851.00 - RM15,041.00) High Members (More than 5)	3%	0%	0%	0%	12%

Based on Figure 3, the comparison were taken between two respondents that have low income with high members in home and respondents with high income with high members in home. Based on the survey, the respondents that have low income with high members in house discarded more food waste (55.0 %) compared to the respondents that high income with high members in house (12.0 %). The comparisons were to analyze whether the income range and the quantity of family members affect the waste discarded by the households. From the observation showed that income range does not affect the quantity of the waste discarded but the quantity of members in house do affect.

Meanwhile for achieving objective 2, the cross data will be used in order to achieve the aim of the objective. Objective 2 discuss on determining the level of awareness of consumers towards food waste in composting. Figure 4 show the data of the level of awareness among 50 respondents. The scale of awareness among the respondents show that majority of the respondents (90.0 %) not aware on separate the kitchen while only 10.0 % of the respondents aware on the issue. Meanwhile 84.0 % of respondents aware on the food composting issue rather than 16.0 % of respondents not realize on the issue.



**Figure 4: Respondents awareness on kitchen waste separate and food composting**

#### 4. Conclusion and Recommendation

Overall, the analysis results found that the community with less income but with high quantity of family in house contributed more waste discarded as it produce (55.00 %) of waste discarded in a week compared to the high-income family with high family members (12.00 %). Hence, the numbers of respondents that do not separate their food waste from other wastages were (90.00 %) compared to the respondent that separate their food waste (10.00 %). Meanwhile regarding on the recycling food compost, 84.00 % of the respondents realize on the recycle and compost issue while 16.00 % of the respondents do not know about the recycling food composting.

Based on the data collected in this study, it is recommended that the questionnaire being distributed and answered face to face rather than online questionnaire. This was because the answer might not accurate due to the understanding of the respondent. On the questionnaire in Part B on types of garbage and quantity of garbage discarded, some respondents seem confuse as there are one-person in-house family having garbage bin till over 20 L. This data may disturb the other data in achieving the objective. Hence, on the issue regarding the level of awareness among respondents, it is recommended from all side to take action on behalf this issue. This because, if there were no actions were taken, this may trouble the young generation in future. This can be proven, even though the knowledge and awareness regarding compost 84.00 % than 100.00 % knew, but the respondents still not separate their food waste from the other wastage.

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#### References

- [1] Jereme, I. A., Siwar, C., Begum, R. A., & Abdul Talib, B. (2016). Addressing the problems of food waste generation in Malaysia. *International Journal of ADVANCED AND APPLIED SCIENCES*, 3(8), 68–77. <https://doi.org/10.21833/ijaas.2016.08.012>
- [2] Manaf, L. A., Samah, M. A. A., & Zukki, N. I. M. (2009). Municipal solid waste management in Malaysia: Practices and challenges. *Waste Management*, 29(11), 2902–2906. <https://doi.org/10.1016/j.wasman.2008.07.015>
- [3] @news. (2016, May 31). Pembaziran makanan di Malaysia sangat tinggi. *Sarawakvoice.Com*. <https://sarawakvoice.com/2016/05/31/pembaziran-makanan-di-malaysia-sangat-tinggi/>

- [4] Radzymińska, M., Jakubowska, D., & Staniewska, K. (2016). CONSUMER ATTITUDE AND BEHAVIOUR TOWARDS FOOD WASTE. *Journal of Agribusiness and Rural Development*, 10(1), 176. <https://doi.org/10.17306/jard.2016.20>
- [5] Maio, G. R. (2010, January 1). The psychology of attitudes and attitude change. The University of Bath's Research Portal. <https://researchportal.bath.ac.uk/en/publications/the-psychology-of-attitudes-and-attitude-change-2>
- [6] Schultz, P. W., Zelezny, L., & Dalrymple, N. J. (2000). A Multinational Perspective on the Relation between Judeo-Christian Religious Beliefs and Attitudes of Environmental Concern. *Environment and Behavior*, 32(4), 576–591. <https://doi.org/10.1177/00139160021972676>
- [7] Periathamby, A., Hamid, F. S., & Khidzir, K. (2009). Evolution of solid waste management in Malaysia: impacts and implications of the solid waste bill, 2007. *Journal of Material Cycles and Waste Management*, 11(2), 96–103. <https://doi.org/10.1007/s10163-008-0231-3>
- [8] Redman, M. A. L. V. (2021). *Romance of Research*. The Williams and Wilkins Company.
- [9] Trochim, W. (2021). *The Research Methods Knowledge Base* (2nd ed.). Atomic Dog Pub Inc.
- [10] Wagner, P. (2018, August 20). Households Waste More Food Than Estimated. Statista Infographics. <https://www.statista.com/chart/15143/percieved-food-waste/>
- [11] Jereme, I. A., Siwar, C., Begum, R. A., & Abdul Talib, B. (2016). Addressing the problems of food waste generation in Malaysia. *International Journal of ADVANCED AND APPLIED SCIENCES*, 3(8), 68–77. <https://doi.org/10.21833/ijaas.2016.08.012>