

# Chapter 3

## Solid Waste Management in Malaysia: The Perspectives of Non-governmental Organizations (NGOs) and Youths on Consumers' Commitment



Mashitoh Yaacob, Maznah Hj Ibrahim and Zubaidah Mohd Nasir

**Abstract** Solid waste management in Malaysia is under the responsibility of the Solid Waste and Public Cleansing Management Corporation or commonly known as SWCorp. It is licensed under the National Solid Waste Management Department, a department directed by the Ministry of Urban Well-being, Housing, and Local Government. SWCorp is responsible for setting up policies on solid waste management under the direct overview of the ministry. Solid waste management in Malaysia has undergone various levels of transformation from managing generated solid waste such as reusing and recycling before 2015 to reducing and segregating solid waste at source since 2015. The management of solid waste at source is emphasized by the enforcement of the 672 Act: Solid Waste and Public Cleansing Management Act 2007 in September 2015. Nevertheless, behavioral transformation requires a commitment to social responsibility, namely reducing, reusing, and recycling activities, in all sectors of the community. This chapter discusses and examines Malaysian consumers' commitment to social responsibility in solid waste management from the perspectives of NGOs and youth. The consumer sector is the most crucial group in the community as it represents the main grassroots. Furthermore, the commitment at grassroots is more sustainable and longstanding compared to top-down enforcement. Additionally, given that NGOs are more sensitive to the transformation of public behavior, and youth are our future decision makers on the fate of the environment, this chapter discusses consumers' commitment to social responsibility in waste management through the perspectives of NGOs and youth. The analysis regarding the commitment of Malaysian consumers through the perspectives of NGOs and youth indicates that Malaysian consumers are more committed to performing recycling and reusing

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activities as compared to reducing activities. These findings illustrate Malaysian consumers' reluctance to embrace the philosophy behind behavioral transformation, that is prevention is better than cure. In this case, they are slow to adapt to the behavioral transformation activities related to reduce, segregate, and compost solid waste at the source.

**Keywords** Solid waste · Waste management · Malaysian consumer · Social responsibility · 3R

### 3.1 Introduction

Municipal solid waste (MSW) is highly related to the economic status of a country and the lifestyles of its population (Sreenivasan, Govindan, Chinnasami, & Kadiresu, 2012). Urbanization, rapid economic growth, and increasing urban populations have resulted in a marked escalation in the quantities of waste generated. Inadequate waste management will have a great impact on public health and may cause environmental degradation and resource depletion. Solid waste management is a study or discipline associated with the control of the generation, storage, collection, transfer and transport, processing, and disposal of solid waste. Wilson (2007) added that modern waste management has shifted to a more flexible waste hierarchy concept known as the 3Rs: reduce, reuse, and recycle. Some of Asia's developing countries are "the fastest and largest waste generators," and close inspection has revealed that a notable blend of general and specific elements of policy dynamics in the evolution and adoption of waste management policies need to be upgraded.

In the case of Malaysia, in spite of its aggressive economic development, solid waste management is still in its infancy and needs much improvement and support. In 2005, the waste generated in Malaysia amounted to 19,000 tons per day. With a projected population of over 31 million in 2016, Malaysia generates more than 25,000 metric tons of domestic waste per day. In 2015, the Solid Waste and Public Cleansing Management Corporation (SWCorp) produced the Mindset Transformation Plan toward a Clean, Beautiful and Prosperous Nation 2015–2020 (*Pelan Transformasi Minda ke Arah Negara Bersih, Indah dan Sejahtera 2015–2020*) in order to change the mindset of Malaysian consumers toward better waste management practices, which is, reducing, segregating, and composting waste (Kamarudin et al., 2015).

At present, the average per capita generation of municipal waste in Malaysia is about 0.85 kg/person/day depending on the economic and geographical status of an area (Zainu & Songip, 2017). In major cities such as Kuala Lumpur, it is estimated that the generation of waste is about 1.5 kg/person/day. Authorities in most major cities in Malaysia are seeking alternative waste management approaches as the landfill approach currently adopted is becoming unsustainable due to the rapid development and lack of new landfill spaces. In response to this situation, the Malaysian government, as part of the 10th Malaysia Plan (2011–2015), adopted waste recycling as a long-term strategy for municipal waste management.

The kind of waste generated the most is food waste, which is now about 45%, and which contains a high percentage of organic compounds. Thus, due to not being separated, more than 30% of potentially recyclable waste such as paper, plastic, aluminum, and glass are unfortunately directly disposed of in landfills. Consequently, by the year 2020, 16.76 million tons of waste is expected to be generated by nearly 30 million Malaysians. The steady increase in MSW generation over these years has resulted in government-funded public information campaigns to establish awareness and to create environmental consciousness among the general public. In 1988, the government introduced the Action Plan for a Beautiful and Clean (ABC) Malaysia, and recycling campaigns followed in consecutive years. However, due to minimal responses from the general public, the campaigns failed, although environmental awareness and knowledge of waste management among the public did increase slightly.

Thus, this chapter discusses and examines Malaysian consumers' commitment to social responsibility in solid waste management from the perspectives of NGOs and youth. NGOs and graduate students were chosen to compare their perspectives on issues of waste management practiced by consumers in Malaysia given that the consumer sector is the most crucial sector in the community as it represents the main grassroots of the population. Furthermore, the commitment at the grassroots level is more sustainable and longstanding compared to top-down enforcement. Additionally, NGOs are more sensitive to the transformation of public behavior, and youth are our future decision makers on the fate of the environment. Hence, this chapter discusses consumers' commitment to social responsibility in waste management through the perspectives of NGOs and youth.

## 3.2 Review of the Literature

Waste management and waste minimization should not always be the sole responsibility of local authorities. Other government agencies such as the Ministry of Housing and Local Government, Ministry of Environment, Ministry of Health, the various academic institutions, and non-governmental organizations (NGOs) need to work hand in hand to establish a more conducive environment for better waste management practices. By the year 2020, the Malaysian government plans to reduce the waste disposal at landfills, with a target of the reduction being at 40% through 22% recycling and 80% of intermediate treatment such as waste to energy, composting, and material recovery (Global Recycling, 2017).

Non-governmental organizations often act as agents of social change, although little is known about how they facilitate this change. NGOs create an impact by disseminating information, implementing public services, and advocating for environmental reforms which often involve collaborative processes with other stakeholders, although generally, empirical evidence of NGOs' involvement in sustainable waste management in the developing countries is sparse. On a separate note, a study by

Kamaruddin, Pawson, and Kingham (2013) found that gaining public participation or facilitating means for discussion is not easy as there are not many platforms available for discussion with the general public about sustainable waste management. The authors added that one of the barriers to advancing sustainable waste management activities is a lack of understanding among consumers as to why one should recycle when there is provision for recyclables collection. However, Kamaruddin et al. (2013) found that the evidence points to more successful efforts through participation and discussion among youths, in particular school students. Through the activities implemented in schools, the students took the opportunity to discuss their concerns and implement their aspirations. They also participated in current and creative ways to sustain the projects by extending recycling to water conservation projects, blogging, social networking, reporting and being consistently involved with monitoring the development of their activities. Hence, developing more creative and pertinent projects that encourage participation and build capacity such as knowledge, attitudes, and practice would be able to attract youth participation.

Meanwhile, the findings of Wahid, Rahbar, and Shyan (2011) indicate that the transformation of behavior among Malaysian consumers toward environmentally better waste management practices is more prone to be influenced by non-governmental organizations. However, studies by other Malaysian scholars (Rahbar & Wahid, 2010; Zulkifli, Harun, & Lim, 2014) have concluded that better waste management practices among Malaysian consumers occur through a process that is in accordance with the current development in the environment field, including the influence of domestic and foreign policy decision-making. Other studies, specifically those by Levine and Strube (2012), Baca-Motes, Brown, Gneezy, Keenan, and Nelson (2012), and Aytakin and Buyukahraz (2013), have measured the influences of social, demographic, knowledge, and individual factors on consumers' behavioral transformation toward better waste management practices. Levine and Strube (2012) found that knowledge among youth, that is, college students, is closely related to behavior in that those who are more knowledgeable behave in a more environmentally friendly way. The authors obtained similar findings regarding the role of age, as older students with more experience in universities showed more environmentally friendly attitudes.

The studies by Baca-Motes et al. (2012) and Aytakin and Buyukahraz (2013) focused on the knowledge and attitudes of consumers, which they found to have great effects on consumers' environmentally friendly behavior. Thus, the authors suggested that interventions using different mechanisms and targeting both knowledge and attitudes will clearly link to behavior change. Their findings illustrate that attitudes predict intentions, which consequently predict behavior and help to explain how attitudes change behavior.

Aytakin and Buyukahraz (2013), who studied green purchasing among consumers, found that consumers who have high knowledge, sensitivity, and awareness of the environment are likely to buy environmentally friendly products. The relationship between environmental interest and environmentally friendly behavior is also posi-

tive. In fact, environmental awareness affects the behavior of buying environmentally friendly products. The authors believed that to change the behavior of individuals toward better environmentally friendly practices such as waste management, they should be educated to have positive attitudes toward the environment. Only individuals who are concerned and sensitive about the environment, and who have an interest in resolving environmental issues can make changes in their behavior.

SWCorp was positive about consumers' support for waste segregation at source, and reported that there had been a noticeable increase in the number of households supporting the program. Following the enforcement of the 672 Act in the Malaysia Peninsular such as the states of Johor, Malacca, Negeri Sembilan, Kedah, Perlis, and Pahang on September 1, 2015, SWCorp claimed that the public are becoming more aware of the importance of segregating their household waste for environmental sustainability. SWCorp was of the opinion that segregating solid household waste is not at all a complicated task as only three categories of waste need to be separated, that is, paper, plastic, and other recyclables, whereas other countries where waste segregation is mandatory, have dozens of categories. Hence, over time, consumers will get used to it. However, SWCorp admitted that it is not easy to educate people to change their mindsets and practices (Bernama, 2016).

Nevertheless, through the literature review indicated that only a few studies have examined the types of waste management practiced by Malaysian consumers or the behavioral transformation of waste management practices from recycling and reusing to reducing and segregating solid waste at source as well as composting.

### 3.3 Methodology

Data and information on consumers' commitment to social responsibility in waste management discussed in this chapter were obtained through focus group discussion method of collecting data, which are, from two focus group discussions with the non-governmental organization group and the graduate student group. The profiles of the informants from the two groups are presented in Tables 3.1 and 3.2. The materials studied are relevant scientific literature and transcripts of the focus group discussions (FGDs). Verbatim and/or textual data (in the form of scientific literature and FGDs) were explored using the predetermined concept/thematic approach or the framework approach. Passages of text were identified, and labels of predetermined themes were applied to indicate the thematic ideas studied. Each theme was charted by completing a table where each case has its own row, and columns represent subtopics. Cells contain relevant summaries from the data set. All the texts associated with a thematic idea were examined together for patterns and connections, and different cases were compared.

**Table 3.1** Profile of informants (NGOs)

Informant	Profession	Gender	Age	Education	Expertise	Malaysian NGO
Informant 1: Mrs. Z	Retiree	Female	55	<sup>a</sup> MCE	Environment	NGO 1 (WAS)
Informant 2: Mrs. N	Lecturer	Female	52	Master's	Law	
Informant 3: Miss N	Postgraduate Student	Female	26	Master's	Environment	NGO 2 (PEM)
Informant 4: Mr. N	Undergraduate Student	Male	21	<sup>a</sup> MCE	Zoology	
Informant 5: Mr. Y	Manager	Male	44	Diploma	Environmental education	NGO 3 (GRA)
Informant 6: Mr. M	Training executive	Male	29	Bachelor	Training and development	
Informant 7: Mr. H	Secretary	Male	60	Bachelor	Social welfare	NGO 4 (PER)
Informant 8: Mrs. M	Consultant	Female	41	Bachelor	Community development	NGO 5 (RCO)
Informant 9: Mrs. A	Vice President	Female	52	Master's	Environmental Management and waste disposal	NGO 6 (IKR)

<sup>a</sup>Malaysian Certificate of Education

**Table 3.2** Profile of informants (students)

Informant	Currently studying Masters/Ph.D.	Gender	Age	Area of study	University
Informant 1: Shari	Ph.D.	Female	30s	Dengue prevention and control	Public K1
Informant 2: Ain	Ph.D.	Female	30s	Public service departments' mentoring program	Public K1
Informant 3: Ann	Master's	Female	20s	Bioremediation on shrimp farms	Public P2
Informant 4: Izu	Ph.D.	Male	30s	Renewable energy	Public N1
Informant 5: Tam	Ph.D.	Male	30s	Material science, i.e., stem cell	Public N1

### 3.4 Results and Discussion

The results illustrate the perspectives of NGOs and graduate students on consumers' commitment to social responsibility in waste management. The results also elaborate on the different types of waste management practiced by Malaysian consumers and the behavioral transformation of waste management practices adopted from recycling and reusing to reducing and segregating solid waste at source.

#### 3.4.1 *Types of Waste Management Practiced by Malaysian Consumers*

According to Mrs. M from NGO 5 (RCO), recycling, which involves proper waste segregation, is one of the types of waste management practiced the most by consumers in Malaysia compared to other types of waste management such as composting, which is the least practiced by the Malaysian consumer. Hence, Mrs. M claimed that 51% of organic waste goes into the landfills. Her statement is supported by the findings of Ismail and Manaf (2013) who found that municipal waste in Malaysia contained around 48–68% organic waste. Contrary to Mrs. M from NGO 5 (RCO), Ann from the youth group, was of the opinion that recycling, which involves proper waste segregation, is not very popularly practiced by most consumers in Malaysia because a sense of personal responsibility and environmental benefits are yet to override incentives and personal gain. The generation gap between the two informants produced different takes on this issue. The informant from the youth group is more economically conscious compared to the informant from the NGO group. However, Tam from the youth group, decided that, compared to the economic aspect, household nurturing and education substantially affect consumers' waste management practices in terms of whether or not to reduce, reuse, recycle, segregate, or compost waste.

Tam, Ann, and Ain from the student group also thought that reusing is the most practiced method by Malaysian consumers compared to the other types of waste management activities, especially by consumers from middle-class families. In their opinions, pre-cycling or reducing waste, segregating waste, and composting are the waste management activities least often practiced by Malaysian consumers, particularly because these activities are perceived as time consuming, and all kinds of products come with too much packaging. Additionally, according to other informants, Shari and Izu from the student group, a few states in Malaysia do not subscribe to the 672 Act: Solid Waste and Public Cleansing Management Act 2007; hence, Malaysian consumers in these states are not sensitive to the various types of waste management activities.

According to Mrs. A from NGO 6 (IKR), the focus of campaigns is often on recycling, and overlooks the two steps before recycling, which is, pre-cycling or reducing and reusing. She added that recycling is at the lower level of waste management compared to pre-cycling or reducing and reusing. Mr. Y from NGO 3 (GRA)

agreed with Mrs. A from NGO 6 (IKR) that efforts made are more focused on recycling, while there are almost none on pre-cycling or reducing and reusing. He added that consumers in Malaysia should emulate consumers in Indonesia in terms of transforming solid waste into crafts, and organic waste into compost. He added that Malaysian consumers should change their views on waste; “it is not waste but a new resource” he said. Hence, he added, the government approach to addressing the waste disposal issue should be changed accordingly, that is, not to focus only on recycling but also on pre-cycling or reusing. As an example, the division called Urban Farming in the Department of Agriculture Malaysia has been promoting the use of recyclables in urban farming. The informants from the student group did not comment on campaigns on waste management and/or urban farming. But they agreed with the informants from the NGO group that waste once generated should be seen as a commodity, not as waste, and should be utilized for other purposes via reusing as well as recycling activities.

Consequently, Mrs. M from NGO 5 (RCO) was of the opinion that prior to pre-cycling or reducing, reusing and recycling, one should perform the 5Ss, that is, sort, set in order, sweep, standardize, and sustain (Fig. 3.1). She believed that it is easier for people to do pre-cycling or reducing, reusing, and recycling activities once they are used to the 5S method. This opinion is supported by Mr. M from NGO 3 (GRA), who added that teachers in schools also have to be role models for their students. He added that teaching a module on environmental education must be established for schools and preschools. Tam, from the student group, agreed with Mr. M that education, formal or informal, is important and plays a big role in changing consumers’ behavior toward environmentally friendly waste management practices. However, none of the students commented on the 5Ss and their relation to waste management practices.

The opinions of the informants from the NGO group, namely, Mr. M from NGO 3 (GRA) and Mrs. M from NGO 5 (RCO), indicate that the 5Ss should first become a part of the culture of Malaysian consumers, and only then will pre-cycling or reducing, recycling, and composting activities naturally follow (Fig. 3.2). However, Miss N from NGO 2 (PEM) was of the opinion that the type of waste management practiced by Malaysian consumers is seasonal and depends on whether or not there is a campaign, such as campaigns on recycling, green campuses, and the 3Rs. The waste management activities performed by the Malaysian consumers are not sustainable and only last for the duration of the campaigns. However, a number of institutions, both educational and commercial, have adopted the 5Ss in their workplaces under the institution’s quality management system (QMS). But, the question raised is that how much this practice has continued into their homes and has affected the other types of waste management remains unanswered.



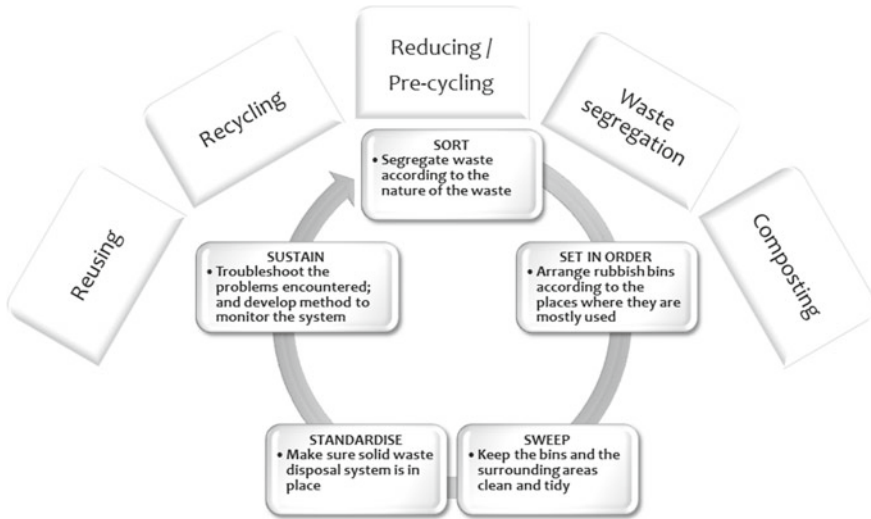


Fig. 3.1 Solid waste disposal and the 5Ss



Fig. 3.2 Levels of waste management according to the informants

**3.4.2 Behavioral Transformation of Waste Management Practices from Recycling and Reusing to Reducing and Segregating Solid Waste at Source**

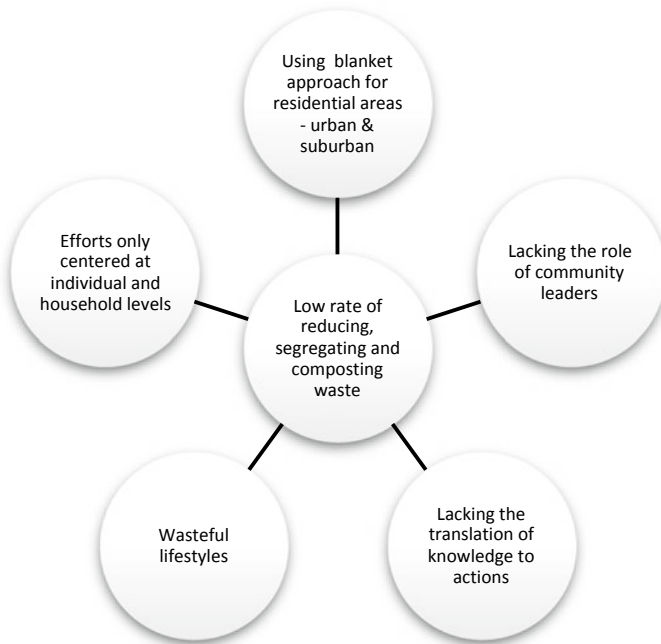
According to Mrs. M from NGO 5 (RCO) and Miss N from NGO 2 (PEM), the rate of recycling activity performed by Malaysian consumers is still very low, although it is increasing depending on residential areas. Additionally, the composting rate is the lowest compared to the other waste management practices. Hence, one can only hope that Malaysian consumers’ behavior may be transformed to reducing and segregating solid waste at source, meaning to say that reducing and segregating waste at source are yet to be performed diligently by Malaysian consumers. Ann, one of the informants from the student group, hold the opinion that reusing is the only waste management activity that is consistently performed by Malaysian consumers for generations, while the other waste management activities such as recycling, segregating waste, and composting are not consistently practiced by Malaysian consumers. Hence, the informants were of the opinion that the behavioral transformation of waste

management practices from recycling and reusing to reducing and segregating waste at source including composting has yet to occur in a substantial manner.

Mr. H, from NGO 4 (PER), agreed with Mrs. M from NGO 5 (RCO) and Miss N from NGO 2 (PEM) advocated that reducing, segregating waste at source, and composting activities are not widespread and are still performed at a minimum rate by Malaysian consumers. He added that urban and suburban areas are different in terms of the type of neighborhood and the community leadership of the areas, specifically, community leaders who are active would mobilize the community to perform environmentally friendly waste management practices, but unfortunately, many are not. He believed that this is rooted in the lack of actions by those who have knowledge and awareness of the importance of protecting the environment. Thus, they cannot be a model for the community. Tam, from the student group, agreed with Mr. H that the social and physical environment one lives in, that is, village versus city residential areas, substantially affects one's commitment to waste management practices as these two areas are different in terms of social norms and the facilities provided. In the villages, with so much open space and lack of facilities, consumers are more prone to dump waste improperly compared to consumers living in the city. Their opinions are supported by Zulkifli et al. (2014) who found that "the level of knowledge on the environment" is not a strong determinant of behavior, meaning that those with a high level of knowledge of the environment may not necessarily translate their knowledge into behavior. The findings of Wahid et al. (2011) also support the views of Mr. H from NGO 4 (PER) in that "environmental knowledge related to waste" although related positively with "green purchasing behavior," did not show a significant relationship, noted as,  $p > 0.05$  (Fig. 3.3).

Mr. H noted that the unfavorable rate of transformation process toward diligent reducing, segregating, and composting wastes amongst consumers in Malaysia is due to the community adopting a wasteful lifestyle (Fig. 3.3). For instance, open houses in festive seasons, and food prepared buffet style in households and hotels or restaurants often create food wastage. On the other hand, the findings of Levine and Strube (2012) and Aytakin and Buyukahraz (2013) contradict the NGOs' views and Malaysian scholars' findings, as they found that respondents who are more knowledgeable behave in a more environmentally friendly way. The opposite findings of the western scholars, that is, Levine and Strube (2012) and Aytakin and Buyukahraz (2013), compared to the findings of the current study, via FGD, and of Malaysian scholars illustrate that although both Malaysians and westerners are knowledgeable of the importance of protecting the environment, Malaysians however, have a greater tendency not to act on their knowledge compared to westerners. Ann, from the student group, agreed with the NGOs' views and the findings of the Malaysian scholars that the tendency of Malaysian consumers to commit to environmentally friendly waste management practices is less in comparison with consumers in other countries, especially consumers in developed nations.

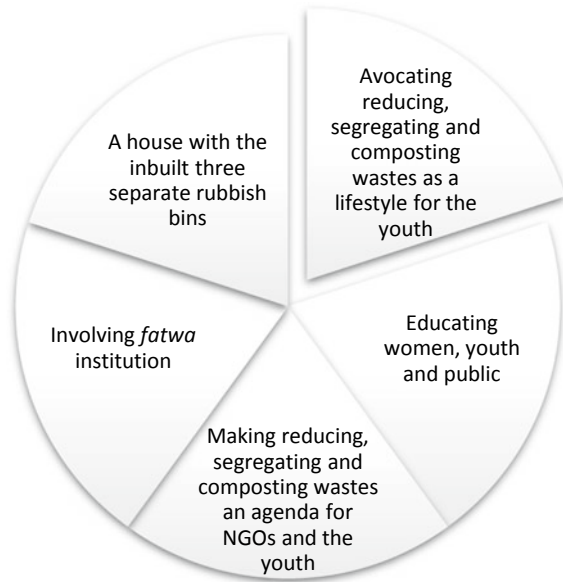
However, Ain, Izu, and Shari, from the youth groups, were more positive and thought that the change in behavior toward diligent reducing, segregation of waste, and composting activities are happening, although at a very slow rate, which is in their opinion consistent with the facilities provided. Additionally, Mr. N from NGO



**Fig. 3.3** Low rate of EEB performed and its factors according to the informants

2 (PEM) agreed with the views of the students as he believed that the behavioral transformation of consumers toward reducing and segregation of waste as well as composting among the youths in Malaysia is visible, although it is not widespread and is occurring at a slow rate. He pointed out an example of a student, Mr. Izham (a Horticulture Graduate from a local university), who initiated [www.kebunbandar.com](http://www.kebunbandar.com)—an agriculture consultancy firm specializing in urban gardening. Mr. Izham has assisted an orphanage to gain income from growing chilies and supplying 20–30 kg of them to supermarkets every 2 days. Mr. N from NGO 2 (PEM) added that although at the moment efforts like this are concentrated at the individual and household levels (Fig. 3.3), the trend of using recyclables (such as wooden pallets, drum barrels, and glass bottles) amongst the youth of Malaysia is becoming more popular as vintage style has a comeback into the green practice. These recyclables are considered trendy by young people for flooring, interior décor, furniture, and many more functions, and they are gaining many followers. Mr. N admitted that he is a product of campaigns on reducing, recycling, and reusing during his school days, and in his case reducing, reusing, and recycling behavior have lasted until today; he cannot bring himself to throw rubbish anywhere but in a rubbish bin, and he would feel very guilty should he do otherwise. He emphasized that reducing, reusing, and recycling activities need to be a lifestyle of the youth should we hope to have them embrace environmentally friendly waste management practices (Fig. 3.4).

**Fig. 3.4** Different approaches to accelerate EEB according to the informants



According to Mrs. A from NGO 6 (IKR), since women hold a lot of purchasing power, especially in decision-making regarding the purchasing of household items, we should therefore focus on educating women to be smart buyers, to purchase based on needs and not desire, and hence to pre-cycle or reduce and reuse. She noted that admirable transformation process of waste management practices amongst Malaysian consumers should be publicized by Malaysian NGOs. For example, Malaysian Islamic Relief has been performing reusing activities for the past 2–3 years through opening charity shops selling old reusable clothes, books, and other articles donated by the surrounding community members. The money obtained is utilized to aid beneficiaries in need (Fig. 3.4).

Mr. Y from NGO 3 (GRA) and Mrs. N from NGO 1 (WAS) agreed that to transform consumers' behavior into environmentally friendlier waste management practices, legal authorities such as the sustainability *fatwa* (edict) institution need to be involved. He noted that, to date, there has been no single *fatwa* issued for environmental protection in Malaysia. Additionally, Ain, from the youth group, thinks that environmental law enforcement such as the 672 Act is an important catalyst for transforming consumers' commitment to better practices in waste management activities, that is, reducing, segregation of waste, and composting.

### 3.5 Conclusion

The informants from the NGO group agreed that recycling activities are performed the most by consumers in Malaysia compared to the other types of waste management activities, while composting activities are performed the least. However, informants from the youth group were of the opinion that consumers in Malaysia are most committed to performing reusing activities compared to other types of waste management activities. Hence, it can be concluded that the results from the FGDs illustrated that reusing and recycling are the common types of waste management practiced by consumers in Malaysia.

Unfortunately, however, pre-cycling or reducing and waste segregation as well as composting are rarely performed by consumers in Malaysia. On a separate note, the informants from both the NGO group and the youth group were unified in their views that the behavioral transformation of waste management practices toward diligent reducing, segregation of waste, and composting activities do exist, but at a very slow rate due to various factors. These factors are discussed and identified relate to the types of residential areas, such as urban versus suburban areas where suburban areas, for example, may not be affluent as they may lack community leaders, and lack the translation of environmental knowledge into action. The Malaysian suburbanites may still have the feature of wasteful lifestyles and the green practice efforts among them may only be centered on the individual and household levels.

Thus, in conclusion, the reducing, segregation of waste at source, and composting behaviors of Malaysian consumers are not accelerating at the speed that we hoped for; which in fact, some of the activities are decreasing in practice. However, on a positive note, there is a trendy transformation of behavior toward diligent reducing, segregation of waste at source, and composting already happening among Malaysian youths such as among university students.

The analysis regarding the commitment of Malaysian consumers through the perspectives of NGOs and students indicates that Malaysian consumers are more committed to performing recycling and reusing activities as compared to reducing, segregation of waste, and composting activities. These findings illustrate Malaysian consumers' reluctance to embrace the philosophy behind behavioral transformation which is: prevention is better than cure. In this case, they are slow to adapt to the behavioral transformation activities related to reduce, segregate, and compost solid waste at the source. Additionally, the emerging issues regarding the relationship between the 5S method and the management of solid waste disposal brought into the FGDs should be studied in future research.

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