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Responsible Garbage Disposal Attitudes and Readiness for Usage of Biodegradable Plastic Bags

Rugayah Hashim ¹, Zaidi Mohd Aminuddin ², Jamsari Abdullah ³,
Lee Yong Hwan ⁴, Ahmad Zuhairi Zainuddin ²

¹ Agricultural Biotechnology Research Group, Universiti Teknologi MARA Cawangan Melaka, Jasin, Melaka, Malaysia

² Faculty of Business and Management, Universiti Teknologi MARA Cawangan Selangor, Puncak Alam, Selangor, Malaysia

³ Koperasi Desa Muara Kpg. Hujung Rintis Berhad, Kota Setia, Perak, Malaysia

⁴ Green Bio, Cheomdang-wagi-ro, Buk-gu, Republic of Korea

gy@uitm.edu.my, zaidi220@uitm.edu.my, ecolodgegfw@gmail.com, bullasasin@nate.com, ahmadzuhairi@uitm.edu.my
Tel: 0133852288

Abstract

Concerns on irresponsible waste disposal have been on the agenda of many world governments, including Malaysia. The buildup of wastes in Malaysia has resulted in significant environmental problems and health issues. One alternative to rectify the problem is by using biodegradable plastic bags. Therefore, this paper aims at showcasing the public's mindset on responsible garbage disposal and the readiness to use biodegradable plastics. The study employed a qualitative approach; hence, these are initial findings derived from the analyses of 118 respondents with a 77.1% returned rate. The findings showed that continuous awareness campaigns on responsible garbage disposal and promoting the use of biodegradable plastic bags would ameliorate the situation.

Keywords: Responsible waste disposal; biodegradable plastic usage; green economy; environmental democracy

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1.0 Introduction

Irresponsible waste disposals by communities in urban and rural areas have continued to be a bane for the local authorities in Malaysia. Less than 5% of Malaysia's waste is recycled (Asmawati Desa et al., 2011), although campaigns and promotions by the relevant Ministry and agencies were done. The population boom in the 21st century brought about a unison increase in waste materials, particularly plastic products. The detrimental effects of consumers' ignorance and attitude towards responsible plastic garbage disposal have been evidenced in numerous reports on waste management. At the local front, the motivation for the study was from the urgings of the Perak Tengah district officer, the assistant district officer, the chieftains, and the village cooperative head. The concerns were on the environmental impact of irresponsible garbage disposal and uninhibited waste management, including e-waste. The paper aims to provide initial results and a snapshot of the converted community leaders' views on the two issues implemented via an e-survey. These preliminary findings will allow the actual study to assess the communities' readiness to use biodegradable plastic bags. Therefore, the research project's objectives were to identify the garbage disposal attitudes and readiness for the usage of biodegradable plastic bags among Malaysia's communities.

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1.1 Background of the Study

On December 18, 2021, parts of Malaysia experienced one of the worst floodings in years (Guardian, 2021). One of the leading causes of flooding was the clogged drains and rivers due to indiscriminate disposal of rubbish and garbage. Malaysia's war with indiscriminate waste management goes a long way. Almost a decade ago, the Malaysian government spent 40-70% annually of the taxpayer's money to manage solid waste (A. Desa et al., 2011). Indiscriminate, irresponsible, and illicit disposal of wastes and household garbage has continued to haunt Malaysia and the communities.

Nonetheless, waste management in Malaysia has been acknowledged as the most significant challenge by the Minister of Housing and Local government, with daily wastes generated at 38,000 tons and only 24% being separate or recycled. In contrast, 76% goes to landfills (Noordin, 2020). This is indeed a very troubling issue.

Human behavior and attitudes towards a hygienic environment can be resolved if a strong sense of community and civic-mindedness inherently points to civil society. The impact on civil society has been included in the 12th Malaysia Plan, the Shared Prosperity Vision 2020-2030, and the Budget 2022. Preserving our natural ecosystem meant that the disadvantaged groups and rural communities continue the livelihood dependence on the natural resources. Uncontrolled plastic disposals will adversely affect the six pillars of the green economy and the green environment and derail the alignment to the 17 Sustainable Development Goals (SDG). Regardless, irresponsible plastic disposal has detrimental effects on both the land and life below the water (Figures 1, 2a & 2b).



Fig. 1: Irresponsible garbage disposal at Kapar, Klang, Selangor
(Source: Researcher's pictures, 2022)



(a)



(b)

Fig. 2. (a) Roadside garbage; (b) Rubbish polluting the river
(Source: Researcher's pictures, 2022)

2.0 Literature Review

In setting the research agenda, the literature review undertook theoretical perspectives and prior studies in similar areas to provide the platform for recommendations and future investigations. A robust search protocol was undertaken to identify the variables and keywords and review congruent studies for critical synthesizing. The two main foci were the responsible garbage disposal attitudes and readiness to use biodegradable plastic bags. It is important to note that the attitude and readiness factors revolve around behavioral intent and demographic elements (Thi Thu Nguyen et al., 2019). In addition, reviews on synonymous keywords were considered, such as the interchangeable terms of "garbage" and "waste." The common ground for these terms is the communities' household materials in whatever form. Consequently, the mapping of the literature review will describe the variables and theoretical underpinnings for responsible garbage disposal attitude, environmental democracy, and sustainable green economy, as shown in Figure 3.

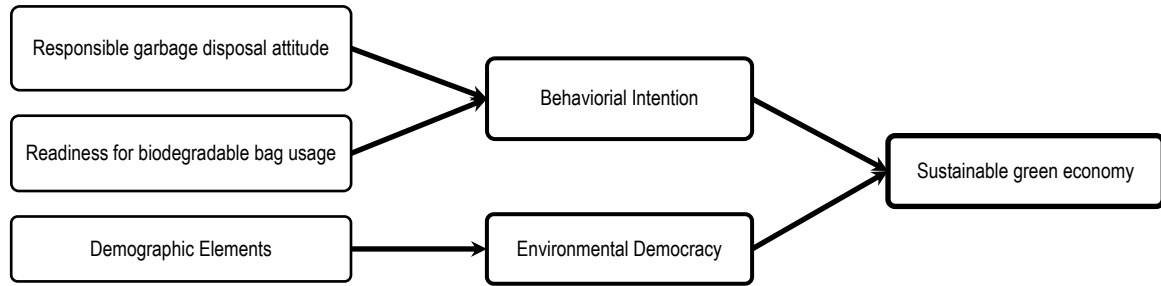


Fig. 3: Conceptual Framework for Reviewing Literature

2.1 Responsible (irresponsible) garbage disposal attitude

The study of human attitudes is vast and infinite. In narrowing the scope of responsible or irresponsible garbage disposal, the topic is vital in today's environment. The call for being responsible citizen beckons in the aftermath of the coronavirus pandemic with the concurrent impacts of global warming, climate change, and the booming world's population. Natural disasters such as flooding have pointed to the accumulation of waste materials as one of the causes. Responsible waste management spreads across all agencies and individuals alike, but time and time again, the amount of waste management has increased annually (Asmawati Desa et al., 2011). One case of poor waste disposal practices is evidenced in the household waste treatment in Kelantan, Malaysia, where 49.7% of household wastes were not separated into food debris or plastic materials (Fadhullah et al., 2022). Therefore, the study comes at an opportune time when reports by world agencies call for a change in attitude towards responsible garbage disposal.

Another concern with irresponsible waste disposal is the growing e-waste in developed countries ending up in developing countries, especially Asia, resulting in adverse environmental and health impacts (Pariatamby & Victor, 2013). Hence these concerns need to be handled immediately and concurrently with the COVID-19 pandemic. Pariatamby and Victor (2013) also stated that several Asian countries had developed policy instruments to ensure the proper management of e-waste for capacity building and sustainability.

2.2 Environmental Democracy

Environmental governance in managing wastes spills over into management challenges that require democratic tactics. Strict implementation of laws, creating awareness, and establishing an effective collection system (Srivastava et al., 2017) are environmental democracy activities. Any democratic transition to environmental sustainability points to the sensitivity and styles of power, vulnerability, and resilience (Mason, 2012). In other words, there must be strong political will and sound awareness in protecting the environment by engaging in good waste disposal practices. The local authorities and the village chieftains are the immediate leaders in rural communities to ensure waste disposal laws are abided by. There have to be liberal rights on ecological and social conditions for collective decision-making towards environmentalist goals and social justice (ibid). Suffice it to say that the global trend toward adopting environmental rights within national constitutions has been regarded as a positive development for human rights and the national environment (Gellers & Jeffords, 2018). Unlike environmental attitudes, which revolve around development, preservation, and conservation ethics (Science, 2022), procedural environmental rights are more likely than non-adopting states to facilitate environmental justice (Gellers & Jeffords, 2018).

2.3 Sustainable Green Economy

The green economy concept emerged in response to global warming and climate change. Concerns on pollution and the thinning of the ozone layer have been addressed repeatedly in the G8 Climate Change Roundtable and the recent United Nations Climate Change Conference (COP26) in Glasgow, Scotland, in November 2021 (-, 2022). The notion of green has become increasingly attractive to policymakers worldwide as the green economy covers diverse concepts with links to sustainability (Loiseau et al., 2016). Regarding garbage disposal, the green or circular economy includes the evolution and present state of waste management and recycling programs (Frone et al., 2020). Nevertheless, the crux of the matter in environmental health and sustainability goes back to the attitude of the citizens is waste disposal, where Frone et al. (2020) reported that 75% of EU's landfills consist of packaging waste or plastic. Advancements in biodegradable polymers are gaining acceptability, particularly in the agriculture and food packing industries (Rai et al., 2021). That said, it is high time Malaysia copies the policies of developed nations in coping with waste management by using biodegradable polymers for sustainable development and reinforcing the green economic goals.

3.0 Methodology

A mixed-method approach formed the basis of the study, as shown in Figure 4. Both the qualitative and quantitative approaches were incorporated into the primary data collections. The first phase of the data collection requires interviews from relevant respondents identified through purposive sampling. A total of five interviewees were identified where a protocol guided the sessions. The responses were transcribed and analyzed in readiness for the following data collection phase using e-surveys. The development of the instrument requires proper testing for validity and reliability matters. Therefore, this paper showcases the preliminary findings from the pilot study of a sample size of n=118. The units of analysis were the undergraduate students from five groups taught by the first author. The students were from the Faculty of Computer Science and Mathematics, UiTM Shah Alam campus, and Hotel Management and Tourism, UiTM Puncak Alam Campus. The instrument used for the pilot study was a Google Form designed to capture data quickly. The first part of the e-survey

consisted of statements (in the Malay language) with "Yes/No" responses (nominal variables). The use of the mother tongue was in anticipation of the understanding of each statement. This is also in anticipation of the actual data collection where the rural communications will not understand English. Thus, elements of qualitative inquiry were employed with other open-ended questions. As a result, descriptive analysis of the 91 responses was a significant qualitative inquiry. The latter encapsulates the survey instrument statements, which allowed for reliability and validity analysis (Malmqvist et al., 2019). For the pilot study phase, discussions and interviews with relevant stakeholders were conducted. The interview protocol leaned towards a market survey analysis on biodegradable plastic bags before the online survey was constructed from the root cause of the research, which is irresponsible garbage disposal. The scope of the study was the communities in Malaysia.

Fig. 4: The Mixed-Method Approach



A pilot survey employing qualitative research was undertaken as the first phase of the case study. The preliminary survey is essential in attending to the preliminary development of the research project and the comparison of the processes for inclusive impact (Malmqvist et al., 2019). Repeated interviews were conducted with three critical respondents through purposive sampling, where the units of analysis were the community leaders. The analyses from the interviews identified the variables for the next phase of the study, the pilot study using the e-survey form.

3.1 Limitation of the study

The limitation of this study was the internet accessibility issue where students in certain areas could not complete the e-survey form. Thus, there is a need to undertake face-to-face questionnaire administration with the targeted respondents in rural localities for the actual data collection.

4.0 Findings

A simple survey was conducted to gauge the preliminary responses. The Google Form link was forwarded to 118 university students. The response rate for the e-survey evoked 77.1% from the 118 sample size. The findings are significant in assessing the attitudes towards responsible garbage disposal and their readiness to use biodegradable plastic bags. The first part of the findings will follow the chronological order of the e-survey, starting with the descriptive analyses from the nominal data based on the statements in the questionnaire (Table 1). The first statement delved into their honest response on public littering, which garnered a "Yes" response of 31.9% compared to 68.1% for not littering in public places. The second statement divulged 94.5% whether their actions were deliberate or otherwise. The third statement on whether public littering is beneficial showed that 97.8% disagree. Lastly, the students agreed (95.6%) that public littering does affect them.

Table 1. Descriptive Analysis of Nominal Data

| Statement | Yes (%) | No (%) |
|---------------------------------------|---------|--------|
| Have you littered in public areas? | 31.9 | 68.1 |
| If yes, did you litter deliberately? | 5.5 | 94.5 |
| Is it beneficial to public litter? | 3.3 | 97.8 |
| Are you affected by public littering? | 95.6 | 4.4 |

The demographic variables for the respondents are shown in Table 2. Of the 91 responses, 63.7% were female compared to 36.3% from the male gender. The age category showed that 95.6% were from 19-30 years of age, with 5.5% were still in their teens. In terms of education level, the highest percentage were the undergraduates at 70.3%, followed by master students at 14.3%. The job status, too, logically returned 97.8% of students' respondents.

Table 2. Respondents' Demographics

| Variable | Breakdown | % |
|-----------------|----------------|------|
| Gender | Male | 36.3 |
| | Female | 63.7 |
| Age | 12-18 years | 5.5 |
| | 19-39 years | 95.6 |
| | 37-40 years | - |
| | 41-50 years | - |
| | Above 51 years | 1.1 |
| Education level | High school | 4.4 |
| | Diploma | 7.7 |

| | | |
|-----------------------------|-------------------------|------|
| | Undergraduate | 70.3 |
| | Master | 14.3 |
| | Others | 3.3 |
| Job-status | Public sector | - |
| | Private sector | 1.1 |
| | Self-employed | 1.1 |
| | Student | 97.8 |
| | Others | - |
| Your residence | Apartment | 14.3 |
| | Residential | 49.5 |
| | Government quarters | 2.2 |
| | Others | 34.1 |
| Status of current residence | Self-ownership | 60.0 |
| | Lease/Rent | 17.8 |
| | Temporary accommodation | 7.8 |
| | Others | 14.4 |

The next part is the awareness of using biodegradable plastic bags (Table 3). The knowledge on the existence of biodegradable plastic bags showed a 79.1% positive response. Similarly, the bags' readiness to use had 71.4% of "yes" responses and 60% agreed that biodegradable bags would reduce littering.

Table 3. Readiness to use Biodegradable Plastic Bags

| Statement | Yes (%) | No (%) | Maybe (%) |
|--|---------|--------|-----------|
| Did you know that there are biodegradable plastic bags? | 79.1 | 14.3 | 6.6 |
| Are you ready to use biodegradable plastic bags? | 71.4 | 4.4 | 24.2 |
| Use of biodegradable plastic bags will reduce littering? | 60 | 2.2 | 37.8 |

5.0 Discussions

The findings show a mediocre mindset among university students on public littering or responsible garbage disposal. The results bode whether the community with non-tertiary background would have the same attitude. Nevertheless, this age group's reinforcement on responsible garbage disposal needs to be done as this generation formed a significant percentage of Malaysia's population. Even the awareness and usage of biodegradable plastic bags evidenced mediocre acceptance. When there is an urgent need to be more responsible in garbage disposal and waste management, the local authorities and state governments must enforce heavy fines on public littering and indiscriminate disposal of household rubbish, trash, or garbage. The implications from the study are apparent; There should be a renaissance on responsible garbage disposal. Evidence of how biodegradable plastics will aid in environmental care has been shown in the literature, where the polymers will break down into harmless, nontoxic elements in less than ten days. To further support the use of biodegradable plastics on the environment, PSADMIN (2018) listed four benefits: savings on non-renewable energy sources, carbon emission reduction, less energy consumption, and provision of an eco-friendly solution. Therefore, the local authorities must continuously emphasize environmental communication to maintain the health of the localities' nature and biodiversity. Budget allocation and action-oriented campaigns on using biodegradable plastic bags must be stapled programs among government agencies, local authorities, and universities to drive change.

6.0 Conclusion and Recommendation

From the findings and discussions, it can be concluded that the attitude towards responsible garbage disposal boils down to individual behavior that can be trained to be more respectful of the environment. Being hygienic and civic-minded will lead to a happier and more inclusive society, particularly during pandemic times. The awareness and use of biodegradable plastic bags or polymers will assist with keeping the environment healthy and generally avoid being the issue of pollution and flooding. Hence, it is recommended that community leaders, politicians, and local authorities continually engage, conduct, and communicate matters on environmental sustainability by utilizing ICT and social media. Aside from these individuals, community leaders from the chieftains and the village heads should continue to emphasize the need to care for the environment. Youth leaders should also play a more decisive role in emphasizing the need to care for the environment by throwing rubbish responsibly. Schools should also regularly have sessions on the need to be responsible for garbage disposal. Such good habits should start at the kindergarten level. Environmental democracy is key to any aspect of governance. Who else should be taking care of our environment if not us!

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Paper Contribution to Related Field of Study

This paper contributes to the field of environmental democracy and sustainability.

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