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Residents' Knowledge of Waste Segregation in Melaka

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Abstract

This study was conducted to assess the level of knowledge of the community in Melaka regarding waste segregation practices. This study focused on the level of knowledge of the population regarding the correct waste segregation methods. In addition, the objective of this study is to assess the extent to which communities in Melaka can identify different categories of waste and separate them according to the appropriate method. A quantitative research approach was used through an online questionnaire that was accessed by respondents via QR codes and distributed to the community around Melaka. In this study, SPSS (Statistical Package for the Social Sciences) was being used to analyze all the data that was collected to obtain the statistics of this study. The result revealed a high level of residents' knowledge of waste segregation, with a mean score of 4.07 and a Cronbach's alpha value of 0.903, indicating excellent internal consistency. The study of findings showed that some of the community has basic knowledge about waste segregation, but on the other hand there still has a knowledge gap in distinguishing recyclable waste, non-recyclable waste and hazardous waste. This study strongly emphasizes that continuous public education, clear guidelines from local authorities, and community involvement are important to support more effective waste segregation practices in Melaka.

INTRODUCTION

Waste segregation refers to the process of separating the waste into several types such as organic waste that includes kitchen waste and food, plastic, papers, glass and metal that refer to recyclable materials, and non-recyclable materials (Ajinomoto Malaysia, 2023). Waste segregation in households particularly can help to reduce the waste sent to landfills, prevent pollution and lower the greenhouse gas emission. In addition, it also helps to support recycling industries.

However, knowledge of waste segregation implementation refers to the level of understanding and knowledge to practice willingness to separate waste properly at the household level (Samsuri et al., 2025). This is one of the measures of how much individuals know about the importance of sorting organic waste, recyclable and non-

recyclable waste before disposal processes. However, in Malaysia, the government has already taken action by making waste separation mandatory since 2015. It applies to the selected states and federal territories such as Kuala Lumpur, Negeri Sembilan and Melaka. This regulation was introduced under the Solid Waste and Public Cleansing Management Act 2007 (Act 672).

In addition, the MalayMail news stated that Melaka has joined the SAS (Separation at Source) programme and makes it as one of the places that fulfill the requirement to evaluate the effectiveness of waste segregation policies that has been implemented (*Malay Mail*, 2021). Since Melaka is a historical and heritage city that makes it one of the tourism centers, it was not guaranteed that their resident has knowledge about waste segregation even though it was important as a tourism state in Malaysia.

Hence, the objectives for this research are to assess the level of awareness among Melaka residents toward waste segregation practices, to examine the key factors influencing residents' awareness and participation in waste segregation, and to identify the most significant predictor of the awareness among Melaka residents toward waste segregation practices. This is because, even though Melaka was categorized as one of the most clean and progressive states, it is still facing a waste segregation issue. From the household itself, many of them are still mixing their waste (Kamarudin et al., 2022). Due to the lack of awareness about waste segregations, it will increase the number of landfills, contamination and cost of waste management (Circularity Informatics Lab, 2021). Therefore, there is a need to assess the rate of awareness among Melaka residents. Thus, it will help to identify the gaps between the execution of the laws and to monitor the public practice.

LITERATURE REVIEW

Waste segregation can be defined as the process of identifying, classifying,dividing and sorting of garbage and waste products in an effort to reduce, reuse and recycle materials (GreenSutra, 2025). Waste segregation also means sorting waste into different categories at the point where it is created based on Graham in 2025. Waste segregation is a crucial component of waste management that guarantees waste is handled in the most economical, ecologically responsible, and efficient way feasible. It goes beyond simply keeping recycling apart from regular trash. Segregation waste into different categories is essential for sustainable waste management and environmental protection. In 2020, the UK will generate 40.4 million tonnes of commercial and industrial waste, showing how proper segregation can lead to reduced total waste generation (We Do Stories, 2025). Applying an efficient waste segregation system can assist reduce landfill use, lower management costs, and boost recycling industries in Melaka, where tourist and urban development are still growing. More significantly, it supports Melaka's goal to become a green, sustainable city and Malaysia's Sustainable Development Goals (SDGs), demonstrating that trash segregation is not merely a mundane chore but an essential first step towards a cleaner, more accountable future. The study is organized chronologically, beginning with the data collection to analysis and ending with the result and discussion. This report is organized thematically, focusing on the research process used to examine Melaka residents' knowledge towards waste segregation. In the Methodological section, data were collected through a structured survey and the findings were analyzed to identify patterns of environmental knowledge and waste management behaviour among respondents. The Malaysian government has been putting in more effort to improve how the country handles waste. According to Business Today (2023), initiatives under the National Solid Waste Management Department aims to reduce waste generation and encourage households to separate waste properly. These policies reflect Malaysia's move towards a circular economy framework, which focuses on conserving resources and minimising landfill dependency. According to The New Straits Times (2023), the Solid Waste Management and Public Cleansing Corporation (SWCorp) has started the 'Separation at Source' (SAS) programme to encourage locals to make waste segregation part of their daily routine. This action shows that the government's goal can go beyond not just cleaning up waste but also focus on building long-term habits and systems that help people to think more about the environment and use resources in a more sustainable way. Even though policies and systems are in place, both articles remind that real change has to start with people. The *New Straits Times* (2023) pointed out that many Malaysians still struggle to separate their waste properly because they are either unsure how to do it or find it inconvenient. Meanwhile, *Business Today* (2023) explained that education and awareness play a big role in helping people make waste segregation part of their daily habits. Both sources agree that for these efforts to last, everyone needs to work together. The government needs to give proper facilities and clear guidance, while people in the community should take responsibility and practice better waste habits. In the long term, Malaysia can only have cleaner cities and a better waste system if there is regular knowledge of waste segregation programs, good waste collection services, and strong support from the community. Several studies highlight that public knowledge plays a key role in effective waste segregation. Etim (2024) found that public knowledge extends beyond mere knowledge which means it acts as a form of infrastructure in its own right. Rather than being just an end goal, knowledge becomes a vital foundation in the pursuit of improved waste management practices, serving as a key driver for meaningful environmental action. Other than that, Ansari Saleh Ahmar (2025) highlights that the level of public

knowledge regarding waste segregation serves as a critical indicator of the efficacy of participation-based waste management initiatives. This knowledge is indicative of the extent to which individuals understand the importance of sorting waste from the source, have concern for the environment, and are willing to take concrete actions to support environmental sustainability. Similarly, Sandhi & Rosenlund (2024) stated that knowledge about what to and where to sort out the waste fractions among the people also impact on recycling behaviour and that a lack of knowledge reduces the efficiency of waste management. Most of these studies were conducted in urban regions, with limited research focusing on smaller cities like Melaka. .

Waste segregation is essential for effective waste management, enabling recycling and reducing landfill use. Studies by Etim (2024), Ansari Saleh Ahmar (2025), and Sandhi & Rosenlund (2024) highlight that public awareness is a key driver of positive waste behaviour, directly influencing recycling efforts and the success of waste management systems. In Malaysia, national programmes like Separation at Source (SAS) reflect a commitment to a circular economy, though many Malaysians still face barriers such as limited knowledge and convenience issues (Business Today, 2023; New Straits Times, 2023). Hence, this study aims to fill that gap by exploring the level of knowledge on waste segregation among Melaka residents, particularly through a community setting like Zoo Melaka.

METHODOLOGY

This study was conducted at Melaka. A descriptive quantitative research design was employed to evaluate the level of individual knowledge, awareness, and attitudes toward waste segregation among participants. The target population is residents of Melaka, with a total of respondents participating in the survey. Data were collected through a structured questionnaire designed to capture respondents' demographic profiles, knowledge, awareness and attitudes toward waste segregation. A Likert-scale format was used to ensure consistency and accuracy in response measurement. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS), with descriptive statistics applied to summarize frequencies, percentages, and mean scores related to participants' knowledge and awareness levels. In addition, a reliability analysis using Cronbach's Alpha was conducted to assess the internal consistency of the questionnaire items, ensuring the robustness of the measurement tool for evaluating knowledge, awareness and attitudes toward waste segregation at Melaka.

RESULT AND DISCUSSION

Profile of Respondents

The profile of respondents table (1.0) in this study provides important insight into residents' knowledge of waste segregation in Melaka. A total of 150 respondents participated, gender distribution indicated a predominance of male respondents (52.0%, n = 78), while female respondents accounted for (48%, n = 72). In terms of academic qualification distribution, most respondents (44.7%, n = 67) were bachelor's degree holders, followed by diploma/ STPM/ foundation/ matriculation (36.7%, n = 55), SPM (14.0%, n = 21), master's degree holders (4.7%, n = 7). Regarding residential area composition, most respondents were from Melaka Tengah (32.0%, n = 48), followed by Alor Gajah (29.3%, n = 44), Jasin (20.0%, n = 30), and Masjid Tanah (18.7%, n = 28). The race composition was predominantly Malay (67.3%, n = 101), followed by Indian (20.0%, n = 30) and Chinese (12.7%, n = 19). Overall, these findings indicate how different social groups perceive and respond to waste segregation in Melaka, highlighting the necessity for focused awareness programs and community involvement approaches that consider demographic factors like gender, academic qualification, residential area and race to improve engagement and adherence to sustainable waste management efforts.

TABLE 1.0
PROFILE OF RESPONDENTS (N=150)

Profile	Category	Frequency	Percentage (%)
Gender	Male	78	52.0
	Female	72	48.0
Race	Melayu/ Malay	101	67.3
	Cina/ Chinese	19	12.7
	India/ Indian	30	20.0

Level of Education	SPM	21	14.0
	Diploma/ STPM/ Foundation/ Matriculation	55	36.7
	Bachelor's Degree/ Ijazah Sarjana Muda	67	44.7
	Master's Degree/ Ijazah Sarjana	7	4.7
Residential Area	Alor Gajah	44	29.3
	Jasin	30	20.0
	Melaka Tengah	48	32.0
	Masjid Tanah	28	18.7

Table 1.2 presents Cronbach's alpha is a widely used measure for assessing the reliability of a scale or to evaluate internal consistency. As stated by Pallant (2016), Cronbach's alpha value of 0.60 or higher is considered acceptable, while values between 0.80 and 1.00 demonstrate excellent reliability. As presented in table 1.2, the Cronbach's alpha coefficient for residents' knowledge of waste segregation in Melaka was 0.903. This high coefficient demonstrates excellent reliability, indicating that the items used in this study were both reliable and consistent.

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Table 1.1
RELIABILITY TEST

Variable	Number of Items	Cronbach's Alpha	Reliability Assumed
Residents' Knowledge of Waste Segregation in Melaka	9	0.903	Excellent

Mean and Standard Deviation

The analysis of the mean scores and standard deviations provides a very far insight into the very all level of resident's knowledge of waste segregation in Melaka. By using the fivepoint likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4= Agree and 5=Strongly Agree), the respondents were asked to show their knowledge and understanding which related to waste segregation. This represented the knowledge of waste segregation of the residents that was included in this study. The overall mean mean score for resident's knowledge was 4.07 (refer to Table 1.4), this shows that the level of knowledge among the residents of Melaka about waste segregation are at the high level (refer to Table 1.3). The standard deviation of 0.882 demonstrates that responses were closely distributed around the mean, this explains the high level of agreement between the residents. We can say that the knowledge about waste segregation has been spread out really well across the different demographic groups in Melaka. On the other hand, knowing that the waste segregation knowledge was successfully spread out. More effort must be taken in ensuring that the knowledge and implementation are running on the same track, for example enhancing the waste segregation place and organizing events that include the community in the process.

Table 1.3
LEVEL OF MEAN SCORE RANGE

Mean Score Range	Level
1.00 – 2.33	Low
2.34 – 3.67	Medium
3.58 – 5.00	High

Table 1.4

MEAN AND STANDARD DEVIATION

Variable	Mean	Standard Deviation	N
Residents' Knowledge of Waste Segregation in Melaka	4.07	0.882	150

CONCLUSION

Overall, this study shows that the level of public knowledge in Melaka about waste segregation practices is at a higher level. However, even though they have a basic understanding about the importance of waste segregation, they still have a lack of knowledge in differentiating between the types of recyclable waste, non-recyclable waste and hazardous waste. This knowledge gap has shown that awareness alone is not enough to ensure that the public is always consistent in separating waste in their daily lives.Therefore, continuous public education, the provision of clear guidelines by the authorities and active community involvement are very important in further increasing awareness about waste segregation. This can not only improve the community practices in waste segregation but can also help in reducing the pollution and enhance the sustainable environmental development in Melaka. In conclusion, each party is responsible for ensuring that waste segregation becomes a daily practice in community life, thus supporting more effective solid waste management in the Melaka area.

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