INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 14, Issue 11, (2024) E-ISSN: 2222-6990

A Study on Factors Influencing the Awareness for Sustainable Waste Management in Kalumpang, Selangor

Syed Munir Barakbah Syed Faozi Barakbah[1], Farah Najlaa Kamis[2], Mastura Mat Zin[3], Tan Zhi Yek[4]

[1,2,3,4]Faculty of Business, UNITAR International University, Malaysia

To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v14-i11/23688 DOI:10.6007/IJARBSS/v14-i11/23688

Published Date: 30 November 2024

Abstract

This study aims to investigate the factors that influence the level of awareness of sustainable waste management among the Malaysian population. With waste generation, limited landfill space, and environmental degradation posing critical challenges in Malaysia, understanding the key elements that contribute to awareness is crucial. The questionnaires were distributed through google form online and there were 322 responded. The respondent's age is between 18 and 60 years old above, with various study and working backgrounds. The study's findings revealed that education and social norms play a significant role in positively influencing sustainable waste management practices among Malaysians. However, it was observed that government policies did not show a significant relationship with sustainable waste management. These research findings hold great significance as they contribute to the existing knowledge on waste management in Malaysia. Policymakers and environmental organizations can utilize these insights to develop targeted educational campaigns, policy interventions, and community engagement strategies that promote sustainable waste management practices across the country. Studying waste management awareness involves examining the knowledge, attitudes, and behaviors of individuals, communities, and organizations towards waste management practices. The research aims to understand the current level of awareness in Kalumpang, Selangor and use the findings to develop targeted interventions and awareness campaigns for promoting sustainable waste management practices. By fostering a more environmentally conscious society, this research aims to play a vital role in contributing to a sustainable future for Malaysia.

Keywords: Sustainable Waste Management, Education, Social Norms, Government Policies

Introduction

Waste management is a critical global issue due to the rapid rise in waste generation, with a prediction of a 70 percent increase by 2050 (Kaza et al., 2018). This surge is attributed to factors such as population growth, plastic use, and technological advancements, leading to

diverse waste characteristics that complicate household waste management and disposal. Proper waste management is essential, as it requires considering environmental conditions during the waste disposal process (Soh et al., 2024). The escalation in waste production poses significant challenges in household waste management and disposal, such as inadequate waste segregation at the household and community level, lack of public sector knowledge, and regulations pertaining to waste management, separation, collection, extraction, transport, space, budget, and specialized waste management personnel (Gómez Sanabria & Lindl, 2024). Malaysia, a major global city, generates an average of 38,000 metric tons of waste daily, with Kuala Lumpur alone producing 2,500 metric tons daily. Population growth and industrial activities contribute to the increasing waste generation, putting pressure on existing waste management systems (Daim & Mohamed Radhi, 2023).

Education plays a crucial role in increasing awareness of sustainable waste management in Malaysia. Integrating waste management topics into the education system and organizing public awareness campaigns can promote awareness among students and the general population (Izhar et al., 2022). Cultural and social norms also shape individual behaviors and attitudes towards waste management. Integrating sustainable waste management practices with cultural events and religious practices can encourage behavioral change (Azlan et al., 2021). Effective government initiatives and policies, such as waste separation requirements and recycling incentives, are vital for promoting sustainable waste management practices. Public campaigns can contribute to increasing awareness among the general population (Lutfi & Diartho, 2024).

However, there is a lack of comprehensive understanding of factors influencing awareness, hindering targeted interventions and awareness campaigns. To address these challenges, this research proposal aims to enhance awareness and promote sustainable waste management practices in Malaysia, focusing on specific communities that face challenges due to cultural norms, attitudes, limited infrastructure, inadequate education and awareness, and limited government policies and regulations.

Literature Review

Awareness of Sustainable Waste Management

Waste management in Malaysia is a critical concern due to rapid urbanization and economic development, leading to overflowing landfills and a risk of running out of space for waste disposal. Promoting social awareness is vital for successful sustainable waste management practices (Molina & Catan, 2021). Waste management offers opportunities for innovation and resource recovery. Proper waste management can reduce greenhouse gas emissions, protect resources, and contribute to a more sustainable world. Efficient waste separation, collection, and treatment, like recycling and composting, can reduce landfill waste and its associated problems (Kanty et al., 2024).

According to Tang and Azman (2024), public awareness is crucial for the success of sustainable waste management practices, while social awareness, influenced by collective conscience, plays a role in individuals' participation in waste management practices within a community. Promoting awareness in sustainable waste management can lead to informed choices and responsible waste management practices, contributing to a more sustainable and environmentally conscious society (Ridzuan et al., 2022).

Education

Komatsu et al. (2023), highlighted that environmental education is essential for promoting knowledge and understanding of solid waste management and encouraging sustainable practices. Implementing environmental education at all levels can instill positive attitudes and environmental awareness in individuals from a young age, fostering a sense of environmental responsibility. Education can influence attitudes and behaviors related to waste management and contribute to a more sustainable future (Acosta Castellanos & Queiruga-Dios, 2022).

Educational waste recycling at the institutional level can improve environmental protection and produce well-trained graduates for sustainable development (Thoo et al., 2022). Environmental education has been shown to change people's attitudes and behaviors towards effective waste management. However, despite efforts, public knowledge of sustainable waste management procedures remains low in developing nations, leading to ecological and waste management problems (Zulkipli et al., 2023). Designing waste separation programs that meet the needs of the targeted population is crucial for achieving more sustainable waste management practices. Waste management education plays a vital role in equipping individuals with the knowledge and skills necessary for effective waste management (Kaur et al., 2021).

Social Norms

Social norms are shared expectations or rules for behavior in a community or society, and they play a powerful role in shaping human behavior. They can be categorized as regulative, constitutive, and prescriptive norms (Wang & Liao, 2024). Social norms influence various behaviors, including waste disposal practices, and can be unwritten or written, impacting social outcomes. Descriptive norms, perceptions of others' behaviors, also influence pro-environmental actions (Nasir Ansari & Irfan, 2023).

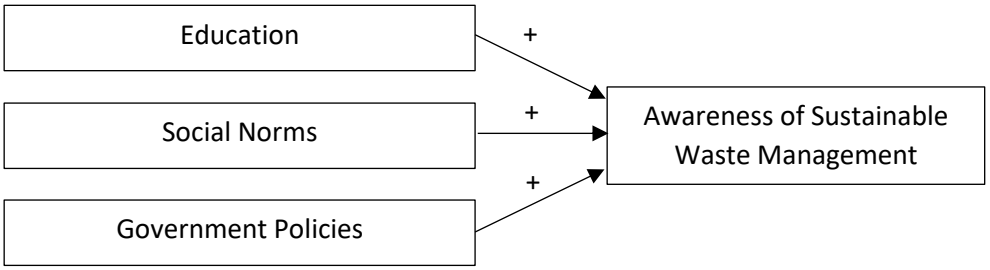
According to Laheri et al. (2024), subjective norms create social pressure and personal standards, impacting behaviors like recycling, while norm activation drives households' recycling contributions, facilitated by convenience. Personal beliefs and environmental integration also influence environmental views and behaviors. Promoting awareness and responsible practices can influence social norms and encourage sustainable waste management behaviour. Education, awareness campaigns, and well-aligned policies can contribute to positive changes in waste management norms (Zameer & Yasmeen, 2022).

Government Policies

The Malaysian government has implemented various policies and initiatives to improve solid waste management in the country. This includes the National Strategic Plan for Solid Waste Management 2019-2030, the Extended Producer Responsibility (EPR) policy, and the Solid Waste and Public Cleansing Management Act of 2007 (Shakil et al., 2023). To address waste management challenges, the government has introduced the Waste Eco Park (WEP) incentive program, aiming to create zero waste creation by consolidating recycling businesses (Chin et al., 2023). Implementing a closed loop cycle approach, emphasizing reuse and recycling instead of landfills, can further enhance waste management practices. Continual examination and updates of policies and initiatives are necessary to address obstacles, technological

improvements, and social demands for more effective and sustainable waste management in Malaysia (Shakil et al., 2023).

Theoretical Framework



Education and Awareness of Sustainable Waste Management

Education and awareness are crucial for sustainable waste management and resource management worldwide. Early and continuous education is most effective, changing attitudes and behaviors towards waste management and the environment. Institutions should integrate waste management knowledge into their educational missions (Mahayuddin et al., 2024). Research shows a positive correlation between public awareness, waste management knowledge, and behaviors, leading to positive changes in waste management practices. Education and awareness campaigns are vital for fostering responsible waste management and promoting a sustainable environment (Farah et al., 2022).

Social Norms and Awareness of Sustainable Waste Management

According to Adel et al. (2022), social pressure influences individuals' subjective norms and intentions to engage in specific behaviors. Subjective norms positively influence waste separation and household food waste reduction intentions. Moral norms, representing ethical beliefs and social obligations, are key factors in shaping pro-social behaviors, such as recycling (Chawla et al., 2024). Attitudes play a significant role in influencing behavior, with a positive attitude towards recycling motivating individuals to engage in activities. Environmental knowledge and awareness significantly impact household recycling intention, with attitudes towards disposal infrastructure and cost playing a role (Mensah & Ampofo, 2021).

Government Policies and Awareness of Sustainable Waste Management

Government policies significantly impact public knowledge and recycling practices. Enacting laws for environmentally friendly trash disposal and promoting recycling are essential. Lower- and middle-income nations can achieve sustainability by reducing waste awareness gaps and implementing environmental education in schools. Public demand for sustainable waste management influences government policies (Chen & Lee, 2020).

Methodology

The research discusses the strategies and techniques used to gather data for the study, including data collection methods, sampling design, research instrument, origin and measure of the construct, and scale measurement using Cronbach's Alpha reliability test. The research design is descriptive, aiming to investigate the relationship between independent variables (education, social norms, and government policies) and the dependent variable (awareness of sustainable waste management).

From a given population of 2,444 in Kalumpang, Selangor, the sample size required was 322 (Krejcie & Morgan, 1970). Online questionnaire (Google Form) was used to gather data from the selected sample using Likert scale-based questions. Cronbach's Alpha test was used to evaluate the internal consistency of the questionnaire items. Pearson correlation analysis was used to measure the strength and causality of relationships between variables, and multiple regression analysis was applied to examine the relationship between the dependent variable and multiple independent variables.

Data Analysis

Demographic Analysis

A total of 322 completed questionnaires were received out of a total of 600 sets of questionnaires distributed to the intended respondents. This indicates a response rate of 54 percent. A total of 200 (62%) female respondents participated in the study followed by 122 (38%) male respondents. Majority (171 respondents, 53%) were aged below 30 years old, followed by 87 respondents (27%) between 31 to 40 years old, and 64 respondents (20%) above 40 years old. Most of the respondents were employed (225 respondents, 70%), 84 students (26%), and 13 respondents (4%) were unemployed. The income level below RM5,000 shown the highest score (274 respondents, 85%), followed by 48 respondents (15%) between RM5,000 and RM10,000.

Reliability Analysis

Reliability analysis on 322 respondents assessed measurement model consistency and dependability using Cronbach's alpha, finding acceptable reliability for all variables (Table 1).

Table 1
Reliability (N=322)

Variables	Cronbach's Alpha	No. of items
Awareness of Sustainable Waste Management	0.734	6
Education	0.866	5
Social Norms	0.830	6
Government Policies	0.817	5

Pearson Correlation Coefficient Analysis

Table 2 shows a significant positive relationship between awareness of sustainable waste management and education ($r=0.537$, $p<0.001$), a significant positive relationship between awareness of sustainable waste management and social norms ($r= 0.538$, $p < 0.001$), and a statistically significant relationship between awareness of sustainable waste management and government policies ($r = 0.417$, $p < 0.001$).

Table 2
Pearson r Correlation (N=322)

Variables	Education	Social Norms	Job-fit
Staff Retention	.537**	.538**	.417**

*** Correlation is significant at the 0.01 level (2-tailed).*

Multiple Linear Regression Analysis

The R value of 0.603 indicates a moderate relationship between education, social norms, and government policies and awareness of sustainable waste management. The R Square value of 0.364 explains 36.4 percent of the variation, indicating a moderate impact of these variables (Table 2).

Table 2
Multiple Linear Regression (N=322)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.603[a]	.364	.358	.48327

ANOVA results indicate that the regression model, which includes education, social norms, and government policies as predictors, is statistically significant in predicting awareness in sustainable waste management (Table 3). The predictors collectively explain a significant amount of the variability in awareness, as evidenced by the large F-value and the small p-value (<0.001).

Table 3
Anova (N=322)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	42.416	3	15.139	60.539	.000[b]
Residual	74.268	318	.234		
Total	116.684	321			

Coefficient Analysis

The regression analysis (Table 4) revealed that education and social norms are significant predictors of waste management awareness. Education leads to a 0.240 increase in awareness score, accounting for 0.317 standard deviations of variability. Social norms contribute to 0.304 standard deviations of variability. However, government policies do not show a significant impact on awareness, suggesting that they may not be reliable and significant.

Table 4
Coefficients (N=322)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Awareness of Sustainable Waste Management	2.143	0.151		14.190	0.000
Education	0.240	0.044	0.317	5.489	0.000
Social Norms	0.253	0.052	0.304	4.910	0.000
Government Policies	0.052	0.041	0.073	1.266	0.208

The regression equation below explains the relative significance relationship between the independent and dependent variables. Education leads to a 0.240 increase in awareness score, accounting for 0.317 standard deviations of variability. Social norms contribute to 0.304 standard deviations of variability. However, government policies do not show a significant impact on awareness, suggesting that they may not be reliable and significant. The regression equation below explains the relative significance relationship between the independent and dependent variables:

Awareness of Waste Management = 2.143 + 0.240 (Education) + 0.253 (Social Norms)

Education and social norms significantly impact waste management awareness, but government policies do not show a significant relationship. Further research is needed to understand their specific role in sustainable waste management.

Hypothesis 1

This hypothesis states that education has a positive relationship with awareness of waste management, explaining if organization provide higher education, then the awareness of waste management will also be higher. This forecast is supported by the result shown in table 4 (r=0.240**), it demonstrated that the correlation is significant at 0.00.

The study found a significant positive relationship between education and awareness in sustainable waste management in Malaysia. Education plays a crucial role in raising awareness and promoting sustainable waste management practices among individuals. Higher levels of education tend to have a greater understanding of the environmental impact of waste and the benefits of sustainable practices. Education provides the knowledge and awareness necessary to make informed decisions and take responsible actions regarding waste management.

Studies have shown that students are aware of the impact of education, research, and project activities on waste management, including recovery, reuse, recycling, plastic bag usage, and zero waste practices. They also recognize the importance of individual involvement in waste management (Izhar et al., 2022).

Public awareness and waste management knowledge have a significant positive correlation, providing a basis for designing environmental strategies (Acosta Castellanos & Queiruga-Dios, 2022). Incorporating solid waste management knowledge and awareness into an institution's educational mission is vital for creating a sustainable future, equipping students with the necessary skills, values, and mindset to become environmentally responsible citizens.

Hypothesis 2

This hypothesis states that social norms have a positive relationship with awareness of waste management, explaining if organization provide higher social norms, then the awareness of waste management will also be higher. This forecast is supported by the result shown in table 4 (r=0.253**), it demonstrated that the correlation is significant at 0.00.

This suggests that individuals who are more aware of the environmental consequences of improper waste management are more likely to adopt sustainable practices. Social norms can

influence perception and engagement with waste management practices, as household waste separation behavior is significantly influenced by subjective norms, perceived behavioral control, past behavior, and intention. A society that values environmentally responsible behavior and waste reduction is more likely to adopt sustainable waste management practices (Chawla et al., 2024). Overall, social norms significantly impact waste management awareness, shaping individual behavior, influencing social influence, facilitating knowledge sharing, and supporting policy implementation.

Hypothesis 3

This hypothesis states that government policies have no positive relationship with awareness of waste management. This forecast is supported by the result shown in table 4 (r=0.052), it demonstrated that the correlation is significant at 0.208.

This suggests that policies alone may not directly impact raising awareness. However, the alternative hypothesis is accepted, and the null hypothesis is rejected. Government policies, such as the National Strategic Plan, Extended Producer Responsibility policy, and enforcement of the 2007 Act, are crucial for achieving positive outcomes. Public education and awareness campaigns, such as 3R concepts and segregation, can improve future conditions. Government policies provide a regulatory framework and incentives for sustainable waste management practices, while awareness and education campaigns engage the public in adopting these practices.

Recommendation and Conclusion

To enhance awareness in sustainable waste management in Malaysia, several recommendations can be made. These include:

1. Implementing comprehensive educational programs targeting schools, universities, workplaces, and communities. These programs should focus on raising environmental awareness about improper waste disposal and the benefits of sustainable waste management practices. Collaborate with local environmental organizations and government agencies to conduct awareness campaigns through workshops, seminars, and public outreach events.
2. Developing media and information dissemination to promote sustainable waste management practices. Encourage media to feature success stories, case studies, and expert opinions. Establish recycling centers and offer incentives for active participation in recycling programs.
3. Fostering community engagement through clean-up drives, recycling programs, and other waste management initiatives. Provide incentives and partnerships between the government, private sector, and NGOs.
4. Utilizing peer influence and social norms to drive behavior change. Highlight positive role models and influencers who practice sustainable waste management. Use social media platforms and community networks to share success stories and best practices.
5. Collaborating with government agencies to develop and implement national policies and regulations supporting sustainable waste management. Involve relevant ministries in environmental awareness and advocate for supportive policies and regulations. Ensure adequate funding and resources are allocated to waste management infrastructure and services.

According to the results, government policies do not show a significant relationship with waste management awareness. However, education and social norms show a significant relationship. This helped the communities become more conscious of the importance of education and social norms toward sustainable waste management. By implementing these recommendations, Malaysia can significantly enhance awareness in sustainable waste management, leading to a more environmentally conscious society and a healthier future for generations to come. It is advised to explore the awareness for sustainable waste management in another states, to get a comparison between the states.

References

Castellanos, P. M., & Queiruga-Dios, A. (2022). From environmental education to education for sustainable development in higher education: A systematic review. *International Journal of Sustainability in Higher Education*, *23*(3), 622-644.

Adel, A. M., Dai, X., & Roshdy, R. S. (2022). Investigating consumers' behavioral intentions toward suboptimal produce: An extended theory of planned behavior – a cross-cultural study. *British Food Journal*, *124*(1), 99-139.

Azlan, R. M. D.@, Razak, S. S. A., & Indiran, L. A. (2021). Knowledge, attitude and practices on e-waste management among business students in a public university. *International Journal of Academic Research in Business and Social Sciences*, *11*(8), 1472-1478.

Chawla, R., Soreng, E., & Kumar, A. (2024). Waste management behaviour in the most populated capital city of the world. *Management of Environmental Quality*, *35*(4), 903-923.

Chen, B., & Lee, J. (2020). Household waste separation intention and the importance of public policy. *International Trade, Politics and Development*, *4*(1), 61-79.

Chin, M. Y., Lee, C. T., & Woon, K. S. (2023). Developing circular waste management strategies based on a Waste Eco-Park Concept: A multiobjective optimization with environmental, economic, and social trade-offs. *Industrial and Engineering Chemistry Research*, *62*(41), 16827-16840.

Daim, N., & Mohamed Radhi, N. A. (2023, March 12). *No room for trash in Malaysia by 2050?* New Straits Times. https://www.nst.com.my/news/nation/2023/03/888278/no-room-trash-malaysia-2050

Farah, F., Osman, S., Zainudin, N., Md Jusoh, Z., & Puteh, F. (2022). A conceptual framework analysing Malaysian university students' solid waste minimization behaviour: An integrated model. *Asian Journal of Research in Education and Social Sciences*, *4*(4), 57-68.

Sanabria, A., & Lindl, F. (2024). The crucial role of circular waste management systems in cutting waste leakage into aquatic environments. *Nature Communications*, *15*(1), e5443.

Izhar, N. A., Yusof, N., Akira, H., & Kamari, A. (2022). Assessing students' municipal solid waste recycling behavior in Putrajaya Malaysia. *Malaysian Journal of Social Sciences and Humanities*, *7*(9), e001716.

Kanty, P. F., Yateh, M., & Zhang, Y. J. (2024). Current situation analysis and suggestions for solid waste management practices among households in Freetown. *Journal of Geoscience and Environment Protection*, *12*, 95-109.

Kaur, P., Dhir, A., Talwar, S., & Alrasheedy, M. (2021). Systematic literature review of food waste in educational institutions: Setting the research agenda. *International Journal of Contemporary Hospitality Management*, *33*(4), 1160-1193.

Kaza, S., Yao, L., Bhada-Tata, P., & Woerden, F.V. (2018). *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*. Overview Booklet. World Bank: Washington DC.

Komatsu, H., Silova, I., & Rappleye, J. (2023). Education and environmental sustainability: Culture matters. *Journal of International Cooperation in Education*, *25*(1), 108-123.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.

Laheri, V. K., Lim, W. M., Arya, P. K., & Kumar, S. (2024). A multidimensional lens of environmental consciousness: Towards an environmentally conscious theory of planned behavior. *Journal of Consumer Marketing*, *41*(3), 281-297.

Lutfi, A., & Diartho, H. C. (2024). Policy of waste management for supports environmental cleanliness and implementation of a green economy in Jember Regency. *American Journal of Economics*, *14*(1), 26-37.

Mahayuddin, S. A., Ishak, N. R., & Wan Zaharuddin, W. A. Z. (2024). Assessing the level of knowledge and practices of sustainable waste management among secondary school students. *Malaysian Journal of Sustainable Environment*, *11*(2), 281-296.

Mensah, I., & Ampofo, E. T. (2021). Effects of managers' environmental attitudes on waste management practices in small hotels in Accra. *International Hospitality Review*, *35*(1), 109-126.

Molina, R. A., & Catan, I. (2021). Solid waste management awareness and practices among senior high school students in a state college in Zamboanga City, Philippines. *Aquademia*, *5*(1), ep21001.

Ansari, J. A., & Irfan, S. (2023). Corporate social responsibility and employee engagement: The mediating role of personal environmental norms and employee green behavior. *Social Responsibility Journal*, *19*(9), 1728-1748.

Ridzuan, M. R., Zani, A. M., Rahman, N. A. S. A., Rabun, M. N., & Yaacob, N. A. (2022). Solid waste management and recycling practices among PPR Sri Pantai Residents: A move towards sustainability. *International Journal of Academic Research in Business and Social Sciences*, *12*(9), 1007-1027

Shakil, N. S. M., Azhar, N.A.Z.M., & Othman, N. (2023). Solid waste management in Malaysia: An overview. *Information Management and Business Review*, *15*(1(I)SI), 86-93.

Soh, W. N., Lau, W. T., Mazlan, N. S., & Tun, Y. L. (2024). Is green always beneficial? Assessing the true impact of greenfield investments on green economy - Evidence from selected Asean countries. *International Journal of Academic Research in Business and Social Sciences*, *14*(5), 578-591.

Tang, W., & Azman, M. (2024). Enhancing environmental awareness through public awareness programs. *Journal of Energy and Environmental Policy Options*, *7*(2), 10-16.

Thoo, A. C., Tee, S. J., Huam, H. T., & Mas'od, A. (2022). Determinants of recycling behavior in higher education institution. *Social Responsibility Journal*, *18*(8), 1660-1676.

Wang, E. & Liao, Y.-T. (2024). Effects of member similarity on group norm conformity, group identity and social participation in the context of social networking sites. *Internet Research*, 34(3), 868-890.

Zameer, H., & Yasmeen, H. (2022). Green innovation and environmental awareness driven green purchase intentions. *Marketing Intelligence and Planning*, *40*(5), 624-638.

Zulkipli, F., Akbar, N. F. N., Salleh, N. S., & Khalid, K.I. (2023). Students' awareness on solid waste management and environmental care: A case study at UiTM Negeri Sembilan branch, Seremban campus. *International Journal of Academic Research in Business and Social Sciences*, *13*(6), 45-54.