Journal of Tourism, Hospitality and Environment Management
JTHEM
EISSN: 0128-178X
Volume 7 Issue 29 (September 2022) PP. 336-343
DOI 10/35631/JTHEM.729024

JOURNAL OF TOURISM, HOSPITALITY AND ENVIRONMENT MANAGEMENT (JTHEM)
www.jthem.com

RECYCLING KNOWLEDGE AMONG MALAYSIANS TOWARDS MAINTAINING CLEAN ENVIRONMENT

Devika Krishnan[1*], Marni Ghazali[2], Khairiyah Hj. Md Shahid[3], Shawal Sahid Hamid@Hussain[4], Suziana Hassan[5]

[1] Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA Negeri Sembilan
Email: devika@uitm.edu.my
[2] Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA Negeri Sembilan
Email: marni@uitm.edu.my
[3] Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA Negeri Sembilan
Email: khairiyah870@uitm.edu.my
[4] Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA Negeri Sembilan
Email: shawalhussain@uitm.edu.my
[5] Faculty of Agricultural Science and Forestry, Universiti Putra Malaysia Kampus Bintulu Sarawak
Email: suzi@upm.edu.my
[*] Corresponding Author

Article Info:

Article history:
Received date: 30.08.2022
Revised date: 10.09.2022
Accepted date: 25.09.2022
Published date: 30.09.2022

To cite this document:

Krishnan, D., Ghazali, M., Shahid, K. M., Hussain, S. S. H., & Hassan, S. (2022). Recycling Knowledge among Malaysians Towards Maintaining Clean Environment. *Journal of Tourism Hospitality and Environment Management, 7* (29), 336-343.

DOI: 10.35631/JTHEM.729024.

Abstract:

As Malaysia seeks to present itself as a developed country, the issue of sustainable waste management has emerged as a top priority for policymakers and other relevant parties. Despite the government's efforts, such as the imposition of new regulations and the promotion of privatization, Malaysia continues to trail behind in sustainable waste management techniques, particularly in the field of recycling. The purpose of this study is to determine the relationship of recycling programmes and knowledge towards clean environment in Malaysia. Due to the Covid-19 epidemic, this survey was done through an online form, with a total of 302 respondents. Convenience sampling is chosen because it suits the environment of our study in which it is often readily and easily available. Based on the findings, it is proved that there is no significant and negative relationship between knowledge and recycling programmes (r= 45.955, p= 0.124). The knowledge on recycling programme on clean environment is believed to be poor among Malaysian.

Keywords:

Recycling, Waste, Solid Waste Management, Sustainability

Journal of Tourism, Hospitality and Environment Management
JTHEM
EISSN: 0128-178X
Volume 7 Issue 29 (September 2022) PP. 336-343
DOI 10/35631/JTHEM.729024

Introduction

Solid waste management (SWM) can be described as a discipline associated with the control of generation, collection, transfer, processing, and disposal of solid wastes (Sreenivasan, Govindan, Chinnasami & Kadiresu, 2012). Moreover, Amasuomo and Baird (2016) defined waste as the useless by-product resulting from human daily activities in which the product still had the same substance available in the other useful product. Basu (2009) also defined waste as the discarded and useless materials to the one who using it. There are several types of waste such as municipal waste, electronic waste, hazardous waste, construction and demolition waste and bio-medical waste. These wastes must be effectively managed so that it can reduce the amount of the landfills waste generated, and thus reduce the impact of those wastes towards the environment as well as human's health. However, solid waste management in Malaysia are relatively poor and this become a major concern to environmental issue and need to be address properly. The increasing volume of waste generated have shown positive relationship with the level of urbanization. Rapidly developed areas tend to create more waste than those areas with least populated. In Malaysia, it was reported that in 1998 alone, there was about 5.5 million tons of solid waste generated in Klang Valley, Malaysia's most affluent area. Furthermore, there were about 17,000 tons of waste generated daily in 2007 for population over 26 million. Next, it is estimated that 25,000 tons of waste were produced daily in 2012 among people residing in Peninsular Malaysia. This waste generation has increased up to 3 percent which brings concern to local authorities (Akil, Johar, & Siong, 2015).

Knowledge is an understanding among community, such as statistics, facts, information, descriptions, or skills towards the topic of interest.

Many studies on sustainable waste management highlighted re-use and recycling of solid waste (Ekere et. al., 2009; Banga, 2008; Pokhrel and Viraqraghavan, 2005, and Omran et. al., 2009). However, for any recycling activities to take place, the waste must be separated according to class paper, metal, plastic, and glass. In this regards, knowledge of recycling is vital to achieve sustainable waste among households. Ehrampoush (2005) recommends that successful recycling programmes should be designed in such a way as to increase society's environmental knowledge, its attitudes as well as its behavior towards recycling. This paper aims to investigate the relationship between knowledge of recycling programme towards clean environment among Malaysian.

Literature Review

Recycling

Essentially, recycling is widely seen as an effective tool for alleviating society's environmental pressures. The problems such as resources scarcity, pollution and burden of solid waste can be reduced. Further, Vellinga, Gupta and Berkhou (1998) divided the term "recycling" into two concepts which are recovery and utilisation. Recovery means the diversion and recycling from landfills, incinerators, or other methods of disposal. Meanwhile, utilisations mean the process of converting the waste materials into the new and beneficials items and products. Other than that, Asmatulu and Asmatulu (2011), recycling is a set of activities which include collecting, sorting and processing any types of recyclable waste into raw materials. Waste can be defined as an object or item which have no value to its user (Basu, 2009). Besides, waste would be disposed by the people even of the payment are required in order to dispose it. The generation of waste are increasing as the world are developing towards urbanization and industrialisation.

Journal of Tourism, Hospitality and Environment Management
JTHEM
EISSN: 0128-178X
Volume 7 Issue 29 (September 2022) PP. 336-343
DOI 10/35631/JTHEM.729024

Even though the waste is an essential product of human activities, it is also a result of poor production processes (Cheremisinoff, 2003). However, if the waste is not managed effectively, it will result in a damage to the environment. Human and animals are also impacted with infectious and chronic illness if the waste are not managed properly (Banerjee et al., 2019).

Types of Waste

There are several types of wastes as classified in the study by David, Thangavel and Sanskriti (2019). Firstly, is the plastic waste. There have been 1.5 million metric tons of plastic produced in 1950s. Further, it is estimated that up to 336 million metric tons of plastic generated in 2016 in which only 9 percent of the total is recycled, 12 percent are incinerated and the remaining 79 percent are dumped in the landfills (David, Thangavel & Sanskriti, 2019). In Malaysia context, it was stated that Malaysia has the highest yearly consumption of plastic in which 16.87 kg per person according to a study commissioned by WWF in 2019. Comparing to Philippines, China, Indonesia, Thailand and Vietnam, Malaysia ranked the second highest in term of overall of waste generated. Improper disposal of plastic waste would bring harm to environment especially the ocean.

Paper waste is one type of waste that gradually increasing in amount. The paper is used mainly in four paper industries especially paper, newsprints, Printing & Writing (P&W) and packaging paper and board (David, Thangavel & Sanskriti, 2019). Raw materials such as wood, water, chemicals-water, sugarcane, Alum and Rosin-water additives are used in the making of a finished paper. However, the process in making a paper would produce a generous amount of wastewater. Globally, 400 million tons of paper being produced annually. Nevertheless, this industry also contributed to the pollution of air, water, noise and soil and also being labeled as the 3rd largest polluter to that.

Next is the glass waste. Glass as defined by David, Thangavel and Sanskriti (2019), is an inorganic compound which is produced about 56.51 million metric tons alone in 2018 and the reseachers expect that the amount of glass produced will be increased to 65.43 million metric tons in 2022. Glass contains a mixture of melted silica sand, limestone, soda ash and also metallic oxides which act as a coloring agent. Glass industries are classified into four segments which are container glass, fibreglass, flat glass and specialty glass. It is widely used in various sectors such as construction, automotive, consumer goods and also pharmaceutical sectors.

The fourth type of waste is the food waste. Food waste can be defined as an edible food item manufactured for human consumption but was left unconsumed (Ghafar, 2017). Primarily, food waste is a product of food processing plants, restaurants, domestic or commercial kitchen and cafeteria. In some cases, the words ‘food loss’ and ‘food waste’ have different meanings, but they specifically apply to losses at various stages of the food supply chain.

Last type of waste is electronic waste. Electronic waste as defined by European Union (EU) is electrical or electronic equipment waste that includes all components, subassemblies, and consumable that are part of the product at the time it is discarded. It is estimated that 500 million tons of e-waste are discarded yearly (David, Thangavel & Sanskriti, 2019). Based on Basel Convention, e-waste includes the household devices such as refrigerators and air conditioner, radio, computer, laptop, and others.

Journal of Tourism, Hospitality and Environment Management
JTHEM
EISSN: 0128-178X
Volume 7 Issue 29 (September 2022) PP. 336-343
DOI 10/35631/JTHEM.729024

Research Methodology

Sampling

Squibb (2019) has stated that a sample size is individual samples or findings in any statistical setting such as public opinion surveys. The sample size is the number of observations used in the calculation of the population statistics. The entities such as individuals in the population subset are chosen for this study. Hence, the sample of this study are representing the individual as the focus of this study is about the recycling programme implementation. There are about 302 respondents involve in this study which is from the age 18 until 55 years old.

Convenience sampling is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in study (Sedgwick, 2013). Furthermore, convenience sampling applied because it helps in solving many of the research limitations. One of the advantage in using this sampling technique in our study is it consumes less time in gathering the data, easy and inexpensive. Thus, the target population in conducting online survey among Malaysian people who aged 18 to 55 years old as it is easy response from the sample.

The data collection process has been carried out through an online questionnaire survey through Google Form. Questionnaire questions adopted and pre-tested among 30 respondents to check the accuracy of the questions and understanding of the respondents towards the questions. The distribution of the online questionnaire also included a cover later and instructions for each of the questionnaire sections. The respondent took about 15 minutes to 20 minutes to complete online survey. However, the online questionnaire distribution is available in two versions that the respondent can easily answer to the survey either in Malay or English. Thus, it will help to gather information from the sample person if they are given more time to answer the online survey questionnaire.

Findings

Demographic Profile

This section explains the respondent's demography profile as well as associated information about the respondent's background. This survey had 302 respondents, and there were six sections regarding respondents highlighted in this study: gender, age, marital, status, highest academic qualification, occupational and race. Table 1 shows the outcome profile of respondents in this study.

Table 1 Demographic Profile

Demographic Profile	Frequency	Percentage (%)
Gender		
Male	100	33.1
Female	202	66.9
Age		
18 years or less	21	7
19 to 24 years	100	33.1
25 to 29 years	70	23.2

Journal of Tourism, Hospitality and Environment Management
JTHEM
EISSN: 0128-178X
Volume 7 Issue 29 (September 2022) PP. 336-343
DOI 10/35631/JTHEM.729024

30 years old and above	111	36.8
Marital Status		
Single	127	42.1
Married	140	46.4
Others	35	11.6
Highest Academic Qualification	45	14.9
Sijil Pelajaran Malaysia	31	10.3
STPM	51	16.9
Certificate/Foundation	31.5	31.5
Undergraduate	44	14.6
Postgraduate	36	11.9
Others		
Occupation	103	34.1
Public Sector	77	25.5
Private Sector	122	40.4
Others		
Races	238	78.8
Malay	30	9.9
Chinese	23	7.6
Indian	11	3.6
Others		

Source: Data Collection, 2019

Table 1 shows a detailed description of the Malaysian respondent profile based on their background. Based on Table 1, a total of 302 respondents participated in this research. Most of the standing respondents were female (n=202, 66.9%), whereas the male respondents were (n=100, 33.1%). Many of the respondents are between the ages of 30 and above, with (n=111, 36.8%) and 19 to 24 years old (n=100, 33.1%). Furthermore, the age group of 25 to 29 years old consists of (n=70, 23.2 %), while the age group of 18 years old and less comprises (n=21, 7%). Aside from that, the respondents' marital status is mostly single (n=140, 46.4 %), followed by married (n=127, 42.1%), and others (n=35, 11.6%). Moreover, in terms of academic qualification, undergraduate qualification is the highest education of level with majority of respondents which about (n=95, 31.5 %). Then, it is followed by certificate or foundation with (n=51, 16.9%), Malaysian Certificate of Education (SPM) qualification with (n=45, 14.9%), postgraduate qualifications with (n=44, 14.6%), others with (n=36, 11.9%) and the least academic qualification, Malaysian Higher School Certificate (STPM) with (n=31, 10.3%). In terms of occupation, many respondents stated others, which means they are self-employed, retired, a student, or unemployed with (n=122, 40.4%). This was followed by respondents from the public sector (n=103, 34.1%) and the private sector (n=77, 25.5%). Lastly, in terms of race, many respondents were Malay (n= 238, 78.8%), followed by Chinese (n=30, 9.9%), Indian (n=23, 7.6%) and other races (n=11, 3.6%).

Journal of Tourism, Hospitality and Environment Management
JTHEM
EISSN: 0128-178X
Volume 7 Issue 29 (September 2022) PP. 336-343
DOI 10/35631/JTHEM.729024

Types of Waste

Table 2 Types of Waste

Types of waste	Average Weight (KG)	Percentage (%)
Paper	110	36.4
Glass	25	8.28
Electronic	45	14.9
Food	122	40.39
Total	302	100

Source: Data Collection, 2019

Table 2 show types of waste dispose by households in a monthly basis. Majority of waste from food category which is 122kg average in a month. This data supported by current food waste statistics in Malaysia. About 4,081 tones food waste being dumped every year in Malaysia (The Star, 2022). Next is paper waste about 36.4% following by electronic waste is 14.89% and lastly glass waste about 8.28%. In Malaysia, over 57,000 tons of paper are thrown into landfills which can take up around 456,000 cubic meters of landfill and that is equivalent to chopping down about 680,000 trees of marketable size (IIUM Today, 2022). Table 2 clearly reflect lack of recycling knowledge among households where respondents poorly implement sustainable approach to segregate the waste.

Main Finding

The Chi-square Independence Test is used to find out whether there is a relationship between two categorical variables, and is called the Pearson Chi-square or the Chi-square Association Test. It is used in this research to demonstrate the relationship between the independent variables of knowledge and dependent variable of recycling programmes.

Table 3 Demographic Profile

	Value	df	Significance (2-sided)
Pearson Chi-Square	45.955a	36	0.124

Based on Table 3, it shows that there is no significant and negative relationship between knowledge and recycling programmes (r= 45.955, p= 0.124). Therefore, from the above values, it shows that Ho1 was accepted and Ha1 were rejected.

Ho1: There is no significant and negative relationship between knowledge and recycling programmes.

Ha1: There is significant and positive relationship between knowledge and recycling programmes.

Norizan (2010) has stated that there is no direct relationship that the knowledge can improve the effectiveness in recycling programme. In addition, Ho1 where there is no significant and negative relationship between knowledge and recycling programmes has been accepted instead of Ha1 where there is significant and positive relationship. This is because due to the other

Journal of Tourism, Hospitality and Environment Management
JTHEM
EISSN: 0128-178X
Volume 7 Issue 29 (September 2022) PP. 336-343
DOI 10/35631/JTHEM.729024
factors such as attitude which has influence the effectiveness of recycling programmes. Yaziz and Rahman (2015) conducted research and discovered that 77.6% people have a positive attitude toward recycling programmes. According to studies, the problems arise when people treat environmental education as merely another topic to learn without applying the knowledge to their daily life (Yasmin & Marjan, 2013). On the other hand, Tonglet et al. (2004) also found that prior experience with recycling predicts a positive attitude and behavior, with no mention of knowledge. According to Yaziz and Rahman (2015), one's attitude about recycling is a big factor in whether they recycle.

Conclusion

As a conclusion, the purpose of this research is to examine the relationship of knowledge towards recycling programme of Malaysian people. Thus, this study had indicated that there were no significance and positive relations of the variables namely knowledge with the recycling programme among Malaysian people. *Lacked interest and responsibility to do recycling one of the reasons for households to rarely implement recycling activities at home.* In order to address the issue, policies of advocacy rather than punishment should be enforced by government to support households engagement in recycling programmes. Hence, a deep through study in terms of utilisation of the methodology in research of this topic is highly recommended because the researchers found that there is limitation of research as explained above.

Ethics Statements

There are 302 respondents agreed to participate in this research and all the information collected is private and confidential.

Author Statements

Devika Krishnan wrote introduction section. Marni Ghazali wrote the literature review. Khairiyah Hj. Md Shahid performed the methodology. Shawal Sahid developed findings and Suziana Hassan explained about conclusion.

Acknowledgments

There is no funding for this research.

Declaration Of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

References

Akil, A. M., Johar, F., & Siong, H. C. (2015). Household participation in recycling programs: A case study from Malaysia. *Tata Loka*, *17*(2), 4.

Amasuomo, E., & Baird, J. (2016). The concept of waste and waste management. *J. Mgmt. & Sustainability*, *6*, 88.

Asmatulu, R., & Asmatulu, E. (2011). Importance of recycling education: a curriculum development at WSU. J Mater Cycles Waste Management, 131-138.

Banerjee, P., Hazra, A., Ghosh, P., Ganguly, A., Murmu, N. C., & Chatterjee, P. K. (2019). Solid waste management in India: a brief review. *Waste management and resource efficiency*, 1027-1049.

Journal of Tourism, Hospitality and Environment Management
JTHEM
EISSN: 0128-178X
Volume 7 Issue 29 (September 2022) PP. 336-343
DOI 10/35631/JTHEM.729024

Basu, R. (2009). Solid Waste Management-A Model Study. Sies Journal of Management, 6, 20-24.

Cheremisinoff, N. P. (2003). *Handbook of solid waste management and waste minimization technologies*. Butterworth-Heinemann.

David, A., Thangavel, Y. D., & Sankriti, R. (2019). Recover, recycle and reuse: An efficient way to reduce the waste. *Int. J. Mech. Prod. Eng. Res. Dev*, *9*, 31-42.

Ehrampoush, M. H. and B. Moghadam. 2005. "Survey of Knowledge, Attitude and Practice of Yazd University of Medical Sciences Students about Solid Waste Disposal and Recycling." Iranian Journal of Health Science and Engineering 2, no 2: 26-30.

Ekere, W. J. Mugisha; and L. Drake. 2009. "Factors Influencing Waste Separation and Utilization among Households in the Lake Victoria Crescent, Uganda." Waste Management 29: 3047-3051.

Ghafar, S. W. (2017). Food Waste in Malaysia: Trends, Current Practices and Key Challenges.

IIUM Today, Towards a sustainable paper consumption and printing practices, 2022.

Norizan, E. (2010). Environmental knowledge, attitude and practices of student teachers. International Research in Geographical and Environmental Education, 19(1), 39-50.

Omran, A. A.; Mahmood; H. Abdul Aziz; and G. M. Robinson. 2009. "Investigating Households' Attitude towards Recycling of Solid Waste in Malaysia: A case study." International Journal of Environmental Research 3, no 2: 275-288.

Pokhrel, D. and T. Viraraghavan. 2005. "Municipal Solid Waste Management in Nepal: Practices and Challenges." Waste Management 25: 555-562.

Sedgwick, P. (2013). Convenience sampling. *Bmj*, *347*.

Sreenivasan, J., Govindan, M., Chinnasami, M., & Kadiresu, I. (2012). Solid waste management in Malaysia–A move towards sustainability. *Waste Manag. An Integr. Visions*, *2005*(April 2005), 55-70.

Squibb, L., Stepleman, L., Goldstein, I., Sand, M., & Zamboni, B. (2019). Predictors and moderators of sexually related distress in women with persistent genital arousal disorder. *International Journal of Sexual Health*, *31*(4), 426-438.

The Star, Malaysia throws away 17,000 tonnes of food daily, 2022.

Tonglet, M., Phillips, P., & Read, A. (2004). Using the Theory of Planned Behaviour to investigate the determinants of recycling behaviour: a case study from Brixworth, UK. Resources, Conservation and Recycling, 41, 191-214.

Vellinga, P., Gupta, J., & Berkhou, F. (1998). Recycling of Materials Local or global? Institute for Environmental Studies, 229-239.

Yasmin, H., & Marjan, N. (2013). Understanding Consumer Decision Making Towards Green Electronic Products. South East Asia Journal of Contemporary Business, Economics and Law, 2(1).

Yaziz, A. N., & Rahman, A. H. (2015, September). Knowledge, attitude and practice towards recycling activity among secondary school students at Hulu Langat, Selangor, Malaysia. In *Proceedings of the 1st International Conference on Interdisciplinary Development Research, Chiangmai, Thailand* (pp. 17-18).