JOURNAL OF TECHNOLOGY MANAGEMENT AND TECHNOPRENEURSHIP

Public Acceptance towards Waste Separation at Household Level

Nurul Zarirah Nizam[1], Nurhayati Kamarudin[2,], Syahida Nordin[3]

[1,2,]Universiti Teknikal Malaysia Melaka, Faculty of Technology Management and Technopreneurship
Corresponding author: zarirah@utem.edu.my

[3]SK Dato' Onn Jaafar, Simpang Renggam, Johor

Abstract

The successful of waste separation at source depends on the willingness and good practices among the residents. The participation rate of waste separation in Malaysia is low and there is an urgency to foster waste separation practice among the household. Considering that, the Separation at Source Initiative (SSI) under Solid Waste and Public Cleansing Management Act 2007 (Act 672), effective on September 2015 mandatory require the resident to separate waste in their dwelling, but the SSI still received resistance from the households. A careful investigation of the factors that affecting and prohibit the waste separation practice at source should be conducted; this required further investigation on multiple acceptance dimension including; social behavior, culture, and policy change. This paper explains the rationale to investigate the multiple factor that affecting the acceptance dimensions for fostering waste separation practice among the household.

Keywords: environmental concern, social behavior, culture, policy changes, education;

_____

1.   Introduction

Population growth has led to an increase in generation of daily waste in Malaysia. Segregation waste disposal is an issue that is challenging to manage of any urban area. Malaysia as a develop country that experience rapid industrialization and urbanization are facing the effects on environment from the increasing of waste generated. Food waste is a major component of generated waste for about 45 percent and contains high organic compounds. Due to un-separated waste, more than 30 percent potentially recyclable materials such as paper, plastic, aluminum and glass are still directly disposed of in landfills (The Star, 2017). The main objective of waste management is to reduce the amount of waste being generated, and as impact reducing on the disposal costs, the effect on the environment and the consequences on human health as well (Agamuthu et. all, 2009). The normal solid waste management system practiced in developing country brings many problems (Manaf.et all, 2009) : (i) limited collection of waste coverage and irregular collection services; (ii) open dumping and burning without control of air and water pollution; and (iii) the breeding of insect such as vermin and flies. By the year 2020, the reduction shall amount to 40 percent through 22 percent recycling and 80 percent intermediate treatment such as waste-to-energy, composting and material recovery (Malaysia Kini, 2015).

    In this study also, researcher would like to highlight the public acceptance towards segregation of waste disposal as well as the factors that contribute to willingness to respond. Segregation wastes refer to the separation of wet waste and dry waste. Waste also can be segregated on basic of biodegradable or non-biodegradable. Malaysian produces an average of 30,000 tons of waste every day. Only 5 percent of is recycle. These two statistics were recently revealed by the national Ministry of Urban Wellbeing, Housing and Local Government, and they're causing enormous problems for Malaysia. Current waste management practices in Malaysia for disposal of municipal solid waste (MSW) is through landfill and most sites are open dumping areas (Manaf.et all, 2009). Open dumping result in tremendous land and air pollution for the environment, health problems for communities and bottlenecks to economic growth. Taken together, the problem of poor waste management in Malaysia is one of the nation's biggest issues to date.

    A New Policy for Waste Management in Malaysia that Malaysian authority has been left with one option that is mandatory recycling with fines for noncompliance. Programs that handed out recycling bins and hoped for the best have been started and stopped since 2007 but, due to public ignorance and disinterest, have met with utter failure. Despite, the process to separate household solid waste is easy and uncomplicated that could reduce the amount of solid waste sent to landfills by 40 percent (Clean Malaysia, 2015). A recovery like this is very crucial

and something Malaysia needs. Research Objective are; i)   to determine the factors of acceptance towards separation waste disposal at household level. ii)   To identify the most factors contribute to the acceptance of public toward waste separation. iii) To investigate public environmental concern toward waste problem.

Table 1. Current waste management practices in Malaysia - Municipal solid waste composition in Malaysia

Compositions/ Percentage(%)	2002	2003	2004	2005	2006	2007	2010
Food waste	32	56.3	37.4	49.3	45	42	43.5
Mixed plastic	16	13.1	18.9	9.7	24	24.7	25.2
Mix paper	29.5	8.2	16.7	17.1	7	12.9	22.7
Textiles	3.4	1.3	3.4	---	--	2.5	0.9
Rubber and leather	2	0.4	1.3	--	--	2,5	--
Wood	7	1.8	3.7	--	--	5.7	--
Yard wastes	--	6.9	3.2	--	--	--	--
Ferrous	3.7	2.1	2.7	2	6	5.3	2.1
Glass	5.5	1.5	2.6	3.7	3	1.8	2.6
Others	1.9	8.4	10.4	18.2	15	25.74	1.8
Total	100	100	100	100	100	100	100

(Source: Ministry of Housing and Local Government, 2011)

In context of Malaysia, solid waste is managed by the Ministry of Housing and Local Government (MHLG) with the participant of private sector as well. The Solid Waste and Public Cleansing Management Act 2007 are Malaysian laws which enacted to provide the guideline and regulate the management control of solid waste for the purpose of maintaining proper environmental health. Solid waste management started from the storage of household waste, commercial waste or industry waste within municipal area. Usually the household wastes stored are packed using variety sizes and color of plastic bags before discarded into large garbage bags. However, waste separations are not practiced by Malaysian household (Goh Ban Lee, 2011).

Besides, „Naming" and „Shaming" campaign has been used in Hong Kong to control of undesired behavior of littering. In 2015, Hong Kong launch a city-wide campaign „The Face of Litter" which used of DNA to testing to construct the portrait of the perpetrator (Justin, 2015) Similarly in 2014, Boston Borough Council, the council use CCTV evidence as a means to encourage citizen to disposed the waste properly. Apart from the government regulation initiatives regarding waste separation, the communities itself have to take waste disposal seriously. Activation of social norms in communities to achieve separation behavior can also be effective. Studies found that higher level of education and provision of information of environmental issue beneficial in order to promoting citizen"s participation (Jones et al, 2010).

2.   Community Acceptance

The launch of Separation at Source Initiative (SSI) under Solid Waste and Public Cleansing Management Act 2007 (Act 672) as implemented effectively on September 2015 by the SWCorp become an indicator that frosting the need of waste segregation behavior at the household level. Therefore, a systematic analysis and research of waste separation practice is crucial for behavioral changing. In the Triangular Model of Acceptance by Wustenhagen (2007) explain that acceptance is formed into three categories which are social-politic acceptance, community acceptance and market acceptance. Social-political acceptance is a social acceptance involving key of stakeholder, policy makes and general public. Community acceptance refers to the acceptance local stakeholder, authorities and the community towards of specific project. Meanwhile, in the third categories of acceptance involve the market acceptance explaining the adoption of new product or project by the investors, organization and the community itself (Wustenhagen, 2007). However, socio-political acceptance and also market acceptance are not being discussed and out from this research.

Figure 1. Tringular Model Acceptance by Wustenhagen (2007)

Community acceptance is the one the important roles to indicates the implementation of the waste separation rules and behavior. Hence community is look as an integral part of the social existence that influences the overall population. Social community acceptance defined that the people signal towards things that they want to be include in their group or relationship (Leary, 2010). It also represents the ability to accept and tolerate differences and diversity in other people. There are difference variable that influencing the waste separation behaviors. Convenient, moral norms, information and social concern are the strongest predictor for household segregate behavior (Miafodzyeva and Brandt, 2013). The involving of the household in local residents to separate their waste raised the awareness and educates them to be more responsible to separate waste at source.

2.1 Environmental Concern
Current environmental issue may include pollution, climate change, environmental degradation bring harmful effect toward the quality of life. People"s concerns over the environmental harm and become more aware of the environmental changes around them. This has brought a good progress in segregation waste disposal behavior. Recent cognition on sustainability development are not only relate to environment but the entire of human life system which included human health, security, environment, infrastructure and technologies (Prochazkova D, 2011). Hence, In order to ensure health development of human population, environment is one of the important key to be account.

2.2 Culture
The lack of interest and concern in the environment crates a culture of non- engagement and participant of community. Hence this stance enhances lack of responsibility to the waste disposal and the environmental issue. Culture involve in two elements which are psychological and geographical. The process of culture influencing the psychological and behavioral of one"s individual. In this process, culture may be conceptualized as a set of shared belief and values through social practice and interaction (Oyserman, Coon, &Kemmelmeier, 2002). Meanwhile, geographical shapes the community having difference views on culture and how to analyze in context of landscape and geography (Sarah,2016) .In Malaysia, waste separation at household level is struggling with the habitual exercise and it take long times before it become cultural. Most people see waste as valueless hence there is no need to recycle them.

2.3 Social Behavior
Social behavior is driven by two partially independent motivational system approaches. First the desire to gain positive social outcomes and the second one is avoidance, the desire to present negative outcomes (Gable, 2006). Public awareness and behavioral towards waste can influence the whole solid waste management system (Zhu et al, 2008). A negative behavior often leads to the unfavorable attitude and mismanagement toward solid waste in countries with the occurrence of littering. The increasing of public littering rates are cause by some of the multitude such as lack of social engagement and pressure to prevent littering, un-continuously enforcement of policies, and lack of knowledge regarding the effect of littering to environment. (Al- Khatib et al. 2009).

2.4 Education
Education has been seen as one of the key affecting the environmental action (Dhokhikah.Y, 2015). It has been argued that the higher the level of knowledge creates a significant role in behavior towards environment (Oskamp, S.et. al. 1991). In other research by Schahn and Holzer (1990) follow two definition of knowledge on separation waste. First is abstract knowledge (AK) which involves with the input gain from the awareness in general environmental issue and concrete knowledge (CK) focus on the knowledge gain through experience of separation service or local service for example. Knowledge is important to traits behaviors as lack of knowledge lead to self-efficacy that causes fewer individual participants due to the feeling of lack knowledge to take place in waste separation initiatives (Liliana et. al, 2013).

2.5 Policy Changes

Implementation of policy regarding the separation waste activities in certain areas appears to be strong correlated to the community. Different approach used have been showing clear result to indicates that it is important to inculcate communities impute in any policy formation on knowledge and outreach campaign has to do with the development of quality of life (NIMB,2002). Policy and community involvement are crucial with citizen that are likely to participate and involve in policy implement and program design. The state of mandatory separation program by government which has been implement in 2015 is one of the effort that government need to be focus on continuously enforce.

Table 2. Correlation between Variables

	1	2	3	4	5	6
1. Environment Concern	1					
2. Culture	.308**					
3. Social Behavior	.404**	.327**				
4. Education	.355**	.269**	.418**			
5. Policy Change	.389**	.269**	.351**	.475**		
6. Willingness to respond	.433**	.384**	.477**	.436**	.536**	1

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

There is no strong positive relationship in between each of the independent variables and dependent variable. There is only moderate, except Culture (CU) variable having weak relationship strength in between the variable. In the overall result of correlation between variables most of them obtained moderate positive relationship except the correlation relationship of Culture (CU) variable and Education (ED) variable which obtained (0.269) that indicated weak relationship between them. It same goes to the correlation relationship of Culture (CU) variable and Policy Change variable (PC) with same coefficient of (0.269) that also indicated weak relationship between the two variables.

The probability value which is $p < 0.05$ is considered as significant in Sig (2- tailed) test. Based on the table 4.16 , each independent variables with the dependent variable have a value of $p < 0.000$ which means there is significant relationship between the independent variables such as environment concern, culture, social behavior, education and policy change with dependent variable which is willingness to change. When there is a positive correlation, the increase value of one variable with led to the value of the other variable increase. This means that there will be an increase of value of dependent variable when the increase of value of independent variables.

Table 3. The Coefficients

Model	B	Std. Error	Beta	t	Sig.
(Constant)	-1.867	1.681		-1.111	.268
Environment Concern	.177	.071	.147	2.508	.013
Culture	.275	.092	.165	3.003	.003
Social Behavior	.166	.057	.173	2.901	.004
Education	.121	.064	.115	1.898	.059
Policy Change	.324	.061	.319	5.310	.000

a.   Dependent Variable: Willingness to change

Based on Table 4.20, policy change (PC) factor showed a significant positive relationship with the willingness to change since its p-value is 0.000, which is lower than alpha value of 0.05. It is indicates that policy change factor

is the most significant independent variable to predict the factor affecting the public acceptance toward waste separation at household level.

Moreover, culture (CU) factor also shows a significant positive relationship with the willingness to change since its p-value is 0.003, which is lower than alpha value of 0.05. Social behavior (SB) factor also show a significant positive relationship with the willingness to change toward waste separation since its p-value 0.004, which is lower than alpha value of 0.05.

Besides that, environment factor (EC) factor indicated that there is not significant to predict the factors affecting public acceptance towards waste separation at household level because p-value is more than alpha value. The p-value of for EC factor is 0.013 which is more than 0.05. Lastly, education (ED) factor also indicated that there is not significant to predict the factors affecting public acceptance towards waste separation at household level because p-value is more than alpha value. The p-value of for ED factor is 0.059 which is more than 0.05.

3.   Discussion

The first research objective researcher could get reached with analysis of Pearson correlation coefficient and multiple regressions by using SPSS software. The result and finding shows that all independent variables (environment concern, culture, social behavior, education and policy change) are positively associates to dependent variable (willingness to change to waste separation at household level). However, only three independent variables were significant. There were culture, social behavior and policy change. The p values that represent the significance were between 0.00 and 0.05 for all three variables. Meanwhile, the p value for environment concern and education was 0.038 and 0.059.

Thus, the researcher concluded that culture, social behavior and policy change lead to the factor that affecting public acceptance towards waste separation at household level while environment concern and education does not much impacted the factors that that affecting public acceptance towards waste separation at household level. According to Crociata.A et al, (2015) in their previous research supported that culture plays important role in society. The research based on Italian population sample, they find that the relationship of culture and waste recycling attitude is significant and strongly statistically approved.

Furthermore, social behavior factor also have been highlighted in previous research. According to Karim et al, (2013) the behavior perceptions are based on two factors outcome. Right or wrong, hot or cold, positive or negative hence it is found and beliefs that one's behavioral result in participation in waste separation that will reduce negative impact toward environment. This result also supported by Nigbur et al, (2010) the study on recycling in UK, found that behavior predicted the intention to recycle which turn to recycle attitude among residence.

Other than that, the policy change factor is the one important criterion that should emphasize as policy plays important roles in enforcing the rules and laws the society. This finding is in line with the research done by Wan.C et al, (2014) revealed that the successful of separation policies that can achieved the goals of waste reduction can be important motivation to perform such act. Moreover, in another research by them, discussed the effectiveness of perceived policy had influence the recycling intention, that the survey based in Hong Kong.

The multiple regression analysis also answered the research objective three by identifying the most significant value that represents most the most influencing factor that affecting the public acceptance towards waste separation at household level. The analysis also explained impact level of independent variables on dependable variable.

The output of the regression began with R value which was 0.653 and the R Square coefficient 0.426. This proved that the factors had 42.6 percentage contributions to the willingness to change toward waste separation at household level. Meanwhile (100% - 42.6% =57.4%) was contributed by other elements in the willingness to accepting waste separation. The significant level in ANOVA which was 0.000 (below 0.005) signified that the multiple regressions were right choice of analysis to examine the factors that affecting public acceptance towards waste separation at household level. Moreover the significant level of each independent variable had effect on willingness to change except for the environment concern and education. The significant value of policy change was 0.000 which the highest that signified the most influence relationship with the willingness to change towards waste separation at household level.

The outcome of the study was supported by the previous research by (Sreenivasan.Jet al, 2012). They stated that waste reduction is achievable through several levels. One of them is to reduce waste per capita with the support of government policy initiatives. Waste separation effort also useful to develop recyclable behavior among citizens.

The statement proved that policy change make by higher authority gives huge impact towards willingness to change to waste separation.

Keles, (2012) also stated that policy maker effort contribute the achievement to encounter the environment issue. Hence, policy change is one of the important factors counted. As a result, there is a direct relationship of policy change towards willingness to change towards waste separation thus it is proved that policy change is one of the most factors that will influence the public acceptance towards waste separation in this research.

Thus, the third objective was achieved through analyzing the mean score and frequency table for the environmental concern questions that were included in the survey questionnaire earlier. The questionnaires are using 5 point Likert scale to show the degree of agreement to the statement. All the result is then correlated to the willingness to change toward waste separation to conclude regarding public awareness and environmental concern towards waste problem.

Based on the mean score for the environmental concern factors, it can be summarized that the mean score was high level is 4.60 at EC4. From the result, it shows that more than half of total respondents were strongly agree to the statement of improper waste management could lead to increase disease vectors. This show that public are really concern toward the consequences of improper waste management. However, the least mean score recorded was 4.25 at EC3. Only 39% of the total respondent are strongly agree that they were aware about the condition of environment at their place.

This result shows that respondents were not well exposed towards environmental surrounding such as waste problem. Moreover, the correlation result between environment concern factor and willingness to change among public household in this research stated that is moderate relationship with $r = 0.433$. Hence it can be conclude that the level of environmental concern of public toward waste problem is still at low stage and way far to go.

This result was supported by the previous research done by Krajhanzl, (2010). It is stated that not all people are aware and concern about environmental issues at their surrounding and willingly to conserve the environment. Moreover, Neo.S, Chong.W and Rahmalan.A, (2015) state that people are might concern about it but they do not doing it. They know what is better for environment but it does not comply with the intention to preserve it. People that are environmentally not practicing to care do not understand their actual roles to protect environment.

4.   Limitation And Recommendation

From this study, few limitations are found and highlighted. For the future study and improvement the limitation should be taken in concern. The first limitation is the area of the study and sample size which this research is only conducted in majorly in Melaka which is Universiti Teknikal Malaysia Melaka. Because of that, this research only focuses on a specific small area. The target respondent is too small and the range of respondents also too limited.

Furthermore, the second limitation is cooperation from the respondents. There are a few respondents that are reluctant to cooperate and give honest point of view to answer the questionnaire. The respondent might not read the question carefully and there might be has a respondent who answer surveys quickly for sake of done the survey fast without thinking much into the response. They also maybe not understand for the few questions given so this will affect the answer they given as well as the whole result.

Besides that, the limitation is the numbers of respondents are small that is only 230 respondents. So the data gathered is too narrow. This will made this research become not too accuracy, because from the milion of household, just around 231 of them are taking part. The time constraint also made this research become limited so if the time given is longer then the respondents will be increase. Few recommendation can be suggested by researcher for the future research. The researcher highly recommend the future study to conduct the research that can include sample in larger area of research. Besides that, through this research, it can achieve the accurate result of elements that given significant effect to the willingness to change to waste separation at household level.

Besides that, future researchers need to know how to attract the respondent to answer the questionnaire with full attention. It is important to choose the right respondent so that the respondent can be reliable and answer the questionnaire with honest. This will gives huge impact to the overall data collection. Moreover, researcher recommended to include larger number of respondent in future research. The number of respondent that is higher than 300 can obtained more accurate data and results. This is because, small number of respondent that covered up large area could lead to the research imbalance. Lastly, the researcher highly recommended creating more

independent variable so that it creates more factors that influencing public acceptance towards waste separation. This is because with more factors or variable should make the future study to understand more about waste separation. The more factors also can make the public have more choice while choosing the criteria in determining the acceptance towards waste separation.

5.   Conclusion

Based on the research had been made which about the factors that affecting public acceptance towards waste separation at household, researcher can concluded that majority of the respondents are agree with the questionnaires that distributed to them. Based on the result of hypothesis test; three over five independent variables such as culture, social behavior and policy change have a positive relationship with willingness to change to waste separation at household level. In addition, the factor or independent variable that mostly influenced the willingness to change to waste is policy change factor with the strongest correlation that is 0.536. Besides, environment concern among citizen towards separation waste is still considered low as they are not ready to the separation phase that took a lot of effort to success. Moreover separation waste in Malaysia is not yet to be a culture hence the implement of the waste separation policy might be challenging. However, from the previous chapter, this can be concluded that culture, social behavior and policy change have a positive relationship with willingness to change to waste separation at household level. In addition, the factor or independent variable that mostly influenced the willingness to change to waste is policy change factor with the strongest correlation that is 0.536. All these three factor need to be focuses on to develop the separation behavior among citizen and also can benefit the future research.

Referances

Agamuthu, P., Hamid, F.S., Khidzir, K. 2009. Evolution of solid waste management in Malaysia: Impacts and Implications of the Solid Waste Bill 2007. Journal of Material Cycles and Waste Management, 11: 96-103

Agwu, M. O. (2012). Issues and challenges of Solid Waste Management Practices in Port- Harcourt City, Nigeria- A Behavioural Perspective. *AmericanJournal of Social and ManagementSciences, 3*(2), 83-92.

Al-Khatib, I. A., Arafat, H. A., Daoud, R., and Shwahneh, H. (2009).Enhanced solid waste management by understanding the effects of gender, income, marital status, and religious convictions on attitudes and practices related to street littering in Nablus – Palestinian territory. Waste Management, 29(1), 449-455.

Asmawati.D, Nor Ba"yah.K and Yusooff.F. (2012) Environmental Awareness and Education: A Key Approach to Solid Waste Management (SWM) – A Case Study of a University in Malaysia.

Blumberg, B., Cooper, D. R., & Schindler, P. S. (2014). *Business Research Methods*. Retrieved from https://doi.org/9781285401188.

Chien Bong, C. P., Ho, W. S., Hashim, H., Lim, J. S., Ho, C. S., Peng Tan, W. S., & Lee, C. T. (2016). Review on the renewable energy and solid waste management policies towards biogas development in Malaysia. Renewable and Sustainable Energy.Retrieved from http://doi.org/10.1016/j.rser.2016.12.004.

Clean Malaysia, 2015. Waste Management in Malaysia : In the dumps. *Clean Malaysia.*Retrieved from https://cleanmalaysia.com/2015/09/04/waste-management-in- malaysia-in-the-dumps/.

Crociata,A.,M.AgovinoandP.L.Sacco,(2014)."Cultural access and mentalhealth :An exploratory study."SocialIndicatorsResearch118,219–233.

DauravK.Singh, Kunal G and Shashank C. 2014. Solid Waste Management: Its sources, collection, transportation and recycling. International Journal of Environment Science and Development, Vol 5, No 4.

Department of Statistics Malaysia.Demographic indicator; 2013.Retrieve from https://www.dosm.gov.my/v1/.

Dhokhikah, Y.; Trihadiningrum, Y.; Sunaryo, S. Community participation in household solid waste reduction in Surabaya, Indonesia.Resour. Conserv.Recycl.2015, 102, 153–162.

Gable.SL. J Pers, 2006. UCLA PsycologyDepartment , University of California, Los Angeles 74(1):pp 175-222.

Goh Ban Lee. 2011. Malaysia. In Solid waste Management: Issues and Challenges in Asia.Environmental Management Centre, Mumbai, India: Asian Productivity Organization.

Hair.J, Aurthur .M, Mary .C ,Philips.S (2007) The Essentials of Business Research Methods. Retrieve from https: //www. researchgate .net/publication /311574685_ The_Essentials_ of_Business Research_Methods

Hamatschek, E. 2010.Current Practice of Municipal Solid Waste Management in Malaysia and the Potential for Waste-to-Energy Implementation.In ISWA World Congress 2010. Hamburg.

Hvatum, L & Kelly, A. (2008) Closing the knowing doing gap. SPA Conference 2008.

Ismail.S.S, and Manaf.L.A,2013. The Challenge of Future Landfill: A case study of Malaysia. Journal of Toxicology and Environment Health Science, 5(6),pp86-96. Retrieved from http://doi.org/10.5897/JTEHS12.058.

JayashreeSreenivasan, MarthandanGovindan, MalarvizhiChinnasami and IndrakaranKadiresu (2012) Solid Waste Management in Malaysia- A Move Towards Sustainability 10.5772/50870

Jha, A. K., Singh, S. K., Singh, G. P., Gupta, P. K. 2011. Sustainable Municipal Solid WasteManagement in Low Income Group of Cities: A Review. Tropical Ecology, 52(1): 123-131.

Jones, N., Evangelinosa, K., Halvadakisa, C.P., Iosifides, T., Sophoulis, C.M.(2010), Social factors influencing perceptions and willingness to pay for a market-based policy aiming on solid waste management, Resources, Conservation, and Recycling 54 (2010) 533– 540.

Justin.W, 2015. Hong Kong Anti-Littering Campaign Uses DNA from Trash to Shame People. Time.Retrieved from http://time.com/3890499/hong-kong-littering-campaign/.

Karim.G, W.A.W.A, Rusli, L.F, Biak, D.R.A, Idris.A. (2013) An application of the theory of planned behavior to study the influencing factors of participation in source separation of food waste. Waste Management.2013, 33, 1276-1281.

Keles.R (2012).The quality of life and the environment.Procedia- Social and Health, 21, 251- 274.

Krajhanzl, J., (2010). Environmental and proenvironmental behavior. School Health, 21: 251-274.

Leary.M.R,2010. Affiliation,acceptance, and belonging. In S.T Fiske,D.T. Gilbert & G. Lindzey (Eds.), Handbook of Social Psycology(5th Ed., Vol. 2,pp.864-897). New York,NY: Wiley.

LilianaAbarca Guerrero, Ger Maas, William Hogland. 2013. Solid Waste Management Challenges for Cities in Developing Countries. WasteManagement, 33(1): 220-232.

Manaf,L.A.,M. A. A. Samah, and Z. N. I. M. 2009. Municipal Solid Waste Management in Malaysia: Practices and challenges.Waste Management. 29:2902-2906.

Malaysia Kini. 2015. Separation of Waste begins in FT, Putrajaya, 6 States. Malaysia Kini.Retrieved from https://www.malaysiakini.com/news/310608.

Malaysia Kini, 2016.Malaysian Waste 15,000 Tonnes Food Daily.Malaysia Kini.Retrieved from https://www.malaysiakini.com/news/342751.

Mark Saunders, Philip Lewis, Adrian Thornhill. Research methods for business students ISBN: 978-1-292-20878-7 : LCCN 2018058370, ISBN 9781292208787

Miafodzyeva, S., & Brandt, N. (2013).Recycling behaviour among householders: synthesizing determinants via a metaanalysis.Waste and Biomass Valorization, 4(2), 221-235.

National Solid Waste Management Department. 2010. Retrieve from http://www.kpkt.gov.my/jpspn/main.php.

Neo.S, Chong.W and Rahmalan.A (2015) Environment Awareness and Behavior Index for Malaysia.Procedia - Social and Behavioral Sciences 222:668-675.

New Sunday Times,Not-In-My-Back-Yard Syndrome (NIBM) 2002.

Nigbur.D, Lyons.E, Uzzell.D.(2010) Attitudes, norms, identity and environment behavior. Using an expanded theory of planned behavior to predict participation in a kerbside recycling programme Br. J. Soc. Psychol. 2010, 49, 259-284.

Oskamp, S.; Harrington, M.J.; Edwards, T.C.; Sherwood, D.L.; Okuda, S.M.; Swanson, D.C. Factors influencing household recycling behaviour. Environ. Behav.1991, 23, 494–519.

Oyserman.D, Coon.H.M, and Kemmelmeier.M 2002.Rethinking individualism and collectivism: Evaluation of theoretical assumption and meta-analysis.Psycological Bulletin,128,3-72.

Prochazkova.D 2011 Strategic Safety Management of Territory and Organisation.Praha: Karolinum,399p., in print.ISBN 978-80-01-04844-3.

Rozita, S. M. 2014. The Effect of Federal Government Policy on Local Governmnet Service Delivery: A case Study on Refuse Collection Privatization. Retrieve from http://www.kapa21.or.kr/data/data_download.php?did=6309

Sarah. W, 2016. Material returns: practicing cultural geography in and for a more-than-human world. Cultural geography, 13(4),pp 600-609.

Schahn, J.; Holzer, E. 1990. Studies of individual environmental concern: The role of knowledge, gender and background variables. Environ. Behav. 22, 767–786.

Seow Ta Wee. 2012. New Perspective of Integrated Solid Waste Management in Malaysia. InProceeding 3rd International Conference on Human Habitat & Environment in the Malay

World, 19-20 Jun 2012, UKM, Bangi.

Sreenivasan, J., Govindan, M., Chinnasami, M., Kadiresu, I. 2012. Solid Waste Management inMalaysia: A Move towards Sustainability. Intech, Chapter 3: 55-70.

Star, T. 2016. Low awareness on recycling among Malaysian | New Straits Times | Malaysia General Business Sports and Lifestyle News.The Star.Retrieved from https:

//www.thestar .com .my/news/nation/2017/08/20/low-awareness-on-recycling-among- malaysians/.

Solid Waste and Public Cleansing Management Corporation. 2011. Implementation of Solid Waste and Public Cleansing Management Act (Act 672), Annual Report 2011 (Chapter4). Kuala Lumpur: Solid Waste and Public Cleansing Management Corporation.

Vergara, S., Tchobanoglous, G. 2012. Municipal Solid Waste and The Environment: A GlobalPerspective. Environment and Resources, 37: 277-309.

Verity.L, 2014. Japan"s Garbage Disposal System Explained. Tofugupedia. Retrieved from https://www.tofugu.com/japan/garbage-in-japan/

Wan.C, Shen, G.Q, Yu.A. (2014) The role of perceived effectiveness of policy measures in predicting recycling behavior in Hong Kong. Resour. Conserv. Recycle. 2014, 83, 141- 151.

Wustenhagen, R., Wolsink, M., &Burer, M.J. 2007. Social acceptance of renewable energy innovation: An introduction to the concept. Energy Policy, 35(5), 2683-2691.

Zhu, Da; Asnani, P. U., Zurbrügg, Chris, Anapolsky, Sebastian, and Mani, Shyamala. (2008). Improving municipal solid waste management in India : A sourcebook for policy makers and practitioners. Washington, DC: World Bank.