Factors Influencing Household Behavior toward Recycling Programsin Melaka

Nor FazilahbintiAbdul Hamid[1], Mashitoh Yaacob[2], Rosli Saadan[3], Norunnajjah Ahmat[4],Nor Azilahbinti Ahmad[5]

[1,3,4,5]*Centre for Languages and Human Development, UniversitiTeknikal Malaysia Melaka, Malaysia*
[2]*Universiti Kebangsaan Malaysia*

Abstract: Recycle is one part of environmental protection but has become an important issue been discussed in national and global level. There are many hot topics faced by a society that relate to natural pollution and disasters such as tsunamis, earthquakes, floods and extreme droughts. The government has done a lot of things to put this country at least the same level of other countries in recycling programs. They launched two recycling related programs in 1993 and 2000 such as recycling planning programs, awareness campaigns, publicity and promotion on television and radio. The aim of this study is to identify three aspects level of knowledge among civil servants on recycling programs in their households, level of respondents' practice of recycling programs and factors that influence them toward recycling programs. A total of 417 complete questionnaire returned have yielded 80% of response rate. The design of this study is a descriptive form of quantitative survey using questionnaires as instruments. Then, the factors affecting the household behavior on recycling practices were used for data collection. As a result, the finding shows that the level of knowledge among civil servant is very high (M = 4.57, SD = .76). Meanwhile the level of practicing recycles (reduce, reuse and recycle) among civil servant was at moderate level (M=3.63; SD: .79).

Keywords: household, reduce, recycle, reuse.

I. INTRODUCTION

Solid waste recycling rates in Malaysia are still at a low level compared to other countries. Some countries have achieved high cycle rates of percentage such as Switzerland that reached 22 per cent followed by 19 per cent by Denmark, 16 percent from Germany and;both Netherlands and Finland shared the 15 percent [1]. In fact, according to the National Solid Waste Management Corporation in 2011 reported that up to that year, the solid waste recycling rates for Germany had reached as high as 74 per cent. Meanwhile Belgium and Austria are 67 per cent, followed by Netherland less one percent to 66 percent.However, Malaysia by 2018 has achieved the national recycling rate is 24 percent only and this is still far from the 30 per cent target of recycling rates set by the government to be achieved by 2020.Previous studies on national recycling rate stresses that this low level is due to lack of participation and practices from the community in recycling [2] [3][4][5][6][7].

The government has done a lot of things to put this country at least the same level of other countries. They launched two recycling related programs in 1993 and 2000 such as recycling planning programs, awareness campaigns, publicity and promotion on television and radio. They introduced enforcement of Act 672 and solid waste separation programs hoping that after 25 years, the society has practicedthe culture of recycling as everyday life habit, but it does not happen as dreamed. According to Yiing&Latifah[8], low recycling participation rates are due to; the inability of the authorities to sustain the recycling programs, toopen more demand for recycling items, to use more effective awareness programs and to present better policy or master plan for the recycling programs.The study conducted by NurKhaliesahet al. [9] on 382 respondents through random sampling in Putrajaya showed that there was a weak but a positive connection between the community's' participation and the recycling program with the attitude of the society towards solid waste isolation is (r = 0.343) and their knowledge on separation of solid waste is (r = 0.251). This research reveals that the distance between home to recycling collection centers, time constraints as well as space constraints and limited recycling bins facilities become major factors preventing the workers from the government sectorto involve or to participate the recycling program.

According to a report released by World Bank in 2018, that very year 2.01 billion tons of municipal solid waste will be generated by the world's population where everyone will produce garbage with an average of

0.74 kilograms per day in the range between 0.11 and 4.54 kilograms. This report also expects municipal solid waste to increase from year to year and by 2050 to a total of 3.40 billion tons a year [10].

Hence, this study selects households among civil servants from the Melaka state of government department and civil servants of the Melaka Local Authority as samples of study. This selection is based on the exposure of civil servants as the first groups to receive policies gazette by the government and they are expected to be the pioneer of implementing it. In addition to the exposure, they were also receiving some briefing and trainingat work related to recycling practices. As a result, the civil servants are meant to be the role models in implementing and practicing recycling either at the office or at home. Since the civil servants are part of society, then their involvement in the society is looked upon as important as preserving the environment by practicing recycle in life for the sake of future generations. There are three main purpose of this study. Firstly, is to identify the level of knowledge among the civil servants in recycling program. Secondly is to identify the level of household practice on recycling program and lastly is to identify some factors that influence the behavior of civil servants' households on recycling practices.

II. RESEARCH PROBLEMS

Malaysia is just like other developing countries that face the national solid waste management problem. Recycling is one of the alternatives used by many countries to reduce the production rate of solid waste. As such, in 1993, the Malaysian government has taken steps to declare a national recycling program by targeting that Malaysia will achieve the recycling rate of 22 percent by 2020. However, this program received less attention from the community due to lack support and involvement from agencies as well as lack of technical facilities at the management level. In 2000, again the government announced various national recycling program with more systematic plans. In conjunction with the programmed, the three-colour Recycle Bin was issued by the Ministry of Housing and Local government. Three colors on the Recycle Bin i.e. orange color bin for plastic/tin materials, chocolate color for glassware and blue colour bins are for paper. The Recycle Bin facilities are intended to facilitate the community to separate and separate goods that can be recycled from their garbage.

III. METHODOLOGY

This study is a descriptive research. It contains a set of questionnaires. This questionnaire consists of 2 sections. Part one consists of the demographic background and information of the subject such as age, gender, level of education, salary and other important matters. Meanwhile, the part two is a series of question relate to factors that affecting household behavior towards recycling practices in Melaka state. The validity level of the questionnaire is on Alpha 0.789. This questionnaire is designed to accommodate significant issues relating to recycling practices and factors that affect the practice of recycling in their life. Every set of questionnaires consists of four parts and it is estimated that the questionnaire needs about 15 minutes to answer depending on the respondent's tendency in answering the questionnaire.

IV. PLACE OF STUDY

This study is related to the factors that are expected to influence the behavior of civil servants in the practice of recycling. Therefore, respondents were selected from the civil servants who served in the seventeen state government departments and four local authorities of the Melaka State Government**.**

V. DATA ANALYSIS

The data were analysed using IBM SPSS Statistics (22.0) software. The results of the factors that influence the behaviour of the civil servants were presented using descriptive statistics. The basic descriptive parameters were calculated in percentage, mean and standard deviation.

VI. RESPONDENT OF THE STUDY

Respondents in this study comprised of the households of civil servants serving in the Melaka State Government which encompass various departments. In this study, civil servants elected as respondent in random stratified means. The selection of civil servants from various departments in the Melaka state Government is based on the needs of finding expected to represent the civil servants of Melaka State Government.

VII.   RESULTS

Table 1 shows the respondent bibliography of the study comprising the number of respondent, age, marital status, education level, income and employment sectors.

Table 1: Respondent bibliography

Profile		N	(%)
Gender	Male	274	65.7
	Female	143	34.3
Age	20 - 30 yrs.	155	37.2
	31 - 40 yrs	177	42.4
	41 - 50 yrs	60	14.4
	> 51	25	6.0
Race	Malay	409	98.1
	Chinese	4	1.0
	Indian	4	1.0
	Others	-	-
Marriage Status	Bachelor	79	18.9
	Married	335	80.3
	Duda/janda	3	0.7
Education	Certificate	273	65.5
	Diploma	114	27.3
	Bachelor	27	6.5
	Master	2	0.5
	Ph.D	1	0.2
income	< RM1000	20	4.8
	RM1001 - RM 2000	259	62.1
	RM 2001 - RM3500	116	27.8
	RM 3501 - RM5000	20	4.8
	> RM5000	2	0.5
Sektor	State Government	242	58.0
	Local authority	175	42.0

Table 2: Mean Distribution and Standard Deviation of recycling knowledge

Recycling Knowledge	N	Mean	Standard Deviation
I know the recycling program in my residential area	417	4.57	.76
I know there is a project of producing compose fertilizer in Melaka.	417	4.45	.93
I know there is a solid waste collection program twice a week for household waste and once a week for bulk and other waste that can be collected.	417	4.33	1.20
I know there are corporate companies running the recycling education on Corporate Social Responsibility (CSR) programs in the state of Melaka.	417	4.18	1.22
I know the day without plastic bags program was fully implemented in January 2016 in the State of Melaka.	417	3.71	1.47

Table 2 shows the mean score of five items where knowledge factor is high between 3.71 and 4.57. The statement 'I know the recycling program conducted in my housing area' has the highest mean value (M = 4.57; SD = .76), followed by the statement 'I know there is a Compost Steel Producing Project in Melaka State' (M = 4.45; SD = .93). Meanwhile about 'I know there is a Solid Waste Collection Program 2 + 1 (collection 2 times a week for household waste and collection 1 times a week for bulk / garden wastes and other waste that can be recycled is (M = 4.33; SD = 1.20). Whereas item on 'I know there are corporate companies that run the Corporate Social Responsibility (CSR) Education Recycling Program in Melaka State' is (M = 4.18; SD = 1.22).

But the lowest item for knowledge factor is the statement ' Plastic 'was fully implemented in January 2016 in Melaka State' with a mean score (M = 3.71; SD = 1.47)

Table 3: Mean Distribution and Standard Deviation of 3R practice (reduce, recycle, reuse)

3R practice (reduce, recycle, reuse)	N	Mean	Standard Deviation
I use a replaceable printer cartridge/ toner.	417	3.63	.79
I carry my own bag while shopping	417	3.62	.83
I donated my used clothes to those in need	417	3.60	.82
I bought eco-friendly products such as food containers and bottled water labeled BPA	417	3.57	.84
I bought refillable items for household items such as dishwashers, washing clothes soap, clothing softener and liquid baths	417	3.54	.78
I use e-mail facilities to send mail, memos and notices in the office	417	3.52	.86
I will isolate recyclable items such as cans, bottles, papers, plastics before selling in recycling centers.	417	3.50	.94
I use both parts of paper to print documents	417	3.27	1.12

Table 3 shows the mean score value of eight items for 3R practice (reduce, recycle and reuse) is between 3.27 to 3.63. The statement 'I use a replaceable printer cartridge/ toner has the highest mean value (M = 3.63; SD = .79), followed by the statement 'I carry my own bag while shopping' (M = 2; SD 3.6= .83); I donated my used clothes to those in need' (M = 3.60; SD = .82); I bought eco-friendly products such as food containers and bottled water labeled BPA (M = 3.57; SD = .84). Meanwhile item 'I bought refillable items for household items such as dishwashers, washing clothes soap, clothing softener and liquid baths' (M = 3.54; SD = .78). While item 'I use e-mail facilities to send mail, memos and notices in the office (M = 3.52; SD = .86). Whereas item on 'I will isolate recyclable items such as cans, bottles, papers, plastics before selling in recycling centers' (M = 3.50; SD .94).The lowest item for 3R practice factor is the statement 'I use both parts of paper to print documents' (M = 3.27; SD = 1.12).

Table 4: Mean Distribution and Standard Deviation of Environmental Factors

Environmental care	N	Mean	Standard Deviation
Children are taught to safeguard the importance of environmental through recycling practices	417	4.35	.68
Recycling activities can maintain environmental beauty for present and future generations.	417	4.30	.71
Practicing recycling can reduce garbage problem.	417	4.27	.71
Recycling practices can reduce government spending costs in environmental management	417	4.24	.69

Table 4 shows the mean score value of four items for environmental issues ranging from 4.24 to 4.35.The statement on 'children are taught to safeguard the importance of environmental through recycling practices ' is the item with the highest score value (M = 4.35; SD =. 68) followed by a statement of ' recycling activities to maintain the environmental beauty of present and future generations 'is (M = 4.30; SD =. 71). The statement on ' practice recycling can reduce garbage problems ' is (M = 4.27; SD =. 71). While the items with the lowest mean score are for statements about'Recycling practices can reduce government spending costs in environmental management(M = 4.24; SD =. 69).

Table 5: Mean distribution and standard deviation of items that affect the recycling facility

Recycling facilities	N	Mean	Standard Deviation
Recycling facilities provided to encourage the general public to recycle	417	3.61	.96
I do recycling because there are facilities for the collection of recycling items in my housing area	417	3.49	.99
I do recycling because there are sufficient recycle bin facilities in my house area	417	3.27	1.12
The Recycle Bin is easily found in my housing area	417	3.20	1.13

Table 5 shows the mean score value for four recycling facility items are between 3.20 and 3.61. The highest mean score of recycling facility items is the "recycling facility" statement provided to encourage the general public to do recycling ' score value (M = 3.61; SD =. 96) followed by statement ' I do recycling because there are facilities for the collection of recycling items in my housing area ' (M = 3.49; SD =. 99) and further statements ' I do recycle because there are sufficient recycle bin facilities in my house area. (M = 3.27; SD = 1.12). ' While the item with the lowest mean score is the statement for 'the Recycle Bin is easily found in my housing area ' (M = 3.20; SD = 1.13).

Table 6: Min distribution and standard deviation of items that affect the recycling campaign

Recycling Campaign	N	Mean	Standard Deviation
The campaign statement through radio and television are very effective.	417	3.81	.76
The campaign statement in the road side by the roadside is very effective.	417	3.73	.77
Recycling campaign carried out by the Government is very effective	417	3.71	.81
Local authorities conducting many recycling program activities in my housing area.	417	3.60	.91

Table 6 shows the value of the mean score distribution for four recycling campaign items ranging from 3.60 to 3.81. The highest mean score for the recycling campaign factor item is the campaign statement through radio and television are very effective (M = 3.81; SD =. 76) followed by the campaign announcement by the roadside is very effective. (M = 3.73; SD =. 77) and a statement of recycling campaign carried out by the Government is very effective. (M = 3.73; SD =. 77). While items with the lowest mean score are for statements of local authorities conducting many recycling program activities in my housing area. (M = 3.60; SD =. 91).

VIII. DISCUSSION

The purpose of this study is to identify the level of knowledge among the households of the public servants to do recycle programme in Melaka. The findings showed that the level of knowledge about recycle was high (mean = 4.0). This finding was in line with the study by Seow&InderaSyahrul[11] which obtained a case study on population in the BatuPahat area that stresses that the communities have basic knowledge about which goods can be recycled and reused. The respondent's behaviour on the sale of recycled materials occurs only once the recycled material has been collected. The study has a clear result that the civil servants have basic knowledge of recycle. Similarly, Zaini et al. [3] found out that the respondents had a high level of awareness about recycle but with some constraints to involve because of limited exposure, facilities and inadequate recycling premises. They also stated that they understand that the practice of recycling is a good effort because they have love for the environment. At the same time, they love to response to the government's call or being a noble and responsible man as well as being example to others [11]. The awareness of the importance of recycle is quite high among the local residents but the effort to practice it is quite low and generally the public found it quite difficult to do. In addition to this study is explained by Kalsom et al. [12]who conducteda research on factors that affect the recycle practices among the secondary school students in Ampang Jaya Municipal council and found out that these students do not only have a very high knowledge on recycle about 93.1% but they are practice it too that about 76.4%. As a result, there is a total of 69.7% of respondents have sold the recycled goods to the individual'spurchaser in the residential area or have sent it themselves to the nearest recycling centre.

Children are taught about the importance of the environment and to take care of it through recycled practice (M = 4.13). Environmental education is a learning process as it encompasses human interaction to the environment, the idea on how to manage it wisely need these children to enhance their knowledge, deepen their understanding and sharpen their awareness of environment [13]. The awareness of conserving and preserving the environment should begin from primary schools. They should know that any environmental damagesmust be amended and sustained so that the impact on the environment can be minimized. Hence, in order to increase the awareness among the community on the importance of the environment must be done at the early stages. This environmental education in school is seen as one way to accomplish the objective of government on recycle program, an effective environmental education process is expected to foster awareness attitude among students, to cultivate the right values in them and ultimately to highlight the good action towards environment [14].

IX CONCLUSION

Overall, it can be concluded that for the success of the recycling program, it should be implemented firstly at the primary school level. At this stage, the children are open to new knowledge and easy for them to understand the importance of the environment protection through recycling practices. In future, they can manage the environment wisely by enhancing their knowledge, expanding their understanding on recycle and refining their awareness towards the environment. Besides that, it is difficult for the community to implement the recycle practices within a short notice and the adult are inclined to be difficult to change their habit compared to children. In short, the idea creating a communitywho can practice recycle program as daily habit such as in Japan requires more than longer period of time but demanding endless efforts from various parties in Malaysia.

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