

RESEARCH ARTICLE

COMMUNITY ATTITUDE, PERCEPTION AND WILLINGNESS TOWARDS SOLID WASTE MANAGEMENT IN MALAYSIA, CASE STUDY

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ARTICLE DETAILS

ABSTRACT

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Malaysia as a developing country is still struggling with appropriate solid waste management due to lack of attitude, perception and willingness among individuals for reuse, recycling waste. This research highlights the current solid waste management in terms of attitude, perception and willingness of community towards solid waste management in Malaysia especially in Serdang. This research has conducted a survey to around 327 respondents living in Serdang in to get their opinions to improve the process of solid waste. The results were then analyzed quantitatively by using SPSS software and descriptive analysis. The result revealed that there is moderate attitude and perception of community towards solid waste management. It is highly recommended that the disposal of wastes should be reduced in Malaysia in order to achieve its future economic growth and industrial revolution.

KEYWORDS

Resident's attitude, perception, willingness, waste management.

1. INTRODUCTION

Solid waste management is currently one of the key factors of public policy. Population and urban growth in the cities usually result in corresponding increase in solid waste generation. Solid waste generation has always been related to the economic status of a country and the lifestyle of its community. Immediate attention needs to be provided in various big cities in Malaysia to manage the waste materials [1,2].

There are various SWM solid waste management implementation issues in Malaysia. The problems are such as poor collection coverage on average due to inaccessibility by vehicles to some basic areas. Irregular collection services, dumping and burning of solid waste without air and water pollution control are the major issues of solid waste management. Less care by residents in urban and rural areas when dumping the solid waste, less education and knowledge of the process of dumping solid waste, poor perception on the process and systems of solid waste [3,4]. A researcher mentioned that the rate of waste segregation is not so effective in Malaysia and only 5% of the total waste is recycled and segregated [5].

A researcher mentioned that in Malaysia, attitude and perception are the key issues towards the practice of recycling [6]. Similarly, another researcher mentioned that environment will be heavily affected if the behavior and attitude of the people is not corrected in future [7].

Focused the previous studies like, it can be seen that in Malaysia, SWM is the real issue [8]. Therefore, this study focuses on the perception, attitude and willingness of Serdang residents towards solid waste management. In order to achieve success in SWM, there is a need of positive perception and willingness of the people [9]. This research will help to encourage and educate the residence in Serdang to practice solid waste in better terms and enhance the process of solid waste and increase the efficiency of it.

1.1 Attitudes, Perception and Willingness Toward solid waste

Attitude is defined as a feeling about something or the way of thinking in a cooperative or uncooperative behavior [10]. Attitude of the individual for solid waste management have positively influenced through knowledge and education and have inadequate influence regarding environmental conditions [11]. Information and knowledge together with positive attitude have maintained the practical waste disposal options.

Thus, it is expected that attitude of the individuals will be positively associated to solid waste management [12].

Perception is defined as, "the ability to see, hear and interpret something" [13]. A researcher argued that improper solid waste disposal results in perception of negative outcomes [14]. Recent study investigated the perception of households regarding solid waste management issues in Malaysia using 400 survey responses and found that perception is positively related to reuse and recycling behavior of individuals towards wastes [15]. In the similar study performed by a previous researcher found that resident's perception has crucial role in determining an individual's participation towards solid waste management practices [16].

It is crucial for the society to have positive willingness and participation towards SWM practices [17]. In the study investigated by a researcher, mentioned that SWM could be influenced if the willingness to pay by the people is not managed properly [18]. Similarly, they stated that accessibility of the location need to be focused on in order to provide good SWM services.

2. MATERIAL AND METHODS

In order to satisfy the objectives of this research, a quantitative research was held. The design applied for this quantitative approach study was cross sectional as the study relied on existing variations and data collection was at one point in time [19]. Figure 1 shows the research flow that starts with research methodology, questionnaire design, primary data and data collection method, and finally data analysis. Descriptive analysis was done by SPSS software. Also, the actual data were collected through random sampling technique.

2.1 Data Collection Procedures

The study used random sampling technique to collect the data. Data were gathered from the Serdang area of Selangor Malaysia. The respondents of this study were householders in Serdang area. The total population of Serdang area is 150,000 based on Majlis Perbandaran Seri Kembangan [20]. By using Krejcie and Morgan formulae (1970), the sample size can be calculated as follows:

$$S = X^2 NP (1 - P) / d^2 (N - 1) + X^2 P (1 - P).$$

$$s = \frac{3.841 * 150000 * 0.5 (1 - 0.5)}{0.05^2} * (150000 - 1) + 3.841 * 0.5 (1 - 0.5)$$

S = required sample size.

X2 = confidence level (1.962 = 3.841)

N = the population size = 150000 residents

P = the population proportion (assumed to be 50%, which is 0.5)

D = the degree of accuracy expressed as a proportion (. 05)

The total number of questionnaires distributed was (400) and 327 is the total sample used, Response rate 81.7%.

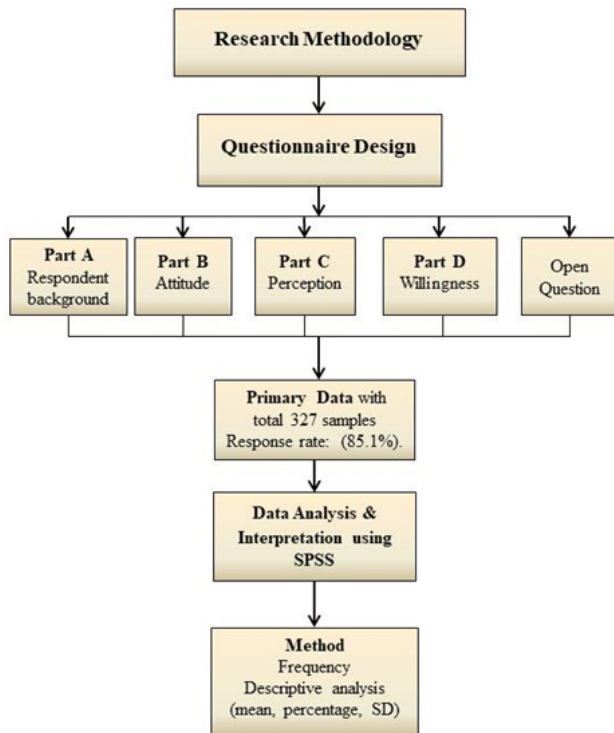


Figure 1: Methodology Framework

2.2 Questionnaire Design

The questionnaire was divided into four sections, which are Section (A): Respondents' Section (B): Attitudes regarding solid waste management and the questions on attitude were adapted from a researcher who investigated the role of attitude and knowledge of households towards solid waste management practices [21]. Section (C): Solid waste management perception and Section. The questions of perception about solid waste management were extracted from a study [22]. They focused on the perception of household towards solid waste management and it was similar to the theme of this study. Section (D): Solid waste management willingness. The questions for willingness were adapted from a study.

2.3 Data analysis

Descriptive methods like percentage, mean and standard deviation were chosen and were analyzed using Statistical Package for the Social Sciences (SPSS). Before conducting descriptive statistics, reliability test was carried out in order to examine the consistency of questions. The minimum 0.70 Cronbach's alpha implies the reliability of the instrument that is suitable and satisfactory for social sciences studies [23].

3. RESULTS AND DISCUSSION

3.1 Demographic information

Females were found to be above in terms of response with 60.6% as compared to that of males having the response of around 39.4%. Next demographic information of the respondent was age. Based on the analysis of the reliability coefficients, the alpha value for all items in the instrument ranged between 0.734 and 0.861, which indicated the

acceptable interrelation between factors. Around 33.6% of the population were less than 20 years, whereas, 31.8% of the sample were in the age range of 21 to 40 years. Furthermore, 27.5% of the total sample constitutes of the age range of 41 to 60 years. Finally, only 7% of the respondents were more than 60 years. Figure 1 shows the frequency distribution of the education level of the participants. A high proportion of the population was holding bachelor's degree (98%), followed by postgraduate with 66%. The less frequency was for the diploma group with 30%.

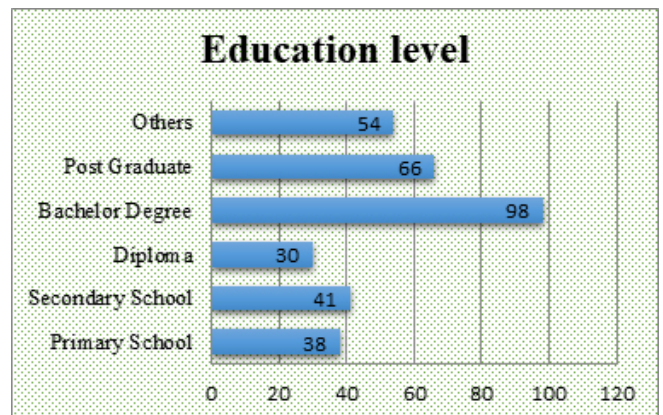


Figure 2: Educational level of the respondents

Figure 3 shows the occupation percentage of the respondents of this. The highest percentage was for the private sector with 33%. Students were 31% of the respondents, 20% were contract, and 16% for the government sector.

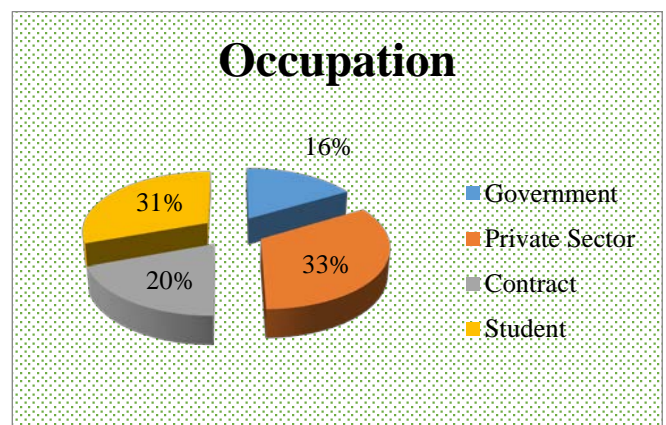


Figure 3: Occupation of the respondents

3.2 Respondent's Attitude towards Solid Waste Management

Table 1 shows the descriptive statistics of attitude of respondent's opinion using 5 point Likert scale. About 24.2% of the respondents agreed strongly to the community workshops on solid waste management participation, which indicated that the respondents possess positive attitude towards waste disposal practices. About 15% agreed strongly to the separating waste reduces waste collection efforts indicating that they are having knowledge of waste separation. About 21.4% of the participants mentioned that there is no relation on waste separation and education, indicating that education does not play a role on the attitude of waste management. About 21.4% of the respondents agreed strongly to the role of women on waste disposal, indicating they have low perception on waste management based on gender. About 23.9% of the respondents mentioned of throwing waste into the dustbin. About 25.7% of the respondents mentioned of segregating waste at house, indicating they have positive attitude on waste collection. About 22.9% mentioned of implementing 3R indicating that they know about the importance of 3R on waste management. About 25.1% mentioned of practicing environment as culture, indicating that they focuses on saving environment through waste management practices. The similar result was identified by a researcher were 80% of the household practices waste management in India [24].

Table 1: Residents' Attitude towards Solid Waste Management

Item	Statistics	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Std. Dev.	Weighted Mean
Community workshops on solid waste management help change waste disposal practices of residents.	Frequency	79	186	45	17	0	.767	4.00
	Percent (%)	24.2	56.9	13.8	5.2	0		
	Cumulative (%)	81.1						
Separating waste reduces waste to be collected and should be practiced by all.	Frequency	49	220	47	9	2	.675	3.93
	Percent	15	67.3	14.4	2.8	0.6		
	Cumulative (%)	82.3						
Waste disposal are not related to one's level of education.	Frequency	70	198	50	7	2	.714	4.00
	Percent	21.4	60.6	15.3	2.1	0.6		
	Cumulative (%)	82						
Waste disposal is women's business.	Frequency	70	193	48	14	2	.767	3.96
	Percent	21.4	59	14.7	4.3	0.6		
	Cumulative (%)	80.4						
You throw waste into the Dustbin.	Frequency	78	189	50	6	4	.759	4.01
	Percent	23.9	57.8	15.3	1.8	1.2		
	Cumulative (%)	81.7						
You segregate your waste at house.	Frequency	84	186	49	8	0	.709	4.06
	Percent	25.7	56.9	15	2.4	0		
	Cumulative (%)	82.6						
You implement 3R (reduce, reuse, recycle) culture at house.	Frequency	75	196	40	16	0	.741	4.01
	Percent	22.9	59.9	12.2	4.9	0		
	Cumulative (%)	82.8						
You practice environment culture in your daily life.	Frequency	82	189	39	15	2	.781	4.02
	Percent	25.1	57.8	11.9	4.6	0.6		
	Cumulative (%)	82.9						
General weighted mean	3.99							

3.3 Residents' Perception towards Solid Waste Management

The participants were asked about their perceptions to improve solid waste management practices in their residential area. Table 2 shows the highest percentage distribution for perception was "the waste collection bags provided to the residents" with 82.3% followed by 81.4% of the residents agreed that the waste management is a shared responsibility for all the citizen.

As shown in Table 2, about 79.6% of the respondents mentioned that there is an organized waste disposal programme in their area, the weighted mean (M=4.01), about 81.3% of the people confirmed that they enjoy the service provided, the weighted mean (M=3.94), whereas 82.3% of the respondents were having the perception of free waste collection bags provided to them, the weighted mean (M=3.94). About 77.4% of the respondents mentioned about the responsibility of the municipal

government to collect the waste, the weighted mean (M=3.87), indicating that they have low perception on waste collection. About 77% of the respondents mentioned of involvement of commercial service to manage waste, the weighted mean (M=3.96), indicating that the waste collection in household and commercial is biased. About 81.6% of the respondents agreed to the responsibility of all citizens for waste management, the weighted mean (M=3.94), indicating that they have positive perception on waste management. Finally, about 81.3% of the respondents were having trust that the waste is disposed off properly, the weighted mean (M=3.99), indicating that they are aware of the job of the municipal employees.

Overall, the mean value of (M=3.95, SD = 0.804) with 80.07% indicated that their perception towards involvement of the municipal government on waste disposal and management is high. With this regard almost 50% of the sample in the study mentioned to have positive perception to participate in solid waste management [25].

Table 2: Percentage distribution for perception

Item	Statistics	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Std. Dev.	Weighted Mean
There is an organized waste disposal programme in my area.	Frequency	78	182	61	5	1	.767	4.01
	Percent (%)	23.9	55.7	18.7	1.5	0.3		
	Cumulative (%)	79.6						
I enjoyed the services provided in my area.	Frequency	53	213	51	10	0	.675	3.94
	Percent	16.2	65.1	15.6	3.0	0		
	Cumulative (%)	81.3						
Waste collection bags should be provided free to people.	Frequency	52	217	46	10	2	.714	3.94
	Percent	15.9	66.4	14.3	3.1	0.6		
	Cumulative (%)	82.3						
Municipal government is responsible for waste management as I pay fee to them.	Frequency	79	171	64	10	3	.767	3.87
	Percent	16.5	60.9	18.3	3.1	1.5		
	Cumulative (%)	77.4						
Commercial services should be involved to manage waste properly	Frequency	78	189	50	6	4	.759	3.96
	Percent	24.2	52.8	19.6	3.1	0.9		
	Cumulative (%)	77						
Waste management is a shared responsibility for all as a citizen.	Frequency	61	186	49	8	0	.709	3.94
	Percent	18.7	62.9	12.2	6.4	0		
	Cumulative (%)	81.6						
I trust that the waste is managed, treated and disposed off properly.	Frequency	75	191	45	16	0	.741	3.99
	Percent	22.9	58.4	13.8	4.9	0		
	Cumulative (%)	81.3						
General weighted mean	3.95							

3.4 Residents' Willingness towards Solid waste management

The respondent's willingness on waste management presented in Table 3 below. It was found that about 83.9% of the respondents mentioned that they are ready to pay for the disposal of waste, the weighted mean ($M=4.04$). About 79.5% of the people confirmed that earning more will encourage them to pay more for the waste management, the weighted mean ($M=4.08$), indicating that income level play an important role on the willingness. whereas 83.5% of the respondents were having the willingness that the charge is reasonable for waste collection, the weighted mean ($M=4.00$). About 82% of the respondents mentioned of having willingness to start composting indicating that they have high willingness on waste collection, the weighted mean ($M=3.99$). About 77% of the respondents mentioned of segregating the waste, the weighted mean ($M=4.03$), indicating that the waste collection importance is provided to the community. About 81.7% of the respondents agreed to the waste management without plastic bags, the weighted mean ($M=3.97$), indicating that they are fully dependent on plastic bags for waste collection. Finally, about 86.3% of the respondents were willing to pay for the services, the weighted mean ($M=4.04$), indicating that they are not willing to perform the waste management practices by themselves. Also, a group of researchers found that willingness to pay for waste collection was at 86.4% among the high income household and 54% among the low income household [26,27].

Table 3: Descriptive statistics for willingness

Item	Statistics	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Std. Dev.	Weighted Mean
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I am ready to pay for the disposal of waste I generate	Frequency	75	200	45	5	2	.695	4.04
	Percent (%)	22.7	61.2	13.8	1.5	0.6		
	Cumulative (%)	83.9						
Earning more income will encourage payment for waste disposal services	Frequency	77	183	59	7	1	.675	4.08
	Percent	22.5	56	18	2.1	0.3		
	Cumulative (%)	79.5						
The amount charged by the operators are reasonable	Frequency	73	200	38	9	7	.714	4.00
	Percent	22.3	61.2	11.6	2.8	2.1		
	Cumulative (%)	83.5						
I am willing to start composting	Frequency	81	187	49	8	2	.767	3.99
	Percent	24.8	57.2	15	2.4	0.6		
	Cumulative (%)	82						
I am willing to segregate my waste to make recycling.	Frequency	78	189	50	6	4	.742	4.03
	Percent	24.2	52.8	19.6	3.1	0.9		
	Cumulative (%)	77						
It is practical for me to live without plastic bags.	Frequency	67	200	47	8	5	.765	3.97
	Percent	20.5	61.2	14.4	2.4	0.9		
	Cumulative (%)	81.7						
I am willing to pay for solid waste services.	Frequency	82	200	33	9	3	.736	4.04
	Percent	25.1	61.2	10.1	2.8	0.9		
	Cumulative (%)	86.3						
General weighted mean	4.02							

4. CONCLUSION

This study conducted to explore respondents' attitude, perception and willingness about the municipal solid waste management in Serdang residential area, Malaysia. The output results discovered that there are significant problems with waste management due to the absence of appropriate waste management process. Therefore, there is a need to conduct socialized activities in order to manage the society for increasing their attitude and perception towards SWM. This study recommended to SWM staffs need to get clear assignments and duties to recycle solid wastes. It is important to conduct more training and workshop to increase the perception of Households. Furthermore, there is a need of serious attention to be given for the waste disposal issue in order to ensure clean environment and vulnerability reduction

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