Presenter's Abstract

FACTORS THAT AFFECT THE PARTICIPATION OF STUDENTS TOWARDS RECYCLING ACTIVITY: CASE STUDY AT UiTM KEDAH

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This papers aims to identify factors that lead to participation in recycling activity among UiTM Kedah student. The respondent in this research are involve students to know which factors lead them to get involved in recycling activity. Recyling has been adopted as way to reduce waste and ease the use of landfills and incenerators, with most currently deals with limited ground sites and raised pollutions concern all together. However, recycling activity could not be performed without public participation and this result will leading to many problems such as health issues and pollution. Two variables have been identified to answer the research question, namely knowledge and facilities provided in relation to public participation among UiTM Kedah student. Sample of 285 respondents has been extracted from the population using stratified random sampling.

Keywords: Recycling, Public Participation, Solid Waste, Knowledge, Facilities.

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CHAPTER I

INTRODUCTION

1.1 Introduction

One of the biggest consequences of rapid economic growth and urbanization process is the massive generation of solid wastes. Solid waste is one of the three major environmental problems faced by the municipalities in the world but also faced by the municipalities in Malaysia (Omran, Mahmud, Abdul Aziz, & Robinson, 2008). Solid waste was defined as any scraped material or other unwanted surplus substances or rejected products arising from the application from any process or any materials that authority want to dispose of. It is estimated about 45 percent of the wastes is made up of foods waste, 20 percent plastics, 7 percent from papers, 6 percent of iron and glass and other made of the rest. Currently, over 23,000 tones of waste are produced each day in Malaysia. However, this amount is expected to rise to 38,000 tones by the year 2020 (Solid Waste Disposal Department, 2012).

According to the Solid Waste Disposal Department of Malaysia in 2010 the statistics shows that Malaysians solid waste generated had increased from year by year in all states (Solid Waste Disposal Department, 2012). In Northern regions of Malaysia, there are increasing rate of solid waste generation started from 1381.6 tones per day up to 2172.6 tones a day in 2010. While the increasing rate also can be seen in the most dense regions like Kuala Lumpur, Selangor, Melaka and Negeri Sembilan where from 2826.5 tones per day up to 4021.2 tones per day especially in Selangor alone. Even the small states like in

Perlis and Melaka also show the increasing rate of solid waste generation when the statistics increased from 195.5 tones per day up to 278.1 tones in 2010. This is in line with the solid waste generated by Sabah where about 2021.0 tones in Sabah had increased to 3248.9 tones per day in 2010.

Overall data of solid waste generated in Malaysia from 2008 to 2010 showed an increased from 24968.8 tones to 28102.6 tones per day. Thus, it gives a triggering alarm to government to have an effective and efficient system of waste management to cope with the mounting of waste produced. In order to ensure that solid wastes are properly dispose, government of Malaysia under Ministry of Housing and Local Government (MHLG) practiced Solid Waste Management (SWM) as one of the way to respond towards this problems.

Taking into considerations towards huge generation of solid waste problem, government also had taken part in the Local Agenda 21 (LA21) which was introduced in the Earth Summit Conference held in Rio de Janeiro in June 1997. Agenda 21 is a development action program global sustainability. Basically, LA21 is a program towards sustainable development and emphasized on the cooperation of Local Authority and participation from the public. It shows that without public participation, the efforts towards sustainable environment cannot be realized. The public participation in view of the interrelationship towards sustainable development efforts should recognize, accommodate, promote and strengthen the role of communities. The roles of public to participate in environmental activity have been stated in Chapter Three of LA21 under Section 26 (1).

In Malaysian context, young Malaysian especially students are well aware about the environmental issue in this country but the reluctant to participate are the major problem that must be mitigated. Studies indicate that although younger consumers in Malaysia generally are aware of environmental issues, they however lack compassion about taking any proactive action to help reduce these issues due to their 'care free' and ' I don't care' attitudes (Abdul Wahid, Abustan and Karwi 2000; Abdul Wahid and Abustan 2001). It is important for the government and other NGO's to act right as the findings indicate that environmental activity should focus more on the action part. Thus, increasing the awareness for conserving the environment through recycling activities is one of the major steps to be achieved to make recycling a choice lifestyle in Malaysia.

1.2 Problem Statement

Solid waste management is one of the emerging issue that faced by Malaysia due to the rapid development of the country. Everyday there are tons of solid waste generated. However, according to the statistics by Ministry of Housing and Local Government (MOHLG) in 2008, Malaysia recycling rate was only 5 percent and it become serious problem to overcome this issues. Yet, this shows those publics are not aware on sustainable and environmental issue and not playing an active role to reduce the solid waste and recycle the waste. Issues with overflowing landfill sites also become the problem in many countries and Malaysia is no exception. Under the Ninth Malaysia Plan a comprehensive blueprint prepared by the Economic Planning Unit to allocate the national budget from the year 2006 to 2010 that government had allocated around RM958.7 million ($307 million) to manage solid waste. However, in 2010 alone, the government had to spend RM303 million ($97 million) which one third of the total

amount spent throughout the Ninth Malaysia Plan period (Ministry of Housing and Local Government, 2012).

Deputy Prime Minister, Tan Sri Muhyiddin explained that the cost of waste management had continued to strain the government, and that the volume of waste produced by the people had risen from 19,000 tonnes per day in 2008 to 27,000 tonnes per day presently (Solid Waste Disposal Department, 2012).This indicates a serious situation as many of the waste disposal sites in the country are not sanitary landfills. According to the Minister of Housing and Local Government in 2010, there are 166 landfills operating in Malaysia but only eight are sanitary landfills.

At current rate of waste generation in Klang Valley, existing disposal sites will be filled up in less than two years (Alam Flora, 2008). This is due to the huge amount of solid waste produced by this area. Plus, if there is no other methods used to reduce the waste. Studies conducted by Haron (2002) found that many Malaysian consumers are not recyclers which are more than 68 percent. After shopping, most people will opt to dump the plastic bags into dustbins rather than take initiative to separate items be recycled or re-used. Many perceived that all the rubbish they throw away is sent straight to landfill for dumping and very few believed that the rubbish will be separated for example to be sent to recycling centre for processing by 'landfill scavengers' before sending the rest to the landfill. The country may have shortage of lands to dump the waste. Hence, recycling activity also need to be practice by all public due increasing amount of solid waste generation. Therefore, the study is conducted to ascertain the participation of recycling activity among the students.

1.3 Research Questions

1.3.1 Is students' knowledge affecting the awareness in recycling activity?

1.3.2 Is facility provided affecting the awareness of students' in recycling activity?

1.3.3 How can the demographic factors affect the awareness of students' in recycling activity?

1.4 Research Objective

1.4.1 To investigate the relationship between knowledge and the awareness of recycling activity among the students.

1.4.2 To study the relationship between facility provided and awareness of recycling activity among the students.

1.4.3 To investigate the most influence factors of awareness among the students in recycling activity.

1.4.4 To indentify gender differentiation in awareness of recycling activity.

1.5 Scope of Study

The scopes of the study are as follows.

1.5.1 Level

This study will covers to the Degree students in four degree courses in UiTM Kedah which are Bachelor in Administrative Science and Policy Studies (AM228), Bachelor in Information Management (IM224), Bachelor in Islamic Banking (BM229) and also Bachelor in Computer and Mathematical Science (CS231).

1.5.1 Territory

The study will emphasize on the involvement of the students in reducing the solid waste in the campus. The study conducted in UiTM Kedah.

1.5.3 Time

The research is conducted from 20th May 2012 until 23rd May 2012. The period of data collection took about one week.

1.6 Significance of Study.

1.6.1 This study will provide additional research output on this issues due to lack of research undertaken.

1.6.2 This study is aimed to deeper the knowledge pertaining the perceived recycling activity among community.

1.7 Definition of Terms/Concepts

The terms used in this study are defined for ease of understanding.

1.7.1 Solid Waste

Solid waste are the things that people throw away which embrace things commonly describe as garbage, refuse and trash (David & Conwell, 2008). While Ministry of Housing and Local Government (2007) defines solid waste as 'any scrap material or unwanted surplus substance or rejected products arising from the application of any substance that is required to be disposed of being broken, worn out, contaminated or otherwise spoiled' (Ministry of Housing and Local Government, 2007). The characteristics of solid waste are important for evaluating infrastructure, technology and equipment needs, management program and planning, especially with respect to the implementation of disposal as well as resource and energy recovery options (Amimul Ahsan, 2010). Therefore, the definition of solid waste that is used by Ministry of Housing and Local Government (2007) is appropriate to describe the concept of recycling activity.

1.7.2 Public Participation

Public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process. Public participation is the process by which an organization consults with interested or affected individuals, organizations, and government entities before making a decision. Public participation is two-way communication and collaborative problem solving with the goal of achieving better and more acceptable decisions (NIH Director, 2008). Public participation is needed

to ensure the successfulness of the recycling activity. The characteristics of the public participation in solid waste are demographic factors, confront perceptions, and voluntarily (Huw Vaughan Thomas, 2012). The research done by Bolaane (2009) stated that the public participation will determine the successfulness of the recycling activity. While, according to Shafique Fahmi Sidique (2008), without public participation, recycling can be difficult and confusing thus leads to the barriers to participate. The government has promoted recycling programmes through various campaigns however little has been achieved due to the lack of participation and warm attitudes of the households (AbdulNaser Omran Ali, 2008). Therefore, the public participation is vital to be discussed further in this study to measure student's participation in recycling.

1.7.3 Recycling

According to Tan Shu Ying (2010) recycling activity involves processing used materials into new products to prevent waste of potentially useful materials while reduce the consumption of fresh raw materials, reduce in energy use, reduce air pollution from incinerator process and water pollution from land filling. Moreover, recycling is the key component of modern way of waste management while also one effort to responding with the 3R's waste hierarchy in reducing waste generation. Therefore, the concept of recycling that is used by Tan Shu Ying (2010) is appropriate to describe the concept of recycling activity.

1.7.4 Knowledge

Knowledge based on Oxford Advanced Learner's Dictionary (2010) defines as the information, understanding and skills that gain through education or experience. Recycling relies on individual participation and without adequate knowledge of recycling, people will not participate in recycling activity because lack of information of what products to recycle, where is the location of recycle bins and how to separate the recyclable products. Vinning and Ebreo (1990) compared the differences between recyclers and non-recyclers and discovered that the major factor separating the two was adequate knowledge of which materials were accepted for recycling. Even those who believe strongly in conservation and resource reduction are less likely to recycle if they do not have adequate knowledge of what and where to recycle (Simmons & Widmar, 1990). The characteristics include in knowledge to recycling are media and promotion, impact and benefits of recycle and education. Therefore, the knowledge factors suitable to used to measure the participation of students in recycling activity.

1.7.5 Facilities

Facilities according to the Oxford Advanced Learner's Dictionary (2010) define as services and equipment that provided for a particular purpose. In recycling activity, the characteristics of facilities are high frequency or visibility of recycling bins and location/area that facilities provided. According to the Omran, Mahmood, Abdul Aziz, and Robinson (2009), recycling bins is vital element in recycling activity because the material must collect in the bins before it being process at recycle center. Therefore, the

factors of facilities is suitable to be used to measure the participation of students in recycling activity.

1.8 Conclusion

Rapid growth of population and high rate of economic development in Malaysia resulted in the generation of vast amount of waste produced year by year. In order to reduce the waste generation and in need to respond with this emerging issue, government had come out with Solid Waste Management (SWM) as one of the way to reduce the wastes in Malaysia. This effort was to promote the recycling activity among the public to aware thus participate in conserving the environment.

CHAPTER II

LITERATURE REVIEW & CONCEPTUAL FRAMEWORK

2.1 Introduction

This study is an effort to identify facilities, knowledge or attitude as the factors leads to student's participation in recycling activity. With the increasing number of students' in UiTM Kedah, the amount of waste produced every single day also shows the escalating growing patterns. The generation of waste typically generated from residential colleges, cafeterias, faculties, and administration blocks. Students, staffs of academic and non-academic division and visitors are predominantly the generator. The success of a recycling activity depends on the active and sustained participation of students in the correct separation and collection of

recyclable waste. An effective study of strategies aimed at augmenting students' involvement in recycling involves understanding which factors influence the decision to co-operate with a recycling activity. This research investigates the influence of facilities, and knowledge which involved in participation in recycling.

2.2 Background of UiTM Kedah

The campus spreads across a 350 acre ground in Mukim Bujang (between Semeling and Merbok), which is approximately 14 kilometers from Sungai Petani and was developed by the approval of the 6th Malaysian Budget Planning with an amount of RM38.4 million since 3rd June 1994. The establishment of this campus is based on the main plan which considers to cater a maximum capacity of 7000 students. Besides fulfilling higher educational needs, UiTM Kedah also acts as a catalyst to economic and educational development in the northern area, specifically in Kedah state. Statistic data given by Academics Affairs from UiTM Kedah, as at 11th Mac 2012, the total students is 6719 which is 2142 for male students and 4577 for female. It consists of two level of education which is Diploma and Degree level (UiTM Kedah Website, 2012). The UiTM Kedah Facility Management Division is one of the main divisions that plans the infrastructure and ensures that all the activities and programmes in the campus take place as planned with 35 staff in the division. The main functions in this division are to ensure that the campus surroundings are taken care off, ensures that all the facilities are usable, maintains, repairs and upgrades all of the buildings' amenities as well as the surrounding areas and plans the developmental and area's growth.

2.3 Environmental Activity in Malaysia

Environmental activity in Malaysia has very long way to sustain the environment but it can be difficult if the public not aware thus resulting in potential barriers of participation. Efforts to reduce waste through waste minimization or recycling should be planned properly and this does not mean that Malaysia need sophisticated or advance systems while public is not efficient nor effective. It is enough to have effective and efficient public that aware and participate in recycling activity. The recycling activity should be properly planned involving all municipalities, household, non-government organization (NGO's), and involve all public in Malaysia. In order to increase the public participation in environment activities, there must be an involvement from all of the municipalities, council, NGO's, and others.

However, recycling activity can be difficult and confusing when the local authorities have conflicts regarding roles or scope of work especially between the Federal and State level. However, the Local Authority was no longer being responsible for Solid Waste Management once the Act was enacted in Federal level and governed under Concurrent List of 9th Schedule of Federal Constitution. This was wrongly interpreted by the Local Authority that the responsibility to manage the solid waste was put under the Local Authority. From that, the Local Authority already felt that the roles as state power were placed to Federal. The major role to be play by either Local or Federal government is to sustain the environment but it is also an effort of the individuals to sustain and retain the environment for the better future. In order to realize the program, cooperation from the Local Authority is very important. It has mentioned in LA21 that acknowledged the key players in the implementation of sustainable development concept are the Local Authority. The implementation of LA21 in Malaysia started in January 2000 under the

pilot project LA21 that involved four local authorities namely Petaling Jaya Municipal Council (MPPJ), Miri Municipal Council, Kuantan Municipal Council and Kerian District Council (Ministry of Housing and Local Government, 2012).

But, in January 2011, Alam Flora has conducted a pilot project in Kota Kemuning to encourage the residents to participate extensively in exhibitions and environmental activity while at the same time is actively involved in regular dialogue sessions with resident's associations, and regularly participate in 'gotong-royong' and other community cleaning-up activities. It is also estimated that Alam Flora supports about 800 'gotong-royong' programs each year, providing vehicles, equipments, manpower and disposing all waste collected (The Star, 2011). Hence, the involvement by Alam Flora in Kota Kemuning showed that government are really serious in promoting environmental activities in order to increase the public participation not just by providing policy and Acts.

Additionally, in supporting the environmental activities, government under Ministry of Housing and Local Authority (MOHLG) had launched recycling activity since 2001 till now to increase the public participation towards recycling activity. In 8^{th} Malaysia Plan, recycling activity also included as one of the pilot projects for waste minimizing, promotion of reuse, developing recycling-oriented society as the main policy goals. While in 10^{th} Malaysia Plan (2006-2010) was more emphasized in the continuation of recycling activity of waste reduction for a greater environment. Government was taken seriously regarding the activity of reducing the waste generation since it was stated in Malaysia Plan (Solid Waste Disposal Department, 2012). In Malaysia alone, the shortage of landfills area has been very serious and critical issue with

almost 80 percent of the landfills reaching its maximum capacity and it is expected to expire in two years time (Alam Flora Website, 2008). Based on the statistics shown by the Alam Flora (2008), this was means that the life spans or life expectancy of one area landfill was about only two years. If there are about 30,000 tonnes of waste generated currently in Malaysia daily with the projection of two percent of minimum increase rate per year, there will be shortfall of the landfills in future.

As a way to reduce the waste generation besides using landfills, some of the countries tried by attempting to overcome this problem by incinerating the waste but the quantum of the waste which is incinerated are small. Incinerator can be defined as the machine that burns something until the last ashes. According to the Tennesse Solid Waste Project (2010) in Knoxville, an incinerator is a unit or facility used to burn trash or other types of waste until it is reduced to ash plus, it is heavy-constructed and well-insulated materials, so that it does not give off extreme amounts of external heats. However, one incinerator may cost around RM261, 578 alone exclude its construction, operation and maintenance plus, this huge machine need big space to operate. The initial stage of procurement, operations and maintenance of an incinerator is very high. When it comes to incineration, public have to think about emissions because burning the solid waste may cause respiratory illness, blacken buildings and kill plants and some of the emissions may contains hydrogen sulfide that can causes acid rain, carbon monoxide and several heavy metals that can harm people (Harvard Campus Services, 2011).

Due to this problems, public should know about the benefits of recycling activity. Some of the benefits are conservation of natural resource like reducing the use of landfills, reduced

energy consumption, and the pollution impacts. Besides that, recycling activity also give benefits in terms of job creations. Basically recycling activity is a profitable option where there is relatively easy and inexpensive to start a home-based recycling business (Leslie, 2011). For example, public can take part in recycling activity by having what kinds of things that they want to recycle then contact the recycling plant for pricing and then can collect and resell these things at a reasonable profit. The benefits of recycling was not only to the public only but also for the society because by practicing recycle, public band together and build communities around common causes and issues. Advantages from recycling activity were not only to public but also to the environment even though it is one small effort to protect the atmosphere.

2.4 Overview of Public Participation in Recycling Activity

In the 1930s and 1940s, recycling once again become prominent, as people found needed to conserve because could not afford to buy new items and because of the increased need for nylon, rubber and metal in particular for the war effort. Recycling faded from view after World War II as economic factors improved and more again made new goods inexpensive to purchase (Leslie, 2011). In 1970 environmental groups started focusing attention on the need for recycling. The United States Environmental Protection Agency maintains that recycling uses less energy than producing products from virgin materials, reduces emissions of greenhouse gases, conserves natural resources, decreases the amount of necessary landfill space and creates jobs. According to Mayfield (2009), recycling has the ability to become an effective resource recovery mechanism. For the last two decades, recycling has gained attention as a means of protecting our environment and it offers one of the most sensible solutions both economically and ecologically.

Over 100 million tons of waste is still thrown away that could have been recycled. So the question remains how to increase public awareness and participation in recycling programs. For this reason, the Malaysia Government through the Ministry of Housing and Local Government launched a national recycling campaign in 1993 (Ministry of Housing and Local Government, 2012). This significant effort was to change the mentality of many Malaysian, where recycling have not become a universal way life in Malaysia (Omran, Mahmud, Abdul Aziz, & Robinson, 2008). The government decided to re-launch the recycling campaign again in 2001.However, most people know that recycling plays an important role in managing the garbage generated in homes and businesses, and that it reduces the reliance on landfills and incinerators. But recycling is far more than a local material management strategy it is also an important strategy for reducing the environmental impacts towards future generations.

Moreover, every year about 60% of the allocation given (so far RM70 million or US$18 million) is used to increase awareness among the public. Some of the medium used are poster, pamphlets, bulletin, and electronic medium such as television, radio, websites, school busses, LRT, billboards, exhibition, carnivals and seminar (News Straits Time, 2010). Based on a recent survey by the Ministry of Housing and Local Government, there is 100% awareness among the public but only 80% are actually practicing on recycling (Ministry of Housing & Local Government, 2011).

The research regarding on the recycling activity as to measure the awareness of the students and publics have been done by Mohammad Aljaridin, Persson and Al Itawi Hossan (2011). Samples and data was collected by a survey conducted in March 2010 at Tafila Technical University in Jordan and surrounding area, a total of 1000 student were randomly surveyed using

three types of questionnaires. In total 28 questions have been asked in a computer based survey to the students in Arabic language and by personal interviewers by students for household living nearby the university, these questions were measured by a 7-point Likert type scale (1. Strongly Disagree, 2. Disagree, 3. Slightly Agree, 4. Agree, 5. Strongly Agree. 6. Have no opinion. 7. Do not know). The findings of this research clear that the recycling knowledge of respondent is very low by only 21 percent of students had knowledge regarding recycling campaign. However, the students hold a positive attitude toward the willing for learning more about recycling activity. At the same time, respondents are also aware of the environmental and economical benefits from recycling, whereas they have negative attitude toward walking more distance and paying more for better recycling in the campus. The other research done by Bolaane (2009),identified that public participation is considered the touchstone for the success of recycling schemes. In recognition of this, the trend in recycling policy and legislation is geared towards promoting people centred approaches in recycling with public education as the main driver towards increasing public participation. Most of the time, these initiatives do not take into consideration the perceptions and attitudes of the key stakeholders of municipal officials and the public towards waste recycling.

Measuring the extent of public participation is essential if local authorities intend to improve their recycling rates by targeting their work. The research conducted by Welsh Government in United Kingdom (2012) found that most, but surprisingly not all local authorities, undertake some form of measurement of public participation. The method for measuring participation can vary considerably from the most basic, occasional counting of boxes, bins or

bags put out by residents, to far more in-depth, and regular recording of the participation details of individual households and streets.

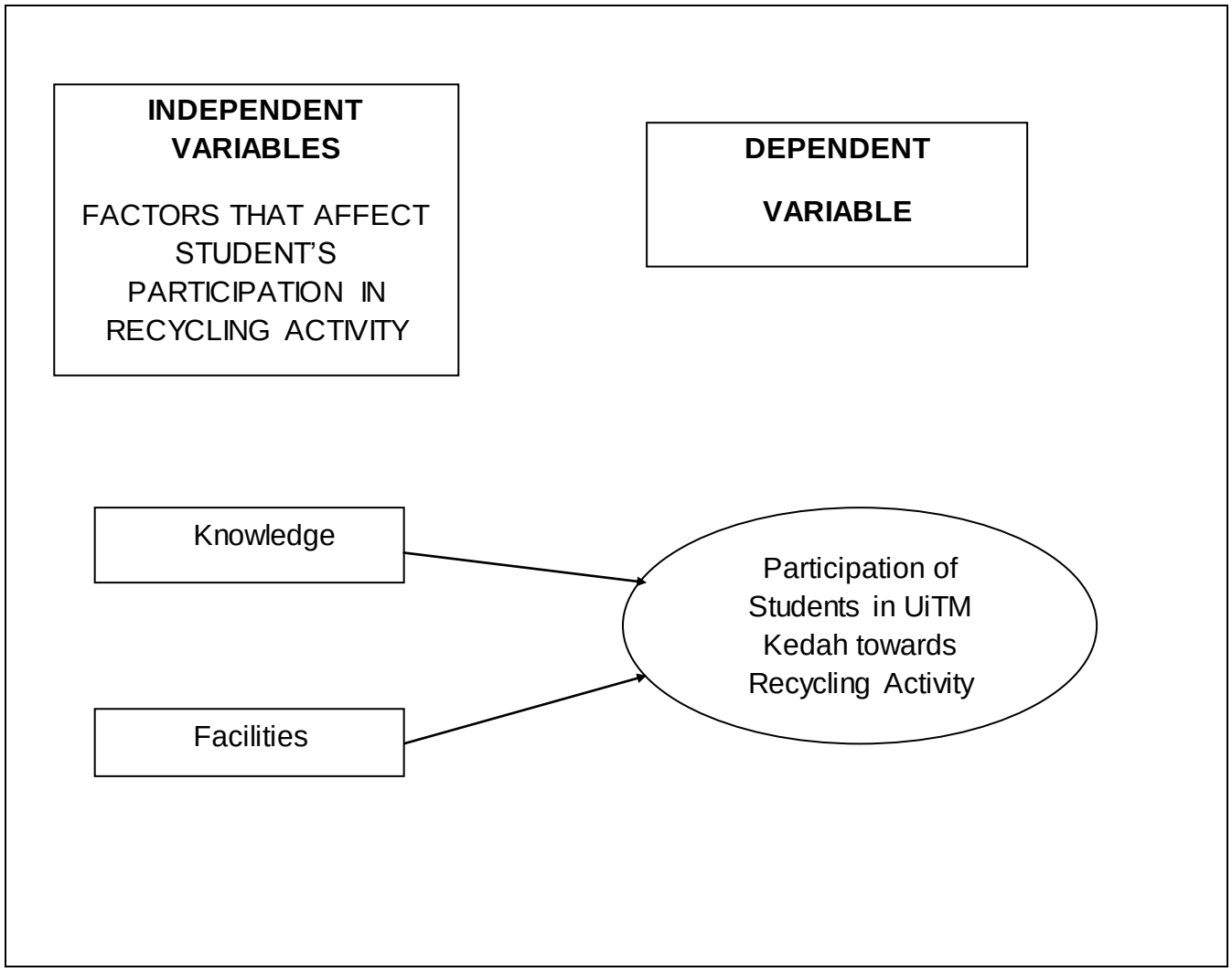
Another method of measuring public participation is done by Huw Vaughan Thomas (2012) as to weigh the waste gathered during collection rounds for recyclables. The weight of waste collected on each round is divided by the number of households to obtain the average weight of waste recycled per household. However, measuring in this way is not detailed enough to identify pockets of low performance that occur within rounds. Measurement needs to identify those that do not recycle from those that already recycle but could do much more and identify the barriers to recycling. The strategy required to educate a resident who is already recycling to do this more effectively is very different from the approach needed to persuade a resident to start recycling. Information is needed to educate the public as to aware and participate in recycling activity.

The findings conducted by Thang Quang Nguyen (2011) at the University of East Anglia,United Kingdom in 2011 using questionnaires survey to develop an understanding of students' recycling knowledge, their recycling barriers, and perceived effectiveness of different publicity options potentially applied in the university. Findings from the survey revealed that students' attitude towards recycling were generally positive. Environmental concerns and the desire to reduce the volume of waste sending to landfill were two major motivations encouraging students in participating in recycling behaviour. The study found a knowledge gap among student population on what to recycle and where to recycle. Consequently, students tend to disposing all sorts of waste to landfill bins, resulting in a significant loss of recyclable materials in landfill waste. Students show a strong desire to receive recycling information in order to more

engage in recycling activity. Instruction on what can be recycled, what benefits brought about by recycling, what happen to the recyclable materials after collection, and feedback on the recycling performance are among the most desired information students would like to receive (Thang Quang Nguyen, 2011).

2.5 Conceptual Framework

Figure 2.1: Conceptual framework for factors that affect the participation of students in UiTM Kedah towards recycling activity.



2.6 Knowledge

Knowledge as define in Business Dictionary (2012) as human faculty resulting from interpreted information, understanding that germinates from combination of data, information, experience and individual interpretation. The most important cognitive variables that have been

found to influence recycling behavior are knowledge of where, what and how to recycle and awareness of the benefits of recycling. The study by Bolaane (2009) found that, even though municipal officials in Gaborone at Botswana are aware of the potential benefits of recycling, they appear not to embrace waste management reforms such as municipally organized recycling schemes amid their limited knowledge in organizing such schemes. In addition, the study found that even though the public are aware of recycling, this does not necessarily translate into participation in recycling initiatives. Letting the public know about what happens to the materials once after they have been collected also helps to reinforce the feel-good factor and encourages participation. Recycling can be the platform from which many people can be educated about their environment and good citizenship.

Education is often seen as the key to changing behavior. Indeed, how can people engage in environmentally significant behaviors if they do not know about the impact of their action, or about the details of how to engage in a specific behavior. The study by Schultz (2002) reported the increasing damage that cause by acts human are among them on the natural environment such as ozone holes, deforestation and so on. But is education sufficient to change behavior? In the context of social marketing approach, educating is often synonymous with providing information. In essence, the educational activities involve disseminating information about the topic or about the behavior with the goal of motivating people to act. It is, however, important to point out that is just one narrowly conceived approach, and that not all educational efforts are information based (Andrews, Ramsey & Hunger, 2003)

Recycling activity has become common in communities throughout the United States and Canada. Within the past 10 years, all 50 United States have passed laws requiring reduction in

the amount of trash sent to landfills (Schultz, 2002). California like many states has set a goal of a 50 percent diversion rate that is, 50 percent less trash sent to landfills. In response to these laws, cities and counties have implemented many types of programs, one of which is curbside recycling. Although laudable, these diversion goals are difficult to reach, and many communities are struggling to meet diversion mandates. In an effort to encourage people to recycle, a number of intervention programs have been developed and implemented. These program target both personal and situational variables, but the effectiveness is often questionable. Of the intervention used to promote recycling, the most common approach is based on knowledge.

Recycling coordinators for cities, advisors for technical councils at the country level, and directors and other administrations of recycling companies often believes that low recycling rates result from a lack of knowledge (Schultz, 2010). From this basic assumption, the solutions for increasing recycling rates are the distribution of educational materials about recycling. The basic assumption of this knowledge deficit theory is that increasing knowledge will translate into a change behavior. Three testable hypotheses can be derived from this theory. First, knowledge about recycling is correlated with recycling behavior. Second, distributing educational materials containing information about recycling will lead to an increase in knowledge about recycling. Third, an increase in knowledge about recycling will lead to an increase recycling behavior. Most of the research on knowledge as a predictor of recycling behavior has focused on procedural knowledge, which is the knowledge about where, when and how of recycling. This can be distinguished from impact knowledge, which refers to an individual's belief about the consequences of recycling. This type of knowledge is especially important in the value belief norm theory, where belief act with values and norms as joint determinations of behavior (Stern,

2000). The research addressing this issue has focused almost exclusively on procedural knowledge. For example, knowledge is often measured by asking participants to identify which material are or are not recycled in their programming and coding the percentage of items correctly classified. In general, the more knowledge a person is about which materials are recyclable and when and where materials are collected the more likely that person is to recycle (Lindsay & Strathman, 2007). Knowledge is not a motive for recycling (McKenzie, 2000). However, lack of knowledge can be to barrier to recycling. The research by Gardner and Stern (2006) argued that the first step in effective community based social marketing is to uncover the barriers to the targeted behavior. These barriers can be external to the individual such as lack of knowledge about which materials are recyclable. Thus, lack of knowledge can be a barrier to recycling and would predict that an individual who knows what, when and how to recycle would be more likely to do it.

As a concern providing the knowledge to the students, Harvard University has a program called Sustainability at Harvard with the mission connects people across the University with information, tools, and inspiration for the challenge at hand: making Harvard sustainable for the long term. There are various projects carried based on this program Garage lighting project to save energy and money (Leslie, 2005). Knowledge about the availability of recycling program and facilities is imperative for households to effectively participate in recycling. Study conducted by Shafique Fahmi Sidique (2008) found that knowledge about recycling programs is a strong predictor of recycling involvement. The research also found that recyclers are more aware of the public associated with recycling and more knowledgeable about the recycling facilities in the local area. Moreover, the project implementation of an Idea-Supported Recycling Innovation

Center was launched in 1999 at German and the important project goal was to foster the transfer of knowledge about recycling alternatives for specific kinds of waste within the recycling network (Milchrahm & Hasler, 2002) The study by Adcock (2012) on the students from Birmingham City University, United Kingdom have found that the reason for the public's mixed response to recycling is a lack of knowledge about the issue. In each of these instances, a lack of knowledge can be a barrier to action, and disseminating information is likely to produce an increase in recycling behavior. However, in existing program where people have a basic understanding of the program, increasing knowledge will not lead to change in behavior (Schultz, 2002).

As argued, the research by Agamuthu, Santha and Fauziah (2009) which take stakeholders who attended in the Focus Group Discussion (FGD) as the respondents in the research agreed that awareness creation is important for the success of recycling. Therefore, they strongly believe that education plays an important role in making recycling a success. Generally the 3R FGD stakeholder perception was that in their area and that awareness creation, education and technical training for staff is important in making recycling a success. However, the perception is also that recycling awareness among the public is not high and low public concern is the cause for limited recycling. Interestingly 100 percent of the stakeholder agreed that awareness creation was important for recycling.

Nevertheless, one major barrier constraining the desire to recycling participation, as identified by Kaplowitz (2009); Kelly (2006), is a knowledge gap regarding to what can be recycled, where to dispose recyclable materials, and how to recycle properly. Furthermore, the establishment and tailoring of recycling outreach education and communication campaigns to

change participants' attitude and behaviour, particularly in universities settings, remains largely unexplored.

2.7 Facilities

Vining and Ebero (1990) found that recyclers are more aware of the publicity associated with recycling and more knowledgeable about the recycling facilities in the local area. Recycling will be conducted if the bins are provided at the particular area. Most public will contribute towards the activity by using the bins which the rubbish shall be separated according to the colours of bins, for example in blue for paper, brown for glass, and orange for aluminum and plastic. Research done by Omran, Mahmud, and Abdul Aziz (2009) indicated the inefficient of the solid waste management was addressed due to the lack of infrastructure, inefficient technical setup like providing enough facilities to support recycling, has lead to an inadequate and inefficient recycling activity at various stages. These contrast with the increasing waste generation rates and rising environmental awareness among the public.

The awareness towards recycling activity was also influenced by the factors of insufficient financial status of the Local Authority to manage the solid waste. To reduce the burden of the authority, government privatizing the process of solid waste management in 2009 which aims to enhance the environmental quality through resource re-uses and waste minimization. However, since the waste management system was privatized, the performance of managing the solid waste was still at the average level said Deputy Prime Minister Tan Sri Muhyiddin (2011). The three concessionaire companies are Alam Flora Sdn Bhd, which will manage the central and east zones comprising the Federal Territory of Kuala Lumpur, Putrajaya, Pahang, Terengganu and Kelantan, SWM Environment Sdn Bhd which will manage the southern

zone covering Johor, Melaka and Negeri Sembilan and Environment Idaman Sdn Bhd which will manage the northern zones of Kedah and Perlis.

Facilities provided to encourage the recycling activity is very important because in order to make public aware of this recycling activity, public must know the location of the nearest place to recycle. Research conducted by Gebril (2011) indicates that 52 percent of the public complained that the facilities to do recycling are far and cannot be reached easily. According to the Poole Borough Council (2008) in United Kingdom, the facilities provided plays important factor to determine the awareness of recycling activity when 'the council set up 55 recycling point which about 360 liter bins along the most popular place or 'hotspot' to make public aware of recycling activity'. By doing this, most of the public that walk along that located bins may aware and indirectly involve in recycling activity. Moreover, the local authority should provide high frequency and visibility of recycling facilities to gain higher recycling awareness amongst the public.

Government or Local Authority in Malaysia faced some difficulty when it comes to the allocating the facilities to encourage public to recycle. The increasing generation of waste currently make the local authority lack of ability to cater the waste dumping problem unless with providing the landfills to placed the huge waste. Due to this, government allocated big amount of money to open the land for dumping purpose. According to the Secretary of Petaling Jaya City Council, (2008) the allocation for land use to open new landfills may arise from RM10 million and more in future regardless of land use and cost to manage the waste.

It is not including the construction of the place and maintenance yet. When government put more allocation on land to dump the waste, it will reduce the availability of the facilities to demonstrate recycle amongst the public. One important reason for this is insufficiency of facilities, including collection schedule or inappropriateness in the location of recycling facilities. Presently, facilities available are 'recycling bins, recycling centers mobile collection unit (van), and recycling lorry' (Agamuthu, Santha & Fauziah, 2009). A sufficient and user friendly recycling facility was important to make recycling a success because it is closer to the public in order to participate in recycling activity.

Three major companies Alam Flora Sdn. Bhd, Malaysian Newsprint Industries Sdn. Bhd and Malaysian Sheet Glass Berhad have pledged their support in ensuring the recycling activity is success. These companies have made sure that it is easy and convenient for Malaysians to recycle their waste (New Straits Time, 2000). Three coloured dustbins have been designed orange for plastic and aluminium products, blue for paper and brown for glass. All one have to do its separate the waste accordingly and dispose in the right bins. The Ministry of Housing and Local Government ordered 30,000 of these dustbins and has distributed them to 30 local authorities in major towns and cities. The collecting centers will be stationed strategically in supermarkets and shopping complexes, petrol stations and places where it is easy to park (Department of Environmental Malaysia, 2009).

In an observational study exploring the effect of location on recycling behavior, the research by Fritz, Kasch, Mantey, and Pearson (2009) identified a higher likelihood of recycling among participants in an area with more recycling receptacles than garbage cans. These results indicated that participants put little thought into the disposal of their recyclable items, and the

mere presence of more recycling bins more conveniently placed than garbage cans resulted in higher rates of recycling.

2.8 Hypothesis

HO1: There is a significant relationship between student's participation in recycling activity and facilities. The more facilities provided in that area, the more students' are aware in recycling activity.

HO2: There is a significant relationship between student's participation in recycling activity and knowledge. The more knowledge that has by the student's, the more student's are aware in recycling activity.

2.9 Conclusion

There is the impact done by the recycle activity as it give more sustainable development and create more health environment. How to assess the environmental sustainability or value recycling? One way is to look for impacts on the natural environment, for instance on the effects on local vegetation, wetlands or wildlife populations effected by recycling activity (Martchek, 2000). The process of recycling will protects the environment. The report of the United Nations Conference on the Human Environment (1992) reported that in order to achieve sustainable development, environmental protection shall constitute an integral part of development environmental as a vital part of development process and cannot be considered in isolation from it.

CHAPTER III

RESEARCH METHODOLOGY

3.0 Introduction

This chapter will explain the researchers' research design, select the appropriate and suitable research design for the objective or relate with the research topic as well. According to Sekaran (2009), research design discussed or enlighten issues relating to decision regarding the purpose of the study, the study setting, type of investigation, the extent to which it is manipulated and controlled by the researcher, the level at which the data will be analyzed, are integral to research design. For this study, researcher will be using questionnaire to gather the information. Hence, to elaborate the result, researchers will use the Statistical Package for the Social Sciences (SPSS) Version 18.0.

3.1 Research Design

The research design for this study was cross-sectional survey where the data will gathered just once which over a period of a week in order to answer a research questions. According to Adler and Clark (2003), cross-sectional survey is data are collected for all the variables of interest using one sample at one time. Therefore, for this study, researchers used one time collection over a period of two (2) days time for the questionnaire to be distributed. Hence, this method was used because it enables the description of samples or populations on a number of variables and because it is least expensive to collect data once from one sample.

3.2 Unit of Analysis

This study addressed about the factors that lead to the students' awareness in recycling activity, therefore the unit of analysis will be the individuals of students in UiTM Kedah that has been selected as respondents. This is because the researchers want to look at the data gathered from each individual in order to identify the factors that lead to the awareness in the aspect of individuals not in group.

3.3 Sample Size

Based on the data given by Academic Affairs Department of UiTM Kedah, from the 1312 students of Degree courses, the researchers chose 285 students to be the respondents which are sufficient to answer the Research Questions, Research Objectives and Research Problem. The sample size chosen was considered adequate as referred to Sekaran (2009) where if all the Degree's student's populations in UiTM Kedah are 1312, the sample size will be 285 students are considered sufficient.

3.4 Sampling Technique

The type of sampling was stratified sampling which defines as a probability sampling procedure that involves dividing the population in groups or strata defined by the presence of

certain characteristics and then random sampling for each data. This techniques was chosen because it is easy to collect data when the group were already been divided.

The population are firstly been divided into meaningful segments; four (4) courses will be selected for closer analysis. Thereafter, subjects are drawn in proportion to their original numbers in the population. This would mean that from 285 samples needed, each of the Degree course will have a chance to be selected as respondents in a way that the researchers decide to include in the sample of 25 percent members from each stratum. Thus, it mean that 104 from BAS, 32 from BBA, 92 from BIB and 59 from BSC. From that, the researchers have done the stratification of sample by using systematic random sampling.

3.5 Data Collection

Data for this study will be collected through survey using questionnaire. According to Sekaran (2009), questionnaire is the efficient data collection mechanism when the researchers know exactly what is required and how to measure the variables of interest. The questionnaire for this study will consists of four (4) sections. In Section A, it will comprise a set of questions about the demographic of the respondents that consists of gender, age, and course. The purpose of this Section is to know about the background of the respondents chosen. While for Independent Variables, it is divided to two (2) Sections which are Section B and Section C. The purpose of these Sections is to know whether there is a relationship between facilities and knowledge with the students' participation about recycling activity. Then, Section D will consist of questions on participation of the students towards recycling activity.

3.5.1 Measurement/Instrumentation

The variables and their measurement are outlined in the following sections.

3.5.1.1 Demographic factors

Demographic factors in this study are classified into three which is gender, age and course of study. Nominal scale allows the researchers to assign subjects to certain categories or groups. Hence, the nominal scale cannot be ranked such as gender, age, and courses. Therefore, the purpose of having demographic factors in this study is to know the background of the respondents. Examples of questions asked are:

Gender : ( ) Male ( ) Female

Age : ( ) 19 - 20 ( ) 21 - 22 ( ) 22 – 23 ( ) 23 – 24 ( ) 24 – 25
( ) 25 - Above

Course : ( ) BAS ( ) BIS( ) BIB ( ) BBA

Part : ( ) Part 1 ( ) Part 2 ( ) Part 3 ( ) Part 4 ( ) Part 5
( ) Part 6

3.5.1.2 Knowledge about Recycling Activity

Knowledge is one of the variables to measure whether it is one of the factors that lead to participation in recycling activity among the students. A state of statement can be the element that will lead the students to participate in recycling activity. Interval scale will be used to measure the items. Interval scale is the measurement used that allows

researchers to perform certain arithmetical operations on the data collected from the respondents. Hence, interval scale is use to measure the variable which the respondents can be agreed or disagreed with the statement. There have 5 measures to scale the statement from Strongly Disagree to Strongly Agree. The statement will be answered by the respondents by using Likert scale from number 1 (Strongly Disagree) to 5 (Strongly Agree). One of the sample question asked in this study is "I know about recycling activity in mass media".

3.5.1.3 Facilities provided in Recycling Activity

The availability of the facilities also contributes to the factor that lead student to become aware or not about recycling. A state of statement can be one of the factors that lead to the awareness of the students' about recycling activity. The statement will be answered by the respondents by using Likert scale from number 1 (Strongly Disagree) to 5 (Strongly Agree). Type of question that been asked is "I will be participate in recycling activity if there is a bins provided nearby the pathway or pedestrian".

3.5.1.4 Participation towards recycling activity

Participation towards recycling activity will influence by the factors like knowledge and facilities. Participation can be referring as the act of sharing or involvement in the activities. In this study, those two factors will determine whether the respondents are participating or not in recycling activity. This measurement is to look whether the respondents participate in recycling or not. The statement will be answered by the respondents by using Likert scale from number 1 (Strongly Disagree) to 5

(Strongly Agree). Type of question that been asked is "I will participate in recycling activity as it is one of the sustainable environmental activity that should be practice by everyone".

3.6 Data Analysis

The data will be analyzed using statistical software tool, Statistical Package for the Social Sciences (SPSS) Version 18.0. From SPSS, researchers able to analyze the variables that showed the mean and standard deviation of the data analyzed. In order to identify which variable is hypothesized to affect one dependent variable, regression analysis is used. From this method, researchers able to see whether there is linear relationship between each of variables where one independent variable is hypothesized to affect one dependent variable (Sekaran, 2009). Thus, to identify whether the variables are reliable, the reliability test was conducted. For that reason, Cronbach's Alpha was used to measure the reliability of the variables to indicate how well the items in a set are positively correlated to one another.

3.7 Conclusion

In this section, the result outlines the procedures followed in gathering the data necessary for the analysis to meet the research objective. Thus, it is very crucial section for the researchers to gather the data during data collection and to measure whether there is relevancy between the variables.