Factors Influencing Recycling Intention among University Students

Noralfishah Sulaiman, Shiau Wei Chan, Yi Sean Ong

Abstract: In Malaysia, the awareness of recycling to reduce household waste among Malaysians are quite low. Research has shown that the Malaysians' recycling rate was as low as five percent only. Hence, the purpose of this research is to determine the factors influencing the recycling intention among university students. Seven hypotheses were conducted with seven factors which were attitude, subjective norm, perceived behavioral control, past behavior, perceived moral obligation, knowledge and inconvenience, which were believed to influence the recycling intention among UTHM students. In this research, 375 UniversitiTun Hussein Onn Malaysia (UTHM) students were selected randomly from the total of 11888 students to complete the questionnaire. The data collected were analyzed quantitatively by using descriptive analysis, correlation analysis, and regression analysis. The results showed that all the factors were positively correlated with recycling intention. However, the regression analysis indicated that past behavior and subjective norm had more impact on recycling intention if compared to other factors. The findings of this study could improve the awareness of recycling and encouraging the recycling intention among Malaysians.

I. INTRODUCTION

As the world's population increases, the total solid waste being dumped also increases. Global solid waste produced is expected to increase to 2.2 billion tonnes by 2025 from 1.3 billion tonnes in 2012 (Urban Development and Government Unit, 2012). In addition, the global waste generated including industrial waste, municipal solid waste, electronic waste, and construction and demolition waste was 20.96 billion tonnes in 2015 and it was increased to 22.07 billion tonnes in 2016 (Talk Business, 2016). Although the Act 672 of the Solid Waste and Public Cleansing Management Act 2007 was enforced since September 2015 (The Malay Mail Online, 2016), Datuk Abdul Rahman Dahlan, the Minister of Urban Well-being, Housing and Local Government uttered that there was only 15% of waste was recycled. Later, Dr. MohdPauzeMohamadTaha, the deputy chief executive officer (technical) of Solid Waste Management and Public Cleansing Corporation (SWCorp) added that the rate of recycling in Malaysia was only 17.5% in 2016 although the programme of waste segregation was introduced. It showed only a little improvement in the recycling rate.

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This indicated that the awareness of recycling to reduce household waste among Malaysians are quite low (The Star Online, 2017). For example, plastic straws have almost become a trend when people consume a cold drink. However, plastic straws can only break down into microplastics but not biodegradable. According to DrTheng Lee Chong, if each person uses a straw per day, there are 31 million straws being throw away every day and all these waste were probably end up with landfills. In 2016, Malaysia produced an average of 38,000 tonnes of waste daily and only 0.5% can be incinerated. Besides, the National Solid Waste Management Department reported that 13.2% of total household waste in Malaysia was plastics. DrTheng also added that the microplastics accumulated in the ocean could harm the food chain of the overall ecosystem (Brown, 2017).

If all wastes are disposed to landfills, there is costly and difficult to obtain suitable landfills (Kathiravale& Ahnantakrishnan, 2007). The local councils often spent two-thirds from the total of accumulated annual fees of assessment to organize the disposed waste. In addition, all waste that discarded in landfills creates greenhouse gas emissions. This causes environmental degradation. The waste that disposed of in landfills undergoes anaerobic decomposition will produce methane, which is a greenhouse gas. It is 25 times more powerful than carbon dioxide. This decomposition process will affect the purification of groundwater through leachate, infect the surface of the water and air pollution caused by the emission of harmful gases. Thus, reducing the discarded waste in landfills by recycling can eliminate the greenhouse gas emissions (Singh, Cranage& Lee, 2014). According to DatukAb Rahim Md Noor, the chief executive officer of SWCorp, stated that the public had the awareness of recycling but they did not make it a culture (Malaysian Digest, 2015). Furthermore, UniversitiTun Hussein Onn Malaysia (UTHM) had the intention to increase the awareness of recycling among the students in UTHM. There were some waste segregation bins provided in selected places. However, these efforts did not accomplish. Some of them may think that it is much easier by tossing all wastes into one bin rather than doing waste segregation. Thus, in this survey, the researcher intended to determine the factors influencing the recycling intention among university students.

II. LITERATURE REVIEW

According to Rouse (2012), recycling refers to the action of reuse items that would be abandoned as waste.

It also refers to the practice of accumulating the discarded items and convert them into a usable product. Recycling can be depicted as converting the resource into the previous stage in the cyclic process (Cousineau, 2017). It refers to the process of collection and transforms the used items such as papers, glass and plastics so that it can be utilized again Intention refers to something that a person wants to do or plan to take action. It is depicted as the motivation which acts as a driven of human beings to perform a certain task (Ajzen, 1991). Recycling behaviour is the action to perform waste segmentation according to the waste bins or collect the waste materials to sell to recycling shops. The recyclable materials such as paper, glasses, plastics, and metals were collected and processed into new products (Apinhapath, 2014).

There were seven dimensions in this research which were attitude, subjective norm, perceivedbehavioural control, past behaviour, perceived moral obligation, knowledge and inconvenience. The Theory of Planned Behaviour (TPB) is the theory that was widely used to explain intention and behaviour. This theory comprises of attitude, subjective norm, and perceived behavioural control (Armitage & Conner, 2001). Attitude can be interpreted as a feeling or viewpoint about something, someone or an approach to behave. It is one of the main criteria in the TPB. Attitude is able to forecast and describe human behaviour essentially (Ajzen, 1991). Attitude is said to consist of a person's belief about the positive and negative consequences to perform the behaviour. Some studies express that attitude and intention has a significant relationship (Lim, Yap & Lee, 2011). Attitudes towards behaviour explained the beliefs and subjective evaluation of an individual towards that behaviour (Fishbein&Ajzen, 1975). If an individual holds a positive viewpoint on a behaviour, the particular individual is more likely to have the intention to practice that behaviour (Armitage & Conner, 2001). Thus, attitude toward recycling refers to the positive or negative perception of an individual towards recycling (Philippsen, 2015).

On the other hand, Subjective norm indicates an individual's engagement in particular behavior based on social pressure. They always concern on other's perception and expectation in their performance and make it as motivation for them to engage in a behavior (Walsh, Edwards & Fraser, 2009). They perceived social pressure to know if the behavior should be practice (Ali, Zani&Kasim, 2014). Subjective norm is another main criteria in TPB. It refers to external and internal influence which constructed by Fishbein&Ajzen (1975). The internal influence refers to a person's interpersonal while the external influence refers to other individuals or groups. Besides that, Perceived behavioral control is also known as behavioral control which describes one's opinion of whether the behavior is easy or difficult to practice (Ajzen, 2005). It includes a person's beliefs whether they have the confidence to control over or perform the behavior (Walsh, Edwards & Fraser, 2009). Perceived behavioral control is another important factor that determines people's intention to perform. They evaluate the ease or difficult to perform the behavior they are interested (Ajzen, 1991). According to previous studies, perceived behavioral control is an important factor to predict a person's intention. An individual will have a stronger intention to execute a behavior if there is a greater perceived behavioral control (Osman, 2014).

Furthermore, According to Ouellette (1998), past behavior is an essential predictor of future behavior. Most of the psychology students understand that the frequency of past behavior can use to predict future behavior. Past behavior estimates how people behave in the future. There is no general statement confirmed that past behavior is one of the predictors in the TPB (Philippsen, 2015). However, past behavior is said to have a direct link with intention. The higher the frequency an individual engages in a behavior, the higher the chances for the individual to practice a similar action in the future (Conner & Armitage, 1998). Moreover, Perceived moral obligation can be defined as people's point of view of their responsibility to carry out certain behavior morally when they face an ethical situation (Leonard, Kronan&Kreie, 2004). It refers to an individual's intention to practice particular behavior according to their personal responsibility or duty with respect to their personal norm. According to Kaiser &Scheuthle (2003), an individual's moral considerations plays an important role in driving the individual to perform when their self-interest is at odds with others'. Knowledge refers to the facts or theory, information, and skills obtained from certain experience and education. An individual is more likely to perform recycling behavior if they have more knowledge about recycling (Schultz, Oskamp&Mainieri, 1995). Inconvenience refers to a state of a problem which causes loss of comfort. An easy and convenient recycling facilities would encourage the groups of people who do not care much about the environment to do so. This makes the recycling rate to achieve highly (Derksen&Gartrell, 1993).

There were a number of studies conducted to determine the factors influencing recycling intention (Chen & Tung, 2010; Sidique, Lupi& Joshi, 2010; Mahmud & Osman, 2010; Jibril, Sipan&Sapri, 2014; Philippsen, 2015). Based on the previous studies, seven hypotheses of this study were formed as shown below:

H1: There is a significant positive relationship between attitude and recycling intention.

H2: There is a significant positive relationship between subjective norm and recycling intention.

H3: There is a significant positive relationship between perceived behavioral control and recycling intention.

H4: There is a significant positive relationship between past behavior and recycling intention.

H5: There is a significant positive relationship between perceived moral obligation and recycling intention.

H6: There is a significant positive relationship between knowledge and recycling intention.

H7: There is a significant negative relationship between inconvenience and recycling intention.

III. METHODOLOGY

Respondents

UniversitiTun Hussein Onn Malaysia (UTHM) is one of Malaysia's local university which the main campus is located in BatuPahat, Johor and the other campus is located in Pagoh, Johor. UTHM provides diploma courses for students who graduated from secondary schools. For the diploma students, they are grouped under the Center for Diploma Studies (PPD) which recently located in Pagoh. In addition, UTHM also offers a series of educational programmes for the degree, master, and Doctor of Philosophy (Ph.D.) students. These programmes are available in all the faculties in UTHM. There are two faculties located in Pagoh Campus which are FTK and FAST. At the same time, there are six faculties based on the main campus which are FPTV, FKMP, FKEE, FKAAS, FSKTM, and FPTP. According to UTHM's Academic Registration Center (PPA), the total number of students in the main campus of UTHM was 11888. This research was focused on UTHM students on the main campus. In this study, random sampling was used to collect data as there was a difficulty to conduct the research with a huge population. The sample size was 373 students based on Krejcie and Morgan (1970). Thus, there were 375 questionnaires distributed randomly among UTHM students. An observation was conducted before the study being carried on. Besides, the researcher had done a preliminary test by asking some questions related to recycling to the students. The students were asked whether they know the location of recycling bins and how often they use it through an interview. The researcher found that the awareness of recycling among UTHM students was quite low. The recycle bins can be found in selected places in UTHM compound. It was available at places such as the library, the bus stand near ATM and the main entrance of the hostel in the campus. However, the results of observation and the preliminary test showed that most of them did not aware of the availability of recycling bins and seldom use it. Students may think that recycling was time-consuming. Thus, most of them choose to throw the wastage in one bin instead of recycling.

Instrumentation

This study was conducted using a quantitative approach. Quantitative research can be described as the method that discusses the issues by accumulating numerical data which has been analyzed mathematically (Aliaga& Gunderson, 2005). A questionnaire was the main tool for this research. In this study, the questionnaire was adapted from previous studies and professional literature relevant to this research. The questionnaire used in this research consists of three parts with a total of 51 questions. The first part of the questionnaire was used to collect the demographic information of the students. The second part of the questionnaire which consists of seven items was used to measure the level of recycling intention. Meanwhile, the third part of the questionnaire comprised with the seven factors such as attitude, subjective norm, perceived behavioral control, past behavior, perceived moral obligation, knowledge and inconvenience were used to identify the factors that influence the recycling intention. The second and third part of the questionnaires were designed in 7 points of Likert scale which ranging from "1" to "7" with the sequence of "strongly disagree" to "strongly agree". The pilot test for the current research was conducted with 30 UTHM students who were randomly selected. The Cronbach Alpha for this questionnaire was 0.981 which known as excellent (George &Mallery, 2003).

Data Analysis

Statistical Package for Social Science (SPSS) version 22.0 was used to analyze the accumulated data. It was software that helped the researcher to analyze a huge number of data. Descriptive analysis was used in this research to explain the data. This was because SPSS was managed to demonstrate a graphical report with charts, graphs, and tables. The data was generated to explain the demographic characteristics of UTHM students while the correlation and regression analysis was used to identify the factors that influence the recycling intention among UTHM students.

IV. RESULTS AND DISCUSSION

This study aimed to determine the factors that influence the recycling intention among UTHM students. Table 5.1 shows a summary of the results of the hypothesis. All seven factors had a positive correlation with the recycling intention. According to Sidique, Lupi and Joshi (2010), attitude and knowledge were significant drivers of recycling intention. The research added that the recycling convenience played a crucial role to increase the recyclers recycling intention. Besides that, Ari &Yilmaz (2016) stated that subjective norm and perceived behavioral control were factors that influence the recycling intention. In this study, the factors of past behavior and perceived moral obligation were positively correlated to the recycling intention. It was found that the result was similar to the research by Philippsen (2015) which stated that the factors such as perceived moral obligation and past behavior were significant predictors of recycling intention.

Table. 1 Summary for the Results of Hypothesis

Hypothesis	Spearman's rho correlation	Result
H_1: There is a significant positive relationship between attitude and recycling intention.	0.335	Accepted
H_2: There is a significant positive relationship between subjective norm and recycling intention.	0.510	Accepted
H_3: There is a significant positive relationship between perceived behavioural control and recycling intention.	0.465	Accepted

H_4: There is a significant positive relationship between past behaviour and recycling intention.	0.479	Accepted
H_5: There is a significant positive relationship between perceived moral obligation and recycling intention.	0.488	Accepted
H_6: There is a significant positive relationship between knowledge and recycling intention.	0.458	Accepted
H_7: There is a significant negative relationship between inconvenience and recycling intention.	0.048	Rejected

Table 2 shows a summary of the regression results obtained by the study. There were two factors that had more impact on recycling intention. These factors were subjective norm (0.022, 0.153) and past behaviour (0.000, 0.278). Past behavior was said to have more impact on recycling intention if compared to the subjective norm as the beta value was higher. The result was similar to the research by Philippsen (2015) as the past behavior had significantly contributed to recycling intention. In addition, previous research related to waste reduction intentions stated that subjective norm had a positive impact on the waste reduce behavioral intention (Jibril, Sipan&Sapri, 2014).

Table. 2 Summary of the Regression results

Model	Significance level	Beta values
Attitude	0.077	0.105
Subjective norm	0.022	0.153
Perceived behavioural control	0.080	0.105
Past behaviour	0.000	0.278
Perceived moral obligation	0.086	0.113
Knowledge	0.362	0.057
Inconvenience	0.627	-0.020

V. CONCLUSION

The results in the study showed that all the factors were positively correlated towards the recycling intention. These factors include attitude, subjective norm, perceived behavioral control, past behavior, perceived moral obligation, knowledge, and inconvenience. According to the study, past behavior had a stronger impact on recycling intention if compared to the subjective norm. The future research was recommended to involve a larger number of population and identify the recycling intention of students based on the place they stay such as hostel on campus, hostel off campus or a rental house. This study could improve the awareness of recycling and encourage the recycling intention among Malaysians. Also, the research conducted was also benefits to the public who face the problem of waste management. The efficient of nature will contribute to the improvement of economic status in Malaysia.

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