Journal of Administrative Science
Vol.22, Issue 1, 2025, pp.159-170
Available online at *http:jas.uitm.edu.my*

Recycling Intention Among Urban Community in Seremban: A Pilot Study

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Abstract

Recycling involves the collection, processing, and conversion of waste materials into new products to reduce the amount of waste sent to landfills. Recycling in Malaysia is less than the rate of waste generation, and due to this, Malaysia is dealing with multiple waste management problems, including full landfills and piling up daily household waste. This study aims to pilot test the reliability of a questionnaire to be used in a larger study. Employing a quantitative method with a descriptive design and cross-sectional design, data were collected from 30 residents of Seremban who have participated in recycling activities in the district. Furthermore, the questionnaire's reliability was checked for Cronbach's Alpha test using SPSS software. Results from the pilot study indicated that all three factors that the questionnaire measured were reliable. Although the 'attitude' dimension had a marginally lower reliability value than the others initially, the removal of specific items improved the score, thereby validating the questionnaire's overall reliability and validity.

***Keywords**: Recycling, Recycling Intention, Community, Household, Urban*

Received: 1 February 2025
Accepted: 1 March 2025
Published: 30 April 2025

INTRODUCTION

Recycling is crucial in ensuring sustainability for various aspects, such as waste management and protecting the health of nature and the earth. In every nation, citizens are generating more and more garbage with no proper solution. With an ineffective and irresponsible view of solving this specific disposal situation, the collected waste will cease polluting the environment and ultimately negatively impact public health risks (Osama & Lamma, 2021). Malaysia is one of the victims of waste management. That is because Malaysia heavily relies on landfilling for waste disposal, leading to potential space limitations, health concerns, and even negative environmental impacts that could undeniably affect the nation (Shakil et al., 2023). Investigating Malaysia's current programs and policies related to these recycling and waste management issues is essential to help further sustain the nation's decline in proper household solid waste recycling and management.

According to Altman et al. (2006), a pilot test is conducted on a small scale to evaluate the quality of the instrument used in the main study. Therefore, establishing

eISSN 2600-9374

validity and reliability is crucial for determining the quality and appropriateness of this instrument. Validity refers to the extent to which a measurement accurately assesses its intended measure. Validation is typically carried out with the assistance of subject matter experts who evaluate the accuracy and validity of the instrument.

On the other hand, reliability involves testing on a smaller scale as a preliminary experiment before the instrument is used with actual samples (Pratt, 1980). Reliability is often assessed using a sample that closely resembles the target population's characteristics, ensuring the test results are more accurate. Therefore, this pilot study aims to test the reliability and validity of the questionnaire, ensuring that the data collected for the future study is reliable. It is vital for a reliability test to be conducted before the actual study to validate the questionnaire's suitability for use in the actual study. The existing instrument is reliable enough to be embedded in this study for the context of Seremban.

LITERATURE REVIEW

Underpinning Theory

This study uses Azjen's Theory of Planned Behaviour (TPB) (Azjen, 2020). This theory is popular, as Piramanayagam et al. (2024) explain, as TPB is widely used due to its strong explanatory and predictive abilities, leading to its widespread acceptance in goal-oriented behaviour. Nevertheless, the theory received multiple criticisms. For example, Barber (2011) highlighted that the TPB were too logical and rational, as that does not perfectly reflect actual human behaviour when individuals are unreasonable or emotionally unstable, and their intentions may be irrational. However, Fishbein and Azjen also released a book on unplanned behaviour, which labels behaviour as socially reactive to the situation rather than planned (Azjen,2011). This allows the TPB to be more flexible in overcoming the criticism the theory receives.

Recycle Intention

According to the United States Environmental Protection Agency (2023), recycling is the act of gathering, processing, and creating new goods out of resources that could have been thrown away as waste. According to projections by the Environmental Protection Agency (EPA), recycling 37% of generated waste can lead to a 65% reduction in landfill space requirements. This significant decrease is attributed to the diversion of materials from landfills through recycling efforts Due to the increasing awareness over the years, recycling activities have increased due to many

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environmental awareness activities and programmes conducted by governments and Non-Governmental Organizations (NGOs). Recycling intention is crucial in nurturing a sense of responsibility towards the environment. With a strong attunement to recycling intention, Seremban Negeri Sembilan communities will react more positively towards recycling activities. According to Majid et al. (2021), recycling intention consists of several key aspects, such as recycling attitudes, subjective norms, behavioural control, moral norms, and awareness.

Attitude

Many factors influence recycling intention, the first being attitude. Attitude can also be referred to as the underlying traits that surface when a person exhibits different levels of favorability for an attitude object; for instance, in this sense, it is to protect and try to sustain the environment (Kaiser et al., 2018). The research by Majid et al. (2021) highlights that attitude and recycling intention are strongly correlated. Attitudes have a significantly strong impact on consumer intentions. In the study of Islam (2021) regarding recycling intention in Bangladesh, attitude positively impacts recycling intention among the individuals in that area. There is also a study conducted by Pivett et al. (2020) predicting recycling in Southern Italy; the author concluded that attitude was a major predictor of behavioural intention, predicting recycling and other pro-environmental behaviour. An individual's values and philosophical orientations frequently impact their attitudes.

Subjective Norms

Subjective norms are another factor leading to recycling intention among communities in Seremban. Subjective norms are the social expectations placed on people by others to act in specific ways or not (Zaitul Himmah et al., 2023). According to TPB, subjective norms can be defined as how people interpret criticism of a particular behaviour from important people (friends, family, and the broader public) (Fan, 2021). This could be explained in another way: the behaviour is based on the reaction and approval of the people surrounding the individual. If the reaction of those people is positive, the individual is more likely to engage in that specific action and vice versa. In research done by Majid et al. (2021), it is found that there is a positive, moderate relationship between the factor with subjective norms and recycling intention. The positive result of the research shows that it was conducted in an area of Johor. Other than that, Sulaiman et al. (2019) have proposed a hypothesis stating a positive relation between subjective norms and the intention to recycle. This means that individuals driven to behave according to social pressure will more likely perform a

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specific expected behaviour. In this case, if the individual surrounding approves the act of recycling, then it is more likely for the individual to have the intention to recycle.

Perceived Behavioral Control

The TPB model's third factor related to recycling intention is Perceived Behavioral Control (PBC). Based on Ajzen (1991), another concept derived from the TPB is Perceived Behavioural Control (PBC), which highlights an individual's perception of their ability to act on something with a given behaviour. In short, it explains the willingness and degree an individual intention to perform specific actions to achieve a targeted outcome. It is worth noting that an individual with a high PBC is considered to be very confident with their ability to perform certain behaviours. In contrast, it contradicts those with a low PBC (Conner, 2020). In a study done by Pathak et al. (2022), one of the hypotheses stated in the research is "Young residents positively and significantly influence their PBC for household waste". The result of the research is that there is a positive correlation with recycling intention. Furthermore, another study by Liu et al. (2021) stated that perceived behavioural control, or self-efficacy, was suggested as a major predictor of behavioural intention in the TPB framework, along with attitude and subjective norms. The research conducted by Liu et al. (2021) also found that the PCB significantly contributes to the PBC.

RESEARCH OBJECTIVE AND RESEARCH QUESTION

This research aims to verify the validity and reliability of the questionnaire items before continuing to collect actual data. The question for this research is whether the questionnaire is valid and reliable for the actual study.

METHODOLOGY

Data Collection

This pilot study utilizes the five-point Likert scale for all variables, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The measurement instruments are adopted from previous studies to ensure reliable and valid information. The Likert scale is utilized to determine the degree of intensity of the respondents' perception, attitude, and intention towards recycling behavior.

The independent variables in this study are Attitude, Subjective Norms, and Perceived Behavioural Control, while the dependent variable is Recycling Intention.

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Five items are given to measure attitudes to assess respondents' beliefs about the usefulness and impact of recycling. These items measure the extent to which individuals consider recycling helpful in reducing landfill waste, conserving natural resources, and general helpfulness. These items are adapted from several studies, including Zatul Himmah et al. (2023), Ioannou et al. (2013), and Pongpunpurt et al. (2022). The subjective norms variable is measured using six items capturing the social pressure that the respondents receive from friends, peers, family, and society. This includes expectations and support from close social circles and pressure from government authorities. These items are also adapted from Zatul Himmah et al. (2023), Ioannou et al. (2013), and Pongpunpurt et al. (2022), providing a comprehensive view of social influences on recycling behavior. Perceived behavioural control is measured based on five items determining how easy or hard an individual finds recycling. The items cover respondents' knowledge of recycling, availability of resources and space, convenience, and support from the local authorities. These items are taken from the same three sources mentioned above to ensure consistency across constructs. The recycling intention dependent variable is measured using five items that examine individuals' intentions and plans to engage in recycling behavior. These include intentions to participate in recycling schemes, reuse materials, reduce the use of disposable products, and sort rubbish before throwing it away. The items are adapted from Zatul Himmah et al. (2023) and So et al. (2021), a robust measure of behavioral intention.

Besides the constructs mentioned above, Part A of the questionnaire deals with demographic information. It includes variables such as gender, age, marital status, and education level. Gender has been categorized as male and female, and age as 18–24, 25–34, 35–44, 45–54, and 55 years and above. Marital status is recorded as single and married. Educational level is categorized into primary school, secondary school, diploma, degree, no formal education, and others. Obtaining these demographic data provides a descriptive overview of the respondents and allows the examination of recycling behaviour across different population segments. Overall, the instruments selected for this study provide a valid and systematic way of measuring the key variables influencing recycling intention among the Seremban urban population.

Sample Size

Reliability is often evaluated using a sample that closely resembles the real sample, which enhances the accuracy of the test. Appropriate sample size is crucial to provide or reach sufficient power for hypothesis testing and to understand the practicability of the participant recruitment and/or the study design (Garg et al., 2024). According to Hair et.al. (2003), the recommended size for a pilot test sample is between

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5 and 30 individuals. Furthermore, as for In (2017) mention that for the sample size of a pilot study, some studies encourage the use of over 30 samples per group. For this study, 32 respondents from the Seremban community were collected. Purposive sampling and convenience sampling were the sampling strategies employed in this investigation. The purposive sampling technique is chosen because Seremban is part of the drive-thru recycling activity, KITARecycle. The purposive sampling technique requires inclusive criteria to be considered for this study. The criteria involve: 1. Community living in Seremban, 2. Communities that participate in recycling activity at least once. One facility is located at the Seremban Municipal Council, which makes it accessible to the public.

The data was collected using the online application Google Forms. Furthermore, for the respondents to access this Google Form, they will be required to scan a custom QR Code using their smartphones or any other smart devices to directly link them to the Google Form page or answer it through printed paper that is prepared. The analysis used in this study uses the SPSS software to determine the reliability of the questionnaire. The questionnaire is divided into four sections: three for the independent variable (attitude, subjective norms & perceived control behaviour) and one for the dependent variable (recycling intention).

FINDING AND DISCUSSION

For this pilot study, Cronbach's Alpha test is used to determine the reliability of the questionnaire. According to Ahmad et al. (2024), Cronbach's Alpha is a critical indicator for assessing the quality of instruments that contain several items intended to evaluate complex phenomena like student attitudes, contentment, or perceptions. Furthermore, Taber (2018) stated that Cronbach's alpha is one of the most significant and ubiquitous statistics in research pertaining to test design and administration, to the point that using it in studies requiring multiple-item assessments is standard practice. As this study contains complex items that involve behavioural items such as attitude, Cronbach's Alpha test is used to test the reliability and validity of the item in the questionnaire.

The results of this study have confirmed that all questionnaire items are valid. A total of 32 respondents from the community in Seremban were the subjects of the validity and reliability tests. Table 1 presents the result of the Cronbach's Alpha test, which can be seen below:

Table 1: *Result of the Crobanch's Alpha test*

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1. Variables	2. Cronbach's Alpha	3. N	4. Final Question Selected
Dependent Variable	0.911	8	5
Recycling Intention			
Independent Variables	Cronbach's Alpha	N	
Attitude	0.520	7	5
Subjective Norms	0.878	8	6
Perceived Behavioural Control	0.913	10	5

Taber (2017) states each scale has sufficient reliability (alpha = 0.70 or higher). However, according to Pallant (2020), a Cronbach's Alpha reliability test result of 0.5 above will be acceptable if the scale item is less than 10. According to the preliminary study, test results consistently score higher than 0.5 for variables such as recycling intention, attitude, and subjective norms with less than ten items. The independent variable perceived behavioural control with 10 items resulted in 0.913, above the 0.7 acceptable test result. Consequently, the questionnaire is dependable since all test results are trustworthy.

As can be seen in Table 1, the outcome of the reliability test for the variable attitude is significantly lower than those of the other two independent variables. One possible explanation for this lies in the fact that a negatively worded item was part of the instrument. More specifically, item number five "I find the idea of recycling reasonless," adapted from Ioannou et al. (2013) was worded more negatively than the others. This wording likely encouraged respondents to select "strongly disagree," relative to the higher agreement observed for the more positively worded items. There is also duplication in the instruments that would affect the validity of the test results. Specifically, item three, "I feel good about myself when I recycle," and item four, "I have a very positive attitude towards recycling," are to some degree redundant and can create result duplication. Therefore, items three and five were omitted as item four provides a more direct and concise measure of the attitude section, making it easier for the public to understand and respond accordingly.

Table 2: *Comparison of the Attitude Cronbach's Alpha after instruments were removed*

5. Variables	6. Cronbach's Alpha	7. N	8. Final Question Selected	9. New Cronbach's Alpha Result
Independent Variables	Cronbach's Alpha	N		
Attitude	0.520	7	5	0.774

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Result in Table 2, signifies that by removing the two items, the result of the reliability test is much higher in comparison to the initial result. This shows that it is important to ensure that the items in the questionnaire is consistent with tone and easy to for the responder to understand.

It can be concluded that attitude greatly influences recycling behaviour as attitude is nurtured through the foundation of knowledge that eventually helps to develop a thorough understanding of sustaining the environment. According to Ajzen (1997), the concept of attitude can be tied to the influence of behaviour of recycling intention, however, the sheer knowledge of saving the environment is not adequate for it to be a strong leading factor of sustainable attitude. Moreover, the actual study has been completed, and it produced that the attitude of the respondents from Seremban, Negeri Sembilan influences their behaviour on recycling.

RECOMMENDATION

One strategic recommendation that could help elevate this study is to consult with representatives from local authorities. With the help of officials from local authorities in Seremban, the scope of the study could be elevated and expanded further through various insights based on existing policies, regulations, and recycling campaigns available in Seremban, Negeri Sembilan. In short, it helps contextualize the research findings further within the framework the existing governance provides.

Another recommendation to fortify this study's foundation is to conduct research and surveys in rural areas of Seremban, Negeri Sembilan. The study primarily focused on urban areas, whereas no study was conducted in rural areas. Although both areas tend to differ, conducting research and studying these two separate areas is ideal to understand recycling intention from two perspectives better. In addition to that, it is recommended that future study will focus more on qualitative studies. In this study, the quantitative method is limited as it only focuses on numbers, not an in-depth analysis of the matter, and does not consider the emotion and human experience on such matters.

Lastly, the completion of the pilot study has established the validity and reliability of the questionnaire as indicated by the outcome of the Cronbach's Alpha test. Based on these findings, it is strongly recommended that the research be advanced to the next level, involving systematic and thorough data collection. This will enable the study to have more robust and generalisable conclusions, thereby contributing useful

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information to the topic area. The instrument tested now provides a solid methodological foundation for the large-scale application of the research.

CONCLUSION

Recycling promotes sustainability, conserves natural resources, and reduces environmental degradation. Despite its importance, Malaysia struggles to uphold the basis of recycling due to specific key challenges, such as low participation rates, weak enforcement of regulations, and lack of awareness from the public. With the rapid growth of waste and the limited landfill space, it highlights the critical issue of sustainable waste management practices. By adopting a more solid environmental attitude, Malaysia may redeem itself to a brighter and more sustainable future. This study concludes that the questionnaire is reliable for the actual study. Thus, it will allow an accurate study of recycling intention among the Seremban community.

Acknowledgements

Thanks to Allah SWT, I have been blessed with strength, a healthy body and mind, and the peace of mind to begin and complete the research. To our supervisor, Madam Saidatul Akma Binti Hamik, Lecturer of the Faculty of Administrative Science and Policy Studies (FSPPP) at Universiti Teknologi MARA (UiTM) Negeri Sembilan, we would like to express our sincere gratitude for all her help, advice, and opportunities to research the chosen topic. Working with her was fantastic and an honour because she shared her thoughts and knowledge, and provided additional details that helped us complete the topic. We sincerely thank Dr. Nurul Hidayana Mohd Noor, our lecturer, for this excellent opportunity and for motivating us to complete the research. In addition to that, she shared her knowledge to finish this assignment correctly. We couldn't have completed this job to the best of our abilities without her help. We also want to thank our classmates for helping us finish this task in the allotted time. We also want to thank our parents and friends for helping us complete this project. We also want to thank everyone who helped us complete the research topic.

Funding

This paper has been funded by the Faculty of Administrative Science and Policy Studies (FSPPP), UiTM Kampus Seremban.

eISSN 2600-9374

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