

Exploring Attitude Domain Influencing Household Waste in Taiping, Perak

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ABSTRACT

The current recycling rate in Malaysia is approximately 31.52%, falling short of the government's goal to achieve a 40% recycling rate by 2025. The Twelfth Malaysia Plan aims to enhance waste separation and recycling facilities. In Taiping, Perak, illegal waste disposal remains a critical issue, with significant environmental contamination and low recycling practices among residents. This study explores the Theory of Planned Behavior (TPB) which are attitude, subjective norms and perceived behaviors control to understand household recycling intentions in Taiping, Perak. This study will only focus on attitude. This study will provide insights to support Malaysia's recycling targets and addressing the challenges of illegal waste disposal. It is hope that this study able to give clearer insight for decision makers in making better solutions to tackle those issues. In obtaining data Quantitative method is used and statistical analytic like descriptive analysis, Spearman's correlation and multiple regression are applied in this study. It is found that, attitude have a significant relationship with the intention in recycling household waste. Thus, in order to increase the intention in recycling household waste, attitude need to be put into account.

Keywords: Theory Plan Behavior (TPB), attitude, recycling, households waste

INTRODUCTION

The concept of household waste encompasses the various disposable materials generated by residences, commonly referred to as domestic waste or residential trash (Fadhullah et al., 2022). The overwhelming majority of individuals in Malaysia are oblivious to the fact that the waste they generate possesses considerable value as a commodity. The national recycling rate, approximately 31.52 percent in 2021, despite governmental efforts to promote the 3Rs which are reduce, reuse, and recycle. Since the 1990s, reflects public misunderstanding, evidenced by the low percentage. Conversely, highest-income countries exhibit recycling rates over sixty percent (Zainal, 2023).

The ability of recycling to alleviate the strain on the natural atmosphere is a primary motivator for promoting its adoption. Gradually diminishing the total volume occupied by landfills is feasible provided waste materials are utilised productively. Landfills will have difficulties in accommodating the increasing volume of waste as the population continues to grow. One advantage of recycling is its capacity to manage and gradually diminish the volume of pollution generated. The theory of planned behaviour (TPB) offers a theoretical framework for systematically determining the determinants that affect waste recycling and waste segregation. Numerous empirical investigations have identified elements that affect waste management practices according to the Theory of Planned Behaviour (Zhang et al., 2015).

This study's findings provide a more profound and comprehensive understanding of the Theory of Planned Behaviour (TPB) as it relates to the intention to recycle household waste. The Theory of Planned Behaviour (TPB) provides a comprehensive framework to understand how attitudes, subjective norms, and perceived behavioural control affect behavioural intentions (Jia et al., 2023). This research study is significant due to the vital nature of the topic.

LITERATURE REVIEW

The advancement of integrated solid waste management in households is obstructed by inadequate waste disposal methods. To make sensible choices towards a more sustainable strategy, it is crucial to understand current behaviours and attitudes of household waste management (Fadhullah et al., 2022). Aprile and Fiorillo (2019) assert that academics and policymakers have devoted heightened attention to waste management in recent years, viewing deficient waste management as a source of financial costs and health and environmental issues. Recycling of household waste is a critical aspect of solid waste management. Although the segregation of home waste and its transportation to recycling bins is time-consuming, recycling yields long-term advantages for society and the environment, including as resource conservation and reduced costs related to general waste management. Therefore, to promote recycling behaviour, it is essential to employ the Theory of Planned Behaviour (TPB) to examine households' intentions towards waste recycling focusing on attitude.

Household Behavioral Intention

Behavioural intention denotes a sign of an individual's inclination or readiness to exert effort to perform a particular task (Ajzen, 1986). Furthermore, it may denote the positive or negative reactions that individuals exhibit towards a particular activity. An individual's likelihood of engaging in a particular activity is contingent upon their intention-behaviour, which may be either affirmative or adverse. Xu et al. (2017) indicate that prior research has identified several factors affecting households' intentions to dispose of waste. The elements encompass environmental awareness, societal influences, economic motivations, risk perception, and the accessibility of waste disposal facilities. To promote environmentally responsible waste management and mitigate the environmental hazards associated with improper garbage disposal, academics have highlighted the importance of identifying and addressing these factors.

Theory Plan Behaviour (TPB)

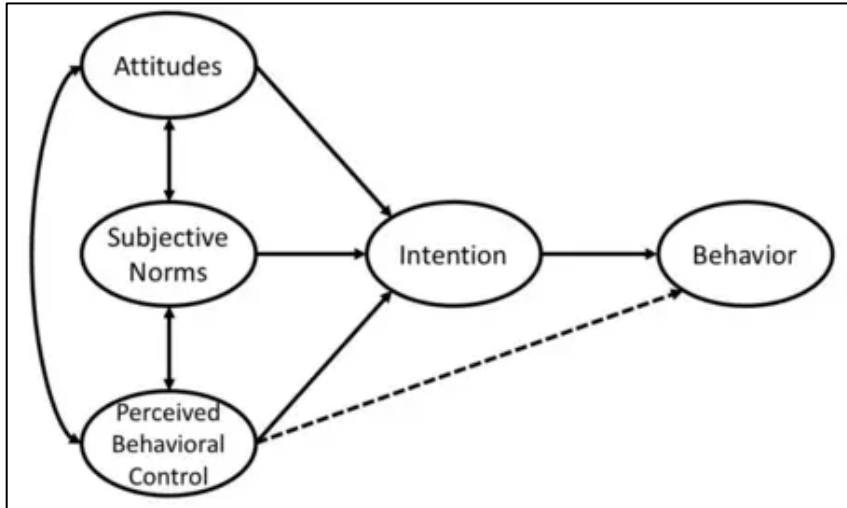


Image 1 : The Theory Plan Behaviour Model (Ajzen, 2011)

Theory of Planned Behaviour (TPB), created by Icek Ajzen in 1991. It is a psychological model that focuses on predicting behavioural intentions. This theory expands on the Theory of Reasoned Action by Fishbein and Ajzen (1975) by excluding "Perceived Behavioural Control". Currently, it is deemed beneficial for predicting human behaviours (Tommasetti, Singer, Troisi, & Maione, 2018). TPB was founded in 1980 to forecast an individual's reaction in a specific situation and setting. All individuals' self-control behaviours were meant to be encompassed in the theory. Behavioural intent is the cornerstone of this strategy. The Theory of Planned Behaviour is a conceptual framework used to study the determinants of behavioural decisions (Mahmud and Osman, 2010). According to Poškus (2015), the Theory of Planned Behaviour is a commonly used framework for predicting and explaining recycling and sustainable behaviour. The Theory of Planned Behaviour can be employed to elucidate the rationale behind individuals' decision-making process when it comes to sustainable behaviour and recycling practices. This study will only focus on the attitude.

Attitude

Regarding TPB, attitude is a person's assessment of carrying out a specific behaviour, whether it be favourable or unfavourable. Attitude profoundly impacts behavioural intention, the motivational element that determines the extent of individuals' efforts to engage in the behaviour. A positive disposition towards a behaviour generally results in a heightened intention to partake in that behaviour (Psychology-Sociology, 2024).

Attitude is a psychological tendency characterised by evaluating a specific behaviour with varying degrees of approbation or disapproval (Sonnenfeld, 2018). Attitude is a component of the theory of planned conduct, which also includes subjective norms and perceived behavioural control. An individual's attitude indicates their preference for engaging in a specific action. Attitudes towards items can be traced back to fundamental assumptions regarding their functional relationships. This results from the effects of expected positive or negative outcomes derived from the assessment scales employed to evaluate qualities, as delineated by a specific function inside the object (Ajzen, 1986). One can infer an individual's attitude by examining their cognitive, affective, and conative reactions to the attitude object (Ajzen, 1986). Furthermore, it is claimed that perceptions of the behaviour influence future involvement intentions. The appropriate methodologies must be utilised to reveal readily accessible notions derived from an observed attitude towards behaviour. The investigators' statements were formulated, despite the fact that replies to an earlier set of belief statements can be utilised to deduce underlying attitudes, presuming that these responses consistently provide information about the beliefs that motivate conduct. In psychology, an attitude is defined as a collection of feelings, thoughts, and actions directed towards a specific entity, individual, object, or event. Attitudes and behaviour are associated with their respective levels concerning action, goal, context, and temporal components (Guchi & Syafrizal, 2022).

An individual's attitudes are shaped by their impression of a conduct, which may be positive or negative, right or wrong, enjoyable or unpleasant, engaging or tedious, or any combination it. Ghani et al. (2013) found that the strongest correlation between waste recycling intention and personal attitude was evident. An optimistic attitude correlates with self-belief. An illustration of this is the belief that recycling domestic waste will reduce pollution and the volume of refuse disposed of in landfills. The findings have been corroborated by Nigbur, Lyons, and Uzzell (2010), who performed a study on curb side recycling in the United Kingdom. They found that attitude was a crucial predictor of the intention to recycle, which subsequently forecasted recycling behaviour. As shown on the table below, attitude scored the highest bivariate correlation towards recycling.

Table 6. Descriptive statistics and bivariate correlations for Study 2

	N	M	SD	1	2	3	4	5	6	7	8
1. Neighbourhood identification	259	3.92	0.62	1							
2. Attitude towards recycling	261	4.58	0.45	.12	1						
3. Self-identity as a recycler	260	3.78	0.72	.08	.47*	1					
4. Descriptive norm for recycling	236	3.85	0.70	.35*	.17*	.16*	1				
5. Injunctive norm for recycling	209	3.67	0.68	.23*	.23*	.28*	.63*	1			
6. Personal norm for recycling	261	4.09	0.59	.18*	.55*	.59*	.19*	.24*	1		
7. Perceived control	257	4.10	0.50	.16*	.50*	.50*	.15*	.21*	.40*	1	
8. Intention to recycle	260	4.43	0.53	.19*	.63*	.59*	.28*	.25*	.57*	.56*	1
9. Self-reported recycling	260	4.57	0.79	.11	.31*	.37*	.29*	.16*	.33*	.31*	.46*

Note. Asterisked correlations are significant at the 5% level.

Table 1 Nigbur, Lyons, and Uzzell (2010)

Moreover, attitudes, often derived from experience or culture, can significantly influence behaviour. While opinions are enduring, they are also subject to change (Cherry, 2021). A person's views, including their

ignorance of the issue, indicate the challenges they have in mitigating home trash. An individual's demeanour can reliably predict their intentions. The quantity of food wasted is affected by individuals' perceptions. Consequently, food waste possesses a considerable psychological aspect (Thyberg & Tonjes, 2016). This attitude can thus be attributed to insufficient environmental education curricula and a deficiency in financial awareness, which have influenced household waste management behaviour.

Inadequate environmental education curricular

It is essential to examine households' environmental knowledge and attitudes to understand their behaviour and identify optimal strategies for promoting waste separation and recycling. A crucial factor influencing household recycling is individuals' understanding of environmental issues and waste management specifically. The majority of recyclers are inclined to get information from several sources, including friends, newspapers, television, and others. Public education and awareness initiatives are a crucial source of recycling knowledge and are favourably associated with recycling rates (Nixon and Saphores, 2009).

Disposing of domestic garbage, such as food, in landfills adversely affects the ecosystem by generating methane gas (Hawthorne, 2017). Methane is a greenhouse gas approximately 25 times more effective than carbon dioxide at retaining heat in the atmosphere, which many scientists consider detrimental to the Earth's climate and temperatures, including climate change and global warming (Massow, et al., 2019). Methane, accounting for 20 percent of greenhouse gas emissions, has been emitted during production, exacerbating environmental harm as food waste compounds the issue (Cooper, et al., 2018). Moreover, food waste might generate land debris (Hawthorne, 2017). The land is being employed for a futile purpose, which poses a dilemma as improper maintenance leads to degradation over time. The environment faces significant strain as almost 99 percent of garbage is produced on severely degraded land, yielding insufficient food to sustain the local population (Cooper, et al., 2018).

Environmental education teaches young individuals the importance of conserving nature and appreciating the advantages and wonders that the natural world provides. Reverence for nature results in diminished domestic waste. Studies indicate that youth engaged in environmental education develop greater wisdom and responsibility in adulthood (Zafar, 2019). It is imperative to develop a curriculum that prioritises environmental considerations in light of the aforementioned concerns. The analysis indicates that socio-emotional skills and action-oriented abilities, crucial for environmental and climate initiatives, are insufficiently emphasised. Consequently, UNESCO has established a new goal: by 2025, environmental education will be integral to the curricula of all nations (UNESCO, 2021).

The Ministry of Education in Malaysia declared that the objective of environmental education is to cultivate a society that is attuned to and proactive regarding environmental concerns, while also equipping individuals with the knowledge, skills, values, and dedication required to address these issues effectively. In 1998, Malaysia's Ministry of Education formally published the teachers' handbook on environmental education, which has since been integrated into the nation's elementary and secondary curricula. This publication functions as a manual for environmental education in Malaysia (Mahat & Idrus, 2016).

Financial consciousness

Many households lack awareness of the relationship between financial literacy and household waste, which exacerbates the increasing volume of domestic waste (Jereme et al., 2016). Financial awareness is crucial for minimising domestic waste. Most middle-class and lower-income households like hosting events at home instead of inviting guests to a restaurant, resulting in increased food waste at those establishments. The decrease of food waste is markedly affected by financial capacity, suggesting that an increase in a family's economic strength correlates with an enhanced ability to minimise food waste (Abdelradi, 2018). A typical Malaysian family of five expends RM900 monthly on food. During the processes of preparation, cooking, and eating, 25 percent of food is squandered. Approximately RM 225 is squandered monthly, equating to RM 2,700 annually for each Malaysian family of five (Albakri, 2016). It also considers the magnitude of the family's income, which is an additional factor contributing to household waste. The danger of increased expenditure on household items, particularly food, correlates with the household's revenue; however, this can

be mitigated (Jarjusey & Chamhuri, 2017).

The majority of homes are either oblivious to or disinterested in the financial benefits achievable by minimising or eradicating waste from their homes via recycling. The Taiping Municipal Council (MPT) gathered 157 obsolete electrical devices of several classifications for recycling at Medan Selera Kamunting. This program seeks to enhance residents' understanding of the importance of environmental stewardship and the appropriate disposal of household electrical trash. The gathered devices comprised laptops, radios, mobile phones, tablets, and television decoders. The collection of these items has produced a total revenue of RM239 for the sellers (Salleh, 2023). This indicates that, with adequate understanding of recycling and financial awareness, home trash may be reduced more swiftly.

Problem Statement

Taiping aspires to achieve the status of the cleanest city in anticipation of the 150th anniversary of the City of Taiping and the Year of Visiting Perak 2024. Nevertheless, Salleh (2023) observes that the disposal of household waste in Taiping, Perak faces numerous challenges, including the illegal dumping of refuse on curbs and in unauthorized sites, which results in environmental degradation and detracts from the aesthetic appeal of the Taiping area. In 2019, the Taiping Municipal Council (MPT) identified over fifty unauthorized waste disposal sites within the Larut, Matang, and Selama districts. Although MPT has made several efforts to tackle this issue, including routine cleaning initiatives, the placement of warning signs, and the installation of rope barriers, these measures do not seem to yield significant effectiveness. The assertion put forth by MPT's Chairman, Khairul Amir Mohamad Zubir, indicates the existence of 49 operational illegal dumping sites within the administrative area. Furthermore, it is noteworthy that an average of 780 tons of waste was collected in 2023, despite efforts to address this issue since 2019 (MDEQ, 2023). Furthermore, as noted by Kamaruzzaman Kamari, the secretary of the Taiping Municipal Council (MPT), research on domestic solid waste management indicates that merely 20 percent of respondents in Taiping engage in such practices, leaving the majority unengaged (Mansor, 2021).

Thus, in order to ensure the success of the Malaysia plan in achieving 40 percent of recycling rate, Taiping to be the cleanest city, and to find the best way to settle illegal landfills issue, the study on The Influence of Attitude on Recycling Intentions Among Households in Taiping, Perak: A Theory of Planned Behavior Approach is much needed.

Objective of the Study

The objective of this paper is to investigate the relationship between attitude and households' intention in recycling household's waste. The information obtained from this study will provide essential information for Municipal Council of Taiping, communities and individuals for future planning that will meet the expectations regarding recycling behavior in the future.

METHODOLOGY

The study utilized a quantitative research methodology, relying on primary data collected through an online survey of households in Taiping, Perak. Additionally, it incorporated secondary data from previous research published in journal articles, papers, and websites. Taiping was chosen for this research due to findings indicating that only about 20% of respondents practiced solid waste management at home, while the majority did not (Mansor, 2021). Furthermore, Taiping aimed to become the cleanest city ahead of its 150th anniversary and the Year of Visiting Perak 2024, despite facing landfill issues. Therefore, the researcher sought to understand how applying the Theory of Planned Behavior (TPB) focusing on attitude, could influence households' intentions to recycle waste, aiding Taiping in achieving its goals. For this study, which is TPB: study on households' intention in recycling household's waste, the answers from the individuals will be compiled. As this study will be run in Taiping, the residents of Taiping, Perak will be the respondents.

The rule of thumb sampling technique provides simple, heuristic guidelines for determining an appropriate sample size without the need for complex statistical calculations. One common rule is the "n = 30" guideline,

which suggests that a sample size of 30 is sufficient for many types of studies to achieve a basic level of reliability and validity. Life sciences and social sciences frequently recommend this rule as a minimum threshold for statistical analysis. If the population is large, one general rule is to use a sample size that is approximately 10% of the population, but no more than 1,000 observations as an upper limit (Kenton, 2021).

In this study, the total household population is 212,562 persons (Majlis Perbandaran Taiping, 2023). Thus, using the 10% rule would be impractical. Instead, a common rule of thumb for large populations is to use a sample size of around 400 to 500 observations. This range is often sufficient to achieve a representative sample without being unnecessarily large (Kenton, 2021). Therefore, for a population of 212,562, a sample size of around 400 to 500 would generally be appropriate.

Spearman’s correlation is applied to test the hypothesis. It aims to investigate the connections between attitudes and households’ intention in recycling household’s waste. Spearman's rank correlation coefficient, represented by the Greek symbol ρ (rho), is a statistical measure that quantifies the degree of correlation between ranks, without making any assumptions about the underlying distribution. It evaluates the statistical correlation between the ranks of two variables. Essentially, it assesses the extent to which the relationship between two variables can be accurately expressed using a monotonic function. Spearman's correlation coefficient is capable of capturing both linear and nonlinear monotonic correlations, unlike the Pearson correlation coefficient which only measures linear links (Kenton, 2021).

RESULTS AND DISCUSSIONS

Demographic background of the respondents

As the questionnaire has been distributed among households in Taiping, Perak through Google Form, 388 Taiping residents have answered the questionnaire successfully. Table 2 below summarizes the demographic profile of respondents collected through this research.

Description of Items	Category	Frequency	Percentage (%)
Gender	Male	164	42.3
	Female	224	57.7
Age	Under 18 years old	33	8.5
	19 - 24 years old	117	30.2
	25 - 34 years old	146	37.6
	35 - 44 years old	61	15.7
	45 - 54 years old	25	6.4
	55 - 64 years old	5	1.3
	65 years old and above	1	.3
Level of Education	No formal education	5	1.3
	Primary School	2	.5
	Secondary School	93	24.0
	Diploma/ Certificate	127	32.7
	Bachelor’s Degree	126	32.5
	Master’s Degree	34	8.8
	Doctor of Philosophy	1	.3
Residential Area	Urban	217	55.9
	Sub-urban	75	19.3
	Rural	96	24.7

Table 2: Demographic background of respondents

The Google Form’s link was distributed to households in Taiping mainly through three platforms, which are WhatsApp, Instagram, and QR Scanner. The researcher successfully received 388 sets of answers to the questionnaire. Based on Table 2 above, it showed that the questionnaire is answered mostly by female respondents, with female respondents covering 57.7% (224 respondents) of the data in this research. Meanwhile, male respondents account for another 42.3% (164 respondents). Additionally, Table 2 presents the age distribution of the respondents. The majority of the respondents are aged 25–34 years old, which covered 37.6% (146 respondents), followed by respondents aged 19–24 years old, which covered 30.2% (117 respondents). Moreover, 15.7% (61 respondents) who are between the ages of 35 and 44 have participated in this study. Meanwhile, 8.5% (33 respondents) are under 18 years old, 6.4% (25 respondents) are 45 to 54 years old, 1.3% (5 respondents) are 55 to 64 years old, and only one respondent who is 65 years old and older managed to answer the questionnaires completely.

The next section displays the educational level of the respondents. The result shows that most of the respondents are diploma/certificate holders, which cover 32.7% (127 respondents), followed by respondents who have a bachelor’s degree, which cover 32.5% (126 respondents). There are 24% (93 respondents) who have secondary school as their highest educational level, 8.8% (34 respondents) who have a master’s degree, 1.3% (5 respondents) who have no formal educational background, 0.5% (2 respondents) who have primary school as their highest level of education, and only 0.3% (1 respondent) who have a doctor of philosophy as his highest educational level.

Finally, Table 2 also presents the respondents' residential area type. The table above reveals that only 19.3% of respondents, or 75, reside in sub-urban areas. 24.7% (96 respondents) lived in rural areas, while most of the respondents lived in Taiping’s urban areas, which covered 55.9% (217 respondents).

Reliability Test

Variable	Number of Items	Cronbach’s Alpha	Reliability Assumed
Household intention in recycling households waste (DV)	8	0.605	Moderately Reliable
Attitude (IV)	8	0.672	Moderately Reliable

Table 3: Reliability Test

The findings of Cronbach's Alpha for each variable utilized in this study are shown in Table 3 above. The Cronbach's Alpha for household intention in recycling households waste (DV) is 0.605 while the Cronbach's Alpha for attitude (IV) is 0.672 in eight items measured by the researcher. According to Middleton (2019) dependability is considered low when the Cronbach alpha value is below 0.60, moderate when it falls between 0.60 and 0.70, and high when it ranges from 0.70 to 0.80. A range of 0.80 to 0.90 is regarded as very excellent, with a score of 0.90 being outstanding. Thus, the variables above are reliable.

Normality Test

The assumption of normality is a prerequisite for many inferential statistical techniques. For this study, skewness and kurtosis values are used to know the normality distribution of variables.

Variable	Skewness	Kurtosis	Decision
Household intention in recycling households waste (DV)	-2.324	11.563	Not normally distributed
Attitude (IV)	-2.309	12.141	Not normally distributed

Table 4: Normality Test

A distribution to be considered normal, the skewness value should fall within the range of -2.0 to +2.0. If the skewness value falls outside this range, it indicates that the distribution of individual items departs from normality. The Kurtosis value should fall within the range of -7.0 to +7.0 in order to indicate a normal distribution (Kline, 2011).

Based on the table above, the skewness score for the Household intention in recycling households was is - 2.324 and for the kurtosis is 11.563. The skewness score for the attitude is - 2.309 and as for the Kurtosis score is 12.141. Due to this result, Spearman’s correlation is applied to investigate the relationship between attitude and household intention in recycling household waste in Taiping, Perak instead of Pearson’s Correlation.

Main Findings

Spearman’s Correlation

The Spearman Correlation ranges from +1 to -1, with a value of +1 indicating a perfect rank association. A score of 0 indicates a lack of correlation between ranks and A value of -1 indicates a complete negative correlation between ranks (Gupta, 2024). In Spearman's rank correlation, a weak correlation is defined as values between 0.1 and 0.3 (or -0.1 and -0.3 for negative correlations). This indicates a slight or negligible association between the variables. Moderate Correlation which values ranging from 0.4 to 0.6 (or -0.4 to -0.6 for negative correlations) indicate a moderate correlation, indicating a visible relationship that is not very strong. Strong correlations, with values ranging from 0.7 to 1.0 (or -0.7 to -1.0 for negative correlations), are regarded as strong, indicating a substantial link with minimal fluctuation (Schober et al., 2018).

		Household’s intention in recycling household’s waste
Attitude	Spearman’s Correlation	.559**
	Sig. (2-tailed)	<0.001
	N	388

Table 5: Spearman’s correlation

Ho1: There is no significant relationship between the attitude and household intention in recycling household’s waste

Ha1: There is significant relationship between the attitude and household intention in recycling household’s waste

Table 5 shows that the Spearman's correlation coefficient (R-value) for attitude is 0.559. This demonstrates that there is a moderately positive relationship between attitude and household intention to recycle household's waste, while the p-value is 0.000, which is less than 0.05, indicating a significant relationship. Therefore, Ha1 was accepted and Ho1 was rejected.

CONCLUSION

According to the findings, there is a significant relationship between attitude and households’ intention in recycling household’s waste. The score of the findings for attitude (r = 0.559, p = 0.000) not only shows moderate positive relationship but also significant relationship between those two variables. This finding can also be supported by the statement by Babaei et al. (2015) where they found multiple studies consistently demonstrate that attitude is the main factor that influences recycling behaviors in individuals. There is a clear correlation between having positive attitudes towards recycling and an increase in involvement with activities related to recycling. This also can be supported by Singhirunnusorn, Donlakorn and Kaewhanin (2017), based on their study, attitudes are a strong indicator of recycling behaviours. Individuals who possess robust positive

views about recycling are more inclined to actively engage in the sorting and recycling of household waste.

Attitude as the affecting factor that contributes to households' intention to recycle their household's waste can also be supported by Kamaruddin's (personal communication, 31 May 2024) statement that the issue of illegal landfills in Taiping is closely linked to the residents' attitudes towards recycling. He further stated that the combination of insufficient environmental awareness and unfavorable attitudes towards recycling has exacerbated Taiping's problem of illegal disposal. Therefore, it is crucial for every individual to adopt a positive attitude to ensure a strong intention to recycle household waste.

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Disclosure Statement

The author declares that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Data Availability Statement

The data supporting the findings of this study can be obtained from the author upon reasonable request.

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