

Relationship between Determinants of E-Waste Recycling and E-Waste Recycling Intention among Gen Y in Malacca

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DOI: <https://doi.org/10.30880/rmtb.2026.07.01.010>

Article Info

Received: 31 March 2026

Accepted: 31 May 2026

Available online: 30 June 2026

Keywords

Theory of planned behavior (TPB),
e-waste recycling intention, Gen Y

Abstract

Electronic waste(e-waste) has become a growing environmental concern in Malaysia due to rapid technological advancement and increased consumption of electronic device. Generation Y (Gen Y) as active users of electronic products play an important role in promoting sustainable e-waste management practices. This study aims to examine the relationship between determinants of e-waste recycling and e-waste recycling intention among Gen Y in Malacca by applying the Theory of Planned Behavior (TPB), focus on attitude, subjective norms and perceived behavioral control. A quantitative approach was employed using an online questionnaire and data were collected from 207 Gen Y respondents residing in Malacca. The data were analyzed using SPSS through descriptive analysis, reliability analysis, normality analysis and Spearman's correlation analysis. The findings indicate that attitude, subjective norms, perceived behavioral control and e-waste recycling intention are all at a high mean level. In addition, the result reveals that attitude, subjective norms and perceived behavioral control have significant and positive relationships with e-waste recycling intention. These findings support the applicability of the TPB in explaining e-waste recycling intentions and provide useful insights for policymakers and environmental agencies to enhance e-waste recycling initiatives among Gen Y in Malacca.

1. Introduction

Electronic waste (e-waste) refers to discarded electrical and electronic devices that are no longer functional or useful, encompassing both household and industrial appliances (Jabatan Alam Sekitar, 2024). Globally, e-waste has become a growing environmental issue, particularly in developing countries like Malaysia. Technological advancements have led to shorter product life cycles and an increase in the volume of e-waste (Mohamad *et al.*, 2022). In 2021, Malaysia's Department of Environment (DoE) collected only 2,459 tonnes of household e-waste, a figure that represents only a small fraction of the actual total (Palansamy, 2025). The DoE estimated Malaysia will generate approximately 24.5 million units of e-waste in 2025, a figure that is expected to grow substantially (Jabatan Alam Sekitar, 2024).

Gen Y or also known as Millennials includes individuals born between 1981 and 1999, they are central to the issue. As digital natives, they are highly engaged with technology and possess strong consumer power. Compared to previous generations, they are more educated, environmentally conscious and show greater interest in sustainability practices including recycling (Bhutto *et al.*, 2023). Their behavior regarding e-waste recycling is therefore critical to national waste management efforts. Although e-waste management has been widely studied, limited research focuses on Gen Y. As a rapidly urbanizing and digitalized state, understanding local recycling

intentions essential. This study aim to fill this gap by identifying determinant influencing e-waste recycling intentions among Gen Y in Malacca to support more effective e-waste management strategies.

First issue is related to the increasing amount of e-waste in Malaysia. The rapid advancement of technology has led to a significant increase in e-waste in Malaysia and become serious. Despite this, e-waste management remains informal and then rises. In 2021, only a small fraction of household e-waste was properly collected and recycled, the DoE collecting just 2,459 tonnes while millions of units of e-waste remain unaccounted for in landfills and illegal dumping sites (Palansamy, 2025). The DoE estimated Malaysia will generate approximately 24.5 million units of e-waste in 2025, a figure that is expected to grow substantially (Jabatan Alam Sekitar, 2024). Despite the government efforts, the Solid Waste Corporation (SWCorp) reported Malaysia e-waste recycling rate in 2020 remains low at around 30.67% and lower than other countries such as Singapore, South Korea and Taiwan (Palansamy, 2025).

Secondly, the improper disposal and informal recycling of e-waste can pose serious threats to environmental and public health (Rulia, 2024). E-waste releases hazardous substances such as lead, mercury and chromium can leach into soil and groundwater and then damage the drinking water sources and local ecosystems (Palansamy, 2025; Malay Mail, 2024). This pollution also threatens the food chain and can lead to health problems including respiratory issues and neurological issues (Malay Mail, 2024). This situation shows that we must deal with e-waste properly to prevent it from harming the environment and public health.

Thirdly, the public awareness and participation in e-waste recycling remain low and especially among households where disposal is largely voluntary and unregulated (Palansamy, 2025; Mohamad *et al.*, 2022). The lack of mandatory reporting and insufficient consumer knowledge about proper e-waste management contribute to the ineffective recovery and recycling of electronic waste (Palansamy, 2025; Mohamad *et al.*, 2022). This situation shows a critical need to understand the psychological and behavioral determinants influencing e-waste recycling intentions especially among Gen Y in Malacca, they are a demographic that extensively uses electronic devices.

2. Literature Review

2.1 Introduction

This section aims to provide selected literature review evidence on the relationship between determinants of e-waste recycling and e-waste recycling intention among Gen Y in Malacca.

2.2 E-waste Definition

Recycling is the process of converting waste materials into new materials and products, thereby preventing the waste of potentially useful resources and it involves collecting, sorting, cleaning and reprocessing materials such as paper, plastics, metals, glass and electronics to create new items. (Kinejara, 2023). This process can also include recovering energy from waste and aims to reduce the consumption of fresh raw materials, lowering energy use and pollution associated with extraction and disposal such as it helps conserve natural resources by substituting recycled materials for scarce raw materials like petroleum, minerals and trees and recycling can also reduce the volume of waste sent to landfills which are costly and environmentally harmful and it decreases air, water and soil pollution caused by waste disposal (Zaidi, 2025).

2.3 E-waste Recycling Intention

Intention is often seen as a keystone construct for explaining and predicting behavior. It is defined in two main ways like as a decision or aim toward a specific end state and as the intensity of commitment to enact that decision (Rhodes & Rebar, 2017). Philosophically, intention is considered a distinctive practical attitude that plays a central role in planning for the future, involving not only desire but also a commitment to act, which explains why intentions are always about doing something (Setiya, 2022).

E-waste recycling intention refers to an individual's or consumer's behavioral intention or willingness to engage in the act of recycling e-waste (Bhutto *et al.*, 2023). It reflects the psychological readiness or motivation to properly dispose of or recycle electronic products rather than discarding them irresponsibly (Bhutto *et al.*, 2023). This intention is influenced by several key factors derived mainly from behavioral theories such as the TPB (attitude, subjective norm and perceived behavior control). These factors help policymakers and marketers design strategies to promote sustainable e-waste management practices.

2.4 Gen Y in Malaysia

Generation Y or commonly known as Millennials, includes individuals born between 1981 and 1999. They form a significant portion of the Malaysian population and in fact, they make up nearly half of the workforce and playing a crucial role in the economics of country and social landscape (Sharkawi, 2018). This generation is highly familiar

with digital technology and they have grown up with the internet and digital technologies which influence their communication styles and work preferences (Lohman, 2023). They prefer flexible working hours to balance professional growth with personal life and this reflects their ambition and desire for multitasking and build new skills (Lohman, 2023).

2.5 Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) introduced by Icek Ajzen in 1991, it is a psychological framework used to predict and understand individual behavior in a specific context (Mohamad *et al.*, 2022; Jobit & Fawehinmi, 2024). It is an extension of the Theory of Reasoned Action (TRA) to address its limitation in explaining behaviors that are not fully under a person's voluntary control (Mohamad *et al.*, 2022). The TPB suggests that an individual's behavior is directly influenced by their behavioral intention which is in turn affected by three key determinants such as attitude, subjective norm and perceived behavioral control (Mohamad *et al.*, 2022). Attitude refers to a person's belief about a behavior and its results while Subjective norms are the perceived social pressure to engage in the behavior and then perceived behavior control is a person's belief in their capacity to carry out the behavior (Arachchilage *et al.*, 2023). These components collectively explain how a person evaluates behavior, perceives social pressure to perform it and feels capable of executing it. According to Kumar (2019), the TPB has been widely applied in various domains such as health, education, consumer behavior and environmental studies, particularly in predicting pro-environmental actions like recycling and energy conservation. According to Shah Alam and Mohamed Sayuti (2011), they applied the TPB to expand on the past studies on the Malaysian's purchase behavior for halal food. In this study, the TPB focuses on attitude, subjective norm and perceived behavior control and it provides a robust structure for identifying both psychological and contextual influences on intention and behavior.

2.5.1 Attitude

Attitude in the TPB framework refers to the degree to which a person holds a favorable or unfavorable evaluation or appraisal of the behavior in question (Mohamad *et al.*, 2022; Kumar, 2019). It is shaped by the individual's beliefs about the likely outcomes of performing the behavior and their evaluations of these outcomes (Mohamad *et al.*, 2022). In other words, a person is more inclined to have a positive attitude toward an action if they think it will result in favorable outcomes (Kaiser *et al.*, 1999). The attitude is considered one of the strongest predictors of intention when the behavior is under personal control (Mohamad *et al.*, 2022). In the context of e-waste recycling behavior and for example, an individual who believes that recycling helps protect the environment and reduce pollution has a positive attitude toward recycling and a stronger intention to engage in it. Positive attitudes are often formed through education, awareness campaigns and personal experiences that show the benefits and importance of behavior.

2.5.2 Subjective Norms

Subjective norm describes to the perceived social pressure to engage in or avoid from engaging in a specific behavior and it reflects the influence of people who are important to the individual such as family, friends, peers and broader social groups (Mohamad *et al.*, 2022). This component of TPB is predicated on normative ideas regarding whether or not these significant individuals believe the person should engage in the activity, as well as the person's desire to live up to these expectations. (Wan *et al.*, 2012). If a person believes that their significant others expect them to engage in a behavior and they are motivated to meet those expectations and then their intention to perform the behavior increases (Mohamad *et al.*, 2022; Wan *et al.*, 2012). In the context of e-waste recycling and for example, if a person perceives that their family and community highly value recycling and they may feel a stronger obligation. However, subjective norms may have less influence when individuals place greater importance on their personal values than on social approval.

2.5.3 Perceived Behavior Control

Perceived behavioral control refers to the individual's opinion of how ease or difficulty of performing the behavior, based on both internal and external factors (Mohamad *et al.*, 2022; Wang *et al.*, 2018). For internally, it includes knowledge, skills and abilities and for externally, it includes the availability of resources, time and opportunities (Mohamad *et al.*, 2022). This construction is like self-efficacy and plays a dual role in the TPB model such as it influences both the intention to perform the behavior and the actual behavior itself (Mohamad *et al.*, 2022). In addition, perceived behavioral control not only predicts behavioral intention but also predicts behavior and intention (Wang *et al.*, 2018). If a person believes they have the necessary resources and control over the situation, they are more likely to intend to engage the behavior and to follow through with it (Mohamad *et al.*, 2022). In the context of e-waste recycling and for example, a person recycles if they feel confident in their ability to identify recyclable items, access recycling facilities and know how to dispose of the items correctly. Thus, perceived

behavioral control is essential in understanding behaviors that are not entirely within the individual's control and where external barriers may exist.

2.6 Past Studies on Relationship between Attitude and E-waste Recycling Intention

Attitude is a key determinant of e-waste recycling intention and reflects how favorably or unfavorably Gen Y individuals evaluate recycling behavior. When they perceive e-waste recycling as beneficial, such as contributing to environmental protection and resource conservation, their motivation to participate increases. Previous studies support this relationship. Bhutto *et al.* (2023) found a significant positive association between attitude and recycling intention, indicating that individuals who view e-waste recycling as important and beneficial are more motivated to engage in it. Similarly, Arachchilage *et al.* (2023) reported that participants with more favorable attitudes showed stronger recycling intentions, and attitude also mediated the effect of information publicity on behavioral intention. Consistent with these findings, Abdul Waheed *et al.* (2023) confirmed a significant positive relationship between attitude and e-waste recycling intention, suggesting that increasing awareness of environmental and societal benefits can positively shape attitudes and encourage recycling behavior. Therefore, it is hypothesized:

H1: Attitude has a significantly positive relationship with e-waste recycling intention.

2.7 Past Studies on Relationship between Subjective Norms and E-waste Recycling Intention

Subjective norms refer to the influence of social pressure from significant others such as family, friends, and the community on an individual's decision-making process. For Generation Y, recycling intention is strengthened when they perceive that important people in their lives expect or value sustainable e-waste management practices. This is supported by Bhutto *et al.* (2023), who found that subjective norms positively influence e-waste recycling intentions among Gen Y, indicating that when recycling is viewed as socially desirable or responsible, individuals are more likely to intend to recycle. Similarly, Arachchilage *et al.* (2023) reported a strong and significant positive relationship between subjective norms and e-waste recycling intention, showing that greater perceived social pressure increases the likelihood of forming recycling intentions. Consistent with these findings, Abdul Waheed *et al.* (2023) also confirmed a significant positive relationship between subjective norms and recycling intention, highlighting the important role of social expectations, cultural norms, and peer influence. Therefore, public campaigns and community initiatives that position e-waste recycling as a socially accepted and expected behavior can effectively enhance individuals' intentions to recycle. Therefore, it is hypothesized:

H2: Subjective norm has a significantly positive relationship with e-waste recycling intention.

2.8 Past Studies on Relationship between Perceived Behavioral Control and E-waste Recycling Intention

Perceived behavioral control refers to an individual's perception of how easy or difficult it is to perform e-waste recycling, taking into account both internal abilities and external resources such as access to recycling facilities. High perceived behavioral control indicates that individuals feel confident and capable of overcoming recycling-related barriers. This is consistent with Bhutto *et al.* (2023), who found a significant positive relationship between perceived behavioral control and e-waste recycling intention, suggesting that individuals who know how and where to recycle old electronics are more likely to engage in this behavior. A strong sense of control reduces perceived obstacles and increases willingness to act on environmental values. Similarly, Abdul Waheed *et al.* (2023) reported that perceived behavioral control has the strongest positive influence on e-waste recycling intention, indicating that even when attitudes and subjective norms are favorable, individuals are more likely to form recycling intentions only if they feel capable and confident in performing the behavior. Therefore, it is hypothesized:

H3: Perceived behavior control has a significantly positive relationship with e-waste recycling intention.

2.9 Conceptual Framework

Fig. 1 is the researcher's literature synthesis explaining the phenomenon presents a conceptual framework. It lays out the necessary steps for the research because of its previous knowledge of the opinions and observations of other researchers on this topic. The researchers understand the relationship between the conceptual background and the specific variables in their study. Therefore, it identifies the required variables in the research study. For this study, the TPB is used to determine the e-waste recycling intention. This study examines the determinants of e-waste recycling behavior among Gen Y in Malacca by the TPB. The independent variables in this study include three key dimensions such as attitude, subjective norm and perceived behavioral control. These variables are investigated in relation to the dependent variable which is the intention to recycle e-waste.

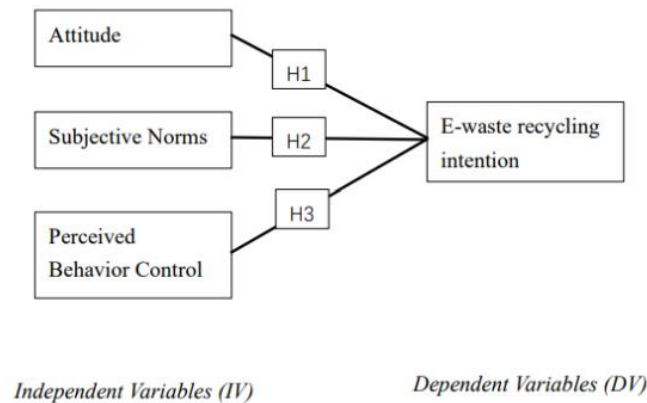


Fig.1 Conceptual Framework

3. Research Methodology

3.1 Research Design

Research design is a detailed and structured blueprint that outlines how research study will be conducted. It clearly defines the research objectives and specifies the procedures for achieving them. The research design for this study will adopt a quantitative method which is suitable for examining the relationships between defined variables using structured data collection methods. In the research, a survey questionnaire will serve as an instrument to collect data on the purpose of research which is the relationship between determinants of e-waste recycling and e-waste recycling intention among Gen Y in Malacca: Integration of Theory of Planned Behavior (TPB). Upon selecting the appropriate measurement scales, an online questionnaire will be developed and distributed to individuals within the Gen Y in Malacca to gather quantitative data.

The survey questionnaires are widely recognized for their efficiency in collecting data from large populations within a short timeframe. In this study, descriptive research is employed to obtain relevant data that supports the development of hypotheses and the formulation of the main research question and its sub-questions. Additionally, the research design incorporates the identification and analysis of key variables that include attitudes, subjective norms and perceived behavioral control. The target population consists of Gen Y individuals (born between 1981 and 1999) in Malacca and efforts will be made to recruit a broad and diverse sample from this demographic group to enhance the generalizability of the findings.

3.2 Research Population and Sampling

The population of this study comprises Generation Y individuals in Malacca and define as the group to whom the research findings are intended to apply, with an estimated population of approximately 219,500 based on Department of Statistics Malaysia data. A purposive sampling technique was employed to select respondents who met specific criteria relevant to the research objectives, namely Gen Y individuals who own electronic devices. This non-probability method was chosen to obtain meaningful insights into e-waste recycling intentions among the target group most affected by electronic waste issues. Based on the Krejcie and Morgan sample size determination table, a minimum sample size of 384 respondents was deemed appropriate for a population of this size.

3.3 Research Instrument

The questionnaire survey method was applied as the chosen instrument to gather quantitative data for this research. It can help the research evaluate respondents' viewpoints or perspectives and determine if they agree with the question asked. Based on Table 1, Section B is related to independent variables, which are attitude,

subjective norms, and perceived behavioral control, and Section C is related to dependent variables, which are e-waste recycling intention. These sections use the Likert scale and a five-point scale, ranging from strongly disagree, disagree, neutral, agree, and strongly agree. The item measurement is sourced from Kumar (2019), Gonul Kochan *et al.* (2016); Wang *et al.* (2018); Zhang *et al.* (2015), Tonglet *et al.* (2004) and Bhutto *et al.* (2023).

Table 1 Summary of item measurements

Section	Categories	Number of Items	Source
B	Attitude	6	Kumar (2019)
	Subjective norms	5	Gonul Kochan <i>et al.</i> (2016); Wang <i>et al.</i> (2018); Delcea <i>et al.</i> (2020)
	Perceived behavioral control	5	Tonglet <i>et al.</i> (2004)
C	E-waste recycling intention	5	Gonul Kochan <i>et al.</i> (2016); Bhutto <i>et al.</i> (2023); Wang <i>et al.</i> (2016)

3.4 Data Collection

3.4.1 Primary Data

In this study, the preferred method for primary data collection is the use of online surveys and questionnaires such as Google Form and distribute through WhatsApp, Facebook and other social applications. Online surveys make the procedure more efficient because researchers can reach a larger audience, gather replies and get data instantly (Bhat, 2021).

3.5 Pilot Study

Pilot study is often referred to as a feasibility study and it is a small-scale exploratory study carried out before the start of the primary research. The purpose is to improve research design or assess the research feasibility (Simkus, 2022). According to Whitehead *et al.* (2015), a sample size between 20 and 40 should be used in the pilot test to test the reliability and validity of the questionnaire. In this study, the sample of 20 respondents Gen Y from Malacca was selected to evaluate the reliability and validity of the questionnaire. This approach ensures that the instrument is reliable and suitable for the research objective.

3.6 Data Analysis

3.6.1 Descriptive Analysis

Descriptive analysis is a one type of data study that helps describe, illustrate or usefully summarize data points so that patterns can emerge that meet *all* the data's requirements (Villegas, 2022). In this study, the focus was on measures of central tendency to calculate the mean or average of the data. The central tendency levels based on mean interpretation by Sullivan *et al.* (2013). Mean values ranging from 1.00 to 2.33 are categorized as weak, those between 2.34 to 3.67 indicate a moderate level and values falling between 3.68 to 5.00 represent a high level.

3.6.2 Reliability Analysis

Reliability analysis is a statistical procedure used to assess the consistency and dependability of a measurement instrument such as a survey or questionnaire. It looks at how effectively a scale's items examine the same underlying construct and whether the instrument yields reliable, consistent findings under similar conditions.

3.6.3 Normality Analysis

Normality analysis helps determine whether a data set follows a normal distribution. This step is crucial before applying many statistical methods. Stratified sampling ensures that the data reflects different subgroups within the population. Normality tests are commonly tested using the Shapiro-Wilk test for small samples ($n < 50$) and the Kolmogorov-Smirnov test for larger samples ($n > 50$).

3.6.4 Correlation Analysis

Correlation Analysis is a statistical technique used to examine the relationship between two variables or datasets and to determine the strength and direction of that relationship (James, 2019). Correlation coefficients measure these relationships with Pearson's correlation and Spearman's correlation being the most commonly used.

4. Results and Discussion

4.1 Response Rate

Based on Table 2, a total of 384,207 out of 384 questionnaires were distributed to the target respondents. Out of these, 207 completed questionnaires were returned and used for analysis and results in a response rate of 53.90%. According to Babbie (2004), a response rate of at least 50 percent is considered adequate for analysis and reporting. A response of 60 percent is good; a response rate of 70 percent is very good.

Table 2 *Response rate of questionnaire*

Number of questionnaires distributed	Number of questionnaires returned	Percentage of questionnaires returned
384	207	53.90%

4.2 Reliability Analysis

4.2.1 Pilot Study

A pilot study was conducted with 20 respondents to evaluate the instrument's internal consistency. The analysis focused on 21 items across four variables, it is attitude, subjective norms and perceived behavioral control (independent variables in Section B) and E-waste recycling intention (dependent variable in Section C). Based on Table 3, the Attitude Cronbach's Alpha rating was 0.732, the Subjective Norms Cronbach's Alpha rating was 0.729 and the Perceived Behavioral Control Cronbach's Alpha rating was 0.712, indicated good internal consistency. The E-waste Recycling Intention Cronbach's Alpha rating was 0.737, the variable indicated good internal consistency. This result ensures the questions could be used in the real study.

Table 3 *Reliability Analysis on Pilot Study*

Variables	Cronbach's Alpha	Number of Questions	Internal Consistency
Attitude	0.732	6	Good
Subjective Norms	0.729	5	Good
Perceived Behavioral Control	0.712	5	Good
E-waste Recycling Intention	0.737	5	Good

4.2.2 Real Study

Following the pilot study, a real study was conducted by distributing 207 questionnaires to the Gen Y residents of Malacca. The reliability of the 21 items across the four variables was re-evaluated using data from these 207 respondents. Based on Table 4, the Attitude Cronbach's Alpha rating (0.749), the Subjective Norms Cronbach's Alpha rating (0.700) and the Perceived Behavioral Control Cronbach's Alpha rating (0.762) indicated good internal consistency. The E-waste Recycling Intention Cronbach's Alpha rating (0.704) indicates good internal consistency.

Table 4 *Reliability Analysis on Real Study*

Variables	Cronbach's Alpha	Number of Questions	Internal Consistency
Attitude	0.749	6	Good
Subjective Norms	0.700	5	Good
Perceived Behavioral Control	0.762	5	Good
E-waste Recycling Intention	0.704	5	Good

4.3 Demographic Analysis

There are 207 respondents involved in this research, and all respondents are in different demographics such as gender, age, ethnicity, education level, occupation, residential area in Malacca, and e-waste recycling experience. Table 5 shows the detailed information of the findings.

Table 5 *Result of Demographic Respondents*

Demographic Respondents		Frequency (f)	Percentage (%)
Gender	Male	94	45.4
	Female	113	54.6
Age	29-32 years	91	44.0
	33-36 years	69	33.3
	37-40 years	35	16.9
	41-44 years	12	5.8
Ethnicity	Malay	79	38.2
	Chinese	101	48.8
	Indian	27	13.0
Education Level	SPM/ O-Level	104	50.2
	Diploma/STPM/A-Level	39	18.8
	Bachelor's Degree	56	27.1
	Master's Degree	6	2.9
	Phd	1	0.5
	Other	1	0.5
Occupation	Private sector employee	154	74.4
	Government employee	18	8.7
	Self-employed	24	11.6
	Unemployed	11	5.3
Residential Area in Malacca	Central Malacca	105	50.7
	Alor Gajah	63	30.4
	Jasin	39	18.8
E-waste recycling experience	Yes	165	79.7
	No	42	20.3

4.4 Descriptive Analysis

Based on Table 6, the attitude shows the mean (4.0596) and standard deviation (0.49096), which fall into the high level category. The subjective norms show the mean (3.8464) and standard deviation (0.51819), which fall into the high level category. The perceived behavioral control shows the mean (3.9285) and standard deviation (0.52760) which fall into high level category. Lastly, e-waste recycling intention recorded a mean (4.0232) and standard deviation (0.50497) which fall into high level category. Overall, all variables recorded high mean values and indicate positive responses from respondents.

Table 6 *Result of Descriptive Analysis*

Variables	Mean	Std. Deviation	Level
Attitude	4.06	0.491	High
Subjective Norms	3.85	0.518	High
Perceived Behavioral Control	3.93	0.528	High
E-waste Recycling Intention	4.02	0.505	High

4.5 Normality Test

Based on Table 7, the result of the normality test using the Kolmogorov-Smirnov test to determine the distribution of the data. These findings show all variables have significance value of $p < 0.001$. The significance values are less than 0.05, the null hypothesis of normal distribution is rejected for all variables and indicates non-normal data.

Table 7 *Result of Normality Analysis*

Variables	Kolmogorov-Smirnov		
	Statistics	Df	Sig
Attitude	0.190	207	<0.001
Subjective Norms	0.124	207	<0.001
Perceived Behavioral Control	0.177	207	<0.001
E-waste Intention	0.149	207	<0.001

4.6 Spearman's Correlation Analysis

Based on Table 8, the result of Spearman's correlation analysis between determinants of e-waste recycling and e-waste recycling. Spearman's rho was used due to the non-normal data. The attitude has a positive with e-waste recycling intention ($r=0.459^{**}$, $p<0.001$). The subjective norms have a positive correlation with e-waste recycling intention ($r=0.535^{**}$, $p<0.001$). The perceived behavioral control has a positive with e-waste recycling intention ($r=0.514^{**}$, $p<0.001$). All correlation is significant at the 0.01 level (2-tailed) and confirm that attitude, subjective norms and perceived behavioral control are significantly and positively related to e-waste recycling intention.

Table 8 Result of Spearman's Correlation

Variables	E-waste Recycling Intention	
	Correlation Coefficient(r)	Sig (2-tailed)
Attitude	0.459**	<0.001
Subjective Norms	0.535**	<0.001
Perceived Behavioral Control	0.514**	<0.001

5. Conclusion

This study aims to determine the determinants of e-waste recycling and e-waste recycling intention among Gen Y in Malacca using the TPB. The findings indicate that attitudes, subjective norms, and perceived behavioral control were all at high levels and significantly positively correlated with e-waste recycling willingness. These findings suggest that psychological and social factors play a crucial role in shaping Generation Y's willingness to recycle e-waste. Overall, this study provides valuable insights for policymakers and environmental agencies and helps them promote effective e-waste recycling strategies in Malaysia and support sustainable waste management practices.

Acknowledgement

The author would also like to thank the Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia for their support.

Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Koh Qi Herng and Nor Kamariah Kamaruddin; **data collection:** Koh Qi Herng; **analysis and interpretation of results:** Koh Qi Herng; **draft manuscript preparation:** Koh Qi Herng and Nor Kamariah Kamaruddin. All authors reviewed the results and approved the final version of the manuscript.

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