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Factors Influence Recycling Intention Among University Students

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ABSTRACT

The recycling programs in Malaysia have been initiated since the early 1990s. Unfortunately, findings indicated that only five per cent of households' practices are being recycled. Hence, by adopting the Theory of Planned Behavior (TPB), this study aimed to investigate the factors influencing recycling intention among university students in Malaysia. Hypothetically, six factors influence the recycling intention behaviour: attitude, past recycling experience, subjective norms, perceived behavioural control, moral norms, and convenience of availability recycling infrastructure. This study used non-probability sampling to obtain information from 80 randomly selected samples among university students. The data obtained were analysed using descriptive, correlation, and regression analyses. The findings showed that all the investigated antecedents significantly correlate with the recycling intention among university students. The findings also showed that the regression is significant, and 68% of recycling intention is jointly determined by attitude, subjective norm, moral norms, the convenience of availability of recycling infrastructure, previous recycling experience and perceived behavioural control. Even though the study's findings are not generalisable due to limited respondents, the findings can provide future direction of research and offer policymakers valuable information to develop an effective policy related to recycling in Malaysia.

Keywords: *recycling intention, Theory of Planned Behavior,*

INTRODUCTION

People will be more likely to take measures to improve their quality of life and protect the environment if they are informed about recycling, which is the practice of reusing materials that would otherwise be considered waste. As a direct result of the critical benefits that recycling education provides to society and the environment, the public's awareness of the significance of recycling will grow. After processing, these types of chemicals can be used as raw materials, preventing them from becoming waste and causing long-term environmental damage.

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Universities could be used as a proving ground for novel solutions to these issues. Universities are representative of society at large in many ways (Kelly et al., 2006). According to Kaplowitz et al. (2009), colleges and universities can be seen as communities that have a substantial impact on society at large because of the wide range of people and activities that take place on campus. According to Noeke (2000), a university's environmental friendliness may enhance its reputation in the eyes of the public. The reduction of solid waste is one of the most significant steps that need to be taken to create a "green" and sustainable university campus (Smyth et al., 2010). According to Kelly et al. (2006), for recycling activities to be successful, both technology and human participation are required. Furthermore, it is essential to build and maintain environmentally conscious behaviors.

LITERATURE REVIEW

Theory of Planned Behavior (TPB)

The Theory of Planned Behaviour (TPB) offers a comprehensive theoretical framework for systematically assessing the various factors that impact individuals' decision-making processes and subsequent behavioural choices (Tonglet, Phillips, & Read, 2004). TPB suggests that individuals engage in rational behaviour as they carefully evaluate the consequences of their actions (Beck & Ajzen, 1991). According to Ajzen (1985), the Theory of Planned Behaviour (TPB) suggests that most human behaviours are driven by goals. Therefore, an individual's decision to engage in pro-environmental behaviour is based upon their intention to do so. There are three factors that determine an individual's behavioural intentions. These factors include the individual's overall attitude towards the behaviour, subjective norms, which include the social pressure experienced when engaging in the behaviour, and perceived behaviour control (PBC), which refers to the individual's perception of the level of difficulty associated with performing the behaviour or their belief in their self-efficacy to engage in the behaviour (Beck & Ajzen, 1991; Icek, 1985). Many scholars have contended that TPB has fallen short in providing an inclusive account of recycling behaviour (Boldero, 1995; Tonglet et al., 2004). According to Beck & Ajzen (1991), TPB provides the opportunity to incorporate additional variables to strengthen the explanatory validity of certain behaviours.

Several studies have incorporated moral norms, situational factors, and past behaviour (e.g. Boldero, 1995; Chan & Bishop, 2013; Davis, Phillips, Read, & Iida, 2006; Tonglet et al., 2004) as the additional predictors believed to enhance the predictive ability of the standard constructs of the Theory of Planned Behaviour (TPB). Therefore, this study tries to incorporate several other determinants such as past recycling experience, moral norms and convenience of availability of recycling infrastructure as the additional predictors over the existing construct of TPB which consisted of attitude, subjective norm and perceived behavior control.

Relationship Between Attitude and Recycling Intention

As defined by Ajzen (1991) and Yuzhanin and Fisher (2016), an attitude refers to how positively or adversely a person regards a specific behavior. Besides, Susanto et al. (2019) defined attitude as the affection (feeling) they have for accepting or rejecting a thing or behavior. While recycling intention is defined as a person's devotion to recycling on their own (Park & Ha, 2014). Many studies reported that attitude has a positive correlation with behavioral and recycling intention (Liu et al., 2022; Thoo et al., 2021; Majid et al., 2021; Susanto et al., 2019; Nguyen et al., 2019). Past studies have shown that a key predictor of favorable attitudes about recycling is an understanding of its well-documented advantages, which include reducing the need for disposal, preserving the environment and resources, and generating employment (Tonglet, Phillips, & Read, 2004, Wan et al., 2012). Prior research suggested that attitude influences pro-environmental behaviour in a beneficial way. Earlier research indicated that one of the important critical elements to affect students' intentions

regarding waste segregation on campus is attitude (Ayob et al., 2016). While another study by Susanto et al. (2019) revealed that attitude has a significant positive effect on the intention of 3R (reduce, reuse and recycle) behaviour. The empirical research demonstrates that behavioural intention and recycling behaviour are strongly predicted by attitude (Thoo et al., 2021). A recent study by Cho (2019) and Majid et al. (2021) found that attitude has a significant and favourably influence on college students' desire to take part in campus recycling.

Relationship Between Past Recycling Experience and Recycling Intention

According to Beck & Ajzen (1991), the variables of the theory of planned behaviour account for past behaviour indirectly if all circumstances relevant to the behaviour are known and held constant. If past behaviour influences future behaviour, the models are missing a component or different measurement. They believe that past behaviour directly impacts future behaviour. Even though one's past actions do not necessarily predict their future actions, engaging in an activity more frequently increases the likelihood that one would engage in the same behaviour in the future (Bentler & Speckart, 1979). For example, a study conducted by Lee, De Young, & Marans (1995) tries to investigate general office recycling practices and paper recycling practices. According to their findings, those who recycled paper at home were more likely to recycle paper at work. However, recycling paper at home has no effect on how other office products are recycled. Consequently, they conclude that prior recycling behaviour can only predict future recycling behaviour if it pertains to the same material and previous recycling behaviour. Tonglet et al. (2004) obtained a similar conclusion in their study of British families. In particular, "previous recycling experience" influences recycling behaviour and adds explanatory value to the theory of planned behaviour; therefore, it should be incorporated into the model for evaluating recycling behaviour.

Goldenhar & Connell (2005) further clarify that earlier recycling experiences are likely to have an impact on both behaviour intentions and actual recycling practice. Gadiraju (2016) conducted a study to better understand the variables that affect students' intentions to recycle. According to the research, prior recycling experience is the key factor influencing recycling behaviour. In other words, students are more likely to plan to recycle if they have previous experience doing so on campus, feel that recycling is the right thing to do, have accurate recycling information, and are aware of the consequences of recycling. Other studies demonstrate that prior experience directly influences intention and behaviour rather than through the model's variables (TPB) (Tonglet et al., 2004).

Relationship Between Subjective Norm and Recycling Intention

Different things can change what motivates people to recycle. One of these is the belief in subjective norms, which is the same as the term "social pressure". The Theory of Planned Behavior (TPB), which is often used to explain intentions and actions, is part of the subjective norm dimension. Theoretically, subjective norms are the social pressure that people feel from others to do or not do something. Susanto et al. (2019) say that subjective norms are usually how people feel about how much social pressure there is to do or not do something. On the other hand, according to (Sulaiman et al., 2019), it means that someone does something because of social pressure. In the case of recycling, it has to do with moral obligations and normative views that come from the expectations of important people or groups. It gives a person who wants to do something a sense of social pressure to do it.

Several studies have found that making people aware of social standards that are important to them makes it more likely that they will recycle. A previous study also found that subjective norms have a big effect on people's plans to buy environmentally friendly products (Al Mamun et al., 2018).

Relationship Between Perceived Behavioural Control (PBC) and Recycling Intention

PBC is an important determinant of people's intention in executing something (Sulaiman et al., 2019). This concept refers to the generalized belief that the outcome that one's received is determined by one's behaviour and it opposed such control comes from other external forces (Ajzen, 2005). Various recycling studies rely on PBC in predicting an individual's purpose that influences their actions and their tendency in specific conduct. According to (Majid et al., 2021), PBC is an important determinant of recycling intention and is mostly taken as an individual's confidence to involve in recycling actions due to the availability of resources and opportunities; which subsequently resulted in the individual's willingness to engage and to encourage others to involve in green practices like recycling.

In a study conducted by Nur et al. (2010) showed that PBC is the robust predictor of recycling intention behaviour among Malaysian school students. Similarly, PBC also positively correlated with recycling intention among university students (Sulaiman et al., 2019). Similar findings were obtained by Majid et al., (2021) in which the PBC is postulated as a significant factor that influences recycling intention among residents of a semi-condensed area in Johor, Malaysia. As perceived control is a strong predictor of recycling intention, it however does not influence the exercise of intention (Kraft et al., 2005). The intention of family recycling intent is also heavily reliant on the reward and penalty effect. A study by Amini et al. (2014), showed that penalty influence PBC whereby an increase in penalty will decrease household's discernment that recycling is a tough and impossible process. In addition, PBC is a significant predictor of recycling behaviour. When the recycling message is capsulated in video format, it effectively convinced individuals to start recycling; even those who perceived themselves to have limited ability in recycling due to limited resources (Liu et al., 2022).

Relationship Between Moral Norms and Recycling Intention

In our research, we have used the TPB to examine the behaviour of recycling intentions among consumers. Immense of literature under TPB proposes that attitude, subjective norms, and perceived behavioural control are influential factors in the intention to behave in a particular manner (Ajzen, 1991). However, the extension of TPB proposed by Liu, Yang, Clark, & Shelly, (2022) suggests that moral norms are also a contributing factor towards recycling intentions. Moreover, the recycling literature also was emphasised by (Thukral & Shree, 2021), (Thoo, Tee, Huam, & Mas'od, 2021), (Haj-Salem & Al-Hawari, 2021) and (Al Mamun, Mohiuddin, Ahmad, Thurasamy, & Fazal, 2018). As Klöckner (2019) defined, moral norms as "the reflection of a personal value system in a given situation". Therefore, in line with the study, we extend the TPB by examining consumer moral norms as one predictor of consumer recycling intention. In addition, Liu, Liu, & Mo (2020) have proved in their study that norms mediate the relationship between the original construct of subjective norms and purchase intentions.

Majid et al. (2021) suggest that researchers should include moral norms as an additional predictor variable when applying the TPB to investigate recycling and sustainable behaviour. Lizin et al. (2017) relate moral norms to the consumer's concern of an individual about morals, like a person's legal and social responsibilities. Meanwhile, Tsai & Tan (2022) also presents moral norm as one of the most popular variables in environmental protection. Similarly, the person performing specific behaviour is based on their beliefs of right and wrong, which explains that their motivation depends on their moral standards regarding recycling intention. Specifically, participation in recycling activities must come from a sense of awareness towards environmental protection, knowledge and a certain level of moral obligations. Notably, the personal feelings of a consumer's moral obligations and responsibility towards pro-environmental behaviour will lead to particular behaviour such as recycling. Hence, this study investigates the importance of the moral obligation of a consumer's recycling behaviour.

Relationship Between Convenience of Availability Recycling Infrastructure and Recycling Intention

Many developing countries, like Malaysia, still lack recycling infrastructure. Moreover, the infrastructure is mostly available in urban areas (Zhang et al., 2021). One of the initiatives offered by Malaysia's government is through the Malaysian Communications and Multimedia Commission (MCMC). This MCMC had located its e-waste collection boxes at a place that is near its program participants. The results showed an increase in the participation of the community in e-waste management (Afroz et al., 2020). Furthermore, the results also related to environmental knowledge and community awareness. When the community is knowledgeable and aware of the importance of recycling, the attitudes toward recycling intention also improve (Afroz et al., 2020).

Mamun et al. (2019) found that factors like sufficient and convenient recycling infrastructure contribute to a positive recycling attitude. However, some factors contribute to the not performing recycling, such as lack of time, storage or handling problems, inadequate recycling infrastructure, and the distance from the community. The study is also supported by Oluwadipe et al., (2022), where the recycling intention is dependent on the space of the infrastructure provided, the distance between residents or businesses to recycling facilities, internal storage space, and good infrastructure. The intention to perform recycling will be high if the distance to the recycling facilities is appropriate, meaning not too far from the residents or business area. People living in houses tend to recycle more than people living in apartments as the size of the storage space of the houses is more convenient compared to the apartments.

Perceived behavioral control is one of the variables under the Theory of Planned Behavior. Perceived behavioral control refers to the ease of performing a behavior. According to Mamun et al. (2019), recycling behavior is the most vital factor after the intention. Thus, recycling infrastructure is believed to play a vital role in implementing recycling behaviors (Mamun et al., 2019).

RESEARCH FRAMEWORK

The research framework developed in this study is illustrated in Figure 1.

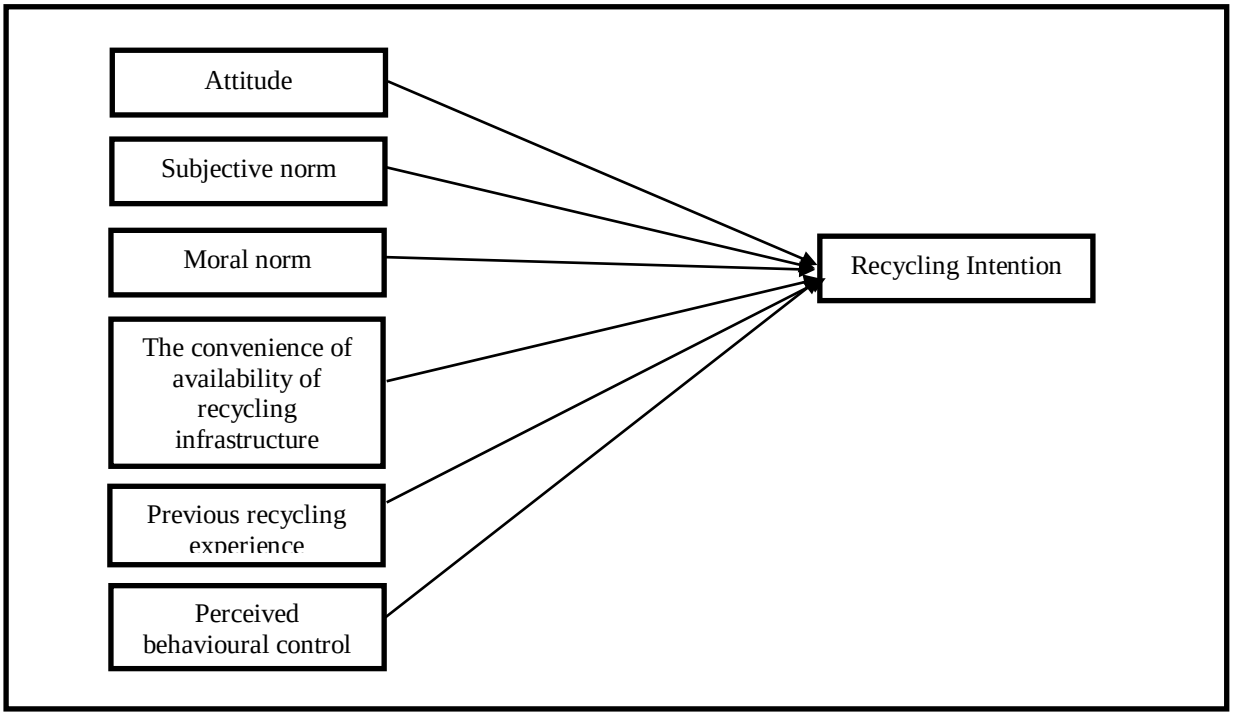

Figure 1: Research framework used in this study

RESEARCH METHODOLOGY

Data Collection and Measures

Information was gathered for this study using non-probability sampling. The questionnaire was also distributed through 100 questionnaires, the returned responses were 80 respondents. According to Table 1, there are six main sections in each set of questionnaires, which include sections measuring items for independent and dependent variables as well as demographic factors. The six independent factors under investigation in this study were: attitude, subjective norm, moral norms, the convenience of availability recycling infrastructure, previous recycling experience and perceived behavioural control. The ratings for each measurement item ranged from 1 (strongly disagree) to 5 (strongly agree) on a five-point Likert scale. The survey's pertinent questions were meant to be answered by respondents. The survey was based on earlier studies (Majid et al., 2021) and (Sulaiman et al., 2019).

Table 1: Sections in the Questionnaire

No.	Section	Description	Number of items
1	Section A	Demographic	3
2	Section B	Attitude	3
3	Section C	Subjective norms	3
4	Section D	Moral norms	5
5	Section E	The convenience of availability of recycling infrastructure	4
6	Section F	Previous recycling experience	4
7	Section G	Perceived behavioural control	3
8	Section H	Recycling intention (Dependent variable)	3

Data Analysis and Findings

Statistical Package for the Social Sciences (SPSS) version 28.0 software was used to look at the data that was received. SPSS was used to look at how the independent and dependent factors were related to each other. A correlation was used to test relationships. Reliability was used to measure the ability of an instrument to give accurate results. Multiple regression and association were used to look at the relationships between the factors that affect university students' plans to recycle. Table 2 shows a summary of the background information for each respondent.

Table 2: Respondent's Background

Background	Categories	Frequency	Percentage
Age	18-25 years old 26-30 years old	79 1	98% 2%
Gender	Female Male	64 16	80% 20%
Semester	Semester 1 Semester 2 Semester 3 Semester 4 Semester 5	23 12 29 6 10	29% 15% 37% 7% 12%

Figure 2 reveals the demographic data of respondents: most of the students were female (80%) than male (20%). Besides that, most of the respondents were aged between 18 to 25 years old (98.8%) as shown in Figure 3. Lastly, 36.7% of the students were from semester 3, and 29.1% represent the students from semester 1 (Figure 4).

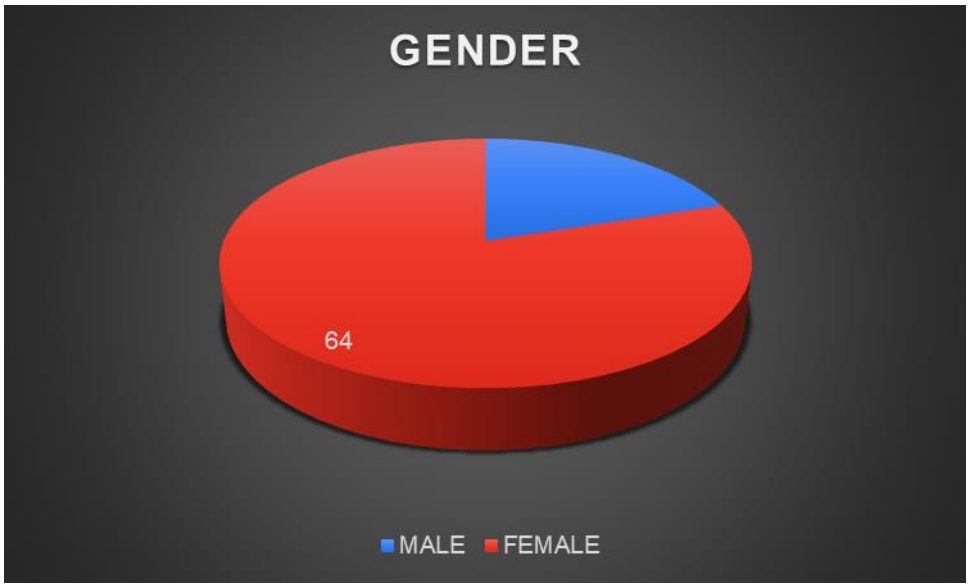

Figure 2: Gender

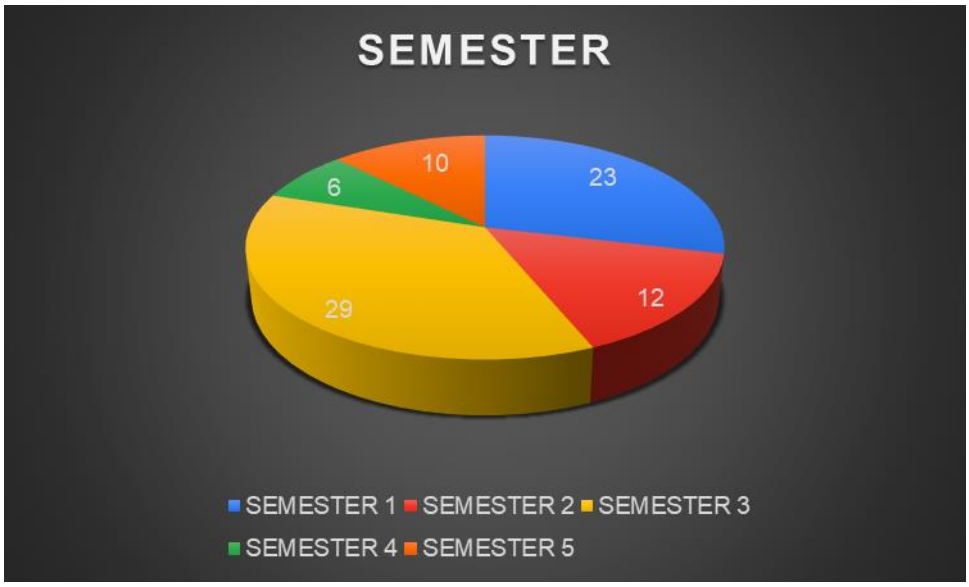

Figure 3: Student's Semester

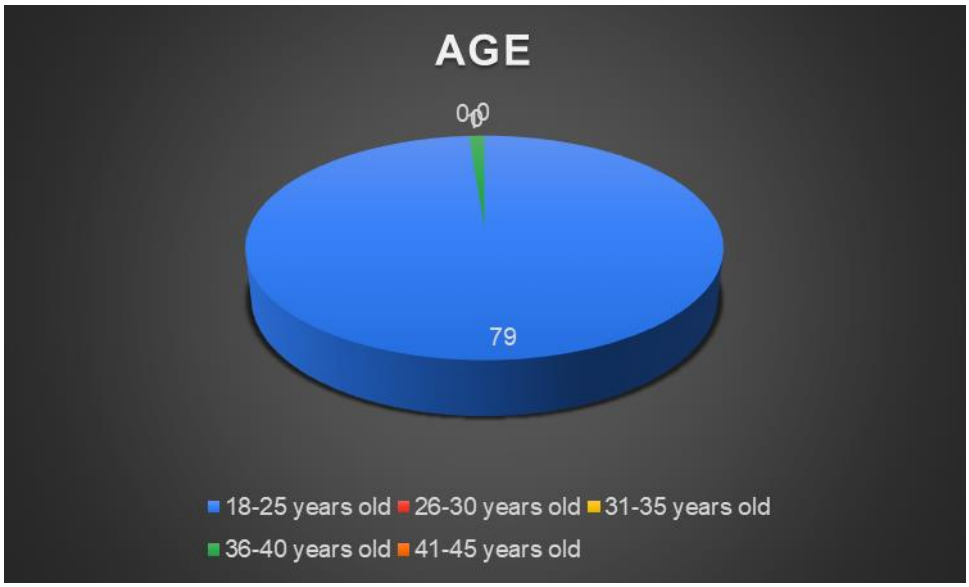

Figure 4: Age

Reliability Analysis

Cronbach's Alpha is a tool for analysing stability. Table 3 shows that Cronbach's Alpha was the same for all factors. The researcher used Cronbach's coefficient Alpha, which is Internal Consistency, to figure out how reliable the numbers were. Table 3 showed that the reliability scores for the constructs are 0.9915, which is above the lowest acceptable level of 0.8. The closer the Cronbach's alpha to 1, the higher the internal consistency reliability.

Table 3: Results of the Reliability Test

Constructs IV and DV	Cronbach's α
28 items	0.9915

Table 4 shows the general mean value for attitude, subjective norm, moral norms, the convenience of available recycling infrastructure, previous recycling experience, perceived behavioural control (independent variables) and recycling intention (dependent variable). All of the results showed that the general mean is higher than 3, which is the midpoint. So, the people who answered the survey agreed that recycling intention was affected by attitude, subjective norms, moral norms, the ease of access to recycling infrastructure, past recycling experience, and the way people think they have control over their behaviour.

Table 4: Mean Value

Constructs	Mean	Std. Deviation
IV 1: Attitude		
I believe my recycling behaviour will help reduce the wasteful use of landfills.	4.22	0.899
I believe that my recycling behaviour will help conserve natural resources.	4.21	0.806
I feel good about myself when I recycle	4.23	0.815
IV 2: Subjective Norm		
My friends expect me to engage in recycling behaviour	3.26	0.977
My colleagues expect me to engage in recycling behaviour to improve the workplace environment	3.52	1.090
My colleagues expect me to engage in recycling behaviour to improve the workplace environment	3.41	0.976
IV3: Moral Norms		
I feel I should not waste anything if it could be used again.	4.32	0.882
It would be wrong of me not to recycle my used material waste.	3.75	0.878
I would feel guilty if I did not recycle my household waste.	3.61	0.974
Not recycling goes against my principles.	3.26	1.003
Everybody should share the responsibility to recycle household waste.	4.32	0.853
IV 4: Convenience		
I am familiar with the recycling facilities in my area.	3.43	0.978
I am familiar with the materials accepted for recycling in the recycling facilities in my area.	3.63	0.931
I believe that my recycling activities will help improve environmental quality.	4.17	0.868
IV 5: Previous recycling experience		
I have a strong interest in the well-being of the community in which I Live	3.82	0.823
I mostly like to recycle my waste material.	3.61	0.864
I use to recycle waste material daily / weekly.	3.17	1.003
I am frequent in recycling most of the room waste.	3.32	0.977
IV 6: Perceived Behavioral Control		
I know how to recycle my household waste.	3.68	0.894
I have enough time to sort the materials for recycling.	3.36	0.931
I have enough space to store the materials for recycling	3.26	1.015
DV: Recycling Intention		
I intend to recycle my recyclables in the next four weeks	3.25	0.878
I will recycle my recyclables every time I have them for disposal.	3.38	0.906
I am willing to participate in the recycling scheme in the future.	3.76	0.845

The correlation results were shown in Table 5. Pearson correlation matrix analyse the strength and significant relationship among all variables that were measured. The higher the correlation value (-1 and 1), the stronger the relationship between variables. Based on the results obtained, Table 5 indicated Spearman's coefficient result, which suggested a positive, strong relationship between Previous recycling experience, Perceived Behavioral Control and Recycling Intention (0.738; $p<0.05$ and 0.779; $p<0.05$), respectively. In addition, a moderate positive relationship exists between Attitude, Subjective Norms and Recycling Intention (0.550; $p<0.05$ and 0.477; $p<0.05$), respectively. From the table also, it can be considered that Moral Norms, Convenience of availability of recycling infrastructure are directly related to Recycling Intention with correlation strength of (0.664; $p<0.05$ and 0.624; $p<0.05$). The correlation can be regarded as 'strong'.

Table 5: Correlation between Independents variables and Dependent Variable

	Attitude	Subjective Norm	Moral Norms	Convenience	Previous recycling experience	Perceived Behavioral Control	Recycling Intention
Attitude	1						
Subjective Norm	0.535	1					
Moral Norms	0.712	0.711	1				
The convenience of availability of recycling infrastructure	0.635	0.584	0.686	1			
Previous recycling experience	0.602	0.642	0.789	0.742	1		
Perceived Behavioral Control	0.440	0.475	0.634	0.621	0.749	1	
Recycling Intention	0.550	0.477	0.664	0.624	0.738	0.779	1

***. Correlation is significant at the 0.01 level (2-tailed)*

Table 6 represents the significance of the answer towards Recycling Intention. The F statistics is 26.421 and the p-value is 0.000 (less than the critical value ($p< 0.05$). Hence the regression model is valid.

Table 6: ANOVA

Model	df	Sum of Squares	Mean Square	F	Sig.
Regression	6	31.587	5.264	26.421	0.000
Residual	73	14.545	0.199		
Total	79	46.133			

Based on Table 7, the result shows the coefficient of determination of six (6) independent variables which include attitude, subjective norm, moral norms, the convenience of availability recycling infrastructure, previous recycling experience and perceived behavioural control. The result of coefficient determination indicated that the standardized coefficient value (Beta) for the attitude was 0.1423, which showed that it is positively related to recycling intention and has a significant relationship as the significant value is less than 0.05 ($p< 0.05$), the variable is making a significant contribution to the prediction of the dependent variable. Based on Table 7, the result for the attitude variable was 0.014, which is below the significance level. Therefore, the attitude variable is significant; hence explains that attitude is positively related to recycling intention.

The second variable is subjective norms with a standardized coefficient value (Beta) was 0.0516, which showed that it is positively related to recycling intention and has a significant relationship as the significant value is less than 0.05 ($p< 0.05$), the variable is making a significant contribution to the prediction of the dependent variable. Based on Table 7, the result for the subjective norms variable was 0.050, which is below the significance level. Therefore, the subjective norms variable is significant; hence explains that perceived behavior control is positively related to recycling intention.

The third variable is moral norms with a standardized coefficient value (Beta) was 0.0973, which showed that it is positively related to recycling intention and has a significant relationship as the significant value is less than 0.05 ($p< 0.05$), the variable is making a significant contribution to the prediction of the dependent variable. Based on Table 7, the result for the moral norms variable was 0.047, which is below the significance level. Therefore, the moral norms variable is significant; hence explains that perceived behavior control is positively related to recycling intention.

The fourth variable is the convenience of available recycling infrastructure with a standardized coefficient value (Beta) was 0.0293 which showed that it is positively related to recycling intention and has a significant relationship as the significant value is less than 0.05 ($p< 0.05$), the variable is making a significant contribution to the prediction of the dependent variable. Based on Table 7, the results for the convenience of available recycling infrastructure variable was 0.035, which is below the significance level. Therefore, the convenience of the available recycling infrastructure variable was significant; hence explains that the convenience of the available recycling infrastructure variable is positively related to recycling intention.

The fifth variable is the previous recycling experience with a standardized coefficient value (Beta) was 0.2212, which showed that it is positively related to recycling intention and has a significant relationship as the significant value is less than 0.05 ($p< 0.05$), the variable is making a significant contribution to the prediction of the dependent variable. Based on Table 7, the result for the previous recycling experience variable was 0.011, which is below the significance level. Therefore, the previous recycling experience variable is significant; hence explains that previous recycling experience is positively related to recycling intention.

The last variable is perceived behavior control with a standardized coefficient value (Beta) was 0.4439, which showed that it is positively related to recycling intention and has a significant relationship as the significant value is less than 0.05 ($p< 0.05$), the variable is making a significant contribution to the prediction of the dependent variable. Based on Table 7, the result for the perceived behavior control variable was 0.000 which is below the significance level. Therefore, the perceived behavior control variable is significant; hence explains that perceived behavior control is positively related to recycling intention.

Table 7: Coefficients of Determination

	Coefficients	**Standard Error**	**t Stat**	**P-value**
(Constant)	0.2935	0.299	0.982	0.033
Attitude	0.1423	0.097	1.468	0.014
Subjective Norms	0.0516	0.077	-0.671	0.050
Moral Norms	0.0973	0.135	0.720	0.047
Convenience of available recycling infrastructure	0.0293	0.105	0.280	0.035
Previous Recycling Experience	0.2112	0.133	1.590	0.011
Perceived Behavioural Control	0.4439	0.089	4.970	0.000

Table 8 shows the multiple regression correlation values (R), which showed a linear relationship between attitude, subjective norm, moral norms, convenience of recycling infrastructure, previous recycling experience, and perceived behavioural control and recycling intention. Table 8 of this model summary showed that the R square number was 0.684, which was 68% when turned into a percentage. This means that 68% of the difference in recycling intention can be explained by the difference, which is made up of 6 different factors. This implies 68% of recycling intention is decided by attitude, subjective norms, moral norms, the convenience of recycling infrastructure, previous recycling experience, and perceived behavioural control. The other 32% could have been caused by other things. This indicated that there were other independent variables which were not included in this study and could further strengthen the regression equation. In line with the results, previous studies show that information about recycling (Philippsen, 2015; Schultz, Oskamp, & Mainieri, 1995) and the inconvenient lack of recycling facilities (Derksen & Gartrell, 1993) are also things that could have made people want to recycle.

Table 8: Regression summary

Model	R	R square	Adjusted R Square	Std Error of the Estimate
1	0.827	0.684	0.658	0.446

DISCUSSION

This study investigated the determinants of UiTM's students' recycling intention by applying the TPB framework. Findings showed that most students are aware of the concept of recycling and recycling was a concern for almost all the students. The research also found a substantial correlation between recycling intention and all six variables, including attitude, subjective norm, moral standards, the accessibility of recycling infrastructure, prior recycling experience, and perceived behavioral control.

The present study indicated that attitude and subjective norms have a significant impact on student's intention to recycle. The results were consistent with data obtained by Halder & Singh (2018) whereby the findings showed that social pressure as a result of subjective norms can drive the recycling intention among students, followed by their attitudes to recycling. The results differ from Majid et al., (2021) estimates of social norms, but it was broadly consistent with earlier studies. According to earlier research by Arli et al. (2020), Ajzen's hypothesis was congruent with a subjective norm that supports recycling activity strongly predicting the intention to recycle. Additionally, Sulaiman et al. (2019) in his study also found that subjective norms and attitudes were important predictors of recycling intention. As these two variables predict intention to recycle among students, it is recommended that the public authorities to work together with local universities to make recycling as a social trend among students. This can be achieved through collaboration with local celebrities or social media influencers in promoting the effort. The recycling messages circulated by these groups of influential people are an effective tool to convince greater participation and indirectly increase the recycling intention among students due to likability and persuasion they receive from the celebrity whom they idolize. The findings by El Hedhli et al. (2021) stated that internalization as part of celebrity credibility has a persuasive effect with product type on consumers' attitudes and intentions.

In addition, this study was able to demonstrate the impact those moral norms have on recycling intention. The findings showed that moral norms were significantly associated with students' recycling intention. According to Arli et al. (2020), moral norms account for a large portion of how people behave in favour of the environment. The findings were also reported by Majid et al., (2021) in

which moral norms turned out to be the strongest predictor of recycling intention among residences in semi-dense areas in Johor. People are aware of the importance of recycling and the environmental risk associated with plastic usage due to their moral norms. As moral norms can be improved through education, it is recommended that recycling awareness and infrastructure should be strengthened among students. Studies found that students need education regarding the recycling infrastructure on campus and increasing the recycling accessibility with more recycling options for students on campus can contribute to their perception that recycling is more practical.

The fourth factor, the convenience of availability of recycling infrastructure, had a positive and significant correlation with the recycling intention. To ensure that people have the intention to perform recycling, the recycling infrastructure or facilities must be available, near, and easy to access by the people. The finding was also consistent with the research done by Dixon & Parker (2022) where the tendency of the students to perform recycling was when facilities were available, appropriate, convenient and the process was easy. The study also highlighted that students' recycling intention would be related to the recycling infrastructure or facilities such as the size of the recycling bins must be sufficient for the rubbish or waste, the location of the recycling bins must not be far from the hostel as sometimes the students need to go frequently to the recycle bin's place, and suitable labeling and colouring of bins to differentiate the functions of bins.

Another variable is that previous recycling experience also had a positive and significant correlation with the recycling intention. Not everyone has the experience of recycling. According to Dixon & Parker (2022), students' past recycling experiences depend on whether their parents support recycling or not. Normally, if their parents performed recycling then they would also be likely to perform recycling and vice versa. However, the study also identified that even though the students had the experience of recycling, yet they would stop recycling because of their surroundings in the university where most of their friends did not do recycling.

Finally, perceived behavioral control, where this factor had a positive and significant correlation with recycling intention, was the strongest determinant of the student's participation in recycling activities at the university. The finding was consistent with the research was done by Thoo et al. (2022) where perceived behavioral control was also found to be the strongest determinant factor. To improve students' perceived behavioral control, the university could conduct recycling campaigns where clear instructions and simple steps on how to recycle are provided using any interactive media (Cho, 2019). According to Dixon & Parker (2022), students were not able to recycle because the cost of behaving sustainability was expensive and students were likely to go for the cheaper substitutes where the cheaper substitutes would not always be sustainable.

CONCLUSION AND RECOMMENDATION

The Theory of Planned Behavior (TPB) provides a valuable framework for understanding human decision-making processes and predicting behavioral intentions. The TPB offers a valuable tool for designing effective interventions and strategies that promote positive behavior change and facilitate the achievement of individual and societal goals. In this study, it was found that all variables tested were positively correlated to students' recycling intentions. According to the study, it was found that perceived behavioral control possessed the strongest effect on the intention to recycle among students. This proved that under adequate and encouraging situations, the recycling intention among students can be improved as they are already aware of recycling and are willing to engage in recycling activities. Moreover, people would likely recycle if the facilities are sufficient to cater for their needs to recycle. Even though the recycle bins are labelled and coloured with different colour coding to differentiate it yet if the number of bins is not sufficient to the residents, the intention would be dropped. Therefore, the university and organization should increase their recycling initiatives like putting enough recycling bins in the nearest location to the residents, more recycling programs to

boost the awareness of recycling among people, and attractive and engaging posters with detailed information about recycling. Encouraging recycling behaviors among the youth not only contributes to waste reduction but also fosters a sense of environmental consciousness that extends beyond recycling. The findings of this study also provide an insight and valuable tool for designing effective interventions and strategies that promote positive behavior change and facilitate the achievement of individual and societal goals. Future research is recommended to extend the study to a larger population to obtain more concrete and generalizable findings.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Various research constraints were highlighted in this section. First, more respondents should be included in future studies. Given the findings of the conceptual model, it could be worthwhile to do further study in a new environment, considering university faculty and staff as well as the hospitality industries. Additionally, the survey might be carried out among students in different Malaysian states to determine the degree of future respondents' awareness of recycling in the region and how they feel about it. More data might be gathered as a result, supporting the conclusions, and enabling Malaysia-wide generalisation. The results also provide greater guidance for the creation of more successful policies and programmes that may be implemented to raise Malaysian citizens' intentions to recycle. Finally, more research is required to investigate additional variables that can affect Malaysian university students' intentions to recycle.

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All authors have contributed equal effort to the overall studies.

CONFLICT OF INTEREST DECLARATION

The authors declare there's no conflict of interest.

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