

ASSESSING UNIVERSITY STUDENTS' PURCHASE INTENTION TOWARD THE ECO-FRIENDLY STATIONERY: THE MODERATION ROLE OF ENVIRONMENTAL CONCERN

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ABSTRACT

Sustainable products like eco-friendly stationery have gained much attention recently due to the increasing awareness and consciousness of consumers towards environmental issues. Numerous sustainable products have been studied in the literature but very limited studies have primarily concentrated on eco-friendly stationery from the perspective of university students. Therefore, this study aimed to identify the factors that affect Malaysian university students' purchase intention (PI) towards eco-friendly stationery. Two environmental factors (perceived environmental responsibility (PER) and environmental knowledge (EK)) have been incorporated into the theory of planned behaviour (TPB) model together with environmental concern (EC) proposed as a moderator to develop this study's research model. In this study, 261 usable responses were gathered via purposive sampling. This study utilised the partial least square-structural equation modelling to validate the proposed hypotheses. The result first showed that attitude (ATT), subjective norms (SN), and PER played significant roles in affecting students' PI towards eco-friendly stationery. Additionally, the moderation analysis further revealed that the influence of SN on PI is significantly strengthened by EC. These findings signified that the students' PI is directly impacted by ATT, SN and PER only, while the greater EC tends to further enhance the effect of SN on PI. This study's findings firstly enrich the literature by offering new evidence on the students' sustainable behaviour, especially in eco-friendly stationery. Besides, the moderating effect of EC on sustainable behaviour is also proven in this study. Moreover, numerous practical implications have also been resulting from this study and it's useful for the stakeholders to cultivate the students' sustainable behaviour.

Keywords: Purchase Intention, Eco-Friendly Stationery, Environmental Concern

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1. INTRODUCTION

The demand for eco-friendly or green products has increased worldwide as environmental sustainability has become the priority for all stakeholders, including governments, manufacturers and consumers. Currently, in the year 2024, the sustainable materials market achieved approximately \$333.31 billion and is projected to increase up to \$1,073.73 billion (Precedence Research, 2024) Chanda et al. (2023) noted that both government and organisations have worked together to cultivate the consumers' environmentally friendly behaviour. The ecological degradation problems also inspire businesses to invent their operation and products by using materials and processes that are friendly to the environment (Irfany et al., 2024). Besides, the government also played a role in promoting sustainable consumption behaviour by providing some guidelines, regulations and policies (Ling et al., 2024a). Similarly, consumers nowadays are more conscious and aware of the consequences of their behaviour on the society and environment. The negative impact of conventional or unsustainable products on environmental degradation has been widely recognised. Therefore, consumers feel responsible for consuming environmentally friendly products, as an effort to protect the society and environment (Irfany et al., 2024). This is consistent with Liu et al. (2020) who also remarked that consumers have a tendency to take part in ecological preservation and behave environmentally friendly.

Paralleled with the increasing demand of consumers towards sustainable products, the topic of consumers' sustainable behaviour has been widely discovered in the literature. For instance, by using the integrated framework of attitude-behaviour-context theory and theory of planned behaviour (TPB), Dwivedi et al. (2022) studied the consumers' intention towards green hotels in India. Besides, Kumar and Basu (2023) have adopted an extended TPB model to investigate the effect of eco-labels on green electrical and electronic product purchase intention (PI). Likewise, the PI on green products has also been studied by Armutcu et al. (2023), using the extended TPB model. Channa et al. (2022) further investigated the consumer's PI towards eco-friendly athletic wear. Moreover, the behavioural intention (BI) to buy or adopt hybrid vehicles and electric vehicles has also been explored by Bhutto et al. (2022) and Pandita et al. (2024), respectively. Based on the stimulus-organism-response framework, Ling et al. (2024b) further studied the consumers' PI towards green cosmetics. These studies have investigated the factors that affect consumers' BI through different standpoints and offered a solid understanding of the consumers' BI towards several types of sustainable products.

Practically, university students present as a unique group of consumers as they represent the existing consumers and consumers that will dominate the market in the future (Ling et al., 2024a). Besides, university students tend to have a higher education level and also moral responsibility towards sustainable development (Wu et al., 2019). Therefore, it is relevant to study the sustainable behaviour of university students as compared to other groups of consumers. Numerous eco-friendly or green products have been produced to meet the rising demand and fulfil the needs of sustainable consumerism, such as green foods, eco-athletics wear, sustainable fashion products, hybrid or electric vehicles, green cosmetics, and many more. However, compared to other products, university students have to use a lot of stationery in their study journey and thus, their stationery usage is typically higher compared to other groups of consumers. With that, studying the university students' sustainable consumption behaviour by focusing on their PI on eco-friendly stationery is

appropriate. In addition, eco-friendly stationery is also expected to receive high demand from the market as the size of the green stationery market is projected to grow to \$13.70 billion in 2030, compared to \$9.87 billion in 2023 (Virtue Market Research, 2023). Despite the importance of eco-friendly stationery has been remarked in addressing the sustainability issue. Unfortunately, the study that primarily concentrated on the university students' PI towards eco-friendly stationery remains deficient, even though university students tend to have high usage of the stationery. As aforementioned, previous studies mainly focused on other eco-friendly or green products and none of them focused on eco-friendly stationery. Besides, the effect of the proposed independent factors on the BI of sustainable or eco-friendly products has been studied in previous studies. However, the evidence is still inconclusive. For example, although most of the studies have remarked the substantial effect of environmental knowledge (EK) on the BI (Ling et al., 2024a; Phan et al., 2023; Suhartanto et al., 2023), the insignificant findings still documented in other studies (Moshood et al., 2023; Sinha & Annamdevula, 2023). Likewise, Zaidan et al. (2025) found an insignificant result of perceived environmental responsibility (PER) on the BI, while other studies still revealed a significant effect (Channa et al., 2022; Minbashrazgah et al., Singh et al., 2022). Consequently, further study is required to further examine their effect on eco-friendly stationery PI amongst university students.

With the research gap mentioned in the previous section, this study intended to identify the factors affecting the intention to purchase eco-friendly stationery for university students. In addition, the moderation effect of the environmental concern (EC) on the proposed relationships is also aimed to be examined in this study. This study is expected to contribute both theoretically and practically. The TPB model is extended with two environmental factors (PER and EK) in proposing a research framework that may better explain the students' sustainable behaviour. This further implies that some extra factors have to be incorporated into the TPB model to capture the special features that are not considered by the TPB model. Besides, the moderation effect of EC was also provided in this study, and it showed the initial relationships between the independent factors and outcome factors. However, the moderation effect of EC is not that straightforward and it has to be studied further. Furthermore, this study's findings also benefit the stakeholders as it could be the reference for them in formulating strategies and policies that would further encourage the university students to buy eco-friendly stationery and/or other sustainable products as crucial steps in protecting the society and environment.

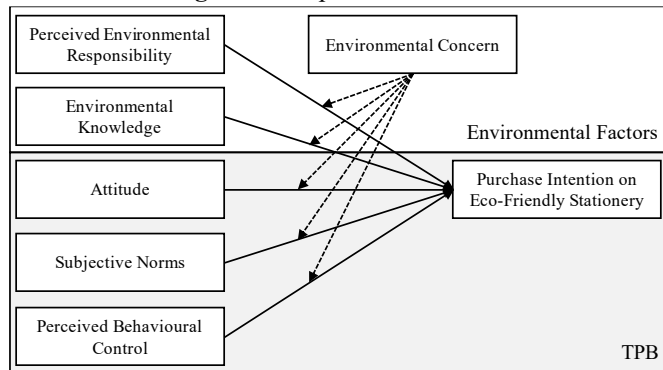
2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. *Theory of Planned Behaviour*

Ajzen (1991) proposed the theory of planned behaviour (TPB) in explaining the individual's behaviour and proposed that the behaviour of an individual is established by three variables, namely attitude (ATT), subjective norms (SN) and perceived behavioural control (PBC). Therefore, it postulated that the individual's behaviour is shaped when they have favourable ATT, greater SN and also high PBC. As remarked by Liu et al. (2020), TPB is suitable for studying the environmentally friendly behaviour of consumers. With the exceptional predicting ability of the

model, TPB is widely recognised by researchers as a reliable model to predict the individual's behaviour and it has been adopted in numerous studies from different areas. These studies include PI on functional foods (Ling et al., 2023), green products PI (Phan et al., 2023; Sun et al., 2022), socially responsible investment intention (Ling et al., 2024c), PI on hybrid vehicles (Hamzah & Tanwir, 2021), green consumption behaviour (Ling et al., 2024a), and others. However, due to the limitability of the TPB model, Ling et al. (2023) suggested that some extra variables that explain the specific characteristics of the study's context have to be incorporated into the model to establish an inclusive model. Therefore, PER and EK were included in the research model as both factors were able to capture the environmental consideration that is not explained in the TPB model. Additionally, EC also is added to the research model as it anticipated that the proposed relationships would be greatly enhanced with the EC presence. Figure 1 illustrates this study's proposed framework that extends the TPB model.

Figure 1: Proposed Framework



Source: Developed by Authors

2.2. Attitude on Purchase Intention

As suggested by the TPB, ATT is one of the important factors that might affect an individual's behaviour. ATT is defined as the degree level of an individual's feelings towards a certain behaviour (Ajzen, 1991), and this feeling might be positive or negative (Ling et al., 2024c). Theoretically, this positive or negative feeling will affect an individual's behaviours. An individual tends to have a higher BI if they have favourable ATT towards that behaviour. Therefore, it is expected that the students will have a high level of PI towards eco-friendly stationery if they have positive ATT towards it. This supposition is widely documented in the literature whereas the positively significant effect of ATT on BI has been found (Armutcu et al., 2023; Channa et al., 2022; Tan, 2023). For instance, Rashid and Lone (2023) found that consumers' green PI is significantly influenced by ATT. The significant impact of ATT on PI has also been covered by Synodinos et al. (2023). Similarly, Chanda et al. (2023) also revealed the positively significant role of ATT on PI

towards eco-friendly houses. However, the insignificant effect of ATT on BI is still documented in the literature (Ling et al., 2024a; Hamzah & Tanwir, 2021). Therefore, the influence of ATT on PI needs to be investigated further, and the following hypothesis is proposed.

Hypothesis 1: ATT is positively significant with PI on eco-friendly stationery.

2.3. *Subjective Norms on Purchase Intention*

SN is another factor proposed in the TPB model and predicted to have a significant effect on the individual's behaviour. SN is defined as the influence of other people in the social networks towards a certain behaviour (Ajzen, 1991). Generally, these other people might be parents, siblings, peers or friends, colleagues and some others who are important to the individual (Ling et al., 2023). As suggested by TPB, the perceptions of people in our social contexts might influence our behaviour. Therefore, a positively significant effect of SN on students' PI towards eco-friendly stationery is anticipated, and this influence is widely proven in previous studies (Ling et al., 2024a; Dwivedi et al., 2022). For example, Bhutto et al. (2022) found that consumers' PI towards hybrid vehicles is significantly influenced by SN. Likewise, Armutcu et al. (2023) also revealed a significant effect of SN on the consumers' green PI in Turkey. The positively significant impact of SN on the consumers' PI towards electrical and electronic products was also revealed in India (Kumar & Basu, 2023). Regrettably, some evidence from the previous studies also documented the insignificant role of SN on BI (Chanda et al., 2023; Armutcu et al., 2024; Tan & Goh, 2018). These inconclusive findings have raised a concern regarding the effect of SN on PI and further study is needed. Hence, the hypothesis below is recommended.

Hypothesis 2: SN is positively significant with PI on eco-friendly stationery.

2.4. *Perceived Behavioural Control on Purchase Intention*

Besides ATT and SN, PBC is the third factor proposed in the TPB model and is expected to have a substantial influence on the individual's behaviour. Theoretically, PBC refers to the degree of difficulty in performing a certain behaviour (Ajzen, 1991). Besides, the difficulty level, PBC might refer to the additional efforts or costs that have to be scarifying when engaging in a certain behaviour, and it tends to affect the individual's behaviour. Therefore, this study hypothesised that the students have greater PI towards eco-friendly stationery if they perceived that purchasing this eco-friendly stationery does not require any extra effort or costs. Previous research proved the significant influence of PBC on BI (Chanda et al., 2023; Armutcu et al., 2023; Kumar, 2024). For instance, Kumar and Basu (2023) found the significant influence of PBC on green product PI. The significant influence of PBC on green food PI is also remarked on by Armutcu et al. (2024). Similarly, Bhutto et al. (2022) also concluded that consumers' PI on hybrid vehicles is also

significantly influenced by PBC. Though the significant role of PBC is documented, some studies also concluded the insignificant effect of PBC on BI (Chanda et al., 2023; Tan & Goh, 2018). This implies that the effect of PBC on BI is still inconclusive and further study on this relationship is required. With that, the following hypothesis is hypothesised in this study.

Hypothesis 3: PBC is positively significant with PI on eco-friendly stationery.

2.5. *Perceived Environmental Responsibility on Purchase Intention*

Due to the TPB does not consider the environmental factors, this study included PER as the additional factor in understanding their influence on the subject matter. PER refers to the opinion regarding the responsibility that individuals have towards ecological welfare and well-being (Hamzah & Tanwir, 2021). The personal responsibility towards the environment will tend to affect their BI. In this study, the university students are expected to have greater PI towards eco-friendly stationery if they feel that they are responsible and obligated to the environment. Empirically, the substantial role of PER on BI is acknowledged in the literature. For instance, Minbashrazgah et al. (2017) remarked on the positively significant role of PER on green chicken purchase intention. Shimul and Cheah (2023) also found that the consumers' PI towards eco-friendly packaged products is significantly influenced by their PER. Similarly, Hamzah and Tanwir (2021) also remarked on the significant influence of PER on hybrid vehicles' PI. Channa et al. (2022), and Singh et al. (2022) also remarked the similar findings where they concluded that environmental responsibility significantly affected consumers' environmentally friendly BI. Although the literature tends to suggest the significant impact of PER on PI. However, the insignificant role of environmental responsibility on BI is still revealed in another study (Zaidan et al., 2025). For that reason, the following hypothesis is formulated.

Hypothesis 4: PER is positively significant with PI on eco-friendly stationery.

2.6. *Environmental Knowledge on Purchase Intention*

Besides the PER, this study also proposed the EK as the additional factor in the research framework to represent the environmental factor that is ignored in the TPB model. EK refers to the level of knowledge an individual has towards environmental issues. As revealed in the literature, this knowledge level has a greater influence towards the individual's behaviour, as they may behave environmentally friendly if they have a higher level of knowledge on ecological issues (Ling et al., 2024a). With that, this study postulated that the PI of the university students on eco-friendly stationery will be significantly affected by their level of knowledge of environmental issues. The substantial effect of EK on PI towards green foods is revealed by Synodinos et al. (2023). Likewise, Tan (2023) also concluded that the consumer's preferences towards green hotels are also

significantly influenced by their EK. Chanda et al. (2023) also noted that the consumers' PI towards eco-friendly houses is significantly impacted by the EK. Ling et al. (2024a) also remarked the similar findings on college students' green consumption behaviour. Moreover, the significant effect of EK on BI is also widely documented in the literature (Phan et al., 2023; Shimul & Cheah, 2023; Suhartanto et al., 2023). However, the effect of EK on BI is still inconclusive as some previous studies also found insignificant results (Moshood et al., 2023; Sinha & Annamdevula, 2023). Thus, the following hypothesis is recommended.

Hypothesis 5: EK is positively significant with PI on eco-friendly stationery.

2.7. *Environmental Concern As Moderator*

In addition to the direct influence of the three TPB factors (ATT, SN and PBC), and two environmental factors (PER and EK). This study also further proposed EC as a moderator that might moderate the effect of these five predictors on the PI. EC refers to the level of understanding and awareness of an individual towards ecological issues (Moshood et al., 2023). Similarly with the level of knowledge in EK, the level of understanding and awareness on environmental issues also will significantly affect the behaviour of an individual. Empirical evidence also remarked on the significant role of EC on BI (Tan & Goh, 2018; Suhartanto et al., 2023; Sinha & Annamdevula, 2023). For example, Rashid and Lone (2023) found that EC significantly affected green PI. Likewise, Sun et al. (2022) also revealed the significant influence of EC on green PI. This signified that the substantial role of EC on an individual's BI cannot be underestimated.

As remarked in the previous section, the inconclusive findings on the proposed independent factors on the PI are still presented in the literature. Therefore, this study proposed EC as a moderator that anticipated enhancing the initial association between proposed independent factors and PI. This is consistent with the studies that revealed that EC could further strengthen the initial relationship between endogenous and exogenous factors in different study contexts. For instance, Canio et al. (2021) concluded the significant moderation role of EC on the relationship between trust in sustainable producers and PI. The significant moderation role of EC was also found by Dwivedi et al. (2022) on the association between green trust and BI towards green hotels. Likewise, George et al. (2023) also found that the associations between green packaging initiatives and green packaging behaviour are significantly moderated by EC. Moreover, Pandita et al. (2024) further proved the mediation role of EC in their study on electric vehicle adoption intention.

Hypothesis 6: EC positively moderates the association between ATT and PI on eco-friendly stationery.

Hypothesis 7: EC positively moderates the association between SN and PI on eco-friendly stationery.

Hypothesis 8: EC positively moderates the association between perceived behaviour control and PI on eco-friendly stationery.

Hypothesis 9: EC positively moderates the association between PER and PI on eco-friendly stationery.

Hypothesis 10: EC positively moderates the association between EK and PI on eco-friendly stationery.

3. RESEARCH METHODOLOGY

3.1. *Sample and Targeted Population*

The targeted population of this study are Malaysian university students who currently studying in universities in Malaysia. This study collected 261 valid respondents from the existing university students who have purchased eco-friendly stationery. To better select the respondents, the non-probability purposive sampling technique was employed. Two preliminary questions were asked to make sure the respondents fulfilled the selection criteria of (1) being current university students in Malaysia and (2) having purchased eco-friendly products before. The collected primary responses of 261 are satisfactory for this study as they are higher as compared to the minimum sample size requirement of 178. According to the power analysis with a medium effect size (0.15), power level of 95%, and 11 predictors, the minimum sample size of the proposed framework is 178 (Memon et al., 2020). With that, the 261 valid responses to this study are sufficient to test the hypotheses.

3.2. *Data Collection and Measurement Development*

This study utilised the online survey by using Google Forms due to the costless and superior ability to collect many responses quickly. The questionnaire of this study was designed by adapting 27 validated items from prior studies. Specifically, ATT and SN are measured by adapted four and three items from Qureshi et al. (2022), respectively. The three items from Duong et al. (2022) were borrowed to measure the PBC. EK is measured by the four items elicited from Nekmahmud et al. (2022), and four items of PER were borrowed from Duong et al. (2022). Besides, EC is measured with the four items adapted from Farzin et al. (2023), and PI is measured with the five items adapted from Duong (2022). The respondents must assess the items using the seven-point Likert for the level of agreement and disagreement (from 1 represents strongly disagree to 7 represents strongly agree). Five demographic questions are also included to provide background information on the participating respondents. Dual-language questionnaires (English and Bahasa Malaysia) were used in designing the questionnaire to ensure the respondents fully understood the questionnaire.

3.3. *Analytic Technique*

The collected responses were examined and prepared in a ready dataset for further analysis. The multivariate normality test of Mardia's coefficient procedures was used to assess the normality of the dataset. The Kurtosis coefficient value (84.1860) indicates that the collected responses are non-normally distributed as it exceeds the level of 20 (Byrne, 2013). However, this non-normally distributed data is not a big issue as it can still be further analysed by using the partial least squares-structural equation modelling (PLS-SEM) with the bootstrapping technique (Hair et al., 2019). Therefore, the PLS-SEM in SmartPLS was selected as the analytic technique for hypothesis testing.

3.4. *Common Method Bias*

Furthermore, this study further examined the common method bias (CMB) problem by using Harman's single factor test and full collinearity test, as the responses were collected in a one-off survey. The findings of both tests consistently proved that CMB issues are absent in this study as all 27 items only explained approximately 33.47% of a single factor (Podsakoff et al., 2003). Similarly, the full collinearity test supports this finding as the variance inflation factor (VIF) values in Table 2 showed that all factors have VIF values below the 3.30 level (Kock, 2015).

4. ANALYSIS RESULTS

4.1. *Participated Respondents' Profiles*

Table 1 shows that the female students accounted for 73%, compared to 27% of the males. Most respondents are students aged between 18 and 25 (54%), 26 and 35 (13%), and 36 and above. Regarding the year of study, 56% of the respondents are Year 3 students, followed by Year 2 students (16%). Besides, 73% of the respondents have bachelor's degrees, followed by master's (21%). Lastly, around two-thirds of the participants are students in the social sciences and humanities stream, compared to the science and technology stream, which only accounted for 33%. Therefore, this showed that the respondents of this study were dominated by female bachelor degree's students aged between 18 – 25 years old and mainly studying in the social sciences and humanities fields.

Table 1: Summary of Respondents' Profiles

Profile	Categories	Frequency	Percentage
Gender	Male	70	26.82
	Female	191	73.18
Age Ranges	18 – 25-Year-Old	218	83.52
	26 – 35-Year-Old	33	12.64
	36-Year-Old & above	10	3.83
Year of Study	Year 1	26	9.96
	Year 2	43	16.48
	Year 3	145	55.56
	Year 4	34	13.03
	Others	13	4.98
Level of Study	Foundation	10	3.83
	Bachelor Degree	190	72.80
	Master Degree	55	21.07
	Doctorate Degree	6	2.3
Education's Stream	Science and Technology	86	32.95
	Social Sciences and Humanities	175	67.05

4.2. *Assessment of Measurement Model*

This study continued with the measurement model assessment and the results of the reliability and validity tests are provided in Table 2. The outer loading of all measurement items was in the ranges of 0.6600 to 0.9219, greater than the level of 0.5000 (Bagozzi et al., 1991), indicating that convergent validity is achieved. Similarly, convergent validity is confirmed at the construct level, whereas all factors' average variance extruded (AVE) value is greater than 0.5000 (Hair et al., 2019). Besides, the internal consistency of this study also proved to be high as the composite reliability (CR) value for all factors is in the ranges of 0.8253 to 0.9327, which is higher than the 0.7000 level (Gefen et al., 2000). Additionally, the result of the heterotrait-monotrait (HTMT) ratio of correlation in Table 3 also demonstrated that the discriminant validity of this study was also attained as these HTMT values are lower than the 0.9000 level (Henseler et al., 2015). These findings would confidently prove that the collected responses are reliable and valid, and therefore, could be used to validate the proposed hypotheses in the next stages.

Table 2: Summary Results of Reliability and Validity Tests

Items	Loading	AVE	CR	VIF
ATT1	0.8038	0.6570	0.8843	2.1450
ATT2	0.7765			
ATT3	0.8714			
ATT4	0.7871			
SN1	0.9191	0.8222	0.9327	1.4340
SN2	0.9219			
SN3	0.8787			
PBC1	0.6600			
PBC2	0.8406	0.6144	0.8253	1.8160
PBC3	0.8372			
PER1	0.7817			
PER2	0.8577			
PER3	0.7783	0.6144	0.8639	2.3840
PER4	0.7109			
EK1	0.7961			
EK2	0.7795			
EK3	0.7336	0.5868	0.8502	2.1720
EK4	0.7533			
EC1	0.7734			
EC2	0.7625			
EC3	0.6775	0.5509	0.8304	2.2780
EC4	0.7519			
PI1	0.7551			
PI2	0.7451			
PI3	0.8089	0.5750	0.8711	1.8950
PI4	0.7366			
PI5	0.7435			

Table 3: Summary Results Discriminant Validity Test

	ATT	SN	PBC	PER	EK	EC	PI
ATT							
SN	0.3659						
PBC	0.7723	0.3936					
PER	0.6667	0.6359	0.7267				
EK	0.7499	0.4206	0.7702	0.6829			
EC	0.8348	0.3053	0.7299	0.6577	0.8708		
PI	0.6347	0.4765	0.6363	0.7937	0.6041	0.5916	

4.3. Assessment of Structural Model

Table 4 and Figure 2 present the results of the path analysis and hypotheses testing. Focusing on the direct hypotheses showed that three direct hypotheses were supported (H1, H2 and H4). ATT ($\beta = 0.1909$, $p < 0.05$) positively significantly influenced the PI and supported H1. Similarly, H2, supported as SN ($\beta = 0.1171$, $p < 0.05$), demonstrated a positively significant relationship with PI. The result also revealed the positive effect of PER ($\beta = 0.3675$, $p < 0.05$) on the PI and supported

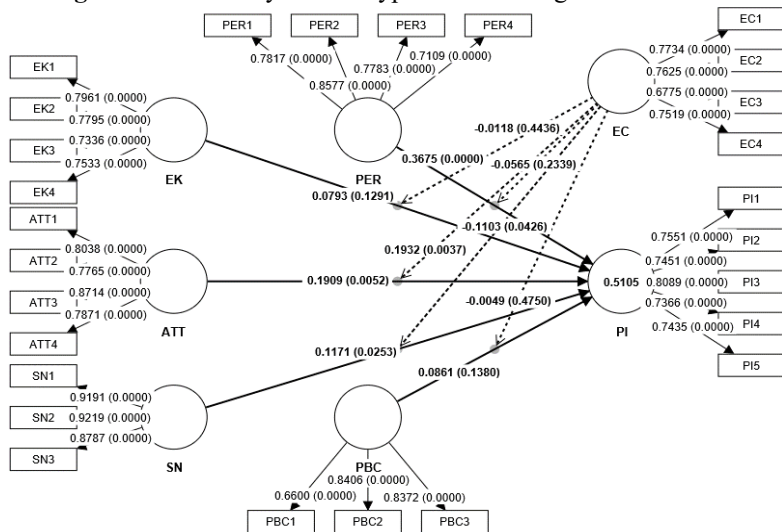
H4. However, H3 and H5 are unsupported as PBC and EK have insignificant relationship with PI, as the p-value is greater than a 5% significant level.

Table 4: Summary Results of Hypotheses Testing

Hypothesis	Path	Coefficient	T-stat.	P-value
H1	ATT -> PI	0.1909	2.5604	0.0052
H2	SN -> PI	0.1171	1.9556	0.0253
H3	PBC -> PI	0.0861	1.0893	0.1380
H4	PER -> PI	0.3675	5.0871	0.0000
H5	EK -> PI	0.0793	1.1307	0.1291
H6	EC*ATT -> PI	0.1932	2.6821	0.0037
H7	EC*SN -> PI	-0.1103	1.7213	0.0426
H8	EC*PBC -> PI	-0.0049	0.0628	0.4750
H9	EC*PER -> PI	-0.0565	0.7261	0.2339
H10	EC*EK -> PI	-0.0118	0.1420	0.4436

Additionally, the moderation analysis further proved the moderation role of EC on the association between ATT-PI ($\beta = 0.1932$, $p < 0.05$), which supported the H6. This result implies that the initial association between ATT and PI is further enhanced with the presence of EC. Surprisingly, EC is found to have a significant moderating effect on the SN-PI association, but in an adverse direction, thus failing to be supported. This negative effect of EC on SN-PI showed that the initial association between SN-PI and EC would be weakened with the EC. Nevertheless, the remaining hypotheses (H8, H9, H10) on the moderation role of EC were not supported as EC does not significantly improve their initial direct relationships.

Figure 2: Path Analysis and Hypotheses Testing from PLS-SEM



Source: Developed by Authors

Table 5: Summary Results of R^2 , Q^2 and f^2

Factors	R^2	Q^2	f^2
PI	0.5105	0.2730	
ATT			0.0332
SN			0.0180
PBC			0.0081
PER			0.1290
EK			0.0056

Lastly, Table 5 provides the summary results of the coefficient of determination (R^2), predictive relevance (Q^2), and effect size (f^2). The result showed all predictors predict around 51.05% of the PI's variation. Besides, the Q^2 value of 0.2730, which is greater than zero, further proved the predictive relevance ability of the predictors in predicting the PI. Based on the guidelines provided by Cohen (1988), only ATT and PER have a small effect on PI ($0.02 > f^2 < 0.15$), while SN, PBC and EK have no effect as the f^2 value is lower than 0.02.

5. DISCUSSIONS

This study investigated the determinant factors that affect the purchase intention of university students towards eco-friendly stationery and also explored the moderation effect of the EC on the proposed relationships. This study revealed that students' PI on eco-friendly stationery is significantly affected by ATT, SN and PER, while PBC and EK have no significant effect. Besides, the result further found that the association between ATT-PI was further enhanced with the presence of EC. Consistent with the assumption of TPB, this study's findings showed that ATT has a substantial influence on PI and this is paralleled with Armutcu et al. (2023), Chanda et al. (2023), and Rashid and Lone (2023) who also remarked on the significant effect of ATT towards BI. This signified that ATT played a vital effect in affecting students' PI as the positive ATT of the students on eco-friendly stationery will further encourage students to purchase it. Likewise, this study also found the significant effect of SN on BI and this further supported the proposition of TPB as the results proved that the social pressure and opinions from the people who are important to the students will affect their PI. This significant result is similar to Bhutto et al. (2022), Dwivedi et al. (2022), and Kumar and Basu (2023), which signified the importance of SN on BI in different contexts.

Surprisingly, an insignificant influence of PBC on students' PI was verified in this study, and this result is opposed to the prediction of the TPB whereas the PBC should significantly influence PI. The insignificant finding is also contradict with this study of Armutcu et al. (2024), Ling et al. (2024a), and Kumar (2024), who remarked that PBC has a significant influence on BI. The insignificant effect of PBC on PI indicates that students' PI towards eco-friendly stationery is not influenced by the difficulty level to purchase or the costs of the eco-friendly stationery. The possible reason for this result might be university students generally are educated and they might feel that they have sufficient information to purchase eco-friendly stationery.

Similar to Channa et al. (2022), Shimul and Cheah (2023), and Singh et al. (2022), the positively significant influence of PER on PI has again been confirmed in this study, and this showed that the students' self-responsibility on the environmental welfare and well-being is crucial in affecting their purchasing intention on eco-friendly stationery. When students have high responsibility towards environmental welfare and well-being, they tend to have high PI on eco-friendly stationery. This finding further implies that environmental factors like PER are vital in influencing students' PI toward eco-friendly stationery, as they can capture the special feature of the research context that is not considered in the TPB model.

EK demonstrated no significant influence on students' PI, and this contradicts the findings of Chanda et al. (2023), Ling et al. (2024a), and Synodinos et al. (2023). Therefore, the level of knowledge on environmental issues does not necessarily motivate students to behave pro-environmentally, such as purchasing eco-friendly stationery. This study is primarily focused on university students and this has signified that these students generally are knowledgeable, and therefore, the high knowledge level on environmental issues probably for them is common. With that, it showed the insignificant influence of EK on PI.

The moderation analysis of this study further confirmed the significant moderation role of EC on the association between ATT and PI. Consistent with prior studies (Dwivedi et al., 2022; Pandita et al., 2024; Canio et al., 2021), EC is necessitated in strengthening the initial relationship between ATT and PI. This implies that a high understanding and awareness level towards environmental problems would further foster the students' favourable ATT towards their PI of eco-friendly stationery. Unexpectedly, the result also showed that the EC would significantly moderate the relationship between SN and PI but in the inverse direction. This might indicate that students tend to have high confidence towards their understanding level as the influence of people in their surroundings will be reduced when they have a high level of EC. On the contrary, the students tend to be affected by the other people in their social contexts if they have lower EC. Therefore, the significant moderation influence of EC further implies that the students' PI decision on the eco-friendly stationery is not direct and simple, as it involved a more complicated decision-making process whereas the EC is proved to significantly moderate their initial influence.

6. IMPLICATIONS

This study provided some significant implications for both theoretical and practical perspectives. Theoretically, the findings contribute to the literature as evidence on the university students' PI towards eco-friendly stationery is provided, and this further extends the existing knowledge in the students' sustainable consumption behaviours, especially on eco-friendly stationery. Besides, by developing a novel research framework that extends the TPB model with PER and EK, this study also contributed to the literature in understanding the university students' purchasing intention thoroughly as the environmental factors also considered in the proposed model proved that PER are important in determining student's sustainable consumption behaviour. Moreover, the evidence on the moderation role of the EC was also discovered in this study, and this enriches the literature

on the subject matter as this study showed that EC does not necessarily strengthen the relationships between independent factors and the outcome factor, as this study revealed that EC might weaken the effect of SN on PI, although the enhancing effect would find on ATT and PI. With that, this study offers a direction for future study as in-depth analysis is required to explore the moderating role of EC on BI in advancing the current state of literature.

Besides, this study's findings also provide some practical implications that could be referred to by the stakeholders in fostering the university students' PI towards eco-friendly stationery. For instance, in promoting the students' PI on eco-friendly products, stakeholders like the university management, businesses, retailers and the like must focus on the three factors that significantly influenced their PI, namely ATT, SN and PER. Cultivating favourable ATT towards eco-friendly products is vital as it will directly impact students' PI. Therefore, the advantages and benefits of using eco-friendly stationery have to be disseminated to the university students in promoting positive ATT on this sustainable product. Besides, as found in this study, the influence of the people surrounding students is important as they tend to affect students' PI. With that, the publicity and marketing campaign of the eco-friendly stationery has to be widely targeting the people in the students' social circle, such as their parents, siblings, friends, instructors, and others. Students are inclined to have high PI on eco-friendly stationery if the people in their surroundings have positive perceptions of the eco-friendly stationery.

Additionally, the stakeholders also have to improve the students' sense of responsibility towards the environmental issues and problems as it is vital in fostering their PI. The current environmental issues and problems as well as the consequences of continuing to consume unsustainable products have to be communicated with the students to raise their responsibility on these matters. Likewise, increasing the student's understanding and awareness level of environmental problems is also important in enhancing their concern for the environment. A better communication channel with the students and consumers is needed to be established by the stakeholders to convey this information effectively. As proved in this study, EC would further moderate the relationship between SN and PI. Therefore, increasing students' responsibility and also their understanding and awareness level of the environmental issues and problems is crucial. However, a high level of EC seems to offset the effect of the SN on students' PI, and this might suggest the strategies to improve both SN and EC cannot be parallelly implemented. If stakeholders wish to enhance the students' EC, then the strategies that concentrate on the people surrounding them should be minimal as the high level of EC tends to reduce the influence of SN students' PI.

7. CONCLUSIONS

With the research gaps mentioned in the previous section, this study intended to empirically examine the factors that affect the PI on eco-friendly stationery amongst university students. The

TPB model has been extended with two environmental factors, namely PER and EK, along with EC functioning as a moderator. Through the purposive sampling technique, 261 usable responses were gathered and analysed via PLS-SEM. Precisely, the result first revealed that students' PI on eco-friendly stationery was significantly influenced by ATT, SN and PER, while an insignificant effect was remarked for PBC and EK. Additionally, the moderating analysis showed that EC significantly strengthened the association between ATT and PI, but not on other relationships. The findings are projected to be useful for stakeholders in fostering university students to purchase eco-friendly stationery and further enrich the literature regarding sustainable consumption behaviour as well as the moderating role of EC in the subject matter.

8. LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDY

Several limitations in this study need to be considered in upcoming research. The generalizability of study findings might be the first limitation of this study as this study only focused on university students in Malaysia. Therefore, the future study has to expand the research scope to university students in other countries and perhaps the comparison study between university students in developed and developing countries might be considered. Besides, the comparison between the sub-cultures such as gender (males vs females), level of study (foundation vs degree vs postgraduates), education stream (science and technology vs social science and humanities), and the like, should be considered in the coming research as this study doesn't consider the heterogeneity of the respondents. Moreover, other related factors such as willingness to pay and price sensitivity should be included in the research framework for future study as additional factors to develop the research framework that can understand the subject matter thoroughly. Furthermore, other more comprehensive theoretical frameworks such as social cognitive theory or stimulus-organism-response framework should be utilised in future studies as the TPB model only posits the direct association between factors, and it doesn't reflect the human's complex decision-making processes.

REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organisational Behavior and Human Decision Processes*, 50(2), 179-211.
- Armutcu, B., Ramadani, V., Zeqiri, J., & Dana, L-P. (2024). The role of social media in consumers' intentions to buy green food: evidence from Turkiye. *British Food Journal*, 126(5), 1923-1940.
- Armutcu, B., Zuferi, R., & Tan, A. (2023). Green product consumption behaviour, green economic growth and sustainable development: unveiling the main determinants. *Journal of Enterprising Communities: People and Places in the Global Economy*, 18(4), 798-819.
- Bagozzi, R. R., Yi, Y., & Philipps, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, 36(3), 421-458.

- Bhutto, M. H., Tariq, B., Azhar, S., Ahmed, K., Khuwaja, F. M., & Han, H. (2022). Predicting consumer purchase intention toward hybrid vehicles: testing the moderating role of price sensitivity. *European Business Review*, 34(1), 62-84.
- Byrne, B. M. (2013). *Structural Equation Modelling with AMOS: Basic Concepts, Applications and Programming*. Routledge.
- Canio, F. D., Martinelli, E., & Endrighi, E. (2021). Enhancing consumers' pro-environmental purchase intentions: the moderating role of environmental concern. *International Journal of Retail & Distribution Management*, 49(9), 1312-1329.
- Chanda, R. C., Vafaei-Zadeh, A., Hanifah, H., & Thurasamy, R. (2023). Modeling eco-friendly house purchasing intention: a combined study of PLS-SEM and faQCA approaches. *International Journal of Housing Markets and Analysis*, 18(1), 123-157.
- Channa, N. A., Tariq, B., Samo, A. H., Ghumro, N. H., & Qureshi, N.A. (2022). Predicting consumers' intentions to purchase eco-friendly athletic wear in a moderated model of individual green values and gender. *International Journal of Sports Marketing and Sponsorship*, 23(2), 410-436.
- Cohen, E. (1988). Authenticity and commoditisation in tourism. *Annals of Tourism Research*, 15(2), 371-386.
- Duong, C. D. (2022). Big five personality traits and green consumption: bridging the attitude-intention-behavior gap. *Asia Pacific Journal of Marketing and Logistics*, 34(6), 1123-1144.
- Duong, C. D., Doan, X. H., Vu, D.M., Ha, N. T., & Dam, K. V. (2022). The role of perceived environmental responsibility and environmental concern on shaping green purchase intention. *Vision*, 1-15.
- Dwivedi, R. K., Pandey, M., Vashisht, A., Pandey, D. K., & Kumar, D. (2022). Assessing behavioral intention toward green hotels during COVID-19 pandemic: the moderating role of environmental concern. *Journal of Tourism Futures*, Vol. ahead-of-print No. ahead-of-print.
- Farzin, M., Shababi, H., Shirchi Sasi. G., Sadeghi, M., & Makvandi, R. (2023). The determinants of eco-fashion purchase intention and willingness to pay. *Spanish Journal of Marketing – ESIC*, 27(3), 348-366.
- Gefen, D., Straub, D., & Boudreau, M. C. (2000). Structural equation modeling and regression: Guidelines for research practice. *Communications of the Association for Information Systems*, 4, 1-70.
- George, H. J., Susainathan, S., & Parayitam, S. (2023). The relationship between green packaging awareness, initiatives, and behavior: an exploratory study on India rural population. *RAUSP Management Journal*, 58(4), 286-317.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24.
- Hamzah, M. I., & Tanwir, N. S. (2021). Do pro-environmental factors lead to purchase intention of hybrid vehicles? The moderating effects of environmental knowledge. *Journal of Cleaner Production*, 279, 123643.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115-135.
- Irfany, M. I., Khairunnisa, Y., & Tieman, M. (2024). Factors influencing Muslim Generation Z consumers' purchase intention of environmentally friendly halal cosmetic products. *Journal of Islamic Marketing*, 15(1), 221-243.

- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1-10.
- Kumar, A., & Basu, R. (2023). Do eco-labels trigger green product purchase intention among emerging market consumers? *Journal of Indian Business Research*, 15(3), 466-492.
- Kumar, R. (2024). To save the environment is my moral duty: investigating young consumer's green purchase behaviour with moderated mediation approach. *Social Responsibility Journal*, 20(8), 1508-1534.
- Ling, L-S., Yi, S., Lee, K. Y. M., Ling, P-S., & Edwin, A. M. A. (2024b). Do environmental-related factors stimulate consumers' green cosmetic purchase intention? *International Journal of Sustainable Development and Planning*, 19(7), 2605-2614.
- Ling, P-S., Chin, C-H., Yi, J., & Wong, W. P. M. (2024a). Green consumption behaviour among Generation Z college students in China: the moderating role of government support. *Young Consumers*, 25(4), 507-527.
- Ling, P-S., Ling, L. S., Wasali, S. D. (2024c). Investing in socially responsible investment (SRI): The role of responsibility, consciousness and literacy. *Journal of Sustainability Science and Management*, 19(2), 95-108.
- Ling, P-S., Wong, L-J., Mohmed@Wasli, S. M., & Bajat, C. D.a. (2023). Sorry COVID-19! You don't moderate my intention to purchase functional foods. *Malaysian Journal of Consumer and Family Economics*, 30(1), 330-354.
- Liu, M. T., Liu, Y., & Mo, Z. (2020). An extension of the theory of planned behaviour (TPB) on Chinese consumers' green purchase intention. *Asia Pacific Journal of Marketing and Logistics*, 32(8), 1823-1841.
- Memon, M. A., Ting, F., Cheah, J-H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample size for survey research: review and recommendations. *Journal of Applied Structural Equation Modeling*, 4(2), 1-20.
- Minbashrazgah, M. M., Maleki, F., & Torabi, M. (2017). Green chicken purchase behavior: the moderating role of price transparency. *Management of Environmental Quality*, 28(6), 902-916.
- Moshood, T. D., Nawanir, G., Mahmud, F., Ahmad, M. H. B., Mohamd, F., & AbdulGhani, A. (2023). The plastic of the future: determinants for switching intention from synthetic to biodegradable plastics among the young consumers. *Journal of Social Marketing*, 13(1), 121-148.
- Nekmahmud, M., Ramkissoon, H., & Fekete-Farkas, M. (2022). Green purchase and sustainable consumption: A comparative study between European and non-European tourists. *Tourism Management Perspectives*, 43, 100980.
- Pandita, D., Bhatt, V., Kumar, V. V. R., Fatma, A., & Vapiwala, F. (2024). Electrifying the future: analysing the determinants of electric vehicle adoption. *International Journal of Energy Sector Management*, 18(6), 1767-1786.
- Phan, V-D-V., Huang, Y-F., & Do, M-H. (2023). Exploring the effect of cognitive factors and e-social interactions on the green purchase intention: evidence from a transitional economy. *Young Consumers*, 24(6), 767-785.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Precedence Research. (2024). *Sustainable Materials Market Size Share, and Trends 2024 to 2034*. Retrieved January 17, 2025, from [https://www.precedenceresearch.com/sustainable-](https://www.precedenceresearch.com/sustainable-251)

materials-market#:~:text=The%20global%20sustainable%20materials%20market%20size%20is%20worth%20around%20USD,forecast%20period%202024%20to%202034

- Qureshi, M. A., Khaskheli, A., Qureshi, J. A., Raza, S. A., & Khan, K. A. (2023). Factoring influencing green purchase behavior among millennials: the moderating role of religious values. *Journal of Islamic Marketing*, 14(6), 1417-1437.
- Rashid, I., & Lone, A. H. (2023). Organic food purchases: does green trust play a part? *Asia-Pacific Journal of Business Administration*, 16(4), 914-939.
- Shimul, A. S., & Cheah, I. (2023). Consumers' preference for eco-friendly packaged products: pride vs guilt appeal. *Marketing Intelligence & Planning*, 41(2), 186-198.
- Singh, S., Sharma, P., Garg, N., & Bala, R. (2022). Groping environmental sensitivity as an antecedent of environmental behavioural intentions through perceived environmental responsibility. *Journal of Enterprising Communities People and Places in the Global Economy*, 16(2), 299-319.
- Sinha, R., & Annamdevula, S. (2023). Is scepticism a barrier to green purchase behaviour? Testing a comprehensive model in the Indian context. *Society and Business Review*, 18(4), 668-690.
- Suhartanto, D., Mohd Suki, N., Najib, M., Suhaeni, T., & Kania, R. (2023). Young Muslim consumers' attitude towards green plastic products: the role of environmental concern, knowledge of the environment and religiosity. *Journal of Islamic Marketing*, 14(12), 3168-3185.
- Sun, Y., Li, T., & Wang, S. (2022). "I buy green products for my benefits or yours": understanding consumers' intention to purchase green products. *Asia Pacific Journal of Marketing and Logistics*, 34(8), 1721-1739.
- Synodinos, C., Moraes, G. H. S. M.d., & Prado, N. B.d. (2023). Green food purchasing behaviour: a multi-method approach of Generation Y in a developing country. *British Food Journal*, 125(9), 3234-3248.
- Tan, L. L. (2023). Understanding consumers' preferences for green hotels – the roles of perceived green benefits and environmental knowledge. *Journal of Hospitality and Tourism*, 6(3), 1309-1327.
- Tan, W-L., & Goh, Y-N. (2018). The role of psychological factors in influencing consumer purchase intention towards green residential building. *International Journal of Housing Markets and Analysis*, 11(5), 788-807.
- Virtue Market Research. (2023). *Green Stationery Market Size (2024 – 2030)*. Retrieved January 17, 2025, from <https://virtuemarketresearch.com/report/green-eco-friendly-stationery-market>
- Wu, Y., Tian, X., Li, X., Yuan, H., & Liu, G. (2019). Characteristics, influencing factors, and environmental effects of plate waste at university canteens in Beijing, China. *Resources, Conservation & Recycling*, 149, 151-159.
- Zaidan, H., Shishan, F., Al-Hasan, M., Al-Mawali, H., Mowafi, O., & Dahiyat, S. E. (2025). Cash or cash-less? Exploring the determinants of continuous intention to use e-wallets: the moderating role of environmental knowledge. *Competitiveness Review: An International Business Journal*, 35(2), 319-346.