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## **Antecedents of Green Purchasing Intentions among Higher Education Population in Malaysia**

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### **Abstract**

This empirical study aims to operationalize the relationship between the direct and indirect influence of factors on green purchase behavior through the mediation of green purchase intention in the context of the Malaysian higher education population. It employed Structural Equation Modeling to assess the strength of relationships between the constructs. The research findings indicate that green purchase intention mediates the relationship between its antecedents and green purchase behavior. This indirect effect is more prominent in the factors of environmental knowledge and green trust. The study helps scholars further understand the facilitating mechanisms of green purchase behavior.

**Keywords:** green purchase attitude, environmental knowledge, green trust, Malaysia

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### **1.0 Introduction**

In recent years, the concept of "green purchase behavior (GPB)" has received significant research attention due to its environmental impact. GPB stands for buying products that are eco-friendly, sustainable, and have a positive impact on the environment, while also avoiding causing damage to the environment and society (Chan, 2001). Unrestrained consumption of goods and irresponsible handling of the environment have significantly harmed the environment, ultimately affecting the balance of ecosystems and the whole life of humans (Chan, 2001). More and more consumers are aware of the importance of the environment and realize that their purchasing habits have an ecological impact. Green consumer groups have emerged and grown globally, including in Malaysia. Although the green consumer base is growing and the green market is expanding, the purchase rate of green products is still low (Rex & Baumann, 2007).

The growing green consumer base contributes to reducing the adverse impact of consumption on the environment. In Malaysia, the increasing pollution rate is a cause for concern. Moreover, the Malaysian government emphasized the green outlook in the 11th Malaysia Plan. However, the initiatives taken by the government and industry players are far from enough to drive green purchase behavior among consumers. Despite the increase in this type of consumption in Malaysia, studies indicate that green purchase behavior is still relatively low (Goh & Abdul Wahid, 2014). Malaysia faces challenges in ensuring sustainable consumption.

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Many scholars have studied the factors that influence GPB. Green purchase intention (GPI) is simply defined as the customer's intention to buy products that are less safe for society and the environment (Akbar et al., 2014). In the context of the environment, green purchase attitude (GPA) refers to one's positive or negative evaluation of GPB (Ajzen, 1991). The "attitude-intention-behavior" theory suggests that an individual's attitude influences their intention, which in turn predicts his or her final behavior. However, current research shows that there appears to be an attitude-intention-behavior gap in green consumer behavior (ElHaffar et al., 2020). So this study is based on the "Attitude-Intention-Behavior" theory and constructs a research framework for green purchase behavior. Among the factors influencing GPB, environmental knowledge (EK) can be defined as "a general knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems" (Fryxell & Lo, 2003), and green trust (GTR) means "a willingness to depend on a product, service, or brand based on the belief or expectation resulting from its credibility, benevolence, and ability about its environmental performance." (Schurr & Ozanne, 1985). So this study specifically addresses the following research questions:

Question 1: How do EK, GTR and GPA influence GPI and GPB among the higher education population in Malaysia?

Question 2: Does GPI mediate the relationship between its antecedents and GPB among the higher education population in Malaysia?

## 2.0 Literature Review

### 2.1 Review of Literature

The growth of a green consumer base can help reduce the negative environmental impacts of consumption. Although the green consumer base is gradually growing and the green market is expanding, the purchase rate of green products remains low (Rex & Baumann, 2007). Many scholars have studied the factors influencing GPB. "Attitude-intention-behavior" theory suggests that a person's attitude influences his or her intention, which predicts his or her eventual behavior. Although previous research frequently mentions the influence of GPA and GPI on actual GPB, a gap exists between attitude, intention, and behavior in the existing literature (ElHaffar et al., 2020). In fact, this gap is intimately associated with the Theory of Planned Behavior (TPB). TPB is a further extension of the Attitude-Intention-Behavior theory and has been widely used to predict GPB (Paul et al., 2016). The TPB hypothesizes that GPA, subjective norms, and perceived behavioral control are the primary predictors of behavior, and GPI mediates these relationships. TPB has excellent potential to explain rational behavior in many research areas (Ajzen, 2020).

Nevertheless, several research studies have indicated that the TPB framework may not effectively explain GPB. The relationship between subjective norms, perceived behavioral control, and actual purchase decisions based on positive attitudes toward green purchasing appears to be weak (ElHaffar et al., 2020; Hanss et al., 2016). Previous research suggests that consumer is not significantly influenced by subjective norms and perceived behavioral control (Paul et al., 2016; Bamberg, 2003). In other words, there is still controversy regarding the correlation of behavior measures in TPB for predicting GPB. Studies are expected to further research the reason of the attitude-intention-behavior gap in green consumption (ElHaffar et al., 2020). Therefore, the study has suggested that new factor variables should be added to explore appropriate explanatory models in conjunction with the "Attitude-Intention-Behavior" theory (Ogiemwonyi & Harun, 2020). In previous studies, many scholars have already emphasized the importance of EK and GTR. Consumers' level of EK affects their willingness to purchase green products (Taufique et al., 2016). Malaysian scholars have found that EK, GPA, and GTR significantly affect Malaysian consumers' GPI and GPB (Ogiemwonyi & Harun, 2020). Therefore, this study attempts to embed EK and GTR into the "attitude-intention-behavior" framework to form a new theoretical framework to contribute to the study of the intention-behavior gap. In addition, many studies have focused on GPI rather than actual GPB, ignoring the mediating role of GPI (Imiru, 2023). Therefore, this study also explores the mediating effect of GPI.

### 2.2 Hypothesis development

#### *Green purchase attitude (GPA), Environmental knowledge (EK), and Green Trust (GTR)*

Honkanen & Young (2015) found that consumers' attitudes toward purchasing sustainable seafood were the most important predictor of their willingness to purchase it, in addition to the influence of family, friends, and coworkers. Sreen et al. (2018) showed that consumers' attitudes about green purchasing affect their willingness to buy and, ultimately, their purchasing behavior. Moreover, according to Iravani et al. (2012), this attitude has positively influenced the GPI of young Malaysian consumers.

It's reported the vital contribution of EK in explaining GPI and GPB (Taufique et al., 2016; Choi & Johnson, 2019). Studies have also found that EK significantly influences the GPI of Malaysian consumers (Khuzaimah et al., 2020). Hamzah & Tanwir (2021) showed in their study that consumers with higher levels of EK in Malaysia are more willing to purchase hybrid cars, which aligns with the findings of Choi & Johnson (2019).

It's reported that GTR significantly predicts GPI and GPB (Wasaya et al., 2021). Research indicated that GTR also contributes to green behavior in Malaysia (Ogiemwonyi & Harun, 2020).

Thus, the following research hypotheses were formulated for this study:

H1: GPA has a significantly positive relationship to GPI.

H2: GPA has a significantly positive relationship to GPB.

H3: EK has a significantly positive relationship with GPI.

H4: EK has a significantly positive relationship with GPB.

H5: GTR has a significantly positive relationship with GPI.

H6: GTR has a significantly positive relationship with GPB.

#### *Green purchase intention (GPI) and Green purchase behavior (GPB)*

Based on the "Attitude-Intention-Behavior" theory, many studies focus on consumers' intentions when examining actual consumer behavior. Consumers' present and potential future purchasing decisions for green products can be assessed through their GPI(Chan, 2001). Researchers indicate that GPI has a positive influence on GPB. It's found that GPI fully mediates the relationship between its antecedents (EK, GTR, subjective norms, green purchase attitude, etc.) and GPB (Imiru, 2023).

Thus, the study proposes the following research hypotheses:

- H7: GPI significantly and positively influences GPB.
- H8: GPI serves as a mediator in the association between GPA and GPB.
- H9: GPI serves as a mediator in the association between EK and GPB.
- H10: GPI serves as a mediator in the association between GTR and GPB.

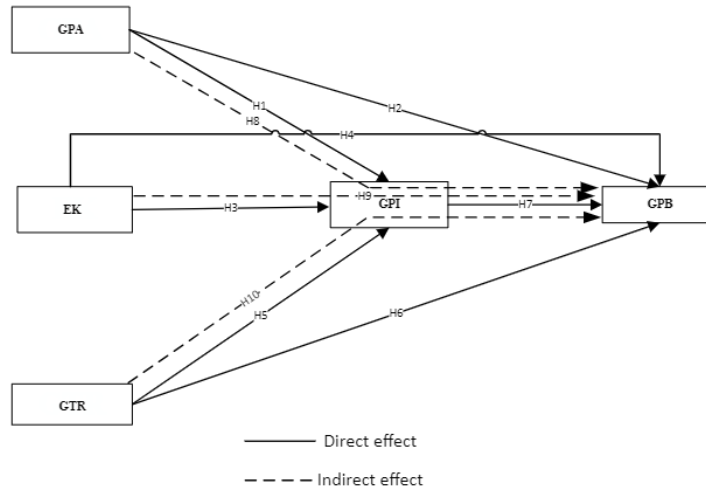


Fig. 1: The Proposed Framework

### 3.0 Methodology

#### 3.1 Population and The Sample

Previous studies have shown that educational attainment is one of the most critical contributors to consumers being more focused on environmental issues (Nguyen, T.H.G., 2014). Environmental behaviors and attitudes among the higher education population may positively influence others and push the whole society towards sustainability. So the object of analysis in this study is the Malaysian higher education population. This study also used a convenience sampling method.

The sample's demographic characteristics are presented in Table 1.

Table 1. Demographic Profile

Item	Frequency	Percent (%)
Age	19-23	23.1
	24-28	19.1
	29-32	12.9
	33 above	44.9
Gender	Female	48.5
	Male	51.5
Education Level	Diploma and Pre-uni	15.2
	Degree	55.1
	Master	17.8
Monthly Allowance	PHD	11.9
	1000 and below	8.3
	1001-1500	7.9
	1501-2000	9.6
	2001-3000	2.3
	3001-4000	16.8
Number of Observation	4000 above	42.2
	NO income	12.9
	303	100

(Source: Own Computation)

#### 3.2 Instrument

To guarantee the content validity of the scales, the construct measurement scales selected for this study were taken from previous studies. The 9-item scale for GPB was obtained from Cardoso & Van Schoor(2017). The 5-item scale for GPI was from Kim et al.(2013). The 5-item scale of GPA was obtained from Akbar et al.(2014). The 5-item scale for EK was from Mostafa(2007). GTR 5-item scale was obtained from Chen(2010). The evaluation of all items was conducted using a 7-point Likert scale, encompassing a range from 1 (strongly disagree) to 7 (strongly agree).

### 3.3 Questionnaire Design and Data Collection

The questionnaire in this study comprised two sections - "Part A" contains the age, gender, education level, and monthly allowance. "Part B" consisted of research questions on personal conceptualization using a 7-point Likert scale. Before being published, the questionnaire was tested on a sample of 16 individuals, which was representative of the target population. Formal survey data is collected through online questionnaires. The researcher received 348 responses, which is a 76% response rate. Three hundred-three responses were found to be suitable for further analysis. Therefore, the effective response rate was 66%. The response rate is acceptable according to the methodological study (Hair,2009). The sample size of 303 is considered appropriate, and it is in line with the guidelines for applying Structural Equation Modeling (SEM) as proposed by Hair(2009).

### 3.4 Data analysis

Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to examine the hypotheses through SmartPLS software. The validity and reliability of the measurement model were first examined, and then the hypothesized relationships were examined for the structural model. Bootstrap methods (5000 samples) were used to examine the significance of path coefficients and loadings(Hair,2009).

## 4.0 Findings

### 4.1 The Measurement model

The initial assessment showed that two items, GPB2 (loading coefficient = 0.645) and GPB5 (loading coefficient = 0.480), should be removed from the measurement model based on the criterion of loadings below 0.7 (Hair,2009), leaving 27 items to be used in subsequent structural modeling to test hypotheses. The outcome of the final measurement model is shown below in Table 2.

Table 2. Factor loadings for Questionnaire items

Items	Outer loadings
EK1 <- EK	0.782
EK2 <- EK	0.865
EK3 <- EK	0.865
EK4 <- EK	0.87
EK5 <- EK	0.849
GPA1 <- GPA	0.932
GPA2 <- GPA	0.938
GPA3 <- GPA	0.897
GPA4 <- GPA	0.934
GPA5 <- GPA	0.927
GPB1 <- GPB	0.738
GPB3 <- GPB	0.76
GPB4 <- GPB	0.783
GPB6 <- GPB	0.82
GPB7 <- GPB	0.738
GPB8 <- GPB	0.866
GPB9 <- GPB	0.87
GPI1 <- GPI	0.836
GPI2 <- GPI	0.86
GPI3 <- GPI	0.909
GPI4 <- GPI	0.932
GPI5 <- GPI	0.921
GTR1 <- GTR	0.933
GTR2 <- GTR	0.95
GTR3 <- GTR	0.943
GTR4 <- GTR	0.945
GTR5 <- GTR	0.929

(Source: Own Computation)

The final measurement model in this study was tested for reliability and validity. The convergent validity of a measurement is usually determined by the average variance extracted (AVE) and the composite reliability(CR). Table 3 shows that the composite reliability of the construct is above the minimum requirement of 0.7, and the average validity extraction of the construct is above the minimum

requirement of 0.50(Hair,2009). In addition, all Cronbach alpha coefficients were above the 0.7 threshold (Hair,2009), and the associated t-statistics were statistically significant(Hair,2009). The findings show that the measurement model demonstrates strong convergent validity.

Table 3. Reliability analysis

	Cronbach's alpha	CR	AVE
EK	0.901	0.927	0.717
GPA	0.958	0.968	0.857
GPB	0.905	0.925	0.638
GPI	0.936	0.951	0.797
GTR	0.967	0.974	0.884

(Source: Own Computation)

The square root of the AVE of any latent variable should be greater than the absolute value of its correlation with other latent variables. In accordance with the Fornell-Larcker criterion(Fornell & Larcker, 1981), the existence of discriminant validity can be determined when the square root of the AVE of the latent variables is greater than the correlation coefficient between them. The existence of discriminant validity is further supported by looking at Table 4, which shows that the loadings of all indicators are higher than their cross-loadings with other indicators.

Table 4. Latent variable correlation and discriminant validity

	EK	GPA	GPB	GPI	GTR
EK	0.847				
GPA	0.369	0.926			
GPB	0.399	0.374	0.800		
GPI	0.457	0.697	0.647	0.893	
GTR	0.489	0.472	0.543	0.516	0.94

(Source: Own Computation)

#### 4.2 The Structural model

The study assessed the structural model using the three most pertinent criteria:(1) coefficient of determination ( $R^2$ ); (2) Stone-Geisser criterion ( $Q^2$ ); (3) path coefficients and the value of the t-statistic. For hypothesis testing in the structural model, this study employed the bias-corrected confidence interval method ( $\alpha = 0.05$ ) with 5000 bootstrap samples. The results of these tests are presented in Table 5.

Table 5. Hypotheses testing results

Hypothesis	Indirect effect	Direct effect	t-value	P-value	Results (YES/NO)
H1	GPA -> GPI	0.523	9.212	0.000	YES
H2	GPA -> GPB	-0.157	2.184	0.029	NO
H3	EK -> GPI	0.159	2.998	0.003	YES
H4	EK -> GPB	0.055	0.929	0.353	NO
H5	GTR -> GPI	0.182	2.794	0.005	YES
H6	GTR -> GPB	0.295	4.083	0.000	YES
H7	GPI -> GPB	0.535	7.289	0.000	YES
H8	GPA -> GPI -> GPB	0.28	5.894	0.000	YES
H9	EK -> GPI -> GPB	0.085	2.763	0.006	YES
H10	GTR -> GPI -> GPB	0.098	2.551	0.011	YES

$$R^2 (GPI) = 0.503, Q^2 (GPI) = 0.397$$

$$R^2 (GPB) = 0.437, Q^2 (GPB) = 0.272$$

Note: EK=environment knowledge; GPA=green purchase attitude; GTR=green trust; GPI=green purchase intention; GPB=green purchase behavior

(Source: Own Computation)

As shown in Table 5, the  $R^2$  values of GPI (0.503) and GPB (0.437) indicate that about 50.3% of the changes in consumers' GPI can be explained by GPA, EK, and GTR. About 43.7% of the variation in green buying behavior decisions can be explained by GPA, EK, GTR, and GPI. The proposed model exhibits a good level of predictive accuracy. Additionally, the study assessed the blindfolded  $Q^2$  values to verify the predictive relevance of the constructs. The  $Q^2$  values were 0.397 (GPI) and 0.272 (GPB), indicating an acceptable level of predictive relevance.

When examining the hypothesized connections in the proposed model, the findings corroborate some of the assumption of direct correlations: EK has a positive effect on GPI (H3: 0.159,  $p=0.003$ ), GPA has a positive effect on GPI (H1: 0.523,  $p=0.000$ ); GTR positively impacts GPI (H5: 0.182,  $p = 0.005$ ) and GPB (H6: 0.295,  $p= 0.000$ ); and GPI is positively correlated with GPB (H7: 0.535,  $p=$

0.000). However, the findings do not provide evidence to support the assumption of a direct relationship (H4), as the direct impact of EK on GPB is not statistically significant ( $b = 0.055, p = 0.353$ ). And also, H2 is rejected as GPA has a negative effect on GPB ( $H2: -0.157, p = 0.029$ ).

This study also investigates the indirect influence of GPA, EK, and GTR on GPB via GPI. The results showed that the three hypotheses of indirect effects were supported. GPA has a significant indirect effect on GPB through GPI (H8), and GTR indirectly influences GPB in a significant and positive manner through GPI (H10). In addition, EK does not have a significant direct impact on GPB, but it does have a significant indirect impact on GPB through GPI, suggesting that GPI acts as a full mediator effect between EK and GPB, and H9 is supported.

## 5.0 Discussion

The outcome shows that the GPI of the higher education group plays a vital role in bridging the gap between promoting EK, GPA, GTR, and actual GPB. The results of this study confirmed the positively significant effect of GTR on GPI and GPB, which remains consistent with the findings of previous studies (Ogiemwonyi & Harun, 2020). However, the findings on EK and GPA do show differences from previous studies. The results indicate that the direct effect of EK on the GPB of the Malaysian higher education population is insignificant. However, its indirect effect on GPB through green purchasing intention is significant. This suggests that GPI fully mediates this relationship between EK and GPB. This finding is different from previous studies (Choi & Johnson, 2019). This means that the EK of the higher education population influences their actual GPB by forming GPI. This result can be interpreted as the higher education population actually adopting more GPB by forming GPI based on their EK.

The outcome of this study confirms that the direct effect of GPA on GPB is negative and significant ( $\beta = -0.157, p < 0.01$ ) in contrast to the positively significant indirect effect of GPA on GPB through GPI. The negative path coefficient suggests that among the Malaysian higher education population, their green purchase attitude, although positive, may be swayed by other factors when it comes to actual purchases, resulting in final purchase behavior that deviates from GPA. Although the path coefficient from GPA to GPB is negatively correlated, the indirect effect of GPA through GPI on GPB is positively significant. This suggests that GPI plays a mediating role between GPA and GPB, compensating for the negative effect on the direct path. In this process, GPI acts as a positive mediator and strengthens the positive association between GPA and GPB. A study conducted by Hughner et al. (2007) has shown that individuals may hold positive attitudes toward specific behaviors, such as green purchases, but do not always translate these attitudes into actual behaviors.

## 6.0 Conclusion & Recommendations

Based on the previous literature, we proposed a new model to measure GPB. This research attempts to understand GPB using the attitude-intention-behavior framework in the Malaysian higher education context. It was found that the higher education population's GPI is a vital bridge to drive their actual GPB through the influence of factors such as GPA, EK, and GTR, which in turn influence their purchasing decisions. This indirect effect is more prominent in the factors of EK and GTR. This implies that the EK of the higher education population influences their actual green behavior through the formation of GPI. The effect of GPA on GPI is more significant, but the direct effect on GPB is negative. This suggests that there is a certain psychological disconnect between GPA and GPB. GPI plays a mediating role between GPA and GPB, compensating for the negative effect on the direct path. This serves as a supplementary contribution to the existing knowledge in this study.

Considering that people with higher education tend to have higher social status and expertise in society, their statements and behaviors have a specific authority over others. Therefore, enhancing the green purchasing rate in Malaysia can be started from the higher education population. For the higher education population, GPA and GTR can be further strengthened by enhancing environmental education, fostering a sense of environmental identity and social responsibility, providing more access to environmental information and knowledge, and reinforcing the inheritance of environmental awareness in the family and social environments to enhance green purchasing intentions and behaviors. In addition, they can be guided and incentivized to better transform their EK into actual purchasing intentions, thus promoting the realization of GPB.

However, this study still has some limitations. This study only considered the higher education population from whom data were collected using convenience sampling techniques. Hence, if different segments of the population had been examined, the outcomes of the study might have varied. Furthermore, this study explored three dimensions of GPI and GPB, while there are numerous other factors, such as green values, environmental concerns, environmental advertising, green branding, etc., that also play a role in influencing GPI and GPB. Further investigation is required to gain a deeper understanding and provide a more comprehensive characterization of GPI and GPB.

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## Paper Contribution to Related Field of Study

This research enhances our understanding of the factors influencing GPB by investigating the mediating role of GPI. This study contributes to the scholarly understanding of the underlying mechanisms that encourage individuals to engage in environmentally-friendly purchasing.

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