

# The Predictors of Purchasing Sustainable Residential Property Among Residents in Malaysia

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## ABSTRACT

In the modern era, homebuyers have a variety of options when purchasing a new home. Underpinned by the Theory of Planned Behaviour, this research attempted to investigate buyers' purchase intention of eco-friendly sustainable residential properties in Greater Kuala Lumpur, Malaysia. Followed the quantitative approach, survey questionnaire method was used to collect the data. Data was analysed using SmartPLS to validate the proposed hypotheses. A regression analysis of 400 respondents' data showed significant positive effects of attitude, subjective norm, and perceived behavioural control on sustainable residential property purchase intention in Greater Kuala Lumpur. The findings of this work filled the research gaps in the sustainable property literature and offer insights to housing developers and policymakers in the Greater Kuala Lumpur. Specifically, government authorities and private sector housing developers should jointly priorities their resources and plan campaigns to further stimulate buyers' sustainable residential property purchase intention. This will bring win-win synergy in terms of environmentally sustainable home living and economic rewards to various stakeholders, including the government and the entire property development supply chain in Greater Kuala Lumpur.

*Keywords: Sustainable Residential Property, Theory of Planned Behaviour, Purchase Intention, Malaysia*

## INTRODUCTION

In the face of worsening climate change and the conflict between global population growth and resource scarcity, the consensus is that carbon emission reduction and energy efficiency is imperative for sustainable development and living (Zhang, Chen, Wu, Zhang, & Song, 2018; Espinoza, Buehlmann, & Smith, 2012; Swilling & Hajer, 2017). Global household electricity and heat production from fossil fuel burning is the key culprit of greenhouse gas emissions, as per the report released by the Environment Protection Authority (2018). Indeed, the energy consumed throughout the development of a new residential property and the recurring daily energy consumption from residential living is one of the main causes of environmental degradation and climate change.

Research in Australia concluded that local households consume approximately 7.7% of annual energy usage as well as a high portion of water usage and solid waste (Judge, Warren-Myers, & Paladino, 2019). In this regard, many countries, including Australia and China, have

embraced sustainable residential properties, while Malaysia lags behind and remains in the initial stage (Tan, 2013). In addition, the worrying trend of an increasing number of unsold units of newly built houses shows a huge mismatch between home buyers' desires and the property types developers have built in Malaysia, especially in Greater Kuala Lumpur (Mohamad, Yong, Nee, & Yang, 2019). An oversupply of inadequate properties in Greater Kuala Lumpur have imposed huge financial strains on private property developers and governmental reserves in property-related taxes.

Sustainable residential property development is residential development that fulfils accommodation demands without compromising the interests of future generations. Sustainable residential property has rapidly entered the mainstream in recent years due to eco-friendly features that minimise negative environmental implications and reduce resource wastage (Judge et al., 2019). In many developed countries, such as Norway and Japan, key stakeholders including government policymakers, residential property developers, and consumers have made a strong commitment to building sustainable neighbourhoods, with the aim of achieving a low-carbon society, sustainable residential living, and greener lifestyle to protect the interest of future generations (Liu & Hu, 2019).

In Malaysia, especially in Greater Kuala Lumpur, there is a perceived uptrend in the acceptance of sustainable residential properties, particularly in affluent areas where consumers are keen to stay in greener residential developments which typically have gated-and-guarded features, as in Sunway City, Desa Park City, and Setia Eco Park (Lim, Ng, Basha, Cheah, & Ting 2020). Tan (2013) conducted research in Iskandar Johor and confirmed a strong demand for sustainable residential properties and townships. In recent years, property development embedded with the self-sustainability concept is gaining more traction, as it reduces carbon emissions by integrating all required amenities for daily life, work, study, medical treatment, and shopping within walking distance of the communities (Tan, 2014). Developers in Greater Kuala Lumpur are now more interested in building sustainable residential properties. For example, Sunway Group is replicating their highly successful self-sustainable community development around the Greater Kuala Lumpur area, such as in Sunway Damansara and Sunway South Quay, and even in other states like Iskandar Johor (Chew, 2016).

Review of literature that conducted in Malaysia context address the growing awareness of sustainability among consumers has resulted in many studies on green household product purchases, ranging from hybrid cars to clothes and diapers (Zhang, Cheung, & Lee, 2014). However, there has been limited research assessing the purchase intentions of sustainable residential properties in Greater Kuala Lumpur, the capital of Malaysia.

To bridge the gap in the literature, the Theory of Planned Behaviour (TPB) was adopted in this study to examine the effect of psychosocial constructs on sustainable residential property purchase intention among consumers in Greater Kuala Lumpur. This theory is one of the most widely used theoretical frameworks in predicting purchase intentions (Judge et al., 2019). TPB cites that an individual's behaviour is decided by the intention to perform the specific behaviour (Ajzen, 1991). Underlying intentions, in turn, are three factors: attitude towards the behaviour, subjective norm, and perceived behavioural control. In this study, the TPB was used to examine the effect of its constructs on sustainable residential property purchase intention.

In doing so, this research also aimed to provide empirical evidence to both private and public stakeholders in the residential property development industry on the level of acceptance towards sustainable residential properties among consumers in Greater Kuala Lumpur above

the legitimate property-owning age of 21. Greater Kuala Lumpur encompasses eleven municipalities surrounding Kuala Lumpur and Selangor, which are Putrajaya, Kuala Lumpur, Shah Alam, Petaling Jaya, Klang, Kajang, Subang Jaya, Selayang, Ampang Jaya, Sepang, and Cyberjaya (Mohammad, 2013).

## **LITERATURE REVIEW**

### **Theory of Planned Behaviour**

Among the theories used to explain the purchase intentions of sustainable residential properties, the TPB, an extension of the Theory of Reasoned Action, has been shown to be an excellent framework for identifying the predictors of intention to purchase a particular product (Ajzen & Madden, 1986; Han, Hsu, & Sheu, 2010).

TPB has been supported by a substantial amount of research across multiple behavioural domains (Ajzen, 1991). In the model, intentions to perform a behaviour are conceptualised as the closest antecedent of actual behaviour, where intentions are predicted by a combination of attitude towards the behaviour, subjective norms (beliefs about how important others view the behaviour, or whether others engage in the behaviour themselves) and perceived behavioural control over performing the behaviour. TPB has been successfully adopted in many areas of environmental preservation, such as intentions to use eco-friendly energy-efficient vehicles (Tan, 2013) and the pro-environmental behaviours of undergraduates (Judge et al., 2019). In recent years, the theory has been extended to examine the purchase intention of sustainable residential properties (Mohamad et al., 2019). According to Tan (2013), the TPB's constructs, namely attitude, subjective norm, and perceived behavioural control, have shown positive correlations with the intentions towards various green products as well as sustainable residential properties. Detailed justifications of the relationship between each TPB's constructs on purchase intention are as follow:

### **Attitude and Purchase Intention**

Attitude can be either positive or negative (Ajzen, 1991), and is a psychological phenomenon that informs an individual's favourable or unfavourable action (Ajzen & Fishbein, 1980). An individual with a positive belief will have a positive attitude towards engaging in a behaviour and vice versa (Ajzen, 1991). In line with previous studies, consumers' attitude has a positive correlation with purchase intention (Cham et al., 2021; Judge et al., 2019; Lacap et al., 2021; Priester, Low et al., 2021; Nayakankuppam, Fleming, & Godek, 2004; Tan, 2013; Tan et al., 2019).

Consumers with a positive attitude will have a higher purchase intention towards green products or sustainable residential properties (Punyatoya, 2015; Lim, Ng, & Basha 2019). Based on Kim and Chung (2011), sustainable residential properties showed a significant positive relation between consumers' favourable attitude and their positive purchase intention. Chai and Tan (2013) also discovered that a favourable attitude towards sustainable residential property is the primary factor driving purchase intention. In summary, purchasers who have a positive attitude towards the concept and benefits of a sustainable residential property would be more likely to purchase the property.

In the context of sustainable residential property purchase intention, the attitude towards environmental preservation correlates with purchase intentions (Tan, 2013). Zhang et al. (2018) cited that attitude is one of the key significant predictors of purchase intention in China, especially for younger generations who experience the proliferation of social media and eWOM. The positive attitude about green products has spread through social media and stimulated more purchase intentions for sustainable consumer products as well as sustainable residential properties. Judge et al. (2019) and Lim, Cheah, Ng, Basha and Liu (2021) further supported this point in their study in Australia, where individuals who possess positive and favourable attitudes have a higher tendency to purchase eco-friendly products. Notably, the empirical results from Erkan and Evans (2016) showed that a positive attitude towards eWOM reviews on social media has a positive moderating effect on consumers' purchase intentions. Hence, it is pragmatic to propose that potential eco-friendly property purchasers are those who have a positive attitude towards environmental preservation and sustainable residential properties that are designed to minimise environmental degradation via renewable resources. Therefore, it was predicted that individuals who have a favourable attitude towards green and sustainable homes are more likely to purchase sustainable residential properties. Hence, the following hypothesis was derived:

**H1:** *There is a positive relationship between attitude and the purchase intention of a sustainable residential property in Greater Kuala Lumpur.*

### **Subjective Norm and Purchase Intention**

Subjective norm is closely related to perceived social pressure, which subsequently influences individuals to either engage or disengage in certain behaviour (Ajzen, 1991). As per Phungwong (2015), social pressure can be triggered by multiple sources, including close family members, close friends, political parties, and even digital social media groups. Consumers' perceptions of social pressures and inputs from referent groups influence their purchase intention of a product or service (Fam et al., 2021; Vida & Koklic, 2009). According to Verbeke and Vackier (2005), subjective norms even include personal psychology and feelings such as accountability and responsibility to either engage or disengage in an action. The findings of Bai, Tang, Yang and Gong (2014) also supported that perceived social pressure has a significant influence on an individual's intention to perform a specific action, such as purchasing.

Hofstede (2016) highlighted that Malaysia scores low in pragmatism dimensions at a mere 41%, which reinforces Malaysians' normative culture. This means Malaysian consumers have a high tendency to listen and follow recommendations from family members, friends, and even social reference groups before making any major purchase decision. Consistent with this, Numraktrakul, Ngarmyarn, and Panichpathom (2012) stated that many studies have shown a strong correlation between social factors and consumers' purchase intention of a property. Another past empirical study concluded that social pressure from spouse and close friends has approximately a 45% implication on residential property purchase decisions (Judge et al., 2019). Lim et al. (2020) revealed a similar conclusion, whereby apart from family members, other social groups such as cultural or religious reference groups influence property purchase decisions based on the buyer's desire to get into the social group.

A recent study on sustainability in China concluded that subjective norm is a significant predictor of sustainable residential property purchasing intention among Chinese, especially

young purchasers below 30 years old (Zhang et al., 2018). Judge et al. (2019) reached a similar conclusion in their study on sustainable residential property purchase intention in Australia. In conclusion, subjective norms have a significant influence on an individual's interest in performing a certain action (Ajzen, 1991; Ajzen & Fishbein, 1980). This phenomenon is still prevalent, as input from family members and close friends remains crucial in influencing one's purchase intention. Hence, positive green awareness among close family members and friends can be spread through social media to stimulate purchase intention of sustainable consumer products and sustainable residential properties (Judge et al., 2019). In-line with the TPB's proposition that subjective norm affects purchase intention, this study posit that buying intentions of sustainable homes may depend on the influence of social referents. Thus, the hypothesis was proposed as:

**H2:** *There is a positive relationship between subjective norm and the purchase intention of a sustainable residential property in Greater Kuala Lumpur.*

### **Perceived Behavioral Control and Purchase Intention**

As one of the key constructs of the TPB, the concept of perceived behavioural control reflects an individual's non-volitional belief. Perceived behavioural control is defined as an individual's perceived ease or difficulty in executing a specific behaviour (Ajzen, 1991). This ideology is closely associated with the notion of perceived self-efficacy defined by Bandura and Walters (1977) under the Social Learning Theory. Researchers have suggested different definitions to critically illustrate perceived behavioural control. Generally, it explains the extent to which an individual has the ability and control over both external and internal influences that stimulate a behaviour's performance (Ajzen, 1991). An individual with a high belief in his or her ability and high control over a behaviour has a stronger tendency to proceed with the behaviour (Ajzen, 1991; Ng, Zhao, Lim, Basha, & Sambasivan, 2020). Klockner (2013) defined that perceived behavioural control measures the tendency of an individual to possess the ability and opportunity to perform an intended behaviour. Generally, perceived behavioural control includes two key criteria (Ajzen, 1991). First, it requires the presence and availability of the resources required to pursue the behaviour, such as time and financial funds. Second, it requires an individual's confidence in executing the action.

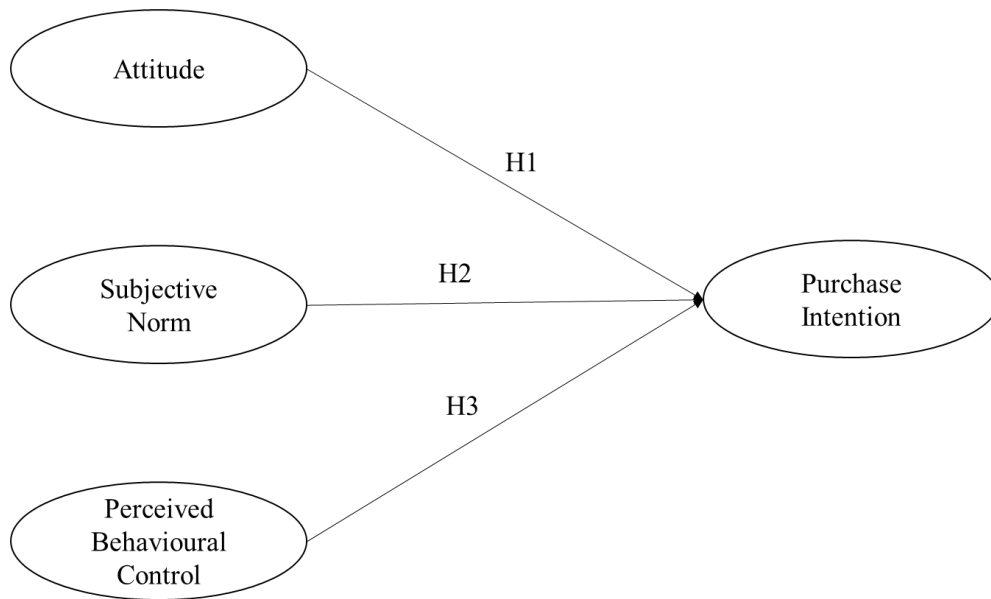
Past studies like those of Iakovleva, Kolvereid and Stephan (2011) and Wu, Lin and Lu (2012) have empirically proven that perceived behavioural control is a significant predictor of intention. As per Alam, Hashim, Rashid, Omar, Ahsan and Ismail (2014), perceived behavioural control represents an individual's beliefs on the external and internal factors necessary for the execution of a behaviour. Consequently, the higher the level of expectation and control about a sustainable residential property decision, the higher the tendency to purchase it. In the context of property purchase, Wang, Malthouse, and Krishnamurthi (2015) reaffirmed that perceived behavioural control plays an important role in influencing property purchase intention. Lim et al. (2020) also concluded that consumers prefer to purchase property from well-known property developers if given the opportunity, due to perceived lower risk. In addition, self-efficacy to own and operate a sustainable residential property, aided by the proliferation of technical know-how via social media, could stimulate the purchase intention of sustainable residential properties. This result is in line with previous studies by Numraktrakul et al. (2012) and Al-Nahdi, Nyakwende, Banamah, and Jappie (2015), which demonstrated that perceived behavioural control is a key predictor of property purchase

intention. Based on the extant evidence in the literature, the following hypothesis was suggested:

**H3:** *There is a positive relationship between perceived behavioral control and the purchase intention of a sustainable residential property in Greater Kuala Lumpur.*

The research model proposed in this study is presented in Figure 1.

**Figure 1:** Research Model



## RESEARCH METHOD

### Data Collection Procedure

By adopting a quantitative research design, this study was conducted based on a cross-sectional analysis where the researcher collects the data at a given time, and participants can respond only once. Since the primary purpose/objective of the present study is to understand the factors that impact the purchase intention of sustainable residential property in Malaysia. Thus, the population of this study included consumers who currently resided in Greater Kuala Lumpur, Malaysia. A purposive sampling technique was adopted in selecting the respondents, where the respondents are chosen based on the appropriate characteristics as judged by the researchers (Zikmund, Babin, Carr, & Griffin, 2013). The selection criterion consists: 1) they must be Malaysian citizens who currently stay in Greater Kuala Lumpur, Malaysia, and 2) aged above 21 years old. A review of the literature demonstrated that purposive sampling is the most widely used technique in the study related to sustainable residential property. For example, the research from Oyewole and Komolafe (2018) adopted a purposive sampling technique when understanding tenant's willingness to pay for the green office. Shari and Soebarto's (2014) work employed purposive sampling in exploring the factors that influence sustainable practice among Malaysian office building development. Likewise, the purposive technique was also

used in the study to examine the determinants that affect sustainable retirement villages among the elderly in Malaysia (Lim et al., 2020).

Before actual data collection, two types of preliminary checks were conducted. Firstly, the researcher conducted a pre-test to check on the content validity of the questionnaire. A total of 10 respondents, including professor and consumer, were invited to verify the content of the items and cross-check on grammar mistakes as well as sentence errors. The questionnaire was revised based on the comments received from respondents. Secondly, a pilot test was carried out by distributing the revised questionnaire to 30 consumers who currently stay in Greater Kuala Lumpur via a face-to-face approach. When performed the reliability test for pilot test data, the results showed that all constructs met the threshold value of 0.70, as suggested by Hair, Risher, Sarstedt, and Ringle (2019). The actual data were collected over three months period, from 1st September 2020 till 31st December 2020, using an online survey. To ease the procedure, an online questionnaire was created using Google Form and distribute it to the target respondents through social media websites, such as Facebook, WhatsApp, and WeChat as most of the consumers owned these social media accounts. The purpose for use Google Form as the survey application as it is very convenient and without involving any cost.

### **Survey Instruments**

The questionnaire of the present study was separated into two sections. Section A captured the respondent's demographic profile, while Section B captured abstract variables (constructs). In this study, closed-ended statements were used to enhance the response rate and also ease the data analysis process (Cooper & Schindler, 2006). All the questions were developed using the English language to provide convenience in the process of collecting data from all the races in Malaysia (i.e., Malay, Chinese, Indian, etc).

As highlighted by Sarstedt and Mooi (2019), the Likert scale approach provides a perfect measurement in measuring a score for a particular item. Specifically, all the items were measured using a 5-point Likert scale, ranging from 1=strongly disagree to 5=strongly agree. The scale of attitudes and perceived behavioural control were adopted from Tan (2013), with five-items. While, a five-items scale developed by Tan (2013) and Judge et al. (2019) were used to measure subjective norm. According to Judge et al. (2019), five-items scale was used to measure purchase intention (refer the full measurement items in appendix section).

### **DATA ANALYSIS**

There are two statistical software were utilized in analyzing the data throughout this study. Initially, the Statistical Package for Social Science (SPSS-version 23) was used to perform descriptive analysis in examining respondents' profiling. This was followed by Structural Equation Modelling- Partial Least Square (SEM-PLS-version 3.2.8), which was used in assessing the measurement model and testing the proposed hypothesized relationship.

### **Respondents Profile**

As presented in Table 1, the demographic profile of the participants, comprising gender, age, salary, highest level of education, and location where they currently live. Among the 351 respondents, there is an equal distribution between male (n=176; 50.10%) and female (n=175; 49.90%). Majority of them are aged between 21-29 years old (n=155; 44.20%) and followed

by 40-49 years old (n=89; 25.40%), above 50 years old (n=54; 15.40%) and 30-39 years old (n=53; 15.10%). With respect to salary, many of them earned below RM 3,000 (n=112; 31.90%), 23.60% (n=83) of them earned above RM 15,001, 22.80% (n=80) of them earned between RM 3,001-RM 6,000, 12.80% (n=45) of them earned between RM 6,001-RM 11,000, and 8.80% (n=31) of them earned between RM 11,001-RM 15,000.

On the distribution of the education level of the respondents, there is about 76.60% (n=269) of the respondents completed their bachelor's degree, 16.80% (n=59) of them completed their master's degree, followed by 4.00% (n=14) of them finished diploma and 2.60% (n=9) of them finished their Ph.D. or Doctor of Business Administration (DBA) degree. It is reflective of the fact that tertiary education in Malaysia is easily made available to all Malaysians, either public-funded or self-funded. As for the location where they currently live, most respondents located in the Selangor area (61.00%; n=214), and only 39.00% (n=137) is located in the Kuala Lumpur area.

**Table 1: Demographic Profile**

Demographic Profile		Frequency	Percent (%)
Gender	Male	176	50.10
	Female	175	49.90
Age	21-29 years old	155	44.20
	30-39 years old	53	15.10
	40-49 years old	89	25.40
	above 50 years old	54	15.40
Salary	Below RM 3,000	112	31.90
	RM 3,001-RM 6,000	80	22.80
	RM 6,001-RM 11,000	45	12.80
	RM 11,001-RM 15,000	31	8.80
	Above RM 15,001	83	23.60
Education	Diploma	14	4.00
	Degree	269	76.60
	Master	59	16.80
	PHD/DBA	9	2.60
Location	Selangor	214	61.00
	Kuala Lumpur	137	39.00
<b>Total</b>		<b>351</b>	<b>100.00</b>

## Measurement Model

According to the guidelines suggested by Hair et al. (2019), there are three main components within the evaluation of the measurement model using PLS-SEM. This involves examining construct reliability, convergent validity, and discriminant validity.

As cited by Hair, Hult, Ringle, and Sarstadt (2017), the reliability of the constructs can be investigated based on Cronbach's alpha ( $\alpha$ ) and composite reliability (CR). As shown in Table 2, the  $\alpha$  value for all the reflective constructs is falls between 0.879 to 0.947, fulfilled the recommended value of 0.70 (Nunnally, 1978). That is attitude ( $\alpha=0.942$ ), perceived behavioural control ( $\alpha=0.879$ ), purchase intention ( $\alpha=0.928$ ), and subjective norm ( $\alpha=0.947$ ).



In addition, Joreskog (1971) recommended that all the constructs with CR values ranged between 0.909 to 0.960 are considered satisfactory as they have exceeded the recommended value of 0.70. Specifically, the CR values of attitude=0.956, perceived behavioural control=0.909, purchase intention=0.954, and subjective norm=0.960.

Subsequently, the assessment of convergent validity was conducted using two metrics, i.e., factor loadings and average variance extracted (AVE). For assessing factor loadings, this study follows the guideline introduced by Hulland (1999), where all the loading values should be equal to or greater than 0.40. In this study, two items of purchase intention (i.e., PI1 and PI4) were eliminated from the data due to its low loading (less than 0.40). While the reminder items all with outer loadings ranged between 0.761 to 0.947 (refer Table 2).

Furthermore, as displayed in Table 2, all the constructs with AVE values above the threshold limit of 0.50, indicating that all the items able to explain more than 50% of the construct's variance (Hair et al., 2017). That is, attitude (AVE=0.812), perceived behavioural control (AVE=0.668), purchase intention (AVE=0.874), and subjective norm (AVE=0.826). It can, therefore, be concluded that all the reflective constructs (i.e., attitude, perceived behavioural control, purchase intention, and subjective norm) correspond to a sufficient level of construct reliability and convergent validity.

**Table 2:** Results of construct reliability and convergent validity

Latent Variable	Item	Outer Loading	Cronbach's Alpha	CR	AVE
Attitude	AT1	0.918	0.942	0.956	0.812
	AT2	0.921			
	AT3	0.863			
	AT4	0.909			
	AT5	0.894			
Perceived Behavioural Control	PB1	0.761	0.879	0.909	0.668
	PB2	0.792			
	PB3	0.817			
	PB4	0.848			
	PB5	0.864			
Purchase Intention	PI1	D	0.928	0.954	0.874
	PI2	0.941			
	PI3	0.947			
	PI4	D			
	PI5	0.916			
Subjective Norm	SN1	0.928	0.947	0.960	0.826
	SN2	0.908			
	SN3	0.909			
	SN4	0.868			
	SN5	0.930			

*Note:* D= item deleted due to low loading (<0.40); CR (Composite Reliability); AVE (Average Variance Extracted)

As illustrated in Table 3, the HTMT value for all constructs is below the 0.90 thresholds (Gold, Malhotra, & Segars, 2001), signifying that all constructs are genuinely different from each other.

**Table 3:** Heterotrait-Monotrait ratio of Correlations (HTMT)

	1	2	3	4
Attitude				
Perceived Behavioural Control	0.595			
Purchase Intention	0.875	0.645		
Subjective Norm	0.871	0.676	0.871	

*Note:* HTMT<0.90

### Structural Model

The assessment of the structural model in PLS-SEM comprises a five-step approach, recommended by Hair et al. (2019): assessing the (i) lateral collinearity, (ii) path coefficient, (iii) coefficient of determination, (iv) effect size and (v) predictive relevance.

First, the variance inflation factor (VIF) values for all the exogenous constructs are lower than the rule of thumb of 5 (between 1.813 to 3.724) (see Table 4). It is therefore inferring that the collinearity problem is not significant in this dataset (Becker, Klein, & Wetzels, 2012; Hair et al., 2019).

Second, by using PLS-SEM, a bootstrapping technique is applied to test the degree of significance for all paths. The result of the bootstrapping suggested that that the relationships between attitude (H1:  $\beta=0.431$ ,  $t=9.442$ ,  $p=0.000$ ), subjective norm (H2:  $\beta=0.387$ ,  $t=7.229$ ,  $p=0.000$ ), and perceived behavioural control (H3:  $\beta=0.118$ ,  $t=3.134$ ,  $p=0.001$ ) on purchase intention were significant. Thus, H1, H2, and H3 are supported (refer to Table 4).

In a structural model, the third step emphasised assessing the explanatory power ( $R^2$ ) of the endogenous constructs. By referring to the result in Table 4 illustrated that attitude, subjective norm, and perceived behavioural control accounted for 74.70% ( $R^2= 0.747$ ) of variance in purchase intention.

Forth, the effect size ( $f^2$ ) analysis was analyzed according to Cohen (1988), where 0.02, 0.15, and 0.35 indicate small, medium, and large effect sizes respectively of an exogenous effect on endogenous constructs. The finding in Table 4 showed that perceived behavioural control ( $f^2=0.031$ ) exhibits a small effect size, while attitude ( $f^2=0.230$ ) and subjective norm ( $f^2=0.159$ ) exhibit medium effect sizes on purchase intention.

In the last step, predictive relevance was assessed using Stone-Geisser's  $Q^2$  (Geisser, 1974). With the blindfolding technique, the result showed that the  $Q^2$  value for purchase intention (= 0.645) is above zero, demonstrating the presence of the predictive relevance of the present model.

**Table 4:** Results of structural model

	Std Beta	Std Error	T Statistics	P Values	VIF	F <sup>2</sup>
H1) Attitude → PI	0.431	0.045	9.532	0.000	3.189	0.230
H2) Subjective Norm → PI	0.387	0.054	7.229	0.000	3.734	0.159
H3) PBC → PI	0.118	0.038	3.134	0.001	1.812	0.031

Note: PI=Purchase intention; PBC=Perceived behavioural control

## DISCUSSIONS

The main goal of this thesis was to study the effects of the TPB's constructs (attitude, subjective norm, perceived behavioural control) on sustainable residential property purchase intention among the population of Greater Kuala Lumpur, Malaysia.

In this study, Hypothesis H1 was supported because the attitude towards sustainable residential property was proven to have a positive impact on purchase intention (p-value=0.000,  $\beta$ =0.431), suggesting that respondents with more favourable attitudes toward eco-friendly residential properties have a higher purchase intention. The significant positive relationship adds to recent findings that attitude has a major influence on an individuals' psychological purchase intention of a sustainable residential property in Malaysia (Tan, 2013) and in China (Zhang et al., 2018). Hence, this finding is clearly in line with previous studies and suggests that the residents of Greater Kuala Lumpur also have a positive attitude towards the idea of buying a sustainable residential property. In this study, attitude was empirically proven to be the most significant construct influencing sustainable residential property buying intention. Specifically, when energy-saving and eco-friendly benefits outweigh perceived risks, attitude would be enhanced. Hence, sustainable residential property developers are advised to embark on marketing campaigns that strongly emphasise the advantages of staying in a sustainable home in the long run, as attitude has a huge implication on the buying intention of such property.

Next, the effect of subjective norm on sustainable residential property purchase intention was positive and significant (p-value=0.000,  $\beta$ =0.387) (H2 was supported), consistent with the previous work of Judge et al. (2019). This corroborates prior research that revealed subjective norm's positive relationship with property purchase intention via the influence of relatives and close friends, such as research by Lim, Ng, and Basha (2019), Yang, Lee and Zo (2017), and Numraktrakul et al. (2012). Subjective norms are crucial in property purchase, as feedback and input from family members like spouses, life partners, children, relatives, and close friends are stronger in collectivistic cultures like Malaysia (Lim et al., 2019). This was evidenced by the findings of Zhang et al. (2018) in China, where subjective norm is one of the most significant predictors of sustainable residential property purchase intention, especially among younger purchasers. Hence, sustainable residential property developers should incorporate family and social values in a marketing campaign to promote launches of their future sustainable residential properties.

In line with previous studies on property purchase intention (Tan, 2013), this study showcased that the perception of the ease of owning a sustainable residential property significantly influences purchase intention (p-value=0.001,  $\beta$ =0.118) (H3 was supported). This study supports previous studies that have found perceived behavioural control to have a significant positive influence on purchase intention in the context of eco-friendly green hotels (Verma & Chandra, 2018), eco-friendly and energy-saving household appliances (Yang et al., 2017), and

green purchase intention (Yadav & Pathak, 2017). Perceived behavioural control is widely cited as the belief of control in dealing with the availability of required resources for performing a given behaviour (Ajzen, 2002). In this study, perceived behavioural control reflects an individual's perception of the simplicity or complexity of purchasing a sustainable residential property in Greater Kuala Lumpur. If sustainable residential property purchasers perceive they have little insight and control over purchasing a sustainable residential property due to a lack of requisite resources and opportunities, their purchase intentions will be weakened. Hence, sustainable residential property developers must enhance potential purchasers' perception of the ease and availability of owning a sustainable home, such as by providing free energy-saving air conditioners or solar-powered water heater device installation

## **THEORETICAL IMPLICATIONS**

In general, this study adds value by examining the effect of the TPB's constructs (attitude, subjective norm, and perceived behavioural control) on sustainable residential property purchase intention. It offers a more comprehensive assessment of purchase intention in the new era of marketing.

In specific, our findings have showcased the robust and predictive power of the adopted theoretical framework in the context of sustainable residential properties in Greater Kuala Lumpur. Specifically, the proposed model and measurements adopted are suitable in predicting sustainable residential property purchase intention in Greater Kuala Lumpur based on attitude, subjective norm, and perceived behavioural control. Overall, attitude has the most significant direct positive influence on sustainable residential property purchase intention in Greater Kuala Lumpur, followed by subjective norm and lastly, perceived behavioural control.

## **MANAGERIAL IMPLICATIONS**

This empirical study on sustainable residential properties contributes to the growth of the real-estate industry and environmental sustainability. In the real estate industry, this study offers insights to all key stakeholders (mainly governmental authorities and property developers) in upcoming developments and investments in eco-friendly sustainable residential properties.

A comprehensive assessment of a sustainable residential property is imperative as market demand is forecasted to be on an upward trend, as more members of the population migrate to Greater Kuala Lumpur and stimulate demand for residential properties (Tan, 2013). The empirical results in this study further show that respondents have a high tendency to purchase a sustainable residential property if they are provided sufficient resources and opportunities. Government authorities and property developers can gauge from this finding that sustainable residential developments are appealing to environmentally conscious consumers in Greater Kuala Lumpur. Thus, these parties should embark on pragmatic initiatives to enhance the three constructs in the TPB (attitude, subjective norm and perceived behavioural control).

For instance, to enhance the availability and promotion of sustainable residential properties in Greater Kuala Lumpur, the government and public authorities should provide tax incentives to sustainable residential property developers with eco-friendly residential products and technologies to reduce construction costs (Tan, 2013). The government can also reduce tax tariffs on eco-friendly appliance production, from raw materials to finished products, or on eco-

friendly product imports from overseas to further reduce the construction cost of sustainable residential properties. This in turn will increase the affordability and popularity of sustainable homes. Furthermore, more sustainable residential property units sold ultimately give back to government coffers through profit taxes from property developers, stamp duty on sales, and purchase agreements of sold property or other forms of stamp duty collection.

Besides, the government and relevant authorities should outline pragmatic eco-friendly residential property development frameworks, policies, guidelines, mandatory laws, green requirements, and building legislations to further promote sustainable residential properties in Greater Kuala Lumpur and Malaysia. As per Tan (2013), on top of the government's typical incentives like stamp duty exemption, tax exemptions on bank mortgage interest should be rewarded to sustainable residential property owners to further stimulate growth, as Malaysia is lagging behind countries like Australia in sustainable home living.

To further enhance the public's awareness and positive attitude towards environmental preservation and sustainable residential properties, the following suggestions are made for key stakeholders in the property industry:

- (1) Government and sustainable property developers should elevate public relations to enhance environmental preservation awareness and publicise the advantages of sustainable residential properties to the public. Various government authorities from the property and construction sector should engage in joint efforts with relevant property bodies and developers to synergise their channels and create more publicity on the sustainable design, construction, and operation of residential properties. In the modern digitised world, they could leverage the proliferation of digital media platforms to broadcast sustainable residential property information to target audiences effectively. Sustainable residential property-related associations are also encouraged to organise recurring physical exhibitions or even online webinar sessions on general environmental preservation or sustainable homes for the public to cultivate an environmental preservation culture and support the development of sustainable residential properties in Greater Kuala Lumpur and Malaysia.
- (2) Relevant parties should strengthen the environmental preservation sentiment and customer experience to enhance the development of sustainable residential properties in Greater Kuala Lumpur. The evaluation standards of environmental preservation and sustainable property standards such as Green Building Index (GBI), reward policies, design, and operational certifications should be publicly announced and transparently awarded. For example, qualified sustainable residential projects should be encouraged to apply for GBI certification to effectively control and promote the property in Greater Kuala Lumpur. Financial incentives for GBI-certified sustainable residential properties should be well-established and perfected to further promote sustainable residential property adaptation among developers and the entire supply chain. Besides, the operational maintenance tasks of sustainable residential properties should be fine-tuned to ensure they comply with standards. Finally, the performance levels of a sustainable residential property, such as its energy-saving status, renewal energy usage level, and indoor environment quality, should be shared with residents and the public transparently to provide a new sustainable living experience and promote healthier lifestyles.

## CONCLUSION

A sustainable residential property is a pragmatic concept to achieve a win-win in environmental sustainability while fulfilling current and future generations' property demand in Greater Kuala Lumpur with a growing population. This study intended to examine and understand the key constructs that influence sustainable residential property purchase intention, which would raise awareness about the upcoming new trend of eco-friendly residential properties in Greater Kuala Lumpur and Malaysia. Undoubtedly, a well-orchestrated sustainable residential property development community or even a sustainable green township will create a healthy eco-friendly lifestyle, simultaneously enhancing resident wellbeing and uplifting the property market.

The empirical results show that respondents well-accept the concept of an eco-friendly sustainable residential property. However, it requires a paradigm shift in attitude and habits, which calls for both the government and property developers to play their crucial roles in promoting the development of a sustainable residential property. Besides, potential homebuyers are more likely to purchase a sustainable residential property when they receive positive reviews and encouragement from family members and close friends, as proven by the strong significant relationship between subjective norms and purchase intention. Also, purchase intention on sustainable residential properties is higher when perceived behavioral control is stronger, with the presence of resources, availability, and opportunity. The government should thus provide sufficient financial incentives and tax exemptions for buyers of sustainable residential properties to increase the perceived availability of sustainable residential properties in the market.

Last but not least, continuous research on sustainable residential properties is pivotal as eco-friendly properties will soon be a fast-growing market segment not only in Greater Kuala Lumpur but also nationwide, given the uptrend in population growth and consumers' growing demand for an eco-friendly, sustainable, and relaxed family lifestyle.

## LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Despite providing new insights to the literature and industry practitioners in the context of sustainable residential properties in Greater Kuala Lumpur, this study has some limitations that offer opportunities for future studies to address.

First, this research adopted a non-probability sampling technique, i.e., convenience sampling, to collect data. It used an online Google form on a sample of post-graduate university students, who were typically from the younger generation that is technology savvy, property savvy, and well-versed with social media. Hence, this segment of respondents may not precisely represent the overall demographics of the population of Greater Kuala Lumpur. Furthermore, the convenience sampling technique is limited with respect to generalising the results of a small sample to a large population. Future researchers can adopt a larger and more representative sampling approach to overcome this limitation.

Second, this research fully focused on the context of Greater Kuala Lumpur, which does not reflect consumers' sustainable residential property purchase intention in different states in Malaysia or in other countries. Hence, it is recommended for future researchers to replicate the model in other cities, states, or countries to provide a more generalisable finding in the context

of sustainable residential properties. This is because consumers with different socio-demographics may have diverse perceptions and purchase intentions towards a sustainable residential property, which is worthwhile to be studied. For example, consumers rural and urban respondents might have different levels of acceptance and purchase intentions towards a sustainable home, which would ultimately exhibit different outcomes and new insights for academicians, government authorities, and property developers.

Third, this study primarily examined psychological factors. There are other crucial external factors to be considered in sustainable residential property purchase intention, such as price, financial return of investment (ROI), accessibility, amenities, and location. Future studies can consider the incorporation of these external variables for more insightful implications.

Finally, as this study investigated sustainable residential property purchase intention, it may be pragmatic to gather feedback from residents on their actual experiences living in sustainable residential properties. By doing this, future studies will provide further insights into actual residents' satisfaction with the sustainable residential property environment. As the needs and wants of residents in sustainable residential properties vary from time to time, a long-term study would also be useful in assessing their experience and offering better options to fulfil their demands in the future.

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## APPENDIX

Table A1: Measurement items

Attitude	
ATT1	Green and sustainable homes are valuable because these homes are developed and constructed using environmentally friendly processes.
ATT2	Green and sustainable homes are sensible because these homes may not have a negative impact on the environment.
ATT3	Green and sustainable homes that meet Sustainable residential property Index (GBI) standards are favourable.
ATT4	Sustainable living features of green and sustainable homes are useful.
ATT5	Green and sustainable homes are beneficial because these homes may enhance our quality of life without sacrificing the internal comfort of the occupants.
Subjective Norm	
SN1	Most members of my family would expect me to buy green and sustainable home.
SN2	I intend to follow the advice of my friends that I should buy green and sustainable home.
SN3	My friends would recommend that I should buy green and sustainable home.
SN4	Most people who are important to me think that I should purchase a sustainable home over conventional home.
SN5	I intend to follow the advice of my family members that I should buy green and sustainable home.
Perceived Behavioural Control	
PBC1	I have a great deal of control in terms of resources and opportunities over whether I can buy green and sustainable home.
PBC2	It is easy to buy green and sustainable home.
PBC3	I felt a great deal of confidence about my ability to buy green and sustainable home.
PBC4	I have the time and willingness to purchase sustainable home.
PBC5	I see myself capable of purchasing a sustainable home in the future.
Purchase Intention	
PI1	I am planning to buy a sustainable home in future.
PI2	I will try to purchase a sustainable home in future.
PI3	I will make an effort to purchase a sustainable home in future.
PI4	I would like to recommend GH to my family and friends.
PI5	I would like to live in a sustainable home in future