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Exploring Psychological Factors in Influencing Customers' Purchase Intention Towards Green Residential Buildings in Malaysia

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ABSTRACT

Nowadays, green residential building is known to preserve all nature from destruction by human activities. Consumers' unsustainable usage patterns are contributing to environmental degradation, which is hindering sustainable development. However, there are several factors that contribute to the lack of awareness among customers in understanding and accepting green technologies in residential buildings. So, this quantitative study aimed to examine the determinants of psychological factors in influencing the customers' purchase intention towards green residential buildings in Pulau Pinang. The study explored several factors such as consumer purchase intention, attitude, environmental concern, financial risk and perceived value towards green residential buildings. By investigating these factors, the researcher will know the most significant factor contributing to consumer purchase intention. A total of 109 respondents, which are students and staff from civil engineering UiTM Permatang Pauh, Pulau Pinang, participated in this study. SPSS version 22 was used for statistical analysis. In order to simplify and characterize the data, descriptive methods were applied. Descriptive statistics and correlation testing were used in the final analysis. The findings found that attitude, environmental concern, financial risk and perceived value had indicated a strong positive correlation in which all hypotheses were accepted. This result will be tremendously useful in the development of theory for researchers with the extended perspective theory of planned behaviour to explore purchase intention towards green residential buildings, especially in Malaysia. Hence, housing developers should design strategies and develop green products to meet the consumer consumption. Last but not least, green businesses better understanding of the customers' characteristics and the factors influencing the purchasing of green residential buildings in Malaysia.

Keywords: *attitude, consumer purchase intention, environmental concern, financial risk, perceived value*

INTRODUCTION

Global warming is an issue that has an impact on both the environment and human existence (Cheng et al., 2022). For the following reasons, all nations will decrease their negative effects as to avoid high energy consumption, environmental degradation, and both internal and external pollution (Allouhi et al., 2015). As a developing nation, Malaysia began implementing green residential structures in 2010

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to assist the government's Agenda 21 Sustainable Development Program. The Ministry of Economic Affairs discusses the details components of the Malaysian Shared Prosperity Vision (2030). It highlights the harmonies of socio-economic development, which is important to implement by the community in order to preserve the environment in Malaysia. Government agencies and private organisations has given support to national development through green growth, which emphasises low-carbon development, such as green buildings. There are also over 400 green building initiatives that have received certification. As a crucial approach for raising the ownership of green buildings, the marketing of green building properties should adopt a complete strategy focusing on characteristics and preferences among both investor-owned and purchasers (Chuweni et al., 2022). Furthermore, green buildings have increased in Malaysia due to the National Green Technology Policy (NGTP) in 2009, which promotes renewable energy (RE), energy efficiency (EE), and the green building index (GBI). Green residential building refers to an environmentally friendly design located on a suitable site, and it is constructed to improve the health of society's well-being and reduce environmental impacts (Shafiei et al., 2013). Generally, a green building that practices energy efficiency will provide human life with more safety, comfort, and a healthy living environment.

The Green Building Index is an environmental assessment system for buildings developed by the Malaysian Institute of Architects and the Association of Consulting Engineers Malaysia. There are six criteria under Green Building Index: energy efficiency, indoor environment quality, sustainable site planning and management, materials and resources, water efficiency, and innovation (Elias & Lin, 2015). In addition, Sustainable Energy Development Authority (SEDA) is the main body to manage the implementation of Renewable Energy (RE), which focuses on promoting, implementing, and developing activities related to renewable energy. The renewable energy sector has shown rapid development in many countries. In a parallel development in the renewable energy sector, the government has implemented two strategies, such as a feed-in tariff program and mandatory blending of biofuels for the transport sector (The Star, 2010). According to Malaysia's Ministry of Energy, Green Technology, and Water, solar power can play a significant role in the country's future energy generation, particularly for household systems, in order to maintain the ecosystem's diversity and sustainability.

Besides that, energy efficiency is a critical element in preserving the environment for humankind. According to Fragidis and Olschewski (2015), energy awareness refers to consumers' knowledge of reducing their energy consumption. A study by Syed Hussain et al. (2013) revealed that the Malaysian community still lacks awareness in terms of energy usage efficiency, such as identifying how much electricity they use and how to calculate the costs that give impact their monthly electricity bill. In line with that, Rahman et al. (2016) also found wastage of energy in residential is high due to the low level of awareness of implementing energy efficiency among consumers. The architectural (design) issue, appliance/service (technology) efficiency, and human (behavioural) difficulties are the three key difficulties in household energy usage (Hussaini & Majid, 2015). Hence, the government and housing developers need to provide awareness and knowledge on the benefits of having a green residential building for their healthy life.

Sani (2020) stated that the property market has become weak and led to a surplus in housing due to the Covid-19 pandemic in Malaysia. Based on the National Property Information Centre (2020) revealed the surplus property market in Malaysia. The findings stated that Johor showed the highest surplus property market list, which is 5,627 units, followed by Perak with 5,024 units and Selangor representing 4,687 units. Meanwhile, Pulau Pinang shows a moderate level number of surplus residential units, which are 3,353 units. This indicates that Pulau Pinang showed a lower level compared to the three highest states (Johor, Perak, Selangor), and the community is more positive in purchasing a house. Hence, this study chooses Pulau Pinang as a sample for this study to determine the customer factor in purchasing the green residential buildings and to have a better understanding of the consumer perspective.

LITERATURE REVIEW

To have a better explanation of consumer buying behaviour, this study modified the Theory of Planned Behavior (TPB) as an underlying theory. In TPB, the attitude toward behaviour, the subjective norm, and the perception of behavioural control all influence behavioural intention. This study discovered that the TPB model had been widely used over the years and well documented in the literature, particularly in the context of greenhouse or green purchasing behaviour. Besides that, this study observes that TPB variables give impact the buying purpose (Wu et al., 2021, Zhang et al., 2021; Uddin, 2021; Zheng et al., 2021; Nimri et al., 2020; Wijayaningtyas et al., 2019). These studies suggested several limitations for the future researcher to fill the gap. The findings from the past research in line with Azis et al, (2021), highlighted factors that influence the consumer to purchase the green residential building are related to financial risk and consumer affordability in spending their money from this property. A similar study by Tan and Goh (2018) highlighted the psychological factor is important to determine green residential building purchase intention. However, there are several inconsistent results on the several factors and need to validate the findings of another study. Given the analysis above, this study had examined attitudes, financial risk, perceived value, and purchasing intentions toward green residential buildings in Malaysia.

Purchase Intention

A person's ability and willingness to offer options to businesses that make things or provide services is referred to as having a purchase intention. This is because each person is free to choose what they want to buy (Chen, 2010). Purchase intention is a subjective evaluation made by consumers that are reflected when the buyer chooses whether or not to purchase a good or service (Sidi & Sharipah, 2011). A client that has more purchase intent will be more willing to pay for the products or services (Schuler & Adair, 2003). Additionally, previous research found that the buyer's purpose has a beneficial influence on the inclination to purchase green residential structures. The study found that Malaysians are more likely to plan to purchase and are more prepared to invest money in green residential projects (Tan & Goh, 2018).

Attitude

In the context of consumer purchase intention, previous empirical studies showed that attitude has a positive influence on the purchasing of green residential buildings (Tan & Goh, 2018; Kokli & Vida, 2009; Numraktrakul, Ngarmyarn & Panichpathom, 2012). This finding indicates that consumers who are concerned about healthy living will have a favourable attitude toward the green residential building. Therefore, housing developers should organise programmes which focus on building quality characteristics of a healthy green home in order to promote a better living environment to the buyers. In addition, the previous study also highlighted the individual mindset or reaction towards certain objects, which could also be related to attitude (Anwar et al., 2020).

On the other hand, Ajzen (1991) suggested that intention can be used as a dependent variable that predicts an independent variable, such as attitude in consumer purchase intention. Moreover, the attitude has two levels which are favourable or unfavourable assessments from an individual to the behavioural intention. Similar studies found consumers have expressed their demand for green products to companies, and attitudes have a favourable impact on the purchase of green products (Do et al., 2020; Nguyen et al., 2022). These studies also suggested house developer to organise advertisements to emphasise the long-term benefits of using green products to young people to create a "green generation" to protect the environment. Hence, it is hypothesised that:

H1. Attitude has a significant positive effect on the green residential buildings purchase intention.

Environmental Concern

Previous study found that environmental concern is one of the most applicable predictors of the purchase intention of green shopping products (Newton et al., 2015). They found that environmental concern has positive impacts on the consumer purchase intention towards green residential buildings. The findings have proposed the government and housing developers focusing on promoting awareness programmes such as Green Carnival in order to attract the environmental concern of the public in purchasing green residential buildings. Moreover, environmental psychology research has applied the Theory of Planned Behavior to environmental concerns due to the positive impact, and it can be a direct indicator of environmental purchase intentions (Hartmann & Apaolaza-Ibanez, 2012). Individuals who accept future changes in energy consumption have the willingness to purchase green products such as green electricity, eco-friendly energy rules and green-labelled energy brands (Wicker & Becken, 2013).

Additionally, study by Zhao and Chen (2021) indicated that the purchasing of a green house could be seen as a unique pro-environmental activity because green houses are products that are environmentally favourable. Thus, individual environmental concerns may have an effect on residents' perception and acceptance of green house. On the other hand, past study found customers who are supportive of eco-friendly products but lack a strong sense of personal commitment to advancing the environment and society may not be as willing to choose to buy eco-friendly items, especially if they have a variety of options (Wijekoon & Sabri, 2021). Therefore, it is suggested that;

H2. Environmental concern has a significant positive effect on the green residential buildings purchase intention.

Financial Risk

According to Tajani et al. (2019), risk is defined as the quantifiable objective idea that happens at future events and varies within the environmental and economic systems. Lambert and Johnson (2003) advocated using value at risk to quantify the reduction in the market charge for loan credit functions in a previous study. Empirically, in some studies, the relationship between financial risk showed negative effects on the green residential buildings purchase intention (Tan & Goh, 2018, Wu et al., 2021). These studies have highlighted that if the public is aware of the low expenses of building greenhouses, the market demand for green residential buildings will be increased.

On the other hand, a previous study by Wijekoon and Sabri (2021) indicated that financial risk and price consciousness were observed as the negative factors affecting green purchase intention, while family size seemed to be a key obstacle in purchasing green items. Similar study suggested green businesses can consider maintaining prices to consumers and giving product discounts for the first time as a form of market education (Nguyen et al., 2022). Hence, housing developers need to offer affordable prices to enable purchasers to buy green residential buildings in Malaysia (Tan & Goh, 2018). Thus, it is hypothesised that;

H3. Financial risk has a significant negative effect on the green residential buildings purchase intention.

Perceived Value

Perceived value is related to three categories which are product-related value, social-related value and personal-related value (Creusen & Schoormans, 2005; Harris et al., 2005; Huber et al., 2001). Product-related value refers to the value of individual experience, convenience and getting benefits by using ergonomic products, while social-related value is based on the social environment. On the other hand, personal-related value highlights individual desire value respectively towards purchasing green products. Many researchers found that perceived value was a discriminate component, and it has a direct

relationship with purchase intentions towards green residential buildings (Mahesh, 2013; Tan & Goh, 2018; Chen & Chang,2012).

Moreover, the study by Chen et al. (2012) revealed that perceived value is important towards purchasing a hydrogen-electric vehicle. Similar study indicated that perceived value was found to have a significant positive influence on residents' intention to purchase green house (Yue et al., 2021). In contrast, study by Zhao and Chen (2021) revealed that the purchase costs of greenhouses are relatively high, consumers will definitely experience a process of considering before making a final decision. Hence, this study highlighted that in order to promote consumer acceptance to green house, it is necessary to ensure that consumer have a more positive overall evaluation of green house. Hence, it is hypothesised that;

H4. Perceived value has a significant positive effect on the green residential buildings purchase intention.

The conceptual framework for the dependent and independent variables is shown in Figure 1.

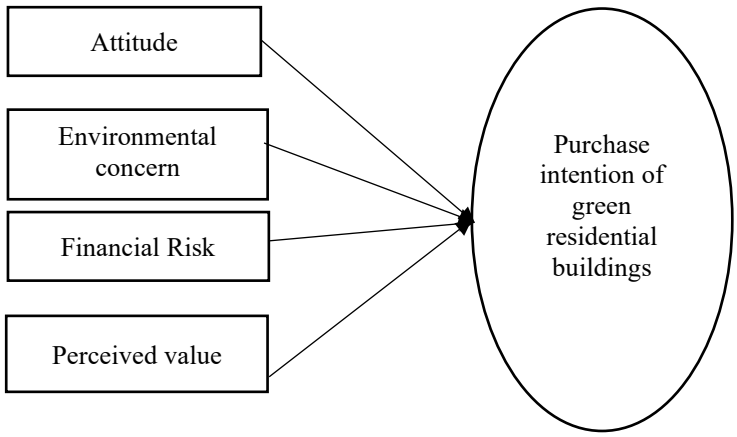

Figure 1: Conceptual Framework

METHODOLOGY

The population of this study comprised 240 based from the list name given from the administrators at the Faculty of Civil Engineering, UiTM Permatang Pauh in Pulau Pinang. However, for determining the sample size, Krejcie and Morgan's (1970) method will be used with the number of sample sizes is 150. The questionnaires were distributed through a Google form questionnaire. A set of questions was distributed using WhatsApp to facilitate the research objectives. According to Kumar and Naik (2016), Google Forms is a service provided to collect data through the website and a very useful tool as it can be automatically saving the collected data into Google Form. In terms of the sampling procedure, the researcher applied simple random sampling which offers high generalizability and treats each element as having equal chance to be chosen as the subject (Sekaran, 2000). This study distributed 150 questionnaires, and 109 of the data is useful, which indicated 73 percent of the total responses. Babbie (2007) asserts that a response rate of 50% is appropriate for social science research surveys. As a result, the study's response rate is respectable and sufficient to do the statistical analysis (Hair et al., 2010). Data for a survey were gathered through the use of a standard questionnaire. The survey was broken down into two sections: (1) demographic background; and (2) variables, such as purchasing intention and attitudes toward green residential structures, such as environmental concern, financial risk, and perceived value.

A Likert-type scale with five points was offered to respondents, ranging from 1 (strongly disagree) to 5 (strongly agree). Statistics were used to analyse the data using SPSS version 22. Descriptive approaches were used to characterise and decompose the data. The final analysis made use of descriptive statistics and correlation tests. A pre-test is essential to determine any potential challenges respondents may have when filling out the questionnaires before the actual survey. The 30 respondents from the academic staff in Perlis who participated in this study received a pre-test in exchange, and the questionnaires were given at random to the participants. A measure's content validity is an estimation of how well it captures each and every component of a concept. The researcher in this study chose two lecturers from UiTM Perlis to examine the accuracy of each item's content, and these lecturers offered a number of recommendations. Based on the findings, no items were eliminated from this study, and the reliability values for all variables ranged from 0.50-0.90. This outcome is consistent with earlier research, which found that Cronbach's alpha values between 0.5 and 0.60 are adequate, 0.70 is respectable, and 0.80 is excellent (Sekaran, 2003).

RESULTS

Reliability analysis

The reliability analysis results for five variables, based on 109 research data, are presented in Table 2. Since it falls between 09.0 and above, the purchase intention Cronbach's Alpha of 0.95 is quite good. The first three independent variables, attitude toward green residential structures, environmental concern, and financial risk, have very good Cronbach's Alpha values of 0.89, 0.87, and 0.89, respectively. The final independent variable, perceived value, has a Cronbach's alpha score of 0.91, which experts consider to be very good because it falls between 0.90 and above. As a result, the evaluations of scale reliability require that the items measure each variable accurately.

Demography analysis

A total of 150 students and employees from the department of civil engineering at UiTM Permatang Pauh, Pulau Pinang, responded to the questionnaires that were provided. A total of 109 questionnaires were returned. The respondents' personal information or research participants' characteristics were used to determining the frequency distribution. For this study, nine demographic factors were gathered, including gender, age, race, marital status, number of children, education level, monthly income, property ownership, and ownership of green residential buildings. There are 78% more women than men (7%) among the respondents. This suggests that women make up the majority of the study's respondents. Malays make up the vast bulk of the population (86%), followed by Chinese (10%) and Indians (4%). These responders from the UiTM Permatang Pauh, Pulau Pinang, had a wide range of backgrounds and cultural backgrounds. The age group between 20 and 29 years has the highest distribution of age groups (81%), while the age group between 50 and 59 years has the lowest distribution of age groups (3%). The bulk of them falls under the category of education which includes degrees (54%) and diplomas (25%), respectively. Only (22) of the respondents had been married, and they have an average of one to six children, according to the data. Due to the fact that most respondents are students, the majority of them (82%) do not own property when it comes to other characteristics. In the end, most respondents (94%) indicated that they were unaware of green residential buildings. The fact that most respondents lacked information about green residential construction is evident from this.

Descriptive analysis

The results demonstrate that the least and highest scores for respondents' attitude responses are 2.40 and 5.00, respectively. The minimum combined score of respondents' responses for financial risk and perceived value is 2.00, while the maximum combined score for all variables is 5.00. The lowest and highest scores for environmental concern are 2.50 and 5.00, respectively. The attitude mean value is 4.17 on a scale of 1 to 10. Environmental concern has the lowest mean of any variable, with a mean of 3.42, whereas this variable has the greatest mean. The standard deviation for purchase intention is

0.76, while the standard deviation for environmental concern is 0.43. Table 1 below shows all of the variables' descriptive statistics.

Table 1: Descriptive Analysis

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Attitude	109	2.40	5.00	4.1725	.59720
Financial Risk	109	2.00	5.00	3.7431	.74347
Purchase Intention	109	1.00	5.00	3.4610	.76314
Environmental Concern	109	2.50	4.00	3.4266	.43208
Perceived Value	109	2.00	5.00	3.8844	.62556

Correlation analysis

Table 2 shows the study's correlation, which calculates the link between all independent factors and the dependent variable. Attitude towards green residential buildings had a strong positive relationship with purchase intention ($r=0.658$; $p<0.00$). Consumers with high attitudes were more likely to have an intention buying on green residential buildings. This finding supported H1 and suggested attitude towards green residential buildings can increase consumer intention. For environmental concerns, there is a positive relationship between purchase intention ($r=0.506$; $p<0.00$). Consumers with eager concern for the environment are more likely to influence their intention to purchase the green residential building. This finding supported H2 and suggested that environmental concerns encourage purchase intention on a green residential building.

However, for financial risk, there is a moderate and negative relationship between financial risk and purchase intention ($r= -0.391$; $p<0.00$). It shows that high risk on finances may decrease consumers' intention to purchase green residential building. The worries about the price of the green residential buildings and the possible financial misfortune could affect their intention to purchase. Thus, H3 was supported. Next, for perceived value, the results indicated a positive relationship towards purchase intention ($r=0.513$; $p<0.00$). When consumer assessment of the usefulness of a product or service based on perceptions of the benefits offered is high, their intention to purchase green residential buildings will increase. Thus, the findings supported H4 and suggested that higher perceived value by the consumer encourages purchase intention on a green residential building.

Table 2: Correlations Analysis

	1	2	3	4	5
Attitude towards Green Residential Buildings	1				
Environmental Concern	0.493**	1			
Financial Risk	-0.426**	-0.119**	1		
Perceived Value	0.385**	0.383**	0.188**	1	
Purchase Intention	0.658**	0.506**	-0.391**	0.513**	1

Note: *p<0.05; **p<0.01

DISCUSSIONS

According to the research, views toward green residential construction and purchasing intentions are positively correlated. Customers' intent to buy appeared to be influenced by attitude, as those with high levels of positivity exhibited a greater propensity to do so. Schniederjans and Starkey (2014), who

highlight how attitudes toward environmentally friendly products influence consumers' intentions to buy environmentally friendly goods, may attest to this. The results show a strong correlation between buying intention and environmental awareness. The findings of Newton et al. (2015), who interpret environmental concern as an immediate marker of purchase intention, are similarly consistent with this conclusion. This study also demonstrates that the likelihood of making a purchase is significantly impacted by financial risk. Financial risk, in the opinion of Zhang et al. (2011), is connected to worries about the price of green residential construction and the possibility of financial hardship as a result of building prices.

Additionally, there is a strong beneficial impact on purchase intention from perceived value. Chen and Chang (2012) assert that green buying intentions are significantly impacted by perceived green value. According to Chen et al. (2012) other investigations, the purchasing intention for a hydrogen-electric car is mostly identified by perceived value. Previous research showed that when a customer has a higher buying intention, they are more likely to be willing to buy goods or services (Schuler & Adair, 2003).

CONCLUSION

This study attempts to analyse the impact of perceived value, financial risk, environmental concern, and attitudes toward green residential buildings on purchase intention. The findings of this study have confirmed that attitude, environmental concern, financial risk, and perceived value all indicated a strong positive correlation in which all hypotheses were accepted. Previous studies had discovered several theories, such as theory consumption value, theory perceived value, the technology acceptance model, and the norm activation model, which are often exploited. However, to the best of our knowledge, previous research has not expounded well on the concept of exploring psychological factors by using an extended perspective of the theory of planned behaviour to explore purchase intention towards green residential buildings, especially in Malaysia. Hence, these findings will be tremendously useful in the development of theory for researchers and green businesses to design strategies and develop green products to meet the consumption needs of consumers in Malaysia.

Besides that, developers can preserve their existing customer by build a fantastic brand because it can aid in memory formation and have a low-level impact on consumers' purchase intentions. For instance, the great brand mindfulness methodology can enhance social responsibility initiatives, provide a variety of high-quality items, and provide the target audience with appealing and unique promotion schemes. The price of a building is set by the developer. A developer's main concern while contributing to any housing project should be how to reduce the building cost without sacrificing quality or meeting the expectations of any possible home buyers. A developer and the local government can collaborate to develop suburban land and establish the township's infrastructure. Additionally, one of the relevancy techniques is price promotion. A few tactics that can be used, especially with regard to location, include offering a price promotion that is honest and reasonable and adhering to the services offered. As a result, potential buyers will be drawn to the unit. Last but not least, scholars have recently commended the buying intention toward green residential structures, and characteristics related to organisations should be added in future studies to study the relationship between buy intention and other characteristics.

Nevertheless, the present study also has several limitations. The fact that the study solely examined Penang customers' opinions toward green residential construction, environmental concerns, financial risk, and perceived value on purchase intent rather than the entire island population is one of the study's limitations. Therefore, it is suggested that future research should be carried out in areas of Malaysia with rapid population growth, such as a city, where the findings will be more comparable and meaningful advice can be given. A larger number of responses will enable more reliable statistical analysis, such as structural equation modelling. The association between purchasing intention and attitude, environmental concern, financial risk, and perceived value must be strengthened despite the small sample size. The discrepancies between purchase intentions and actual purchases of green residential structures over time can be determined through longitudinal studies.

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AUTHORS' CONTRIBUTION

The experiment and data preparation was carried out by Nor Aida Iwani Hafidzin. Besides that, Nurul Labanihuda Abdull Rahman was in charge of writing the manuscript and contributed constructive feedback on the analysis and paper.

CONFLICT OF INTEREST DECLARATION

We attest that the authors and co-authors who contributed to the article did so independently. The article has never been published before, and publishing elsewhere is not being considered. This research hasn't been fully or partially published elsewhere, nor has it been submitted for publication. We certify that each Author made a significant contribution to the effort, validity, legitimacy, and interpretation of the data for submission to Jurnal Intelek.

REFERENCES

Anwar, N., Mahmood, N. H. N., Yusliza, M. Y., Ramayah, T., Faezah, J. N., & Khalid, W. (2020). Green Human Resource Management for organisational citizenship behaviour towards the environment and environmental performance on a university campus. *Journal of Cleaner Production*, 256, 120401. https://doi.org/10.1016/j.jclepro.2020.120401

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50, 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Allouhi, A., El Fouih, Y., Kousksou, T., Jamil, A., Zeraouli, Y., & Mourad, Y. (2015). Energy consumption and efficiency in buildings: current status and future trends. *Journal of Cleaner production*, *109*, 118-130. https://doi.org/10.1016/j.jclepro.2015.05.139

Azis, S. S. A., Zulkifli, N. A. A., & Rahman, N. H. A. (2021). Influential factors to occupy green residential building among green building occupants. *Environmental and Toxicology Management Management, 1*(1), 7-13. http://dx.doi.org/10.33086/etm.v1i1.2021

Babbie, E. (2007). The Practice of Social Science Research (11th ed.) Belmont, CA: Wadsworth.

Chen, Y.S. & Chang, C.-H. (2012). Enhance green purchase intentions. *Management Decision, 50*(3), 502 -520. http://dx.doi.org/10.1108/00251741211216250

Chen, H.S., Chen, C.Y., Chen, H.K. & Hsieh, T. (2012). A study of relationship among green consumption attitude, perceived risk, perceived value toward Hydrogen-Electric motorcycle purchase intention. *AASRI Procedia*, 2, 163-168. https://doi.org/10.1016/j.aasri.2012.09.029

Cheng, B., Lu, K., Li, J., Chen, H., Luo, X., & Shafique, M. (2022). Comprehensive assessment of embodied environmental impacts of buildings using normalized environmental impact factors. *Journal of Cleaner Production*, 334, 130083. https://doi.org/10.1016/j.jclepro.2021.130083

Chen, Y. S. (2010). The Drivers of Green Brand Equity: Green Brand Image, Green Satisfaction, and Green Trust. *Journal of Business Ethics,93*(1), 81-92. http://dx.doi.org/10.1007/s10551-009-0223-9

Chuweni, N. N., Saraf, M. H. M., & Fauzi, N. S. (2022). Factors Determining the Purchase Decision of Green Residential Properties in Malaysia. *Planning Malaysia, 20*(2), 272-282. http://dx.doi.org/10.21837/pm.v20i21.1111

Creusen, M. E. H., & Schoormans, J. P. L. (2005). The different roles of product appearance in consumer choice. *Journal of Product Innovation Management, 22*(1), 63-81. https://doi.org/10.1111/j.0737-6782.2005.00103.x

Elias, E. M., & Lin, C. K. (2015). The empirical study of green buildings (residential) implementation perspective of house developers. *Procedia Environmental Sciences*, 28, 708-716. https://doi.org/10.1016/j.proenv.2015.07.083

Fragidis, G., & Olschewski, D. (2015). Consumer awareness and engagement for energy efficiency solutions. Cleopa White Paper Series.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate data analysis (7th ed.). Saddle River, NJ: Prentice-Hall International.

Harris, P., Rettie, R., & Kwan,C. C. (2005). Adoption and usage of m-commerce: A cross-cultural comparison of Hong Kong and the United Kingdom. *Journal of Electronic Commerce Research, 6*(3), 210-224.

Hartmann, P., & Apaolaza-Ibanez, V. (2012). Consumer attitude and purchase intention toward green energy brands: The roles of psychological benefits and environmental concern. *Journal of business Research, 65*(9), 1254-1263. https://doi.org/10.1016/j.jbusres.2011.11.001

Hussaini, I. U., & Majid, N. H. A. (2015). Energy development in Nigeria and the need for strategic energy efficiency practice scheme for the residential building sector. *Management of Environmental Quality: An International Journal. 26*(1), 21-36. https://doi.org/10.1108/MEQ-10-2013-0117

Huber, F., Herrmann, A., & Morgan, R. E. (2001). Gaining competitive advantage through customer value-oriented management. *Journal of Consumer Marketing, 18*(1), 41-53. https://doi.org/10.1108/07363760110365796

Krejcie, R. V and Morgan, D. W. (1970). Determining Sample Size for Research Activities Robert, *Educational and Psychological Measurement*, 310,607–610. https://doi.org/10.1177/001316447003000308

Kokli C.M.K. and I. Vida, (2009). A Strategic Household Purchase: Consumer House Buying Behavior. *Managing Global Transitions, 7*(1): 75-96.

Kumar, S. K., & Naik, L. (2016). How to Create an Online by using Google forms. International *Journal of Library and Information Science, 6*(3), 118–126.

Lambert, A., & Johnson, J. (2003). Special mortgage info–focus an property valuation. Mortgage Info, (5).

Mahesh, (2013). Consumers perceived value, attitude and Purchase intention of green

products. *Management Insight.9*(1), 36-43. National Property Information Centre (2021, 15 July). Property sales data-q1 2020. Retrieved from http://napic.jpph.gov.my/portal

Newton, J. D., Tsarenko, Y., Ferraro, C., & Sands, S. (2015). Environmental concern and environmental purchase intentions: The mediating role of learning strategy. *Journal of Business Research, 68*(9), 1974-1981. https://doi.org/10.1016/j.jbusres.2015.01.007

Numraktrakul, P., Ngarmyarn, A., & Panichpathom, S. (2012). Factors affecting green housing purchase. In 17thInternational Business Research Conference. Toronto, Canada

Nimri, R., Patiar, A., & Jin, X. (2020). The determinants of consumers' intention of purchasing green hotel accommodation: Extending the theory of planned behaviour. *Journal of Hospitality and Tourism Management*, 45, 535-543. https://doi.org/10.1016/j.jhtm.2020.10.013

Nguyen, T. L., Huynh, M. K., Ho, N. N., Le, T. G. B., & Doan, N. D. H. (2022). Factors Affecting of Environmental Consciousness on Green Purchase Intention: An Empirical Study of Generation Z in Vietnam. *The Journal of Asian Finance, Economics and Business*, *9*(1),333-343. https://doi.org/10.13106/jafeb.2022.vol9.no1.0333

Rahman, K. A., Leman, A. M., Yusof, M. Z. M., & Salleh, M. M. N. (2016). Consumer Awareness in Energy Efficiency for Residential Houses in Peninsular Malaysia. In MATEC Web of Conferences 78,01010).EDPSciences. http://dx.doi.org/10.1051/matecconf/20167801010

Sani, N. M. (2020). The Impact of the COVID-19 Pandemic in Pulau Pinang, In the Context of the Housing Industry. *Sumerianz Journal of Social Science, 3*(11),137-141.

Schniederjans, D. G., and Starkey, C. M. (2014). Intention and willingness to pay for green freight transportation: An empirical examination. Transportation Research Part D: *Transport and Environment*, 31, 116-125. https://doi.org/10.1016/j.trd.2014.05.024

Sekaran, U. (2003). *Research method for business: a skill building approach (4th ed.).* Singapore: John Wiley & Sons.

Sekaran, U. (2000). *Research Methods for Business: A Skill Building Approach, 3rd edn*, John Wiley and Sons Inc.

Schuler, A. & C. Adair, (2003). Demographics, the housing market and demand for building materials. *Forest Product Journal, 53*(5),8-17.

Shafiei, M. W. M., Samari, M., & Ghodrati, N. (2013). Strategic approach to green home development in Malaysia-the perspective of potential green home buyers. *Life Science Journal, 10*(1), 3213-3224.

Sidi, S. & N. Sharipah (2011). Quality affordable housing: A theoretical framework for planning and design of quality housing.*Journal of Techno- Social, 2*(1),1-10.

Syed Hussain, T. P. R., Ismail, H. & Md Noh, M.K. (2013). Kesedaran mengenai penjimatan tenaga elektrik dan kelestarian alam sekitar. Persidangan Kebangsaan Ekonomi Malaysia ke VIII (PERKEM VIII). 7–9 Jun 2013. Johor Bahru: Universiti Utara Malaysia. 977-990.

Tan, W.-L. and 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. https://doi.org/10.1108/IJHMA-11-2017-0097

Tajani, F., Morano, P., Salvo, F., & De Ruggiero, M. (2019). An evaluation model for an effective risk assessment in the rent to buy property market. *Property Management.* http://dx.doi.org/10.1108/PM-09-2019-0052

Uddin, B. (2021). Consumers' purchase behavior in Bangladesh: green products perspectives. *Journal of Sustainable Tourism and Entrepreneurship, 1*(4), 305-318. https//dx.doi.org/ 10.35912/joste. v1i4.475

Wu, C., Liang, S., Wu, W., & Hong, Y. (2021). Practicing Green Residence Business Model Based on TPB Perspective. *Sustainability, 13*(13), 7379. https://doi.org/10.3390/su13137379

Yue, T., Liu, J., Long, R., Chen, H., Li, Q., Liu, H., & Gu, Y. (2021). Effects of perceived value on green consumption intention based on double-entry mental accounting: Taking energy-efficient appliance purchase as an example. *Environmental Science and Pollution Research*, *28*(6), 7236-7248. http://dx.doi.org/10.1007/s11356-020-11027-0

Zhang, X., Shen, L., & Wu, Y. (2011). Green strategy for gaining competitive advantage in housing development: a China study. *Journal of cleaner production, 19*(2-3), 157-167.

Wijayaningtyas, M., Handoko, F., & Hidayat, S. (2019). The millennials' perceived behavioral control on an eco-friendly house purchase intention. *In Journal of Physics: Conference Series.* 1375, 1, 012060). IOP Publishing. http://dx.doi.org/10.1088/1742-6596/1375/1/012060

Wijekoon, R., & Sabri, M. F. (2021). Determinants that influence green product purchase intention and behavior: A literature review and guiding framework. *Sustainability*, *13*(11),6219. https://doi.org/10.3390/su13116219

Wicker, P., & Becken, S. (2013). Conscientious vs. ambivalent consumers: Do concerns about energy availability and climate change influence consumer behaviour?.*Ecological Economics*, 88, 41-48.

Zhang, G., Zhang, Y., Tian, W., Li, H., Guo, P., & Ye, F. (2021). Bridging the intention–behavior gap: Effect of altruistic motives on developers' action towards green redevelopment of industrial brownfields. *Sustainability, 13*(2), 977. https://doi.org/10.3390/su13020977

Zheng, G. W., Siddik, A. B., Masukujjaman, M., Alam, S. S., & Akter, A. (2021). Perceived Environmental Responsibilities and Green Buying Behavior: The Mediating Effect of Attitude. *Sustainability, 13*(1), 35. http://dx.doi.org/10.3390/su13010035

Zhao, S., & Chen, L. (2021). Exploring residents' purchase intention of green housings in China: an extended perspective of perceived value. *International Journal of Environmental Research and Public Health*, *18*(8), 4074. https://doi.org/10.3390/ijerph18084074