

A MODEL OF GREEN RESIDENTIAL BUILDINGS AMONG HOMEBUYERS: A CASE STUDY OF RESIDENTIAL BUILDING

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Abstract

Green housing (GH) is considered a dominant approach to achieve sustainable urbanisation in both developed and developing nations such as Malaysia. However, the supply of green-certified residential buildings in Malaysia remains limited than conventional housing. This is exemplified by the inexistence of GH projects within the largest state in Malaysia, namely Sarawak. All these circumstances motivate the present research to explore the implementation of a model of green residential buildings among homebuyers in Sarawak. A questionnaire survey was used to collect data from 200 respondents, and the Statistical Package for the Social Sciences (SPSS) software was employed for data analysis purposes. Overall, homebuyers' value perception and trustworthiness had the most significant influence on their purchase intention. The Model of Green Residential Buildings offers valuable insights into potential homebuyers' awareness and readiness to embrace the green concept for their future homes. Additionally, it assists developers, the government, and policymakers in understanding homebuyers' intentions and expectations regarding green housing (GH), enabling them to formulate effective development and marketing strategies to drive the expansion of GH projects in Sarawak.

Keywords: Green housing, Homebuyers, Purchase intention, Residential buildings, Sarawak.

1. Introduction

The sustainable development of green buildings (GBs) in Malaysia is no longer a new journey but rather an emerging phase whereby 696 projects have been green-certified by the Green Building Index (GBI) as of 30th June 2024. Most of the GBI projects were Non-Residential New Construction (NRNC) followed by Residential New Construction (RNC) with a total of 353 projects and 240 projects, respectively. The remaining GBI projects were for Non-Residential Existing Building (37 buildings), Industrial New Construction (36 buildings), Industrial Existing Building (4 buildings), Interior (11 buildings), and Township (15 buildings).

The development of green residential properties is mostly focused on Peninsular Malaysia, primarily Kuala Lumpur and Selangor. Likewise, the development of GBI residential project is yet to be initiated in Sarawak [1]. This is agreed by Zainordin et al. [2] and Zaini et al. [3] who reported that the development of GBs in Sarawak is relatively slow compared to peninsular areas due to its high up-front cost. Mazli and Fauzi [4] further mentioned that although green residential buildings (GRBs) are an increasing trend in Malaysia, the supply remains imbalanced across states especially in the main cities.

The statement aligns with the research by Wei et al. [5] which emphasised that the level of awareness will directly affect the adoption of GBs in the construction industry. For instance, if the public shows no concern and awareness towards the importance of green concept implementation, the demand will decrease and hence prompt a low supply from developers.

As propounded by Andelin et al. [6], this scenario will lead to an endless circle of blame whereby property investors might perceive that even if they intend to invest in sustainable buildings, tenants would not be interested in renting them. In contrary, tenants might believe that there is a limited supply of sustainable buildings available even if they have the intention to live in one. All these scenarios have set this research to discover the main criteria of building design concept and sustainability, materials innovations and construction, and influence of building design on occupants which will enhance the awareness level of homebuyers towards the benefits of GRBs.

2. Literature Review

2.1. Concept of green building design and sustainability

Green building minimizes carbon footprints by enhancing natural airflow and using renewable energy sources like solar power [7]. This involves converting existing buildings into green buildings and optimizing airflow. Computational Fluid Dynamics (CFD) is employed to improve building designs for better airflow and reduced cooling loads, making construction more efficient and cost-effective. The addition of an extra column of windows was found to enhance natural airflow. The total electric energy load has been calculated, and the required number of solar panels to meet this demand has been recommended [7].

Green building offers numerous benefits, including cost-effectiveness, availability of materials, energy efficiency, cost and waste reduction, economic improvement for communities, promotion of cultural heritage, environmental adaptability, eco-friendliness, enhanced social well-being, and reduced carbon emissions [3].

2.2. Materials innovations and construction

Due to the current concerns about sustainable and non-renewable energy sources, energy conservation has become a global priority. Buildings account for approximately 40% of the world's total energy consumption. To reduce energy usage in buildings, construction materials should incorporate energy-efficient principles, such as thermal insulation for exterior walls. However, previous research has mainly focused on the effects of insulation on external walls with a long-time lag and minimal decrement factor. In Cyprus, where hemp can be cultivated, it is more cost-effective than other building materials, even without fertilizing the agricultural lands. Producing Hempcrete is a simple and affordable process, making hemp a cheaper alternative to other load-bearing materials [8].

A study conducted in Northern Cyprus by Emadi [9] demonstrated that using thermal insulation on external walls can save up to 74% of energy. Similarly, hemp has been proven to be an excellent insulator, capable of saving over 74% of the energy used in buildings. By comparing energy savings with and without insulation, it is evident that 48% of energy can be saved using hemp, which is more cost-effective than imported insulation materials. This translates to nearly half the cost savings on electricity and energy. Additionally, hemp offers health benefits by absorbing CO₂ and being anti-pesticidal, thus reducing health costs. Overall, using hemp as a sustainable building material in Cyprus has significant advantages, including lower initial costs and long-term savings on energy expenses [8].

2.3. Influence of building design on occupants

Effective ventilation and airflow management are essential for ensuring thermal comfort and air quality, which greatly affect occupants' well-being. Recently, various technological solutions have been explored and developed to reduce high energy consumption in buildings through both passive and active techniques. For instance, a Trombe wall can efficiently absorb solar heat for room heating, leading to energy savings during the heating season [10]. However, due to its limited control capabilities, it can cause unwanted heat accumulation during the cooling season [11]. Additionally, Salihi et al. [12] have utilized phase change materials (PCM) to offer a practical solution for reducing energy demand and managing thermal comfort in buildings. Researchers have discovered that PCM-integrated walls enhance indoor comfort while reducing cooling and heating loads and temperature fluctuations. In terms of energy efficiency and load shifting during the summer, a triple-layer system with mechanical ventilation has shown the best performance [12].

2.4. Urban planning and the role of green buildings

Modern civilizations face significant challenges due to urbanization and the concentration of populations in major metropolitan areas. Economic growth drives urban expansion, resulting in the development of businesses, homes, highways, and recreational centres. This urban sprawl leads to the loss of natural vegetation, wildlife habitats, and agricultural land, with residential and commercial construction rapidly replacing undeveloped areas. Coastal regions, home to nearly 60% of the world's population, experience the highest levels of human impact on the landscape [13].

Urban green spaces are crucial to urban ecosystems, greatly contributing to ecological stability and human well-being [14]. They enhance environmental sustainability and promote physical and mental health by providing opportunities for recreation, leisure, and physical exercise, fostering a healthier urban lifestyle. These spaces allow urban residents to connect with nature, offering tranquillity and natural beauty amidst densely populated areas. This connection has been shown to reduce stress, improve mental health, and enhance overall quality of life. Urban green spaces, defined as open areas in cities primarily covered by vegetation, can be public or private [15]. They include parks, community gardens, nature reserves, sports courts, and playgrounds. In this research, the usability of urban green spaces refers to the ease with which residents can access these areas from their homes [16].

2.5. Green building residential and homebuyers' purchase intention

Past research stated that the demand for GRBs in Malaysia is very low as most homebuyers feel contemptuous to pay 30% higher cost than conventional houses; however, the situation is only applicable in peninsular areas [2]. This suggests that financial constraint is one of the key factors leading to the issue of low GRB demand. Conversely, the marketing of GB properties, including GRBs, should adopt a comprehensive strategy that focuses on factors and preferences among investor-owned and purchasers to increase the demand for GBs. Nevertheless, the increasing number of overhanging properties in Malaysia is caused by the misalignment between pricing strategy and buyer expectations. This highlights the crucial need to comprehend factors that have a significant impact on the purchase intention of potential homebuyers [17].

The above arguments thus motivate the present research to explore the perception of homebuyers in Sarawak regarding the key factors that influence their intention to purchase GRBs in the future. Numerous studies have looked on the determinants that can influence the purchase. For instance, GH research in China primarily focuses on developing a comprehensive research model that incorporates the homebuyers' perspectives and personal traits to determine the factors influencing their perceived value toward GH purchasing [18].

Meanwhile, studies conducted in Bangladesh mainly comprised a research model focusing on the determinants that can affect homebuyers' behavioural intention and green purchase behaviour to buy GH [19]. In Malaysia, the research model which establishes the relationship between psychological factors and GH purchase intention has been developed but is merely focused on peninsular areas, such as Penang, Selangor, and Johor [20]. The focus of previous GH research in Sarawak is still in the early phase and revolves around aspects such as creating awareness and understanding the barriers to the adoption of the GB concept in residential properties [2]. Thus, no specific model exists as a source of reference for GRBs in Sarawak because the implementation of the GB concept remains in the infancy stage. Therefore, this paper aims to fill the research gaps by establishing a GRB model that incorporates the awareness level of local homebuyers towards the benefits of GRBs and the key factors influencing the purchase intention of GRBs among homebuyers.

2.6. Theoretical and conceptual framework

This section covers the theoretical framework and model of GRBs from vast literature. The theoretical framework established by Rashid and Shaharudin [21] as

shown in Fig. 1 was adopted from the stakeholder theory. According to the researchers, the stakeholder theory acts as a reasonable foundation in terms of the justification and rationalisation of the homebuyer’s motivational factor of purchasing GRBs. Moreover, the perceptions of stakeholders are vital for making an effective business decision. According to the theoretical framework in Fig. 1, the three stakeholders include homebuyers, developers, and government agencies. The three variables which are homebuyers’ environmental attitude, developers’ credibility and government’s perceived role were expected to positively influence the purchase intention of the GRBs.

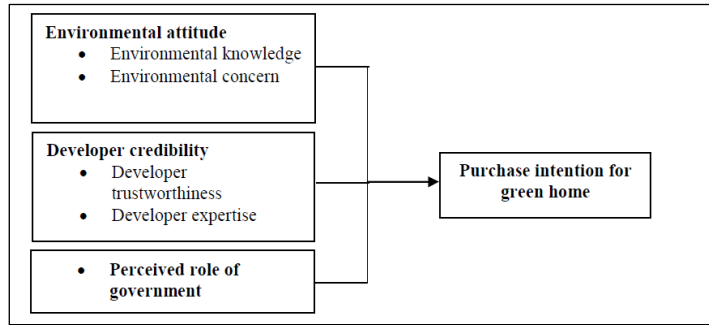


Fig. 1. Theoretical framework of the intention for purchasing green home [21].

Based on the theoretical model established by Tan and Goh [20] as shown in Fig. 2 the psychological factors such as the homebuyers’ attitude towards purchasing GRBs, perceived moral obligation, environmental concern and perceived self-identity are vital in enhancing the predictive force of Theory of Planned Behaviour (TPB) model.

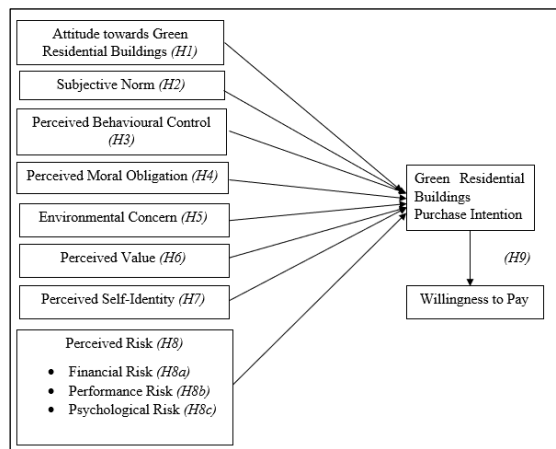


Fig. 2. Theoretical model of the GRBs purchase intention [20].

The relationship between the independent variables and the dependent variable was modelled using a conceptual framework. Figure 3 illustrates this conceptual model, which consists of two key constructs: level of awareness and key factors (independent variables), as well as GRB purchase intention (dependent variable).

In summary, the independent variables had a significant impact on the dependent variable. Therefore, the findings from these relationships will serve as a valuable guideline for developers, government, and policymakers in formulating the future development marketing plan of GRBs in Sarawak.

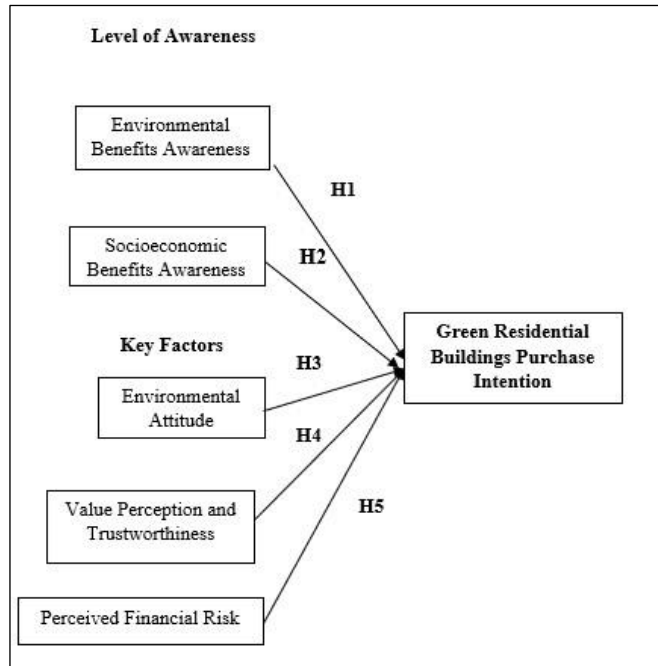


Fig. 3. Conceptual model of this research [21, 20].

3. Methodology

The research employed a quantitative approach using a questionnaire survey to effectively achieve its aims and objectives. The questionnaire was designed with a seven-point Likert scale and consisted of three sections. A sample size of 200 respondents was adopted from previous research conducted by Zainordin et al. [2] on homebuyers' perceptions of GRBs. Prior to distribution, the questionnaire underwent multiple rounds of review and revision.

The first section focused on respondents' demographic information, including five questions related to living division, age, education level, job category, and household monthly income. The second section aimed to achieve the first research objective: assessing respondents' awareness of the benefits of GRBs. This section contained 17 questions covering economic, social, and environmental benefits. The third section addressed the second research objective: identifying key factors influencing respondents' GRB purchase decisions. It comprised 20 questions, along with an additional two questions related to the dependent variable. The analysis started with exploratory factor analysis (EFA), which grouped the independent variables into smaller sets of components. As indicated in Table 1, the study focused on 2 latent constructs and 5 components, evaluated through 37 items.

These components were socioeconomic benefits awareness (10 underlying items), environmental benefits awareness (7 underlying items), environmental

attitude (10 underlying items), value perception and trustworthiness (8 underlying items), and perceived financial risk (2 underlying items). Next, reliability test was conducted and the results denoted that all variables were reliable and valid with Cronbach’s Alpha values range between .965 and .980. Finally, the normality test showed that the data was normally distributed, thus allowing the adoption of parametric tests for hypothesis testing, which is Pearson’s correlation analysis and multiple linear regression analysis. The results from Pearson’s correlation analysis indicated that all variables were significant at 0.01 (2-tailed). Multiple Linear Regression Analysis indicated that an R-square value of more than 0.75 signified strong correlation between the independent and dependent variables. This research obtained an R-square value of .771, thus implying that the model fit well with the data.

Table 1. Indicators and factor loadings.

Indicators	Level of Awareness (Independent Variables)	Factor Loading
Component 1: Environmental Benefits		
EEC	I am aware that GRBs contribute to efficient energy consumption.	0.872
REI	I am aware that GRBs contribute to the reduction of environmental issues.	0.861
RCF	I am aware that GRBs contribute to the reduction of carbon footprint.	0.858
EMR	I am aware that GRBs contribute to efficient material and natural resources consumption.	0.858
EWC	I am aware that GRBs contribute to efficient water consumption.	0.835
RW	I am aware that GRBs contribute to the reduction of waste.	0.833
Component 2: Socioeconomic Benefits		
IQL	I am aware that living in GRBs can improve occupants' quality of living.	0.858
EOC	I am aware that living in GRBs can enhance occupants' comfort.	0.824
EOH	I am aware that living in GRBs can enhance occupants' health.	0.809
BIE	I am aware that GRBs are constructed with better indoor environmental quality.	0.808
HAQ	I am aware that GRBs have high aesthetic qualities.	0.758
REE	I am aware that GRBs contribute to the reduction of household expenditures via electricity charges.	0.720
OLE	I am aware that GRBs contribute to the optimisation of life-cycle economic performance.	0.715
REW	I am aware that GRBs contribute to the reduction of household expenditures via water charges.	0.690
VP	I am aware that GRBs contribute to the value of the property.	0.680
RMC	I am aware that GRBs contribute to the reduction of maintenance costs.	0.680
SSP	I am aware that GRBs contribute to sustainable site planning and management.	0.785
Component 3: Environmental Attitude		
CAI	I suppose that I am an individual who is very concerned about environmental issues.	0.894
EEF	I suppose that I will engage myself with environmentally friendly practices from time to time.	0.890
IEA	I suppose that involving in environmental activities is one of the important parts of my life.	0.869

CWI	I am concerned regarding the worsening issue of our country's environmental quality.	0.794
PEP	I am passionate about issues related to environmental protection in our country.	0.787
CLR	I think that everyone should contribute towards the conservation of our limited natural resources.	0.783
TWI	I always think about ways to improve our country's environmental condition.	0.782
CNS	I think that everyone has the responsibility to cherish our natural resources.	0.776
PFI	I think I will purchase GRBs if there is financial incentive provided by the government.	0.682
PGA	I think I will purchase GRBs if there is affordable green housing offered by the government.	0.678
Component 4: Value Perception and Trustworthiness		
PEB	I suppose I will purchase GRBs as it brings more environmental benefits compared to conventional residential building.	0.830
NNE	I believe that GRBs are sensible as these buildings may not contribute negative effects towards the environment.	0.823
BSL	I believe that GRBs are beneficial as these buildings have sustainable living features.	0.822
PEF	I suppose I will purchase GRBs as it is environmentally friendly.	0.821
EPE	I suppose the environmental performance of GRBs will fulfil my expectations.	0.820
VEF	I believe that GRBs are valuable as these buildings adopt environmentally friendly procedures throughout the construction process.	0.796
PTD	I think I will purchase GRBs if it is constructed by a trustworthy developer.	0.722
PDE	I think I will purchase GRBs if it is constructed by a developer who is an expert in the construction of GRBs.	0.721
Component 5: Perceived Financial Risk		
NWI	I would feel that it is not worth to invest in GRBs.	0.995
PNW	I think that my purchase of GRBs would not be a wise way in spending money.	0.925
Purchase Intention (Dependent Variable)		
WPG	I will purchase a GRB instead of a conventional residential building in the future.	-
PPG	I plan to purchase a GRB instead of a conventional building residential building in the future	-

The following five (5) hypotheses were tested to develop the model:

- Hypothesis 1: There is a significant positive relationship between homebuyers' environmental benefits awareness with their GRB purchase intention.
- Hypothesis 2: There is a significant positive relationship between homebuyers' socioeconomic benefits awareness with their GRB purchase intention.
- Hypothesis 3: There is a significant positive relationship between homebuyers' environmental attitude with their GRB purchase intention.
- Hypothesis 4: There is a significant positive relationship between homebuyers' value perception and trustworthiness with their GRB purchase intention.
- Hypothesis 5: There is a significant negative relationship between homebuyers' perceived financial risk with their GRB purchase intention.

3.1. Hypothesis testing, results, and discussion

Table 2 summarises the relationships between the independent variables for level of awareness (environmental benefits awareness and socioeconomic benefits awareness) and key factors (environmental attitude, value perception and trustworthiness, and perceived financial risk) with the dependent variable (purchase intention).

Hypothesis 1: There is a significant positive relationship between homebuyers' environmental benefits awareness with their GRB purchase intention.

The results in Table 2 shows an insignificant relationship between homebuyers' environmental benefits awareness with their GRB purchase intention ($\beta = -.141, p = .064 > .050$). Thus, Hypothesis 1 was rejected. Such a finding contradicts past research which reported that homebuyers' knowledge and awareness about the benefits of GBs, including environmental benefits, possess significant impact on their purchase intention [22]. According to Yang and Zhang [23], homebuyers' trust towards GRBs is affected by their level of knowledge and awareness towards its benefits, including environmental benefits. Sang et al. [24] stated that when homebuyers acknowledge the positive impacts of GRBs on the environment and resources, they are more likely to choose them out of a sense of ethical responsibility towards environmental protection. Masukujjaman et al. [25] further posit that Malaysian millennials' intention to purchase GRBs instead of conventional housing will increase when they recognise its valuable environmental benefits [26]. Therefore, it can be justified that homebuyers in Sarawak do not fully acknowledge the environmental benefits of GRBs and hence perceive these benefits as less appealing compared to other benefits when deciding whether to purchase GRBs.

Hypothesis 2: There is a significant positive relationship between homebuyers' socioeconomic benefits awareness with their GRB purchase intention.

This research found a significant and positive relationship between homebuyers' socioeconomic benefits awareness with their GRB purchase intention ($\beta = .198, p = .003 < .050$). It denotes that increasing homebuyers' socioeconomic benefits awareness will increase their intention to purchase GRBs. Thus, Hypothesis 2 was supported.

Such finding indicates that increasing homebuyers' socioeconomic benefits awareness will lead to higher GRB purchase intention. This is in line with the study by Shafiei et al. [27] which found that the majority of homebuyers in Malaysia choose indoor environment quality as the most appealing green feature of GHs. It demonstrates that potential GH homebuyers highly value indoor air quality as a high-quality indoor environment will result in improved performance and health conditions. Moreover, many homebuyers are prone to equip their homes with energy-efficient appliances in order to lower their utility bills and significantly reduce their household expenses [27].

According to Chuweni et al. [28], depending on the overall floor space, the green technology of the air conditioning system could save energy usage by up to 15%. These benefits of lowering operating costs and energy usage lead to the increasing demand for sustainable buildings. It justifies that Sarawak homebuyers' purchase intention is more likely to be affected by their concern over socioeconomic benefits, such as reduction of utility charges, optimisation of life-cycle economic performance, and better indoor environmental quality. This is supported by past findings which indicate that homebuyers prioritise comfort, health, and financial savings above other GH benefits [18].

Hypothesis 3: There is a significant positive relationship between homebuyers' environmental attitude with their GRB purchase intention.

The results in Table 2 revealed an insignificant relationship between homebuyers' environmental attitude with their GRB purchase intention ($\beta = -.108$, $p = .128 > .050$). Thus, Hypothesis 3 was rejected.

The finding contradicts past research which reported that the environmental attitude of Malaysian homebuyers positively and significantly affects their GRB purchase intention [21]. It is also in contrast with Zahan et al. [29] who found that Bangladeshi homebuyers' attitude towards purchasing GRBs positively and significantly impacts their purchase intention. A possible reason for such finding is that homebuyers may have the propensity to feel that they are not required to address environmental and energy issues despite being conscious about environmental problems. This aligns with past research where having environmentally conscious attitudes does not always result in energy conservation among households in Korea [30]. Furthermore, Young et al. [31] stated that consumers' concern towards the environment may not necessarily transform into actual green purchasing behaviour. Li et al. [32] also argued that consumers' attitudes of favouring green products do not necessarily indicate their actual purchase intention.

Hypothesis 4: There is a significant positive relationship between homebuyers' value perception and trustworthiness with their GRB purchase intention.

The results also showed a significant and positive relationship between homebuyers' socioeconomic benefits awareness with their GRB purchase intention ($\beta = .891$, $p = .000 < .050$). It demonstrates that value perception and trustworthiness had the most significant influence on purchase intention due to having the highest standardised coefficient. According to Stephanie [33], a larger absolute value of the standardised beta coefficient suggests a more influential effect. This indicates that increasing homebuyers' value perception and trustworthiness will highly increase their GRB purchase intention. Thus, Hypothesis 4 was supported.

Such finding is supported by past research which found that the perceived value among homebuyers in Penang, Selangor, and Johor positively impacts their GRB purchase intention [20]. It aligns with the study by Zhao and Chen [18] whereby the purchase intention of homebuyers in China is significantly and positively influenced by their perception of the overall value of GRBs. The finding of this research is also in accordance with past evidence proving that homebuyers' trustworthiness positively and significantly affects their intention of purchasing GRBs as potential homebuyers will feel more confident if the developer has an excellent track record of managing construction projects [21]. Having a trustworthy developer with solid experience will also attract homebuyers' attention. As denoted by Nursal et al. [34], the majority of homebuyers emphasise on developers' reputations when making GRB purchase intention due to numerous problems caused by unreliable developers. It leads to a conclusion that homebuyers in Sarawak are concerned about the value of GRBs and the developers' trustworthiness whereby they will undoubtedly go through the process of weighing and thinking before making a final decision of purchasing, especially given the high price of GHs [18].

Hypothesis 5: There is a significant negative relationship between homebuyers' perceived financial risk with their GRB purchase intention.

This research found a significant and negative relationship between homebuyers' perceived financial risk with their GRB purchase intention ($\beta = -.104$, $p = .004 < .050$). It indicates that decreasing homebuyers' perceived financial risk will increase their GRB purchase intention. Thus, Hypothesis 5 was supported.

The finding is in line with past research whereby homebuyers' perceptions encompass factors such as motivation (positive) and hindrance (negative). It implies that homebuyers' trade-offs between various perceived benefits and perceived risk should be properly considered when promoting GHs. Perceived risk, primarily financial risk associated with high purchase, operating, and maintenance expenditures, is among the significant factors that will influence the GH purchase intention among homebuyers [18].

The finding of this research is also in accordance with Tan and Goh [20] who found that perceived financial risk is one of the important factors that can negatively influence homebuyers' decision to purchase GRBs in Malaysia. Thus, it can be assumed that homebuyers in Sarawak are concerned about perceived financial risk when making the intention to purchase GRBs. This is further supported by past research revealing that homebuyers in Sarawak concur that they are under financial pressure to purchase GRBs upon believing that it will cost them relatively more than conventional housing [2].

A study of a medium-sized city in Switzerland, based on research by Schaffner et al. [35], supports the proposition that behavioural intentions to move into energy-efficient homes are influenced by different social-psychological factors depending on the phase of behaviour change an individual is in (predecision, preaction, or action). While social norms and emotions tend to influence intentions in the first two phases, attitudes and personal norms only have an effect in the second phase. The most important factor for all phases is perceived behaviour control. The conclusions drawn from this study will contribute to an increased understanding of the effectiveness of interventions, marketing strategies and communication campaigns, and thus support public authorities, policymakers and marketers in the real-estate sector, promoting energy-efficient buildings.

Table 2. Summary of hypothesis testing.

No.	Hypothesis Tested	Standardised Coefficient (β)	Significance Level ($p < .050$)	Result
Level of Awareness				
1	H1: There is a significant positive relationship between homebuyers' environmental benefits awareness with their GRB purchase intention.	$\beta = -.141$	$p = .064$	Unsupported
2	H2: There is a significant positive relationship between homebuyers' socioeconomic benefits awareness with their GRB purchase intention.	$\beta = .198$	$p = .003$	Supported
Key Factors				
3	H3: There is a significant positive relationship between homebuyers' environmental	$\beta = -.108$	$p = .128$	Unsupported

	attitude with their GRB purchase intention.			
4	H4: There is a significant positive relationship between homebuyers' value perception and trustworthiness with their GRB purchase intention.	$\beta = .891$	$p = .000$	Supported
5	H5: There is a significant negative relationship between homebuyers' perceived financial risk with their GRB purchase intention.	$\beta = -.104$	$p = .004$	Supported

4. Establishment of the model of green residential buildings among homebuyers in Sarawak

The GRBs model was developed based on the hypothesis testing results of the five independent variables (Environmental Benefits Awareness, Socioeconomic Benefits Awareness, Socioeconomic Benefits Awareness, Environmental Attitude, Value Perception and Trustworthiness, and Perceived Financial Risk) with the dependent variable (Purchase Intention). Figure 4 shows the GRBs model after the deletion of non-significant components.

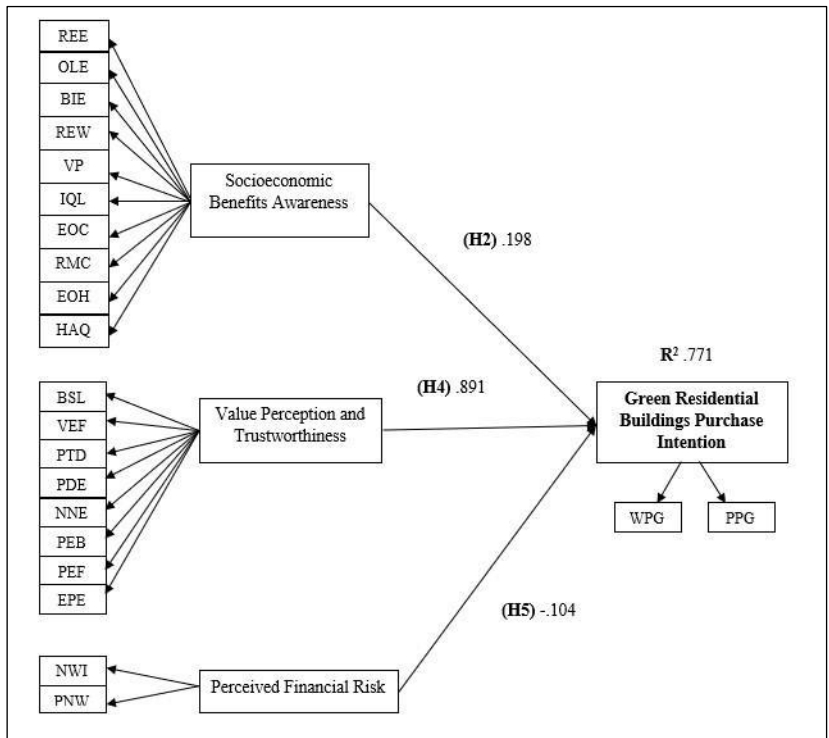


Fig. 4. GRBs Model of Homebuyers (after the Delegation of Non-significant Components).

The results indicated that there were significant and positive relationships between socioeconomic benefits awareness (H2: $\beta = .198$, $p = .003 < .050$) and value perception and trustworthiness (H4: $\beta = .891$, $p = .000 < .050$) with GRB

purchase intention. Moreover, perceived financial risk (H5: $\beta = -.104$, $p = .004 < .050$) negatively impacted GRB purchase intention among homebuyers. In contrast, there was no significant relationship between environmental benefits awareness (H1: $\beta = -.141$, $p = .064 > .050$) and environmental attitudes (H3: $\beta = -.108$, $p = .128 > .050$) with GRB purchase intention.

Thus, it can be justified that majority of the homebuyers' purchase intention are more likely to be affected by their concern on the socioeconomic benefits such as reduction of utility charges, optimization of life-cycle economic performance and better indoor environmental quality. In addition, the homebuyers are also concerned about the value of the GRBs and trustworthiness of the developers whereby they will undoubtedly go through a process of weighing and thinking before making a final decision of purchasing due to the higher price of GRBs. Moreover, perceived financial risk negatively impacts the GRBs purchase intention among the homebuyers.

Thus, it can be assumed that the homebuyers are concerned about the perceived financial risk when making the purchase intention of GRBs because they believe GRBs will cost them somewhat more than conventional housings. In contrast, there is no significant relationship between environmental benefits awareness and environmental attitudes with the GRBs purchase intention. It can be justified that the homebuyers do not fully acknowledge the environmental benefits of GRBs and hence perceive these benefits are less appealing compared to other benefits when deciding whether to purchase GRBs. At the same time, they might think that they are not required to address environmental and energy issues even though they are conscious about the environmental problems. Overall, the homebuyers' value perception and trustworthiness had the most significant influence on their purchase intention. Thus, it can be summarized that three hypotheses were supported out of five hypotheses.

5. Conclusion

This paper contributes to the body of knowledge by establishing a Green Residential Buildings (GRBs) model that examines Sarawak homebuyers' awareness of the benefits of GRBs and the key factors influencing their purchase intentions. The model serves as a practical guideline for the government, developers, and policymakers to effectively incentivize green housing initiatives, ultimately boosting the number of GH projects in Sarawak. Additionally, it aims to enhance homebuyers' awareness and expectations regarding future development and marketing plans for green residential properties. The proposed model not only supports marketers and practitioners in developing and promoting GRBs more effectively but also makes a significant contribution to environmental preservation.

However, the findings might not provide insight into the specific contributions of these underlying items to the overall construct of the independent variables based on the GRBs model. Future researchers may delve further by examining the relationship between homebuyers' demographic profile and their GRB purchase intention and investigate other determinants that may affect the GRB purchase intention among homebuyers.

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