

What are the Key Factors Shaping Purchase Decisions? A Review of Preferred Green Features Among Potential Homebuyers

Ardini Firas Azizul¹, Nor Nazihah Chuweni^{1*}

¹ Department of Built Environment Studies and Technology
College of Built Environment, Universiti Teknologi MARA, Perak Branch
Seri Iskandar Campus, Perak, 32610, Malaysia

*Corresponding Author: norna692@uitm.edu.my
DOI: <https://doi.org/10.30880/rmtb.2024.05.02.071>

Article Info

Received: 30 September 2024
Accepted: 01 November 2024
Available online: 01 December 2024

Keywords

Green residential, green real estate,
green building, sustainable building,
and homebuyer

Abstract

Residential properties are crucial for meeting basic human needs, enhancing stability, and improving quality of life. Since the 1960s, there has been a growing interest in investing in environmentally friendly real estate to reduce greenhouse gas emissions and combat global warming. Extensive green property elements have been incorporated globally, with home purchasers' preferences varying based on their culture, lifestyle, and personal preferences. This study aims to create a comprehensive review and provide framework for potential homeowners particularly the factors influencing the decision to purchase green residential properties in Kuala Lumpur. To achieve this, both empirical and conceptual papers were reviewed. A total of 3,525 articles were discovered in several e-databases using the keywords: 'green residential,' 'green real estate,' 'green building,' 'sustainable building,' and 'homebuyer.' Following the filtration process, 19 full-text papers relevant to the subject were chosen for review. The analysis identified five criteria that drive property buyers or investor-owned individuals to invest in or purchase green residential property namely financial, locations, design, neighbourhood and policies in green buildings could influence customers' decisions to purchase them. Property developers must comprehend the aspects that may impact consumers' purchasing intentions to maintain a competitive edge in the current market. Understanding sustainability aspects is crucial for developers, legislators, and real estate professionals to fulfil the changing demands and tastes of consumers as sustainability becomes increasingly important in the housing market.

1. Introduction

Residential properties play a fundamental role in fulfilling basic human need, offering not only a place to live but also a feeling of safety and connection. In recent decades, there has been a notable change in acknowledging the crucial importance of real estate in advancing sustainability and reducing environmental deterioration. The shift gained traction during the 1960s, driven by increasing worries regarding the detrimental impact of greenhouse gas emissions on the Earth's climate. Subsequently, a growing cohort of individuals with vested interests, such as developers, politicians, and homeowners,

have been actively pursuing methods to incorporate environmentally sustainable practices and technologies into constructed spaces. The shift towards ecologically sustainable real estate has been propelled by a collective dedication to diminishing carbon footprints, preserving natural resources, and cultivating resilient communities.

The integration of abundant green features into residential homes has become a worldwide trend, demonstrating an increasing recognition of the interdependence between human actions and the natural surroundings. Energy-efficient designs, renewable energy systems, eco-friendly construction materials, and water-saving technology are green characteristics that provide concrete benefits for both the environment and the residents. Nevertheless, the implementation of environmentally friendly property features varies among different locations and civilizations. Homebuyers' tastes are influenced by a multitude of factors, such as cultural problems, the combined result of heat waves (HWs) and urban heat island (UHI) effects. The UHI phenomenon which indicates higher temperatures in cities than their surrounding rural/suburban areas is also a crucial problem (He, 2022). A preliminary study on the relationship between GBs and UHIs verified that temperature around GBs can be 0.35 Celsius lower than those around conventional buildings. Many cities are facing the urban overheating problem, the combined result of heat waves (HWs) and urban heat island (UHI) effects. The lasting temperature increase, during HW periods, exerts severe heat stresses on human bodies and thereby increases morbidity and mortality (He, 2022). Other than that, the construction industry is playing a significant role in the economy of every country because the growth of the construction industry may enhance a nation's economic performance, especially for developing countries (Dakhil, 2013). Although the building and construction industry generates social and economic benefits for the public, it also causes negative impacts on the environment (Shafii and Othman, 2007). This phenomenon will cause a great disaster to whether human, animal or the world. However, very few studies have been attempted to explore end-user behaviors towards green building developments. (Chau et al., 2010).

In Malaysia, the construction of green residential property is recently emerging. Among the few green residential properties are Avantas Residences in Kuala Lumpur, Tropez Residences in Johor Bahru and the Light Point in Pulau Pinang. These and many other green residential projects have proved that the green concept is growing and well accepted by the public. Based on the statistics provided by the Green Building Index (GBI) council, a total of 333 residential new construction projects in Malaysia have registered under GBI before 30 September 2020 (GBI, 2020). In line with the importance of dynamic and sustainable governance, Kuala Lumpur City Hall (DBKL) also placed emphasis on urban planning best practices such as low carbon emission, congestion-free, pedestrian-friendly and having adequate facilities. DBKL would double its city beautification and greening efforts in addition to safeguarding the environment. (Bernama, 2022). The increasing in urbanisation combined with a spatial planning policy of densification cause more people living in residential environments with less green resources (Maas et al., 2006). Also, the increasing demand for condominiums in urban areas has created environmental pollution issues (Masrom, Mohd, Abd Rahman, 2022). Nevertheless, compared to the traditional housing concept, the properties with GLC are more expensive. The current market indicates a rise in property overhangs because of the mismatch in pricing strategy which is not in line with consumers' expectations and buying behaviour (MOF, 2017).

This is why this research is so important. This research also focuses on the awareness of potential home buyers in order to provide an overview to developers in attracting potential buyers to purchase green home concepts. This research study aims to develop a multidimensional assessment framework or model for home buyers based on the elements and benefits of the green features concept that has been implemented in every green development project. Hence, property developers need to understand the factors that are likely to affect consumer's buying intention (BI) to stay ahead in the current competitive market. Therefore, this study aim to identify the factors determining the purchase decision of green features properties of home buyers in Kuala Lumpur. To achieve a gold rating of Malaysian's Green Building Index (GBI), the building must achieve points from 76 to 85. To achieve the gold rating of Green Real Estate (GreenRE), the building features and green design must achieve 85 – 90 points (Yong, 2022). This shows that green building in Kuala Lumpur is great considering their rating on the certification. Therefore, the conventions, lifestyle choices, and individual

preferences. The definition of an appealing environmentally friendly residence can vary greatly between different communities, emphasising the significance of customising sustainable solutions to fit local circumstances and sensitivities.

Essentially, the quest for eco-friendly real estate is a continuous process characterised by innovation, collaboration, and adaptation. Through the adoption of sustainable practices and technology, stakeholders have the ability to decrease their negative effects on the environment while simultaneously fostering the development of healthier and more resilient communities. This, in turn, improves the overall quality of life for both current and future generations. The participation of selected home buyers is critical to the completion of this investigation. As a result, these findings can provide an overview to developers as well as the homebuyers. Kriss (2014) stated that there are many different definitions of green building out there, it is generally accepted as the planning, design, construction, and operations of buildings with several central, foremost considerations: energy use, water use, indoor environmental quality, material selection and the building's effects on its site. The purchase decision is one's willingness to pay (WTP). WTP is the consumer's personal valuation of a particular item or service and includes a strong subjective evaluation component (Li, Long & Chen, 2018).

According to Li, Long & Chen (2018), energy shortage and environmental degradation have become the great global economic development challenges in the 21st century. The traditional construction industry urgently needs a green transformation and upgrading due to its high energy consumption and large pollution. Because of this, many cities are facing the urban overheating problem. The purpose of this study is to determine what factors influence the purchase of green residential properties in Kuala Lumpur.

1.1 Purchase Decision

Purchase decision has three phases which are problem recognition, seeking information and evaluation for the final decision (Fauzi, Johari, Chuweni et al., 2021). In research from Simpson E.M. & Bei L.T. (1995) find that consumers who perceived more purchase utility from the purchase were more likely to buy the product. As for instance, homebuyers tend to purchase green residential properties because it will give benefit to the environment (Kim et al., 2020 cited by Fauzi, Johari, Chuweni et al., 2021). (Fauzi, Johari, Chuweni et al., 2021). This indicates the concern that investors and property owners have for the environment's impact on sustainable development. Other than that, talking about purchase decision of properties, Fauzi, Johari, Chuweni et al. (2021) stated that before making a final decision, property investors will consider previous purchases of the property. This action will make property investors more confident about the decision to be made. Green residential homebuyers value the experience that they feel when they live in a green house, so they willingly invest and pay additional fee to own a green house. This shows that decisions can be affected by experiences (Chau et al., 2010).

1.2 Definition of green buildings

In the 1960s, Paul merged the words ecology and architecture into "Arology" and proposed the ecological architecture (green building) concept. The subsequent international conference Sustainable Building 2000 (GBC2000) was held in Maastricht, Netherlands, marking comprehensive development of the international green building movement. Therefore, green housing is a subset of green buildings, with all the general characteristics of green building, some additional attributes. Although there are several different terms for different areas or countries such as "Sustainable Building", "Eco-Friendly Building", "Green Building", "Energy Efficiency Building" or even "Net Zero Energy Building", the objective remains the same: to improve the efficiency performance of building functions and at the same time, able to conserve the environment (Mohd Hanapiah, Mohd Zaki, Abu Husain & et al., 2022).

Other than that, (Li, Long & Chen, 2018) green buildings are buildings that provide people with healthy and comfortable living spaces, fully utilizing natural resources while minimally affecting the environment. Zaini, Khairul Hisham, Abdul Aziz et al. (2021) explained that green building principles consist of optimal site potential. First, the site must be integrated with existing development or natural surroundings to minimize the negative impact during the development or retrofitting of the existing building. The second principle is about optimization of energy use, where the green building

must consume energy at a very minimum rate but still sufficient to provide power for building occupants' comfort. Building construction shall adhere to a few principles of environmental sustainability to be recognised as green building. These principles are fulfilling the needs of society, preservation of diversity, capacity to regenerate, reuse and recycle, and reducing the production of waste and using eco-friendly building materials. In order to prevent waste product and create an eco-friendly building, sustainable, resilient, safe, and livable environment, (Zaini et al., 2021) selection of materials for green building construction must implement strategies with steps such as efficient use of materials, use renewable energy and recycled resources and use materials with low environment impact (Green building (GB)).

2. Research Methodology

The preferred green features of potential home buyers in choosing to buy green residential properties over standard properties is examined in this study. The identification of the factors could assist the homebuyer in identifying their requirements for a green residential building. Additionally, homebuyers can implement their plans to buy their future home effectively by selecting the right criteria in terms of their health, social needs, affordability, and a variety of other factors. To achieve the research objective, both empirical and conceptual papers were reviewed (see Figure 1 for the research process). A total of 3,525 articles were discovered in several e-databases using the keywords: 'green residential,' 'green real estate,' 'green building,' 'sustainable building,' and 'homebuyer.' Following the filtration process, 19 full-text papers relevant to the subject were chosen for review. Based on these articles, five criteria have been identified as the main factors for the purchase decision namely financial, location, design, neighbourhood and policies. Table 1 illustrates the matrix table for green residential purchase decisions.

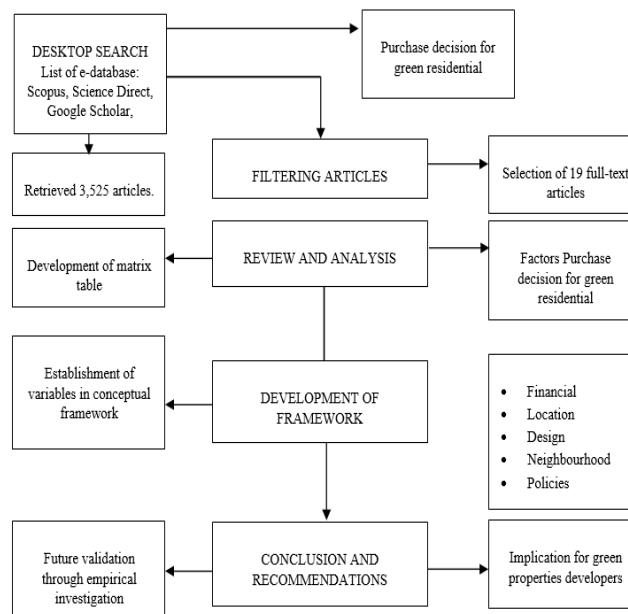


Fig. 1 Flowchart of review procedures

Table 1 Matrix of green residential purchase decision determinants

Authors	Lindén et al.	Wang et al.	Zhang et al.	Zhang et al.	Ding et al.	Zhao et al.	Masrom et al.	Chuweni et al.	Wu et al.	Frequency
Year of publication	2006	2015	2016	2018	2018	2020	2022	2022	2022	
Factors of purchase decision										
Financial						/	/	/	/	Σ4
Location			/					/		Σ2
Design				/	/		/		/	Σ4
Neighbourhood			/					/		Σ2
Policies	/	/	/		/					Σ4

3. Preferred Green Features Among Potential Homebuyers

Generally, people believe that living in a green environment is good for their health (Buijs and Volker, 1997). This is in line with Burger’s (1994) opinion which is people living in the rural areas are generally inclined to live a healthier life than people who are living in urban areas. While the promotion of green housing depends on the supply-side, the main driving force is from the demand-side, whether and how much urban households are willing to pay for green housing. If this willingness-to-pay (WTP) exceeds the incremental costs of building such green housing, developers will be incentivized to supply this green product in the market. In addition, based on the previous literature, there are five preferred green features among potential homebuyers (please see Figure 2).

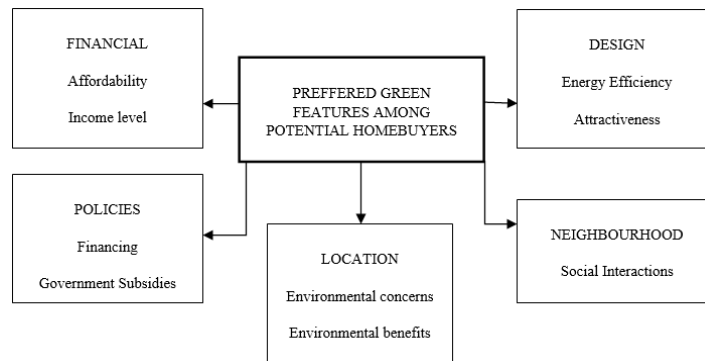


Fig. 2 Illustration of the main factors for purchase decisions in green housing

3.1.1 Financial

In fact, based on a conjoint survey conducted in Nanjing, Hu et al. (2014) find that in China only the rich are willing to pay a price premium for green apartments. Zheng et al. (2012 cited by Zhang, Sun, Liu et al., 2016) investigate homebuyers’ revealed preference for “green” housing based on the transaction prices and rents of residential complexes in Beijing between 2003 and 2008. According to Jayantha and Ming (2016), the demographic background of the housing buyers, including income level, age, and marital status could influence the decision on property purchase. It is found that the annual income level of the family determines the affordability of the buyers, which has a direct impact on the purchase intention when the price of a green house is higher than that of an ordinary house (Zhao and Chen, 2020). Therefore, predicting condominium prices with green buildings is becoming important for the developer as well as to the potential buyers so that they can acquire information on the condominium price trends (Masrom, Mohd, Abd Rahman, 2022). According to Wu (2022), householders will be more willing to buy a green house when the family has more housing assets. Similarly, householders are more willing to buy a green house when the price of housing is higher.

3.2 Location

Other than that, green residential developments were found not able to attract environmentally savvy homeowners (Chau et al., 2010). In Malaysia, the real estate market has reached a high level of maturity, where house buyers are becoming more selective and demanding. Besides prime location, green building elements such as attractive landscape, indoor air quality, non-toxic and sustainable materials, are regarded as higher preferences by the house owners. Zhang et al., (2016) believes that when consumers are making decisions, environmental factors play a significant role. As well as things that draw people to live in the green-certified residential building in Johor Bahru are its advantageous location and its superior environmental quality (Chuweni et al., 2022)

3.3 Design

According to Ding et al. (2018), the psychological factors include environmental value, personal norm, sense of responsibility, attitude, perceived behavioural control, subjective norms, intention, and habits are one of the factors determining the purchase decision. Egoistic and ecological values showed partial mediation between perceived benefits and willingness to pay for both framing contexts. Zhao and Chen (2021) found that perceived value is a crucial predictor of green housing purchase intention that factor used the structural equation model to systematically study the willingness of consumers to pay for green housing, and through questionnaire surveys, it was found that factors such as consumer economy, social status, consumer expectations, consumer perception, external stimuli, and other factors have significant impacts on willingness to pay. Homebuyers who wish to provide their parents with a better living environment may be drawn to this type of property, given that "green" developers emphasise living comfort and health advantages (Zhang et al., 2018). In addition to a desirable location, homeowners place a higher value on green construction features including a beautiful landscape, healthy interior air quality, and sustainable and non-toxic building materials (Masrom et al., 2022). When lockdowns happened, it assessed the three primary components of residential buildings which is environment, comfort, and health and safety. This implies that new green housing should incorporate cleanliness and well-being (Wu et al., 2022).

3.4 Neighbourhood

Zhang (2016) also have the same ideas which he said the willingness of consumers to pay for green buildings and analyzed factors, such as product feature stimulus, social stimulus, green advertising, and green certification, and found that the above factors have different effects on the willingness of consumers to pay and payment level. Chuweni et al., (2022) believes that the most important characteristic of a neighbourhood is privacy. A buyer's choice to acquire a home is influenced by a quiet and peaceful community. According to Jayantha and Man (2013 cited by Chuweni et al., 2022), two requirements that need to be taken into account in green building management practice are noise and interior concerns.

3.5 Policies

Lastly, policies are one of the most important external factors that affect the green consumption behaviour of residents, and the policy instruments include information policy, economic policy, technology policy, and administrative regulation (Lindén et al., 2006). Information policy mainly means information feedback. The economic policy mainly refers to "tax and subsidy" and "price." The technical policy mainly affects the maturity of technology, and administrative regulations refer to mandatory policies that have a direct effect on residents' green consumption behaviour (Ding et al., 2018). Economic policy, as an external incentive, has a positive effect on environmental-friendly behaviour and energy-saving behaviour (Belaid and Garcia, 2016). Wang et al. (2015) studied the green housing market from a demand side perspective and pointed out that consumers do not have a sufficient understanding of incremental costs, incremental benefits, and indirect incremental benefits, resulting in low purchase enthusiasm. Government economic incentives for green housing and the formulation of laws and regulations, evaluation standard, and release related to the concept of science popularization and propaganda can increase the perceived benefits of the green house, reduce the green housing's perception of the cost, increase the trust and purchasing power of the consumer, and real estate enterprises in the promotion (Wu, Zheng & Li, 2022). Numerous studies have found that

government incentives had a major impact on people's green consumption behaviours (Zhang et al., 2016).

4. Conclusions

Several criteria determine the classification of green feature properties, all of which play an important part in purchasers' purchases. The financial aspect includes pricing, household income, and interest rates. Location is also important, with crucial and desired places providing access to facilities and services, increasing the property's value. A well-designed house increases comfort and makes a good impression on residents and visitors. The neighbourhood also plays an important part in providing a healthy atmosphere; if community well-being is high, it will have an impact on overall quality of life. Lastly, policies factor also significant as it affects the property's price, buyers need to understand the concept in the policies such as incremental cost, incremental benefits, and indirect incremental benefit to be able increasing the purchase power of green properties. This study could help the developer in examining the information on potential homebuyers' awareness of green residential properties. Overall, this study is important for developers, policymakers, and potential homeowners as it provides valuable insights into the intricate relationship between several elements that influence the green real estate market. Stakeholders may make more educated decisions to encourage sustainable development and create a greener, healthier built environment by comprehending the different factors that affect green property classifications and purchase choices.

Acknowledgement

We are expressing our sincere gratitude to UiTM Perak for sponsorship of funding the conference fees. We also thank the reviewers for their valuable research and suggestions that have helped enhance the quality of our paper.

Conflict of Interest

The authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

The authors confirm sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

*The authors confirm contribution to the paper as follows: **study conception and design:** Ardini Firas Azizul, Nor Nazihah Chuweni; **data collection:** Ardini Firas Azizul, Nor Nazihah Chuweni; **analysis and interpretation of results:** Ardini Firas Azizul, Nor Nazihah Chuweni; **draft manuscript preparation:** Ardini Firas Azizul, Nor Nazihah Chuweni. All authors reviewed the results and approved the final version of the manuscript.*

References

- Ahmad Zaini, A., Khairul Hisham, N.K., Abdul Aziz, A.R. & Abd Aziz, N.N. (2022). Economic model of green building construction: a conceptual model. *Journal of Earth and Environmental Science*, 1022, 012008. <https://doi.org/10.1088/1755-1315/1022/1/012008>
- Alias, A., Sin, T. & Aziz, W. (2010). The green home concept acceptability and development problems. *Journal of Building Performance*, 1, 130-139.
- Bernamea (2022, February 1). *Golden jubilee: KL moving towards becoming sustainable city*. New Straits Time. Retrieved from <https://www.nst.com.my/news/nation/2022/02/767814/golden-jubilee-kl-moving-towards-becoming-sustainable-city>
- Chau, C.K., Tse, M.S. & Chung, K.Y. (2010). A choice experiment to estimate the effect of green experience on preferences and willingness-to-pay for green building attributes. *Journal of Building and Environment*, 45, 2553-2561.
- Chen, F.Y., Liang, J.H. & Mak, M.Y. (2022). Effects of green attributes on residential price in Taiwan. *Journal of International Real Estate Review*, 25(3), 307-331.
- Chuweni, N.N., Mohamed Saraf, M.H., Fauzi, N.S. & Che Kasim, A. (2022). Factors determining the purchase decision of green residential properties in Malaysia. *Journal of Malaysian Institute of Planners*, 20(2), 272-282.

- Goh, Z.T., Low, S.T., Choong, W.W. & Wee, S.C. (2021). Do green features increase housing value in Malaysia? *Journal of Housing Markets and Analysis*, Vol15(5), 1296-1312.
- He, B.J. (2022). Green building: a comprehensive solution to urban heat. *Journal of Energy & Buildings*, 271, 112306. <https://doi.org/10.1016/j.enbuild.2022.112306>
- Kriss, J., (2014, August 6). *The definition of green building*. Leadership in Energy and Environmental Design (LEED). Retrieved from <https://www.usgbc.org/articles/what-green-building>
- Li, Q., Long, R. & Chen, H. (2018). Differences and influencing factors for Chinese urban resident willingness to pay for green housings: evidence from five first-tier cities in China. *Journal of Applied Energy*, 229, 299-313. <https://doi.org/10.1016/j.apenergy.2018.07.118>
- Masrom, S., Mohd, T. & Abd Rahman, A.S. (2022). Green building factor in machine learning based condominium price prediction. *Journal of Artificial Intelligence (IJ-AI)*, 11(1), 291-299. <https://doi10.11591/ijai.v11.i1.pp291-299>
- Mohamad @ Masri, M.H., Nawawi, A.H. & Sipan, I. (2016). Review of building, locational, neighbourhood qualities affecting house prices in Malaysia. *Journal of Social and Behavioral Sciences*, 234, 452-460. <https://doi.org/10.1016/j.sbspro.2016.10.263>
- Mohd Hanapiah, N., Mohd Zaki, N.I., Abu Husain, M.K. & Mukhlas, N.A (2022). Green building in existing development: a review of current status, challenges, and implementation strategy. *Journal of Civil Engineering and Architecture*, 10(7), 3134-3146.
- World Population Review (n.d.) *Population of Cities in Malaysia 2023*. Retrieved from <https://worldpopulationreview.com/countries/cities/malaysia>
- Wu, Q., Zheng, Z. & Li, W. (2022). Can housing assets affect the Chinese residents' willingness to pay for green housing? *Journal of Environmental Psychology*, 12, 780235. <https://doi.org/10.3389/fpsyg.2021.782035>
- Zhang, L., Chen, L., Wu, Z., Zhang, S. & Song, H. (2018). Investigating young consumers' purchasing intention of green housing in China. *Journal of Sustainable Construction, Development and Management in the Built Environment*, 10, 1044. <https://doi.org/10.3390/su10041044>
- Zhang, L., Sun, C., Liu, H. & Zheng, S. (2016). The role of public information in increasing homebuyers' willingness-to-pay for green housing: evidence from Beijing. *Journal of Ecological Economics*, 129, 40-49. <http://dx.doi.org/10.1016/j.ecolecon.2016.05.010>