



Modelling Housing Demand Factors for Affordable Units in Malaysia

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Abstract: The Malaysian government is prioritizing the development of affordable housing units to cater to the needs of the underprivileged. However, it is not sufficient to merely meet the required number of units; it is crucial for developers to understand the actual demand for affordable housing in urban areas. This is because even middle-class homebuyers have their own preferences when it comes to purchasing a home at an affordable price. Therefore, this study aims to investigate the current demand attributes that contribute to the affordable housing demand model in urban areas, using Wangsa Maju, Kuala Lumpur, Malaysia as a case study. Data was collected from 400 potential buyers of affordable housing units, and 25 significant attributes of housing demand were examined. Partial Least Square Equation Modelling (PLS-SEM) was used to develop the housing demand model. The findings revealed that a total of five factors with nine attributes in housing demand significantly contribute to the affordable housing demand model in urban areas, as determined by the coefficient's determination, path coefficient, effect size, and predictive relevance towards endogenous variables of housing demand. Overall, the result has confirmed that government intervention has play major role in supporting affordable housing development and at the same time has encourage the potential buyer form the right group to have their own house at affordable price.

Keywords: Housing demand, affordable housing, demand attributes, urban area, demand model

1. Introduction

Housing in Malaysia is considered affordable when it is priced within the budget of individuals with low to middle-income levels (Basrah et al., 2021). According to the Malaysian government, affordable housing is categorized as housing that falls within the price range of RM42,000 to RM300,000, taking into consideration its location, size, and property type. To address the issue of affordable housing in Malaysia, the government has implemented several schemes, including the People's Housing Programme (PPR), the Rumah Mampu Milik (RMM) scheme, the Perumahan Penjawat Awam 1Malaysia (PPA1M) scheme, and the MyHome scheme (Mohammad et al., 2018).

Applicants for affordable housing schemes in Malaysia must generally meet certain eligibility criteria, such as being Malaysian citizens or permanent residents, having a household income below a certain threshold, and not owning any other properties. The demand for affordable housing in Malaysia is currently high, as the cost of living continues to rise, other property prices increase, and the supply of affordable housing remains insufficient. According to Suraya et al. (2019), there was a significant decline in housing affordability from 4.0 to 5.1 between 2012 and 2014. Despite repeated assurances from the government that it is working to address the growing demand for homes priced under RM 300,000, affordable housing remains a pressing issue.

The availability of affordable housing is crucial in ensuring that low to middle-income earners have access to adequate housing (Adzhar et al., 2021). However, purchasing affordable housing can be a challenging endeavour for potential buyers due to various factors, such as economic, demographic, social, and geographic factors (Zainon et al., 2017). Therefore, policymakers, developers, and investors need to understand these factors to investigate current housing demand and meet the needs of the population through the supply of affordable housing (Saleh et al., 2016,2017; Mustapha and Ali, 2022).

2. Housing Demand Factor

Potential buyers' considerations and preferences are the primary drivers of housing demand (Said et al., 2022; Majid et al., 2022), and their choices are influenced by various external factors (Bintoro et al., 2019). This factor also affects buyer's decision who are definitely become the target market under affordable housing due to other commitment from non-housing cost. Besides that, their decision to buy a house may contribute a major impact on their life status with the new instalment payment commitment rate. Therefore, even though the price of the house is offered at an affordable rate, there are another external factors that also have an impact on their buying decision. These factors may include product features, geographic location, financial requirements and regulations.

2.1 Regulation

Financial requirements and regulations set by banking institutions are often a major hindrance for individuals looking to purchase a house, especially those with low incomes (Maybank, 2020; BNM, 2010-2012; PR1MA, 2017; Ariff et al., 2016). Many low-income individuals struggle to obtain loan approval due to improper documentation of their income levels (Gopalan and Venkataraman, 2015). Additionally, the inability to provide a 10% downpayment and cash for hidden charges, such as legal fees, can pose a challenge for those with low to middle incomes when purchasing a house (Khuo, 2020). This has an impact on the community as a whole (Jones et al., 2011). As a result, individuals with poor credit history may be disqualified from obtaining a mortgage and may struggle to support monthly repayments.

Besides that, Potential buyers must comply with all obligations and regulations set by commercial banks when applying for a mortgage (Liew & Haron, 2013), including the dual banking system, which has different requirements (Louhichi and Boujelbene 2017). The loan margin, loan tenure, interest rate, credit availability, and appropriate lending rate with the current economic cycle are the most influential factors on a buyer's decision to purchase a house (BNM, 2012), which have become important indicators of housing demand (Dumicic and Ridzak 2012; Cerutti et al., 2017). While first-home buyers may be able to acquire 90% to 100% of the housing loan, it may impact the approval of marginal loans (Cagamas, 2016). Moreover, a down payment or cash deposit of 10% can provide leverage for people to make the right decision when purchasing a house (Abdullah & Zarin, 2008).

Therefore, it can be concluded that the ability of people to afford housing is highly correlated (Ariff et al. 2016). To address this issue, the government has implemented several housing support programs such as the My First Home Scheme, My Deposit Scheme, and Withdrawal from Employment Provident Fund, which have proven to be effective in assisting low- and middle-income earners to own their own homes. Additionally, new regulations and requirements implemented by the government have also benefited middle- and low-income groups in terms of housing affordability (Saieed, 2016; Olanrewaju et al., 2018; Ramli, Zainal and Ali, 2020). These programs also include specific types of housing that are designed for these income groups (Shuid 2004; 2016).

2.2 Product

Product factors encompass the attributes and quality of a product that can influence a house buyer's decision (Thean, 2017; Majid et al., 2012; Bakhtyar et al., 2013; Jewkes and Delgadillo, 2010). These attributes can be classified as internal or external factors of the product, with internal factors referring to structural attributes such as floor size (Mok et al., 1995), number of rooms, house condition, design, finishes, built-up areas, landscape features, and site layout allocation (Linneman, 1980; Rodrigues & Sirmans, 1994; Mar Iman, 2000; Yu, 2004; Teck Hong, 2011; Abdul & Mahfoud, 2015; Liu et al., 2016). On the other hand, external product factors derive from the exterior features of the houses, such as the topography and condition of the land, open space, and allowable density, which have a long and short-term impact on house prices and inequality (Majid et al., 2012; Massyn et al., 2015). Previous research has identified the most influential attributes as derived from tenure, house design, built-up areas, quantity of rooms, allocation of site plan and layout plan, restriction of interest, allowable density, external view, topography, and open

spaces (Majid et al., 2012; Saleh et al., 2017). Additionally, house price is also a consideration factor for potential buyers before making a purchasing decision (Addison et al., 2012; Garratt, 2012), with the price of affordable housing typically being set by the government.

However, some affordable houses are priced beyond the means of low and medium-income groups, leading to their inability to become homeowners. Jones et al. (2011) have identified the age of the house and tenure as additional determinants of housing attributes. Freehold interest, as described by Addison et al. (2012) and Dodson (2005), may also influence potential buyers to choose a house over a leasehold property. However, the time taken to complete the purchase, restrictions on interest, zoning regulations, and limitations on land such as Bumiputra lots, may discourage educated buyers from buying a house (Abdullah and Zarin, 2008).

2.3 Spatial Geographical Location

Researchers in the housing market have extensively studied the spatial geographical location, which is not limited to just the location itself. Geographic Factors also encompass the availability of land, transportation infrastructure, and proximity to amenities, all of which have an impact on housing demand. Esruq-Labin et al. (2014) have reported a significant relationship between the location of housing and the demand for affordable housing. Locational attributes are broadly categorized into three groups, namely Strategic location, Environment location, and Established location, as identified by Saleh et al. (2016).

Strategic location is an important factor that can influence housing demand due to its distance availability. Policymakers often take into consideration the difference in travel time to understand people's choices and behaviour (Majid et al., 2012). House buyers prioritize a short distance between their home and workplace, especially low-income individuals due to additional transportation costs (McDonald, 2008; Thanaraju et al., 2019; Hashim, 2010; Yusof & Ismail, 2012). Housing areas that are equipped with facilities such as clinics, mailing systems, community halls, playgrounds, and other public and private amenities can also attract potential buyers, increasing demand scores (Nafrizon et al., 2020; Leby and Hashim, 2010). Moreover, the location can also reflect the surrounding area in terms of green areas, peace, flood vulnerability, and lower pollution issues (Fazli et al., 2012; Ulfa et al., 2014). A housing area with good environmental quality with clean air and water are also socially acceptable to buyers (Villamagna et al., 2013). Furthermore, good traffic conditions can have a significant impact on a house buyer's perspective (Wen et al., 2020; Ossokina & Verweij, 2015).

Therefore, properties in prime locations with good transportation links and amenities are more likely to have higher demand (Nghah et al., 2020). Poor distribution of affordable housing can affect the level of housing demand (Saleh et al., 2017; Thean, 2017), as properties located far from the city centre and other facilities are generally less in demand. Some families may prefer to live in locations near family, friends or work, but affordable housing is usually constructed in rural areas (World Economic Forum, 2019; Saieed, 2016) due to lower land prices which contribute to the sale value of affordable homes (Majid et al. 2012). In addition, the lack of an adequate supply of affordable housing by the government can also impact the overall level of housing demand (Chowdhury 2013).

2.4 Other Accountable Factors

Other factors that influence housing demand may arise from the buyer themselves, such as their affordability level for affordable housing, which needs to be emphasized in housing demand research. Additionally, their housing preferences and taste should align with their actual affordable level after considering their non-housing expenses (Majid et al., 2021).

Demographic profiles contribute significantly to housing satisfaction and are a key factor in identifying credibility in property purchasing (Harrison et al., 2020; Majid et al., 2022a; Majid et al., 2022b). These profiles, including age, income level, employment types, and marital status, are crucial in determining housing preferences.

Different income levels among potential buyers may result in varying levels of affordability (Zainon et al., 2017; Majid et al., 2021). The current income level of a buyer determines the amount of housing financing they can afford. However, the low-income group is often limited by their residual income after factoring in non-housing expenses such as healthcare, bills, education, and food (Štreimikienė, 2014). Additionally, education level and employment type have also been shown to contribute to housing demand (Majid et al., 2012), as a higher level of knowledge in the real estate field can encourage potential buyers to consider all aspects before making a purchasing decision.

The age of the buyer is a crucial factor in the purchasing of housing (Majid et al., 2022b; NAR, 2020). The median age of non-landed property buyers has decreased from 40 years old in 2000 to 28 years old in 2019. In addition, the age range of 25 to 35 years old has been observed among half of the house buyers in the PRIMA unit, which is one of the affordable housing programs provided by the government (Dineskumar, 2022). This trend suggests that young couples are increasingly concerned about homeownership compared to the previous decade. Additionally, the reputation of the developer and their brand name also have a significant impact on the buyer's purchasing decision (Abdul Aziz et al., 2014).

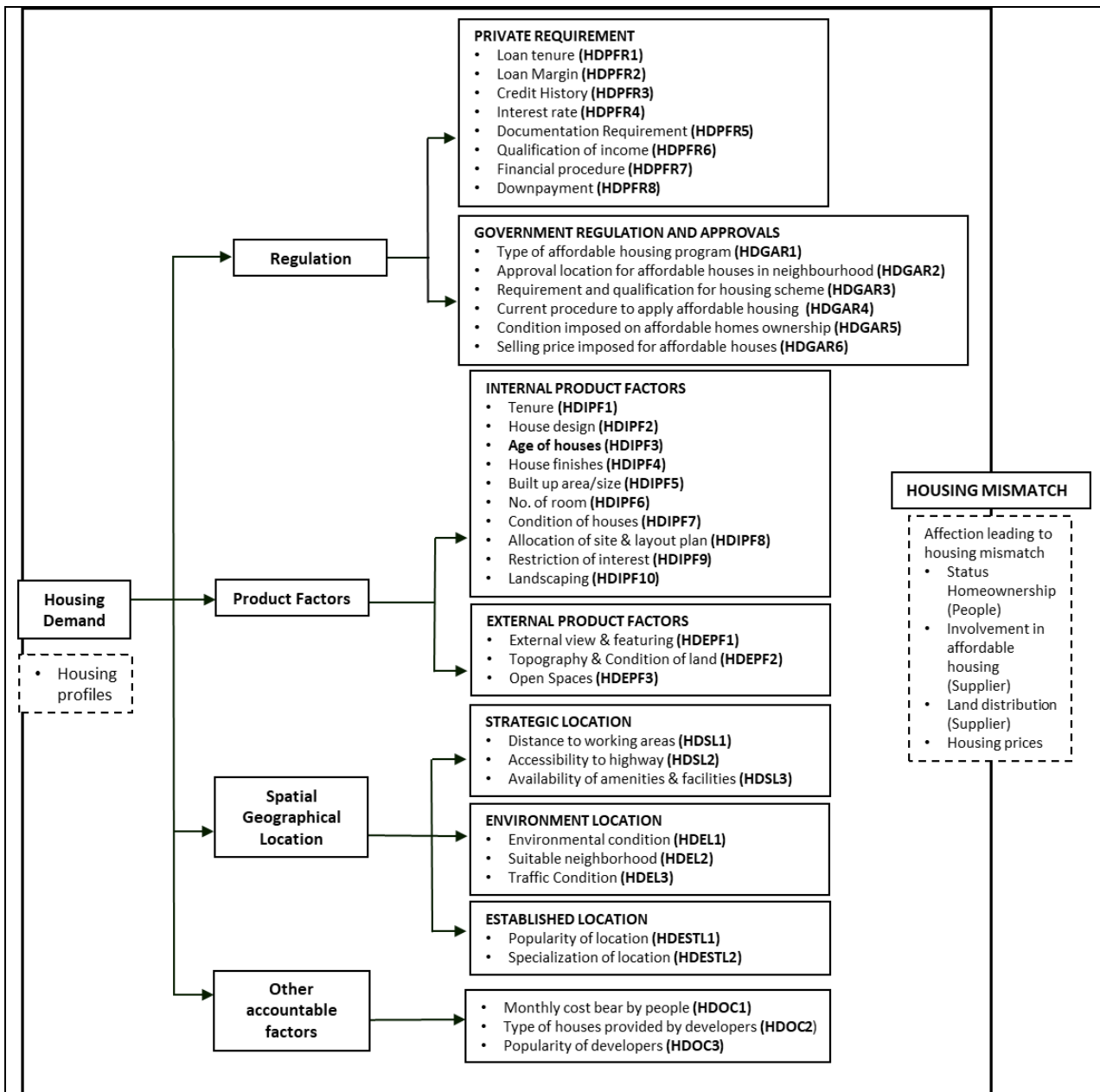


Fig. 1 - Conceptual Framework for Affordable Housing Demand

3. Research Methodology

This research employed a questionnaire with a five-point Likert scale (ranging from 1-Strongly disagree to 5-Strongly Agree) as the research instrument. The questionnaire was distributed to 400 house tenants who were potential buyers of affordable houses in Wangsa Maju, Kuala Lumpur. The instrument comprised 38 items under four main constructs. Descriptive analysis was conducted using the Statistical Package for Social Science (SPSS), while Structural Equation Modelling (PLS-SEM) used SmartPLS Software to develop the Affordable Housing Demand Model, which is a better option when measurement models have not undergone validation (Urbach and Ahlemann, 2010). This procedure was used to establish the link between measurement items (observable variables) and associated constructs (latent variables) (Hair et al., 2011; Sartsedt et al., 2017). The final model was validated by removing a few attributes and merging convergent validity and average variance extracted (AVE). The structural model was analysed using formative analysis to interpret the Coefficient of determination (R^2), Path coefficient (β) and Effect size (f^2). A high R^2 indicates a high level of association and accuracy (Hair et al., 2011). The significant indicator used to identify variables was greater than 0.26; 0.33 is regarded as moderate, and 0.19 is weak (Chen et al., 2022; Cohen et al., 2013). Path coefficient analysis was used to take into account the particular effect in a structural model through the minimum

route coefficient value of 0.1. Meanwhile, t-statistic and P-Value were used to determine the significant construct variables, which were indicated above 1.65.

4. Result

The results of the study would include the outcome of Outer Loading, Evaluation of the Measurement Model, Evaluation of the Structural Model, and The Development of the Housing Demand Model.

Table 1 shows that most indicators have loading values higher than the acceptable range (0.504-0.923). To increase the AVE value, only indicators with loading values higher than 0.57 were retained in the model. However, one indicator (Loan Tenure - HDPFR1) had a loading value below 0.57. Loading values of 0.7 or higher are considered satisfactory while loading values of 0.5 are acceptable (Memon and Rahman, 2014).

Table 1 - Outer Loading

Factors	Attributes	Loading Value
Product Factors	House Design (HDIPF2)	0.873
	Age of Houses (HDIPF3)	0.752
	House Finishes (HDIPF4)	0.878
	No. of Room (HDIPF6)	0.839
	Condition of Houses (HDIPF7)	0.611*
	Allocation of Site Layout Plan (DHIPF8)	0.895
	Restriction of Interest (HDIPF9)	0.879
	External view & Featuring (HDEPF1)	0.756
	Topography & Condition of Land (HDEPF 2)	0.794
Private Financial Requirement & Regulation	Loan Tenure (HDPFR1)	0.504*
	Loan Margin (HDPFR2)	0.625*
	Credit History (HDPFR3)	0.608*
	Interest Rate (HDPFR4)	0.798
	Documentation Requirement (HDPFR5)	0.775
	Qualification of Income (HDPFR6)	0.826
	Financial Procedure (HDPFR7)	0.816
Government Approval & Regulation	Type of affordable housing program by the government (HDGAR1)	0.767
	Approval location for affordable houses in the neighbourhood (HDGAR2)	0.895
	Requirement and qualification for affordable housing scheme (HDGAR 3)	0.923
	Current procedure to apply for affordable houses (HDGAR4)	0.876
Location Factors	Environment condition (HDEL1)	0.777
	Suitable Neighbourhood (HDEL2)	0.821
	Distance to working areas (HDSL1)	0.736
	Accessibility to highways (HDSL2)	0.666*
	Popularity of location (HDESTL1)	0.798

4.1 Evaluation of Measurement Model

After eliminating some attributes, the final composite and convergent validity of each construct is presented in Table 2. The CR values indicate that all constructs fall within the satisfactory range of 0.834-0.945. The AVE values were then analyzed to determine the convergent validity. As shown in the table, all constructs have an AVE value greater than 0.5. This indicates that the construct validity is met and accepted in this context for the selected 25 attributes analyzed in the structural model.

Table 2 - Composite and Convergent Validity

No.	Indicators	Composite Validity	Convergent Validity
		CR	AVE
1	Product Factors	0.945	0.657
2	Private Financial Requirement & Regulation H	0.896	0.554

3	Government Approval & Regulation	0.923	0.751
4	Location Factors	0.834	0.511
5	Housing Demand	0.810	0.592
6	Housing Mismatch	0.275	0.659

*CR: $0.6 \leq CR \ \& \ \alpha \leq 0.7$: Acceptable * $0.7 \leq CR \ \& \ \alpha \leq 0.9$: Satisfactory

*AVE: $AVE > 0.5$: Satisfied * $AVE \leq 0.5$: Consider to remove

4.2 Evaluation of Structural Model

Government approvals and regulations have a significant impact on housing demand, as evidenced by the f^2 value of 1.434. Similarly, the location factor also has a significant association with housing demand with an f^2 value of 0.268. However, the components of Product Factor and Private Financial Requirements have no impact on housing demand. Out of the four path relationships with endogenous variables, two are significant (Item 1 & 2) while the other two are not significant and can be considered as non-significant relationships (Item 3 & 4). The path coefficient value between government approval regulation and housing demand is larger than 0.1 (= 0.693), and the t-statistic value is greater than 1.65 (t-statistic= 9.633), indicating a significant association between these two variables. Additionally, there is a substantial correlation between the geographic location parameters and housing demand, as indicated by the coefficient value of 0.319 and the t-statistic of 3.099. However, the association between private financial requirements and regulation and product factor are not significant with housing demand, as shown by a different route that has a path coefficient value below 0.1 (=0.016 and -0.009) and a t-statistic value below 1.65 (t-statistic= 0.254 and 0.150). As a result, this route is rejected, as seen in Table 3.

Table 3 - Summary of Effect Size and Path Coefficient

Item	Relationship: Exogenous > Endogenous construct	Effect size f^2	Path coefficient (B)	t-statistic	P-Value	Significance	Result
1	Government Approval & Regulation > Housing Demand	1.434	0.693	9.633	0.000	$P < 0.01$	Significant & large effect
2	Location Factors > Housing Demand	0.268	0.319	3.099	0.000	$P < 0.01$	Significant & medium effect
3	Product Factors > Housing Demand	0.001	0.016	0.254	0.799	$P < 0.10$	Not Significant
4	Private Financial Requirement & Regulation > Housing Demand	0.000	-0.009	0.150	0.881	$P < 0.10$	Not Significant
5	Housing Demand > Housing Mismatch	0.051	0.211	1.955	0.051	$P < 0.05$	Significant

Notes: * $f^2 = 0.02$: Small effect * $f^2 = 0.15$ Medium effect * $f^2 = 0.35$ Large effect: * $P \leq 0.01$ and $P \leq 0.05$: Significant * $P \leq 0.10$: Not significance

4.3 The Development of Housing Demand Model

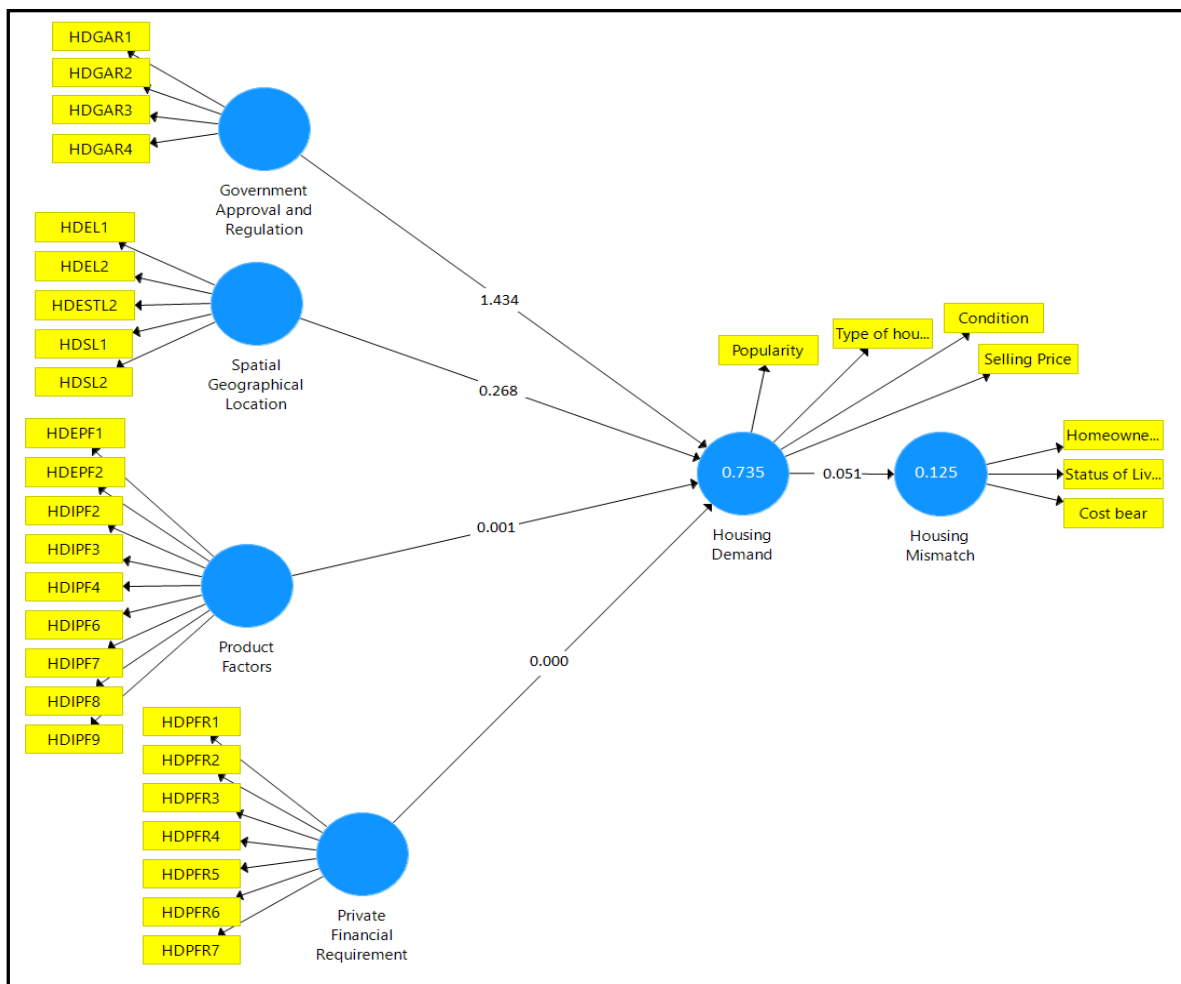
The PLS-SEM analysis has been summarized in the figure presented above (Table 3). After eliminating some constructs and analyzing the results of the relationship and effect size, the study found that government approval and regulation have the most significant impact on housing demand, with the highest effect size value reported by the respondents. The attributes that affect housing demand include the types of affordable housing programs offered by the government, approval location, requirements and qualifications for affordable housing, and current procedures. The government often approves and allocates affordable houses in areas far away from amenities and transportation links (Saieed, 2016). However, the government cannot be solely blamed as they already provide a substantial supply of affordable houses, and the shortage of vacant land in urban areas makes it difficult for them. For example, 6,172 units have been approved by the government under the PR1MA program in Wilayah Persekutuan, compared to Perak with 15,870 housing units and Pulau Pinang with 24,923 units of houses (PR1MA, 2017; 2022).

The second factor that showed a significant impact on housing demand is spatial geographical location, with an f^2 value of 0.268. After eliminating some attributes, the final set of attributes that proved to be significant included accessibility to highways, distance to working areas, suitable neighbourhood, popularity of location, and environmental conditions. Tiwari and Kaushik (2014) suggested that historical value, current trends, routine locations, and event-based factors could influence the global or local popularity of a location, which explains why the public is heavily influenced by location, especially in urban areas where the population is concentrated. As Abdullah (1992) pointed out, the reputation of a location is one of the reasons for increasing demand. Finally, Housing demand showed significant impact on housing mismatch with an f^2 value of 0.051. On the other hand, product factors and private financial requirements do not seem to have a significant relationship with the endogenous variables of housing demand.

Table 4 - Summary of Relationship (R²) & Predictive Relevance (Q²)

Relationship: Exogenous > Endogenous construct	R ²	Degree of Relationship	Q ²	Degree of predictive relevance
Attributes in Housing Supply > Housing Supply	0.735	Larger effect	0.405	Strong
Housing Demand > Housing Mismatch	0.125	Small effect	0.064	Week
<i>*R² > 0.26 = Substantial</i>		<i>*Q² = 0.02: Week * = 0.15; Moderate * = 0.35; Strong predictive relevance</i>		

Table 4 shows a substantial relevance between attributes and the endogenous construct of housing demand. This relationship shows a strong degree of predictive relevance of Q² with a value of 0.405. Respectively, this would mean 73% of positive variation for housing demand has explained to all the attributes in housing demand component. However, ended variables in between housing demand and housing mismatch showed a week degree of predictive relevance at 0.064 with 12% could explained the housing mismatch. Figure 2 below shows the overall final development model by indicating its effect size (f²) for every attribute and relationship (R²) in between endogenous construct of housing demand and housing mismatch.



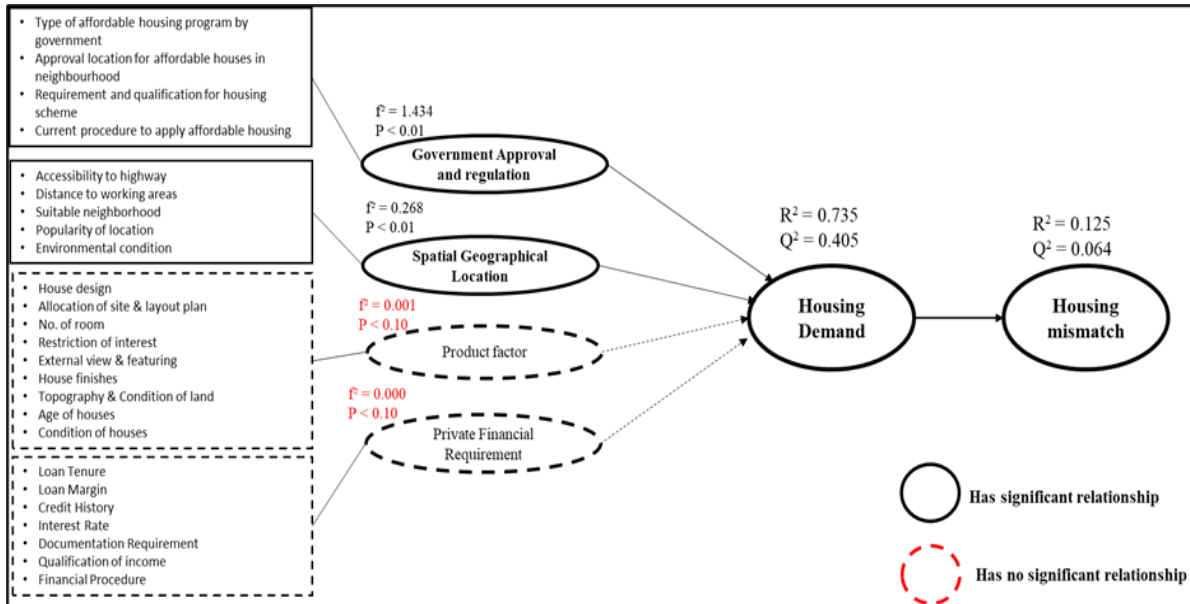


Fig. 2 - The development of Housing Demand Model

5. Conclusion

In conclusion, the study has identified four factors that impact the affordable housing market, with two of them showing a significant influence on housing demand. Government approvals and regulations and spatial geographical location have emerged as strong determinants of housing demand from the buyer's perspective, whereas the financial aspect does not seem to affect the affordable housing market. As a result, there are no restrictions on middle-income group buyers continuing to purchase affordable houses that meet their preferences. Furthermore, the criteria for affordable housing development have not had any impact, indicating that the design and development policy for affordable housing is well-suited to the preferences of buyers. However, the study highlights the crucial role that location and government regulations play in influencing housing demand and encouraging affordable housing purchases by the target demographic. The available of affordable unit which far from workplace may exposes this group to high transportation costs. Meanwhile house location which far from facilities and infrastructure will reduce the attraction from buyers even it has been offer at affordable. In addition, the government's intervention in the provision of affordable housing also provides the opportunity and assurance to the buyers of affordable housing to continue with the purchase decision. Through the policy and legislation for each development by the developer, government intervention has succeeded in allocating a sufficient number of affordable units at the strategic locations to the right population. Therefore, the government should ensure the effectiveness of the policies enacted in ensuring that prospective owners of affordable homes are always protected and protected.

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References

Abdul-Aziz A. R., Jaafar M., Loh C. L. (2014). Speculative residential developers and foreign retirees’ market segment in Malaysia. *International Journal of Hospitality Management*. 37 (February) 38-46

Abdullah, S., & Abu Zarin, H. (2008). *Sustaining Housing Market*. Vol. 1. Penerbit Universiti Teknologi Malaysia.

Addison, C., Sumei, Z., & Bradley, C. (2012). “Smart Growth and Housing Affordability: A Review of Regulatory Mechanisms and Planning Practices.” *Journal of Planning Literature*, 28(3), 215–57.

Ariff, K., Dasimah, O., & Zaharah, M. (2016). “The Relationship between Youth Activities and Outdoor Features in Urban Neighbourhood Space.” *Procedia - Social and Behavioral Sciences*, 234, 271–79.

Adzhar, S. A., Rahim, N. A., Basrah, N., Majid, R. A., and Mustafar, S. (2021). Overview on built environment planning: Residential overhang factors in Malaysia affordable housing. *The 5th International Conference on Rebuilding Place IOP Conf. Series: Earth and Environmental Science* 881.

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Bakhtyar, B., Zaharim A., Sopian, K., Saadatian, O., & Moghimi, S. (2013). “Quality Housing in Affordable Price for Malaysian Low Income.” *WSEAS Transactions on Environment and Development*, 9(2), 78–91.

- Bank Negara Malaysia (BNM). (2012). Financial Stability and Payment System Report; Development in the Housing Market and Implication on Financial Stability. Bank Negara Malaysia Publishers. www.bnm.gov.my.
- Bank Negara Malaysia (BNM). (2018). The Financial Stability and Payment System Report 2015. Bank Negara Publishers. www.bnm.gov.my.
- Basrah N., Majid R. A. Rahim N. A., Alias N. H (2021) Environmentally Sustainable Concern Toward Affordable Housing. Malaysia Construction Research Journal (MCRJ). Special Issue Vol. 12 | No. 1 149-158.
- Bintoro, B., P., K., Susanto, T., Mihardja, E., J., Putra, J., C., P., and Ihsan, M. (2019). Criteria for Medium Segment Vertical Housing Selection: User Perspective. The International Journal of Integrated Engineering. 11 (9), 181-191
- CAGAMAS. (2016). Housing The Nation: Definitive Studies. Cagamas Holding Berhad.
- Cerutti E., Dagher J., Dell'Araccia G., (2017). Housing finance and real-estate booms: A cross-country perspective, Journal of Housing Economics, 38, Pages 1-13,
- Chen, B., Chen, Y., Chen, Y., Gao, J. (2022). Model of Demand of Human Settlement Environment for Rural Houses in North China: A Structural Equation Modelling Approach. Building. 12(7), 926; <https://doi.org/10.3390/buildings12070926>
- Chowdhury, Md. Z. (2013). "The Housing Affordability Problems of the Middle-Income Groups in Dhaka: A Policy Environment Analysis." University of Hong Kong.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). Applied multiple regression /correlation analysis for the behavioural sciences. Routledge.
- Dineskumar Ragu. (March 8, 2022) Half of PRIMA buyers are aged between 25 and 35. Free Malaysia Today. <https://www.freemalaysiatoday.com/>
- Dodson, J. (2005). Is There a Spatial Mismatch between Housing Affordability and Employment Opportunity in Melbourne? Vol. 2. Australia
- Dumicic M., and Ridzak T., (2012). Determinants of banks' net interest margins in Central and Eastern Europe Croatian National Bank, Trg hrvatskih velikana 3, 10000 Zagreb, Croatia.
- Esruq-Labin, A. M. J., Che-Ani, A. I., Tawil, N. M., Nawi, M. N. M., & Othuman Mydin, M. A. (2014). "Criteria for Affordable Housing Performance Measurement: A Review." E3S Web of Conferences, 3:2-7.
- Fazli, A. I., Bajunid, & Ghazali, M. (2012). Affordable Mosaic Housing: Rethinking Low-Cost Housing. Procedia - Social and Behavioral Sciences, 49, 245-56.
- Garratt, J. P. D. (2012). "Evaluating UK Housing Policies to Tackle Housing Affordability." International Journal of Housing Markets and Analysis, 5(3), 253-71.
- Gopalan, K., And Venkataraman, M. (2015). Affordable housing: Policy and Practice in India. IIMB Management Review. 27(2), 129-140
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed, a silver bullet. Journal of Marketing Theory and Practice, 19(2), 139-152.
- Harrison M., Roy A. S., Hultqvist J., Pan A. W., McCartney D., McGuire N., Fitzpatrick L. I., Forsyth K., (2020). Quality of life outcomes for people with serious mental illness living in supported accommodation: systematic review and meta-analysis, Social Psychiatry and Psychiatric Epidemiology, 55, 977-988
- Hashim, Z. A. (2010). "House Price and Affordability in Housing in Malaysia [Harga Rumah Dan Tahap Mampu Milik Rumah Di Malaysia]." Akademika, 78:37-46.
- Khoo, E. (2020, September 1). Cover Story: Buying a house during challenging times. The Edge Malaysia. <https://www.theedgemarkets.com/article/cover-story-buying-house-during-challenging-times>
- Leby J. L., Hashim A. H., (2010). Liveability Dimensions and Attributes: Their Relative Importance in the Eyes of Neighbourhood Residents. Journal of Construction in Developing Countries, 15(1), 67-91
- Liew, C., & Haron N. A. (2013). Factors Influencing the Rise of House Prices in Klang. International Journal of Research in Engineering and Technology, 02(10), 261-72.
- Louhichi A., Boujelbene Y., (2017). Bank capital, lending and financing behaviour of dual banking systems. Journal of Multinational Financial Management. 41, September 2017, Pages 61-79
- Jewkes, Md & Delgadillo, L. (2010). Weaknesses of Housing Affordability Indices Used by Practitioners. Journal of Financial Counseling, 43-53.
- Jones, C., Watkins, C., & Watkins, D. (2011). "Measuring Local Affordability: Variations between Housing Market Areas. International Journal of Housing Markets and Analysis, 4(4), 341-56.
- Majid, R., Rosli, S., & Md. Nasir, D. (2012). "The Impact of Buyers' Demography on Property Purchasing." Journal of Surveying, Construction & Property, 3, 1-18.
- Majid R. A., Said R., (2021). Controlling Non-housing Cost for A Better Homeownership, The Malaysian Surveyor, 15 (1), 18-19
- Majid, R.A., Said, R., Razali, M.N.M. & Tan, S.H. (2022a), Impact of 5G Network on the Malaysian Real Estate Industry: Future Homebuyers' Perspective, Journal of Design and Built Environment, 22:3, pp 121-133
- Majid R. A., Said R., Basrah N., Rahim N. A., Mustafar S., Mahamod N. M., (2022b). Homebuyer Preference Among Different Generations in Malaysia. International Surveying Research Journal. Vol 10, No 1, 5-15, MyCite

- Massyn, M.W., McGaffin, R., Viruly, F. and Hopkins, N. (2015), "The challenge of developing higher density, affordable housing in the inner city of Cape Town", *International Journal of Housing Markets and Analysis*, Vol. 8 No. 3, pp. 412-428. <https://doi.org/10.1108/IJHMA-11-2014-0049>
- Maybank (2017). Application for housing loan. Retrieved from: Official Website of Maybank, [April 2017]
- McDonald N. C. (2008). Critical Factors for Active Transportation to School Among Low-Income and Minority Students: Evidence from the 2001 National Household Travel Survey *American Journal of Preventive Medicine*, 34 (4) 341-344
- Mohamad, W. S. S. W., Rahman, Abd. Nor, A. S., and Ridzuan, M. R. (2018). Adequacy of Low-Cost Housing: A Study of the People's Housing Programme (PHP) at Kuala Lumpur. *Journal for Social Science*. 22, Pg 8-21, ISSN: 2600-7568.
- Mustapha, N. A., and Ali, S. (2021). A conceptual Framework for minimising middle-income housing mismatch. *Malaysian Journal of Sustainable Environment*. 9(1), 77-98
- Nafriizon N. H. N., Awang M., Salleh A. A., Rahman M.A.A., Hamidon N., Rahman S. A., (2020). Assessment of Facilities Management Performance on Operation and Maintenance Aspects in Malaysian Technical Universities Network, *International Journal of Advanced Science and Technology*, 29(8), pp. 84-97
- NAR (2020). Home Buyers and Sellers Generational Trends Report, March, 2020-National Association of REALTORS® Research Group Washington.
- Ngah R., Putit L., Mat A., Abdullah J., Majid R. A. (2020). Moderating effects of service Quality on Public Transport Travel Behaviour and Antecedents. *Journal of the Malaysian Institute of Planners*, 18 (4), 80-91
- Olanrewaju, A., Lim, X. Y., Tan, S. Y., Lee, J. E., and Adnan, H. (2018). Factors affecting housing prices in Malaysia: Analysis of the supply side. *Journal of the Malaysian Institute of Planners*, 16(2) 225-235
- Ossokina I. V.; Verweij G., (2015). Urban traffic externalities: Quasi-experimental evidence from housing prices *Regional Science and Urban Economics*. 55 (November 2015) 1-13
- Ramli, F., Zainal, R., & Ali, M. (2020). Oversupply of The High-Cost Housing in Malaysia. *Malaysian Journal of Sustainable Environment*, 7(2), 91-106.
- Said, R. Majid, R.A., Akinsomi, O. & Hishamuddin, M.I. (2022), Sustainability of Residential Investment in Klang Valley, Malaysia, *Journal of Design and Built Environment*, Vol 22:3, pp 134-149
- Saheed, Zunaira. (2016, Jan. 30). PRIMA sets realistic targets. *The Star*. <https://thestar.com.my/business>
- Saleh, F., Ting K. H., & R., Majid. (2016). Housing Mismatch Model in Suburban Areas. *Procedia - Social and Behavioral Sciences*, 234, 442–51.
- Saleh, A. F., Ting K. H., R.,Majid. & Masri. H. (2017). Attributes of Housing Mismatch Framework in Urban Areas. *Environment –Behaviour Proceeding Journal*, 2(5).
- Shuid, Syafiee. (2004). Low Medium Cost Housing in Malaysia: Issues and Challenges.
- Shuid, Syafiee. (2016). "The Housing Provision System in Malaysia." *Habitat International*, 54, 210–23.
- Štreimikienė, D. (2014). "Housing Indicators for Assessing Quality of Life in Lithuania." *Intellectual Economics*, 8(1),25–41.
- Suraya, I., Wai, C. C. W., Hamid, H. A., Mustapha, N. F., Ho, G., Theng, T. T., Kamaruzuki, M. N., & Firouz, A. M. (2019). Rethinking Housing: Between State, Market and Society: A Special Report for the Formulation of the National Housing Policy (2018-2025).
- Thean L. C. (2017) Housing the Nation. *News Straits Times*. Retrieved from [https://www.thestar.com.my/business/business News/2017/07/15/housing-the-nation/](https://www.thestar.com.my/business/business%20News/2017/07/15/housing-the-nation/).
- Thanaraju P., Mentaza Khan P A., Juhari N. H., Sivanathan S., Md Khair N. (2019) Factors Affecting the Housing Preferences of Homebuyers in Kuala Lumpur, *Journal of the Malaysian Institute of Planners*. 17 (1) 138 – 148.
- Ulfa, B., Dian R., & Putu, Gde. (2014). "Land Suitability for High Rise Building Based on Land Developers' Preference and Soil Vulnerability Index." *Procedia - Social and Behavioral Sciences*, 135, 147–51.
- Urbach, N., & Ahlemann, F. (2010). Structural equation modelling in information systems research using partial least squares. *Journal of Information Technology Theory and Application*, 11(2), 5-40.
- Villamagna A., Angermeier P. L., Bennett, E. M., (2013). Capacity, pressure, demand, and flow: A conceptual framework for analyzing ecosystem service provision and delivery. *Ecological Complexity* 15:114–121
- Wen H.; Gui Z., Zhang L., Hui E. C. M., (2020). An empirical study of the impact of vehicular traffic and floor level on property price, *Habitat International*, 97 (March) 102132
- World Economic Forum. (2019). Insight Report: Making Affordable Housing a Reality in Cities; Cities, Urban Development & Urban Services Platform in Collaboration with PWC. https://www3.weforum.org/docs/WEF_Making_Affordable_Housing_A_Reality_In_Cities_report.pdf
- Yusof, A. & Ismail, S. (2012). "Multiple Regressions in Analysing House Price Variations." *Communications of the IBIMA* 2012, 1–9.
- Zainon, N, Mohd-Rahim, F.A., Sulaiman, S., Abd-Karim, S. B., Hamzah, A. (2017). Factors Affecting the Demand of Affordable Housing Among the Middle-Income Groups in Klang Valley Malaysia. *Journal of Design and Built Environment Special Issue*, 17(2).

Zainul, E., And Idris, A. N. (2017, December 22). Developers' Margin woes to stay. The Edge Financial Daily. <https://www.theedgemarkets.com>
Zainuddin (1994) and Krinsman (2007), poor inability of credit history has contributed to their inability to support monthly repayments and may be disqualified to get mortgage.