

Assessing Decision Factors for House Purchasing (Needs Vs. Preferences) from Case Study of First-Time Potential Homebuyers in Klang Valley: Towards Technology-Mediated Individual Decision Aid

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ABSTRACT

This study assesses the decision factors for house purchasing as part of the design model of a technology-mediated decision aid for first-time homebuyers. Technology-mediated assistance in house purchasing decision is evidenced in many developed countries, however, in Malaysia less study was found although the decision challenges faced by first-time homebuyers are undeniable. 19 decision variables under four group of housing attributes, namely, locational, neighborhood, structural and social cultural, are tested. A factor analysis approach is used on 320 case study data of first-time potential homebuyers in Klang Valley. This study finds that first-time homebuyers perceived locational and structural attributes as needs, where as neighborhood and social cultural attributes as preferences.

Keywords: House purchasing, factor analysis, technology-mediated decision aid

I INTRODUCTION

House purchasing in most country are considered as high risk investment where chances of going bankruptcy are most likely (Glindro et.al, 2008). Hence, it is imperative to understand the decision factors for house purchasing to avoid such catastrophe. Housing attributes have been shown in many literatures to vary from intrinsic housing attributes such as interior living spaces (Cupchik et al., 2003), extrinsic attributes such as exterior design and exterior space (Bhatti & Church, 2004) to neighborhood and locational attributes such as environmental qualities (Yusuf & Resosudarmo, 2009; Tan, 2011). Chin and Chau (2003) further classified house attributes into three, namely, locational, structural, as well as neighbourhood factors. There is also relative importance of socio-cultural housing attributes in house purchasing observed in settlement patterns and lifestyle (Sidi & Sharipah, 2011) as well as house orientation (Wang & Li, 2006). This classification is in line with other scholarly views such as Pozo (2009), Ajide and Alabi (2010), and

Babawale et al. (2012). In a more recent study, Chong and Omkar (2017) investigated five factors that affect the consumer decision making when it comes to purchasing a residential property; there are location factor, feature factor, financial factor, neighborhood factor and demographical factor.

Previous studies implicate interesting debate about the relative importance of all these housing attributes in house buying preferences. Therefore, this study also intends to contribute to the literatures by developing an understanding on which housing attributes, as defined by locational, neighborhood, structural and socio-cultural contribute to house buying preferences among first-time homebuyers in Klang Valley. Ideally, with the knowledge about the housing attributes, providers of new housing would be better equipped to meet the demand of prospective home buyers and maximize construction efficiency.

One of the ways to assist homebuyers in making decision is through technology-mediated decision aids. Technology-mediated assistance in house purchasing decision is evidenced in many developed countries, however, in Malaysia less study was found although the decision challenges faced by first-time homebuyers are undeniable (Tan, 2012). The use of Internet, however, doesn't benefit homebuyers in terms of search time, flexibility and intuitive results. Even though it facilitates an intensive search and discovery of more properties, it also wastes more time and energy (Yuan, et al. 2012). Additionally, Alrawhani et al. (2016) verified this problem, arguing that due to each and every real estate company building its own website to advertise its products for the purpose of online buying and selling, customers are prone to get lost in searching among all those websites, and aside the time consuming of such processing, results can be very conflicting. Alrawhani et al. (2016) additionally notes two problems: firstly, that the purchasing of a home is a multi-faceted decision, however search services in real estate websites are single-faceted (lack of

multi-attribute search system), thus inhibiting prospective buyers when comparing properties; secondly, there is no semantic relationships between the various factors that constitutes intricately connected information about home assessments.

In view of the fact that homebuyers need a better and practical assistance in house purchasing, this study explores the potential of implementing a systematically designed technology-mediated decision aid for first-time homebuyers in Malaysia, by first assessing the decision factors for house purchasing. The following sections will elaborate on the process of assessing the decision factors as well as the findings from the survey.

II HOUSING ATTRIBUTES: THE DECISION FACTORS

In this study, 19 housing attributes (as shown in Table 1) were gathered based on the prior studies by Tan (2013), Nur Syuhada and David (2013), and Branigan and Cathal (2013).

Table 1.

A. Locational Attributes	
1	Close proximity to mall
2	Close proximity to school
3	Close proximity to public transport
4	Close proximity to place of work
5	Close proximity to recreational park
6	Close proximity to place of worship
7	Close proximity to medical facility
B. Neighborhood Attributes	
1	Level of pollution
2	Level of crime problem
3	Cleanliness of neighborhood
4	Gated & Guarded community
C. Structural Attributes	
1	Number of bathroom
2	Number of bedroom
3	Size of living area
4	Size of kitchen
5	Eco-friendly
6	Built-up area of the house
D. Socio-Cultural Attributes	
1	House orientation
2	House number

A. Locational Attributes

Grissom and Diaz (1991) classified location into three levels: the first being the immediate surroundings as well as the internal space planning of the actual site; the second being the relationship of the actual site to its immediate surroundings, and lastly, the entire urban structure along with the interrelationships of the community's land use

pattern. However, in other sources such as Des Rosiers et al. (2000) however, location is divided into proximity attributes and neighbourhood attributes. Proximity attributes are associated with the distances to objects, such as highway entrance, high schools, universities or colleges and regional shopping centers while neighbourhood attributes are associated with proportions of adults with a university degree, proportion of tenants, proportion of dwellings in buildings of five stories and more, proportion of dwellings in buildings of stories and more, etc.

These classifications illustrate that there are several locational attributes of housing that they are characterized with such as distance to the workplace, schools, retailing outlets and public transportation stations – all of which have been found to be significant considerations for house buying. To emphasize this, Kauko (2007) showed that a strategic location is of great significance to determine the success or failure of the housing development project. According to Clark et al. (2006), distance to school is significantly relevant for households with children when deciding the location for a house. Likewise, distance to retailing outlets could be one of main considerations for house buyers as retailing is one of the most important routines of the households (Tan, 2011). Additionally, housing units that are located in close proximity to green or recreational park are highly preferred by house buyers (Lo & Jim, 2010). Aluko (2011) succinctly combined the major locational attributed together when he posited that “facilities for education, transport, worship, health care, shopping and recreations are factors to be considered when making house choices”.

B. Neighborhood Attributes

Choguill (2008) plainly defines neighbourhood as “an area where the residents are drawn and held together by common and beneficial interest.” Along similar understanding, Aluko (2011) defined neighbourhood as “geographic units within which certain social relationships exists” but further clarified that the intensity of these relationships and their importance in the lives of residents vary tremendously. He posited that the concept of neighbourhood is based on two concepts: social and planning. The social concept was to provide convenience, comfort, direct and face-to-face contact aimed to restore sense of community that has been destroyed or disturbed by the specialization and segmentation of urban life.

Tan (2011) argued that homebuyers prefer a good neighborhood, as they are willing to pay extra for a house with good environmental qualities. The

characteristics of a good neighbourhood in residential areas have been researched and they range from view and ventilation (Salleh et al., 2015), sights of trees and water (Luttik, 2000), green space provision (Jim & Chen, 2006), quality of air (Zabel & Kiel, 2000), and low neighborhood crime (Karim, 2008).

With regard to the type of premise, home buyers in Klang Valley are also increasingly aware of the value of gated-guarded with landscape compound and freehold tenure neighbourhoods as studied in Tan (2011). In general, today's home buyers prefer intangible benefits in the neighbourhood that are sought after by such as an infrastructure that supports the lifestyle of home buyers, a sense of security in the landscape compound, and a feeling of harmony with one's surroundings.

C. Structural Attributes

Housing structural attributes have been evidenced in many literatures as influencing homebuyers' buying preferences (Opoku & Abdul-Muhmin, 2010). The most common structural attributes that have impacts on house buying preferences for first-time homebuyers are size of housing lot, number of bedrooms and bathrooms, and presence of garden in a house. Space has been identified to be a key aspect of house buying decision-making process. It is to this observation that Clark et al. (2006) pointed that most of the households at all times make an effort to increase their existing size of housing lot as it symbolizes more luxury for the inhabitants. Hurtubia et al. (2010) revealed that the number of rooms and bathrooms in a house is an important feature to be considered by homebuyers particularly in western countries. Furthermore, the authors observed that families with young children often have the tendency to choose gardens rather than balconies. As pointed by Al-Hagla (2008) and Choguill (2008), gardens play an important role in supporting social sustainability as their primary function is for relaxation and social purposes.

In the Malaysian context, (Tan, 2012) examined the housing needs and preferences of first-time buyers in Kuala Lumpur based on six structural attributes (living room, bathroom, bedroom, eco, kitchen, built up) and found that only the number of bedroom and the house with eco-friendly features were found to be significantly related to house purchase by 25% higher than other attributes. Moghimi and Jusan (2015) conducted another study in Johor Baru. They examined how home buyers prioritized six structural housing attributes (in descending order: space

organization, adequacy of natural ventilation, space characteristics, air conditioning units, sufficient daylight distribution and floor finish). The analysis of the study shows that respondents attached significant importance to space organization (number of bedroom, bedroom size, bedroom location, living room size, bathroom position, kitchen position) and space characteristic (space efficiency, floor flexibility) while they resounded a general feeling of dissatisfaction with the current housing layout arrangements. There was a demand for well ventilated and ample solar gain, once again, implying a general sense of inadequacy and desire to improve appropriate passive thermal designs. Lastly, the study found that there was a predominant emphasis on façade finishing material whereby people prefer to finish their homes with materials that will ease the home's maintenance, adaptability and durability.

D. Socio-Cultural Attributes

Several studies that focused on identifying the demand for structural attributes revealed that home preferences are associated with intrinsic housing attributes such as interior public and private layout, building design and total floor area (Al-Momani, 2003, Opoku & Abdul Muhmin, 2010, Tan, 2012); extrinsic attributes such as exterior space and exterior design (Bhatti & Church, 2004) through a relative importance of socio-cultural housing attributes in home-buying decisions (Jabareen, 2005) observed in settlement patterns and lifestyle (Sidi & Sharipah, 2011) as well as house orientation (Wang & Li, 2006).

III HOMEBUYERS' NEEDS AND PREFERENCES: THE SURVEY

Needs and preferences are integral elements in the process of house purchasing decisions. This study makes a distinction between the needs and preferences of homebuyers as part of the decision-making criteria. A need is defined a homebuyer's desire for a property's specific benefit, whether that be functional or emotional. A preference is the desire for products or services that are not necessary, but which homebuyer's wish for.

The survey was scoped to the area of Klang Valley (also known as Greater Kuala Lumpur). The demographic statistics for first quarter of 2018 shows that Klang Valley has an estimated population of 8 million (Department of Statistics, Malaysia, 2018) consisting of a mixture of many different races and other demographics. The present study covered most of the majority race groups, various work sectors, and all income levels found in the population of Klang Valley. The only criteria

was that respondents should have the financial means to buy a house in Klang Valley and legally eligible to do so. It was not known exactly what the total number of potential house buyers in Klang Valley and who they were. This meant that there was no sampling frame available for the potential house buyer's population in Klang Valley. Thus, Non-Probabilistic Convenient Sampling Method was adopted for this study.

The Raosoft size sample calculator was utilised to compute the minimum sample size required (<http://www.raosoft.com/samplesize.html>). Given that the population size of more than a million, the following settings are selected; margin of error as 0.05, confidence level as 0.9 and response distribution as 0.5. Based from the result of the Raosoft size sample computation, the sample size required was 271. Therefore, the minimum number of data to be collected was equal to or greater than the 271 respondents. A total number of 400 sets of questionnaires were distributed and 388 questionnaires were collected from respondents in the area of Klang Valley (i.e., respond rate of 97%). However, from 388 questionnaires only 320 valid to be used for data analysis, which surpasses the sample size required.

A. Demographic Profile of Respondents

Out of 320 respondents, 168 were male (52.5 per cent) and the remaining 152 were females (47.5 per cent), which correspond to the sex ratio of current population estimates in Malaysia (Department of Statistics Malaysia, 2018). In terms of age distribution, most of the respondents were in the age category of 26 to 40 (66.9 per cent). Once again, this percentage seems to be consistent with the preliminary study. Furthermore, Metawa and Almossawi (1998) mentioned that exploring the perception of people and consumers within the age of 20 to 50 years group would have more impact on the policies. Malays were the overwhelming majority of the respondents at 267 (83.4 per cent), followed by Chinese (8.1 per cent), Indian (5.6 per cent), Bumiputera (2.5 per cent) and others (0.3 per cent). These percentages also consistent with population distribution by ethnic group in Malaysia (Department of Statistics Malaysia, 2016)

An odd result was found on *household composition* item. Out of 320 respondents, 62 were couple living with dependent children, 52 single parent living with dependent children, 37 couple with no child, 36 lives alone, and an overwhelming majority, which is 132, chose "others" as their response.

Since the number of those responded "others" in that particular item are high, crosscheck analyses have been carried out with two other related items in the survey instrument, namely items related to marital status and current residential house. The result for the former show that 68.1% (i.e. 218 respondents) are single, and from that group of respondents 113 (i.e., 35.5% of total respondents) were reported to currently living with their parents and 24 (i.e. 7.5% of total respondents) currently living in a worker hostel. These responses reflect the relevancy of the response recorded in item related to household composition since the only options available for that item are as follow:

(*answer options for household composition*)

- Live alone
- Live with partner without a child
- Live with a partner/spouse together with (a) child/children
- Single parent living with (a) child/children
- Others (please state): _____

In addition, the response for item related to current residential status as stated above also indicate a more variety of household composition as compared to what is available in the answer options for household composition. This is supported by the specific statement provided by 54 of the respondents who answered "others" in that item. The following are the recorded statement:

- Living with relative(s), 1
- Living with office mate(s), 2
- Living with family (consists of parents and siblings), 14
- Living with friend(s), 17
- Living with sibling(s), 3
- Living with parent(s), 11
- Living with house mate(s), 6

Based on the discussion, perhaps the options for item household composition need to be revised with extended options for future use in the recommender system. But as far as the main aim of this real study is concerned (i.e., identifying the needs and preferences of first time homebuyers in Klang Valley area) the finding for item household composition did not affect the final result as supported by the discussion above.

B. Factor Analysis

Factor Analysis was performed on four groups of housing attributes comprise seven items for Locational Attribute, four items for Neighborhood Attributes, six items for Structural Attributes, and

two items for Social Cultural Attributes. Hair et al. (2006) describes that Factor Analysis was employed to make sure that the number of items could be decreased to the number of factors (i.e. in this study if its fall under Needs or Preferences). The cut-off value for Kaiser–Meyer–Olkin (KMO) measure is 0.50 for Bartlett’s test of sphericity to be significant. The minimum value of factor loading 0.4 on one factor should be achieved to consider it as significant. The KMO measure verified the sampling adequacy for the analysis, stand at 0.814. According to Field (2013) the values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb. For these data the value is 0.814, which falls into the range of great, so the sample size is adequate for Factor Analysis. Table 2 summarizes factor loadings for Locational Attributes (A1, A2, A3, A4, A5, A6, and A7), Neighborhood Attributes (B1, B2, B3, and B4), Structural Attributes (C1, C2, C3, C4, C5, and C6), and Social Cultural Attributes (D1 and D2) that were extracted from the Rotated Component Matrix.

Table 2. Rotated Component Matrix^a

	Component	
	1	2
A1	.530	
A2	.532	
A3	.596	
A4	.540	
A5	.669	
A6	.648	
A7	.586	
B1		.893
B2		.876
B3		.904
B4		.692
C1	.718	
C2	.721	
C3	.734	
C4	.755	
C5	.565	
C6	.552	
D1		.549
D2		.464

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

This study refers to Factor 1 as “Need” and Factor 2 as “Preference”. Based on the factor loadings as shown in Table 2, variables A1 to A7 and C1 to C6 loaded strongly on Factor 1 (Need) whereas variables B1 to B4 and D1 to D2 loaded strongly on Factor 2 (Preference). This survey shows that first time homebuyers perceived Locational Attributes and Structural Attributes as needs, where as Neighborhood Attributes and Social Cultural

Attributes as preferences, as depicted in Table 3.

Table 3. Classification of Housing Attributes into Needs vs. Preferences

Needs		Preferences	
A. Locational Attributes		B. Neighborhood Attributes	
1	Close proximity to mall	1	Level of pollution
2	Close proximity to school	2	Level of crime problem
3	Close proximity to public transport	3	Cleanliness of neighborhood
4	Close proximity to place of work	4	Gated & Guarded community
5	Close proximity to recreational park		
6	Close proximity to place of worship		
7	Close proximity to medical facility		
C. Structural Attributes		D. Socio-Cultural Attributes	
1	Number of bathroom	1	House orientation
2	Number of bedroom	2	House number
3	Size of living area		
4	Size of kitchen		
5	Green (eco-friendly)		
6	Built-up area of the house		

IV DISCUSSION

A. Locational Attributes

The findings of factor analysis provide evidence that locational attributes are perceived as necessity (i.e. need) among first time homebuyers. The results also implied that first time homebuyers in Klang Valley perceived considerable importance on distance especially from house to public transportation station, recreational park, place of worship (e.g. masjid), and medical facility as compared to locations to business centre, school, and workplace. In addition, they also do not bother about the travel distance from their house in performing their daily activities like going to workplace, sending children to school and getting household necessities from the business centre. This could be due to availability of owning vehicles and good access to public transportation conditions. Furthermore, a very high house price is expected considering houses with good distance from all local amenities located at Klang Valley. The findings of this present study corresponded with previous studies by several researchers such as Opoku and Abdul-Muhmin (2010) and Tan (2011). These studies have proven that locational attributes are important criteria that a homebuyer observes upon deciding chosen housing areas.

B. Structural Attributes

In this study, structural attributes are found to have good values of factor loading under the Needs factor. When first time homebuyers in Klang Valley decided which house to be purchased, they greatly emphasized on structural features of the houses such as construction quality, number of rooms and size of the house. This is due to the fact that these features are tangible and easily for homebuyers to evaluate upon buying a house. Remarkably, the findings of this present study echoed previous studies such as Opuku and Abdul- Muhmin (2010), Razak et al. (2013) and Sengul et al. (2010).

C. Neighborhood Attributes

To many homebuyers, neighborhood attributes are highly favorable so that they can have a peaceful life and minds living in area, which are free from crime, noise, traffic and pollution. In this study, it was found that neighborhood attributes have great values of factor loadings under the Preference factor. Even though, housing units which are located within a close distance to green area and away from the city congestions are preferred by households (Luttik, 2000; Lo & Jim, 2010), it has been shown that accessible green spaces near homes could raise house price by 5-6 percent (Tajima, 2003). Perhaps, this could be the factor for the neighborhood attributes not included under Need.

D. Social Cultural Attributes

In this study, it was found that social cultural attributes including superstition-numbers have mediocre values in factor loadings and loaded under the Preference factor. Superstition-numbers is a concerning factor when some numbers are perceived as lucky or unlucky to the individual connected to it, especially among the Chinese. It can be concluded that first time homebuyers in Klang Valley are still superstitious to some extent but contrary to expectation. Among possible reasons is the small number of Chinese respondents with quite high education level and young in age. This finding is consistent with study by Chia et al. (2016).

V CONCLUSION

Identifying the various dimensions (i.e., need or preference) of housing attributes will be of great help to interested parties. The results of the study revealed that Locational Attributes and Structural Attributes were found to be perceived as Needs where as Neighborhood Attributes and Socio-

cultural Attributes were perceived as Preferences among first time homebuyers in Klang Valley. The findings from this survey serve a twofold purpose, i) provide better understanding to the developers about the actual housing needs and preferred of first time homebuyers in the Klang Valley market and be able to tailor their housing products to better satisfy these attributes, and ii) the verified homebuyers' needs and preferences will be used as decision criteria in a recommendation system that is designed to assist the first time homebuyers in their house purchasing decisions.

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