

The Housing Environment Preference Among Housing Consumers in Johor Bahru

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Abstract

A house is no longer a basic shelter. It is now described as a status symbol and becomes an asset to the owner since it provides security, privacy, neighbourhood and social relations, status, community facilities and services, access to jobs and control over the environment. These additional features have changed housing consumers' expectations which in turn have pressured developers to address urgently to ensure that housing needs of all Malaysian could be met. Therefore in such situations, this study offers developers to understand market needs of how Malaysian housing consumers especially in Johor Bahru differ in preference of house. There are two objectives for this research. The first objective is to identify the housing environment preference among housing consumers which will be a qualitative exploration of a housing environment by collecting variables from previous researchers at secondary sources. Themes from this qualitative data will then be developed into an instrument so that the preference on housing environment by housing consumers can be identified. The second objective is to measure the preference on housing environment quality by housing consumers using the analytic hierarchy process (AHP) collected using a quantitative approach. Questionnaires will be distributed to a sample of housing consumers in Johor Bahru.

Keywords: *housing environment, housing consumers, analytic hierarchy process (AHP)*

Introduction

Living in satisfactory housing conditions is one of the most important aspects of people's lives. It is places where many people especially the older ones spend a large part of their time (Vera-Toscano & Ateca-Amestoy, 2008). The factors, which determine their satisfaction, have long been an objective of national policy in Malaysia to meet all housing needs (Teck, 2011). This is due to the fact that housing satisfaction is considered as the hallmark of successful housing delivery system. Despite efforts by the Malaysian government to increase the homeownership rate of all income levels particularly the low-income groups, the real demand for the housing environment of users might be ignored in some degree (Fan, 2010). According to Abdul Karim (2008), there is some variance in the choice of facilities which affect the satisfaction of residents towards their housing environment. The major need is dwelling but Vera-Toscano & Ateca-Amestoy (2008) argue that having a social space to interact and socialize with family and friends is also important which might be some reasons why individuals demand some housing services. These variables that influence housing satisfaction which is a function of housing quality can provide a picture of what people want, what their actual setting is and how far this is from their ideal accommodation (Khozaei *et al.*, 2012). It can be shown that from recent studies. Tan (2011) found house buyers in Malaysia generally opt for gated-guarded landscape compound and freehold tenure neighbourhoods. In Abdul Karim (2008), she found the low income groups in Shah Alam have little resources to acquire facilities that are located further away from their homes. The feelings of dissatisfaction in their housing environment might influence them to become more cautious before renting or purchasing a new house (Tan, 2011). This factor then would create several issues and problems that relate to a housing delivery system such as property overhang (Teck, 2011).

The term property overhang or unsold properties means housing units have remained unsold nine months after its launch and have been issued with a certificate of fitness for occupation (CF) (Ministry of Finance's Valuation and Property Service Department, 2006). Ministry of Finance's Valuation and Property Service Department (2009) reported that in 2008, the residential overhang units increased from 23,866 units worth RM (Malaysian Ringgit) 3.82 billion in 2007 to 26,029 units worth RM 4.476 billion in 2008. Most of the residential overhang units in Malaysia surprisingly are priced at RM 150,000 and below. Meanwhile, data from the Valuation and Property Service Department (2011) showed that Johor continued to top the national list in terms of total volume and value of overhang for residential property and shop lots in 4QFY10. For residential properties, Johor recorded an overhang of 5,599 units of residential properties valued at RM 1.01 billion and shop lots posted an overhang of 2,456 units valued at RM 612.34 million. Johor also topped the list of unsold residential properties and shops, in terms of those under construction and those not constructed.

In response to this phenomenon, Teck (2011) pointed that the majority of these units remain unsold probably because of price factor, ranging from poor location, and to unattractive houses with lack of adequate amenities and facilities. These unsold houses do not attract the target market and cater to the housing needs of the target group as they are located in a wrong location which then contributed to the overhang (Tan, 2011). As for the efficiency of the housing delivery system, Teck (2011) pointed that public and private sectors are required to

carry out research to understanding the market needs as a lot of housing projects were started without proper plans. In residential development which house buyers become more sensitive and knowledgeable the expectations from the housing and the residential environment have been changing (Yam & McGreal, 2010). This change has revealed that the factors increasing users' quality of life should be taken into consideration among all parties in the industry especially housing developers before planning the housing area (Berkoz *et al.*, 2009). Therefore in such situations, housing developers should plan and design their products where housing consumers can find the place within the neighbourhood to work and fulfill recreation needs (Tan, 2011).

Literature review

Definition of Housing environment

In a classic study, Langsing and Marans (1969) defined housing environment as 'An environment of high quality which conveys a sense of well-being and satisfaction to its population through characteristics that may be physical (housing style and condition, landscaping, available facilities), social (friendliness of neighbours, ethnic, racial or economic composition), or symbolic (sense of identity, prestige values)'. Campbell, Converse & Rogers (1976) conceptualized people's housing environment as the residential environment consisting of the housing unit, the neighbourhood and the community in which the residents are located. Thus, the literature highlights the environment of housing which includes facilities, infrastructures and services, amenities and the social capital within neighbourhood (Fan, 2010). According to Abdul Karim (2008) housing consists of two components which are the physical and the social components. The physical components include the houses, facilities and utilities while the social components include the families, neighbours and the community.

This definition enlightens us that housing has many functions which can be defined according to the Dictionary of Human Geography as a form of shelter, a refuge, a welfare service, an investment and a gateway to jobs, services and social support (Johnston *et al.*, 2000). Housing is central to the everyday life of the residents who live, work and play in it. Housing fulfills physical needs by providing security and shelter from weather and climate. It fulfills psychological needs by providing a sense of personal space and privacy. It fulfills social needs by providing a gathering area and communal space for the human family. It also fulfills economic needs by functioning as a centre for commercial production. Therefore planning for housing is the best way of approaching at the neighbourhood level. Houses, infrastructure, utilities, green parks, school, shops, places of worship, employment opportunities, clinics, other social and public facilities is the conception of the neighbourhood unit according to Perry (1910) which is believed can provide quality of life to residents. Quality of life is concerned with intimate relationships, family life, friendships, standard of living, work, neighbourhood, city or town of residence, the state of the nation, housing, education, health and self (Campbell, 1981). It can be measured by the extent to which people's happiness requirements are met (MacCall, 1975). The feelings of happiness towards the availability, accessibility and choice of facilities mean reflecting the sentiments of satisfaction to the housing place (Gold, 1980; Weidemann & Anderson, 1985; Berkoz *et al.*, 2009). It can be summarized that residents in a neighbourhood will be satisfied and happy when their housing needs and wants are met (Abdul Kadir, 2008).

Housing environment previous studies

In previous research studies, there are several variables that used to characterise the housing environment. Bender *et al.* (1997) aim at gaining better understanding of the environmental of single-family houses in the greater Geneva area. This was undertaken by means of an Analytical Hierarchy Process (AHP) methodology. Eight factors were chosen in order to characterise the environment. The criteria chosen are the following: quietness of the area, public transport, distance to city centre, good view, social value of the area, distance to schools, distance to commercial facilities and distance to a green area. The results show that distance to a green area and quietness of the area are the two most important factors.

In Fiadzo *et al.* (2001), indicators which include the distance to nearest hospital, distance to secondary school, distance to nearest market and distance to nearest primary school are used to estimate housing quality. Proximity to schools, shops and parks are used by Reed & Mills (2007) in their research as to assess the housing preference of first time house consumers. Berkoz *et al.* (2009) study revealed the factors that increase the level of user satisfaction in housing and environmental quality in the Istanbul metropolitan area. One of the factors is accessibility to various function areas in the inhabited housing area. Accessibility in their thesis refers to shopping centre, city centre, work, places of entertainment and market where daily needs are obtained as the factors of centrality, elementary schools and high schools as the factors of accessibility to education institutions, parking areas, walking areas and sports centres as the factors of accessibility to open areas, while local clinics and hospital as the factors of accessibility to health institutions. And public transport stops as the factors of accessibility. They found that housing users prefer central areas to peripheral ones.

In Levy & Lee (2011), proximity to shops, proximity to good schools, proximity to central business district (CBD), proximity to work, proximity to friends, and proximity to like-minded people status are used as the factors that affect location choice of potential buyers in their research. The results indicate that the reasons place are popular is their closeness to work and the CBD. In Tan (2011), the variables are used to capture the proximity of the house to several amenities in the neighbourhood. These variables include the distance to the workplace (Worktime), to retailing outlets (Retailtime), to the hospital (Hosptime), to sport and recreation centres (Sportime) and to the public transport stations (Transtime). Different from the previous studies, Fan (2010) combines the physical and social environment to offer a better perspective on housing environment quality. He specifically concentrated on the housing environment preferences of Chinese youth. There are 13 attributes selected set up as four to five sub-factors in the three categories of mobility (public traffic network, privacy traffic network, proximity to urban center and proximity to workplace) community facilities (education facilities, medical and health facilities, retail service, sports facilities and green space and view) and community social capital (sense of safety, sense of belonging, neighborliness and density). Using AHP method, he found that nearby public transportation, proximity to workplace, sense of safety, proximity to medical and health facilities, and proximity to educational facilities as the top five determinants of housing consumption amongst young consumers in Guangzhou. In Abdul Mohit & Nazyddah (2011), they also combined the physical and social components for measuring housing satisfaction. The variables include open space, play area, parking, prayer and multi-purpose halls, perimeter roads, pedestrian walkways, public phone and local shops as public facilities

components, while noise, crime, accidents and community relations as social environment components. Lastly, distance to town centre, school, police station, hospital, market, shopping centres, public library, mosque, light rail transit (LRT), bus and taxi stations as neighbourhood facilities components.

According to Gruber & Shelton (1987), housing cannot be separated from its surroundings and level of satisfaction may be more dependent on where the unit is situated. Community/social and housing quality have a direct significant factor on residential satisfaction (Ha & Weber, 1991). In the real world, people are looking for houses that consists various combinations of residential properties (Andersen, 2011). Various needs that appear due to the problems caused by housing and residence environment situated in a physical, psychological and socio cultural environment together with their surroundings affect resident satisfaction and attitude while directing the overall individual/family and public health, happiness and welfare (Berkoz *et al.*, 2009). It can be shown from classical studies. Gruber & Shelton (1987) characterised two sets of neighbourhood evaluation variables. The first set included the characteristics of neighbourhood and community, which focused on attractiveness, neighbourhood, public service, facilities and services. The second set was neighbourhood attributes, which included pleasant/friendly, traffic/noise, parking/maintenance, closed space, exterior lighting/maintenance and recreation attributes. The results indicate that evaluations of neighbourhood characteristics and attributes are closely related to respondent's overall satisfaction. In Jirovec *et al.* (1985), micro (housing) and macro (neighbourhood) were used to measure residential satisfaction among urban elderly men. The findings indicated that, a function of macro (neighbourhood) environmental conditions affected housing satisfaction.

In recent decades, researchers have increasingly examined the relationship between residents, physical and social aspects of the residential environments. Blair & Larsen (2010) hypothesized that neighbourhoods characterized by satisfying social relationships among residents have higher housing prices than areas where people are less satisfied with their neighbours. In Vera-Toscano & Ateca-Amestoy (2007), they investigated the determinants of individual housing satisfaction as a particular domain of satisfaction by examining the effects of individual and household attributes, housing characteristics and social interactions in one's residential neighbourhood. Salleh (2008) investigated housing satisfaction and found that the neighbourhood factors were the predominant ones affecting housing satisfaction in private low-cost housing in Pulau Pinang and Terengganu. Mohit *et al.* (2010) found that "housing support services, followed by public and neighbourhood facilities and then by housing features and the social environment" as the factors that moderately satisfied among residents of the newly designed public low-cost housing in Kuala Lumpur. It reaches a conclusion that one of the objectives of these studies is to understand resident's priority in order to better guidelines for relevant groups, such as housing developers or people related to housing, to create better environments for fulfilling residents' needs and desires. The concept of housing satisfaction is often employed to evaluate resident's perceptions of and feelings for their housing units and the environment (Ogu, 2002). Housing satisfaction is defined as the "perceived gap between a respondent's needs and aspiration and the reality of the current residential context" (Galster, 1987). It can be used as a key predictor of an individual's perceptions of general "quality of life" (Campbell *et al.*, 1976). Without appropriate shelter, people cannot meet their basic needs and

participate adequately in society. There is considerable evidence in the literature that shows the physical and social factors that are associated with housing satisfaction.

Physical components

As mentioned earlier, physical factors are those related to the physical characteristics of a dwelling and its surrounding environment (Khozaei *et al.*, 2011). According to Ola (2011), a home should be viewed in the community setting because it is part of a neighbourhood. Satisfaction with community layout such as proximity to education centres, proximity to workplace, proximity to public traffic network, proximity to urban center, proximity to shops, health centres, sport facilities and green space and view is related to community satisfaction (Fan, 2010; Smith, 2011).

Bayoh *et al.* (2006) examined the influence of local public goods and services in central city among house buyers in Ohio country. They concluded that school quality is the most influential factor in choosing a new home location. It may be that the school is regarded as assets which will make the home more marketable in the future or that its presence is an indicator in itself of a desirable neighbourhood. The location and type of schools then become a key consideration factor as children grow to school age (Levy & Lee, 2011). This is because when families have more children, the need for space facilities and environment is changed dramatically (Andersen, 2011). Distance from the workplace also has been found to influence household choice. While people are young, residential location is influenced by the location of educational institutions, whereas later it is more influenced by workplace location (Andersen, 2011). This is because most resident prefers not to spend too much time travelling to and from work (Karsten, 2007). These aspects also can increase a person's attachment to the community which in turn increases one's satisfaction with the community as a person does not leave the community to seek a new employment (Smith, 2011). In terms of green space and view, According to Andersen (2011), people living in cities that lack green spaces could have a greater preference for green spaces than people living in the countryside, where they have more exposure to the natural environment.

All of these factors emphasize the importance of the physical attributes of the constructed environment; besides being available that meets the resident's requirements (Khozaei *et al.*, 2011).

Social components

According to Khozaei *et al.* (2011) social factors is concerned about the personal characteristics of the people who reside in these dwellings as well as their feelings and perception of the environment. Previous research has suggested that residents who feel they belong to that community are more satisfied with their social relationships and physical surrounding which can influence high levels of residential satisfaction (Young *et al.*, 2004; Smith, 2011). Social capital is seen as the foundation on which social stability is built (Middleton *et al.*, 2005). People can interact and socialize with family and friends which can enable them to reach a desired social status (Vera-Toscano & Ateca-Amestoy, 2008).

The interactions provided by being involved in one's community are dependent on their perception of the level of safety within that community. The safer one feels within their community the more open they are to social interaction (James *et al.*, 2009; Smith, 2011). A high incidence of crime can considerably reduce the usually high neighbourhood satisfaction among residents (Andersen,

2011), which can result in high residential mobility out of the area (James *et al.*, 2009; Diaz-Serrano & Stoyanova, 2010; Grillo *et al.*, 2010; Smith, 2011). Snatch thefts, assaults and rampant break-ins in Klang Valley's urban areas make house buyers a little more concerned about their personal security (Tan, 2011). Tan finds that house buyers are willing to pay more to live in these neighbourhoods because of the security provided by security guards. Concerns about security are not only focused on the physical security of the dwelling which can be achieved by the installation of security devices, it also can be considered as an attribute of the public realm and the relation of public to private space within the neighbourhood. All of these factors emphasize the influence that resident's personality has on his or her satisfaction and the perception between two people will not be exactly the same. Neighbourhood can be much more important than neighbouring in affluent areas. People may buy into a neighbourhood as a physical environment rather than anticipate in social interaction (Forrest & Kearns, 1999).

Modeling housing environment quality using the Analytic Hierarchy Process (AHP)

In the context of Johor Bahru

Johor is one of the nation's fastest growing states in terms of new development. Since Prime Minister of Malaysia, Dato's Seri Najib Tun Razak has announced that Iskandar Malaysia in Johor Bahru will be the first Smart City in Malaysia, it is attracting more and more domestic and international interest (Zakaria, 2012; The Star, 2012). It can be deemed as the factor that is spurring such fast-paced movement. The investments in various sectors would not only make Iskandar Malaysia as an economic growth centre but also an employment growth centre which can provide employment choices to the people based on their qualification, expertise and skills. This development would continue to contribute to the positive growth in the property market as it helps to boost demand for houses in south Johor due to the exponential increase in population. Along with this factor as well as throughout globalization process, as the housing consumers become more informed and discerning, people's expectations from the housing and the residential environment have been altering as a result of the changing life conditions (Berkoz *et al.*, 2009). There is increasing public awareness and interest among them who are beginning to demand houses with living styles that have more greens and landscaping in Johor Bahru (Yam *et al.*, 2008). This is because for housing consumers, the first concern among them in choosing a location is the quality of an area, especially in terms of access to facilities and services, a sense of community and safety and security which can produce a quality environment. The sense of quality comes from detailed design of the buildings, the corners and boundary treatments, and from the mature landscape. It is no surprise that there are broadly the recommendations of all the recent housing design guidance. However, where house are located, how well designed and built, and how well they are weaved into the environmental, social, cultural and economic fabric of communities are factors that can influence the daily lives of people, their health, security and wellbeing. And which, given the long life of dwellings as physical structures, affect both the present and future generations. Construction sector is considered as a major contribution to environmental problems which are caused directly or indirectly by the patterns of production by the industries, patterns of consumption and behaviour of the consumers (Abidin & Awang, 2012). Existing studies indicated that Malaysia is facing an increase in construction waste

material generation, energy waste, decimation of water catchment, soil erosion, deforestation and landslides and destruction of endangered fauna and flora (Begum & Pereira; 2008; Mohd Rosli & Kamaruddin, 2005; Zakaria, 1999; Chan, 1998; Chan & Ismail, 1998). Thus, it is imperative for the housing sector to strive towards sustainable approach (Abidin & Awang, 2012). Sustainable development is unattainable without sustainable building and housing (Abu Bakar, 2012). The term sustainable development means that builders, architects, designers, community planners and developers strive to create buildings and communities that will not deplete natural resources. Therefore, achieving sustainable development is the greatest challenge that requires the knowledge and involvement of all parties in the industry to protect and improve people's living environment. Sustainable development is defined as a development that meets the needs of the present without compromising the interests of future generations to meet their own needs (Brundtland, 1987). In Malaysia, smart and sustainable initiatives in housing have been highlighted by the government under the 7th Malaysian Plan which outlined new measures to enhance Malaysia's ability to develop sustainability. Through the Tenth Malaysian Plan (2011-2015), the Malaysian government focuses on streamlining the affordable housing delivery system, strengthening efforts to deliver high quality and environmentally sustainable housing and cultivating a health and sustainable housing industry (Pakir *et al.*, 2012). In the case of housing section in sustainable development practices, the Government through the Construction Industry Development Board (CIDB) will encourage housing providers to be accredited, particularly for the usage of skilled and qualified labour and improved construction processes in order to achieve sustainable housing development. Other than that, a new policy which is called the National Green Technology Policy in 2009 was introduced by the Government to promote towards energy efficiency and sustainable development particularly in the housing industry. The government also provides incentives for the developers to develop green homes in Malaysia (Pakir *et al.*, 2012).

Housing developers have a particularly important role to play. In line with Malaysia's national policy, to protecting the natural environment and maintain the sustainability of the country's economic development, housing developers need to strive to create buildings and communities that will not deplete natural resources (Singh, 1994). They can do this through Corporate Social Responsibility (CSR) initiatives that align with national development objectives. What is CSR? CSR is defined as "the obligations of businessman to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society" (Carroll, 1999; Yam *et al.*, 2008). In other words, CSR refers to voluntary activities undertaken by a company to operate in an economic, social and environmentally sustainable manner. A summary of CSR elements is depicted in Table 1.1.

CSR elements	Examples
Environmental sustainability	Landscaping, sustainable timber supplies, environmentally-friendly materials, sustainable building designs
Social amenities	Recreational facilities, parks, play grounds, sport facilities, meeting places, school
Safety of houses and surrounds	Safety of ingress and egress, and building materials, security facilities with gated and guarded features
Quality of the environment	Development density, proximity of public transportation, mix with industrial and commercial, development, community activities
Sound infrastructure	Quality roads, wider roads
Quality product	Quality finishes and design

Theoretical framework

The model of housing environment quality (Fan, 2010) is the basis for the theoretical framework of this study. This model was developed from previous works on housing environments and location preference (Bender *et al.*, 1997, 2000; Kauko, 2006, 2007; Yam *et al.*, 2008; Fan, 2010; Mohit & Nazyddah, 2011). Since the limitation is relative small database, the researcher adds two variables from CSR element in property to fulfill the gap suggested from Fan. Fan (2010) suggest to further studies to take more issues into account such as noise, house structure and house function. With the addition of two variables from CSR element it is believed that this can offer a better perspective on housing environment quality in the context of Johor Bahru. Figure 1.1 exhibits a model of housing environment quality for the study.

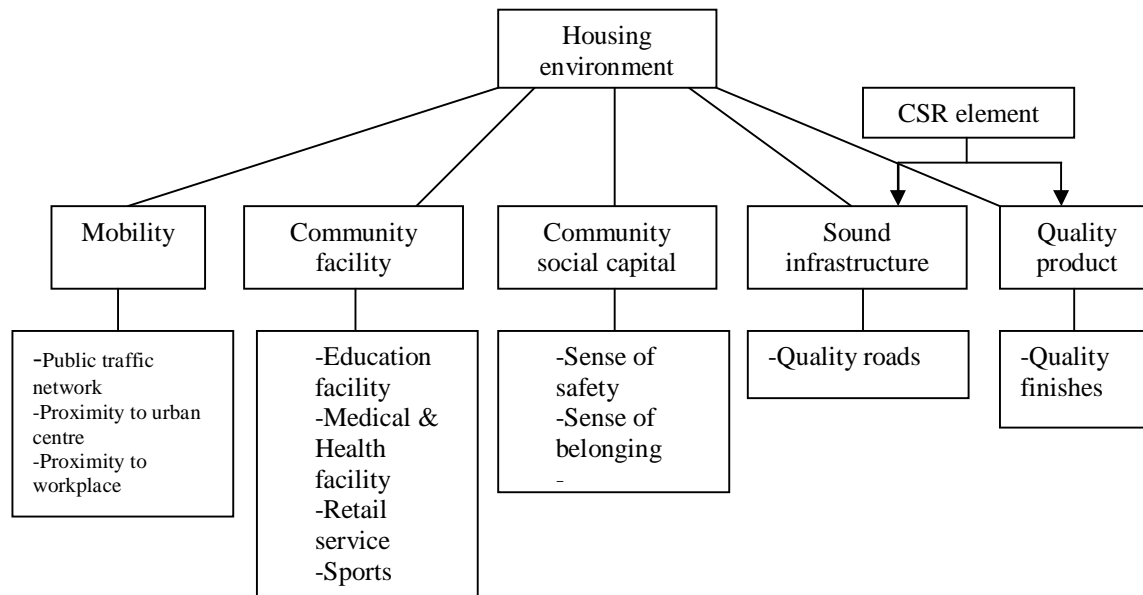


Figure 1.1: Modified model of housing environment quality for the study

Definition of attributes

There are four categories; mobility, community facilities, community social capital and Corporate Social Responsibility (CSR) which are explained as follows:

1. Mobility

- Public traffic network (PUT) refers to the quality of public transport system connected to the neighbourhood, such as bus lines and metro system.
- Proximity to urban centre (PUC) refers to the proximity to the urban centre where the commerce and service trade of a city is concentrated.
- Proximity to workplace (PTW) refers to the proximity to employment of residents.

2. Community facilities

- Education facility (EDF) refers to high quality kindergartens, primary schools, high schools and libraries near the neighbourhood.
- Medical and health facility (MHF) refers to the neighbourhood hygiene and the quantity and quality of clinics or hospitals near the neighbourhood.
- Retail service (RES) refers to the presence of an adequate number of shops, stores, markets and supermarkets.
- Sport facility (SPF) refers to the presence of arena and gymnasiums near the neighbourhood.
- Green space and view (GSV) refers to the closeness to gardens, open areas or lake and general unobstructed view to surroundings (Bender *et al.*, 2000).

- Mosque (MQ)
3. Community social
 - Sense of safety (SES) is the degree of safety residents feel. The feeling of safety leads to residential satisfaction (Smith, 2011).
 - Sense of belonging (SEB). The level of attachment one feels for their community has been found to influence their level of residential satisfaction (Aiello *et al.*, 2010).
 - Neighbourliness (NBL). A friendly neighbourhood means that residents are in good relation with their neighbours. The more friends in the community one have, the higher their level of residential satisfaction (Allen, 1991).
 - Density (DEN) refers to the satisfaction of residents to the density of the neighbourhood. Excessive and repetitive noise from overcrowding in mass high density housing complexes can decrease residential satisfaction (Smith, 2011).
- Corporate Social Responsibility (CSR):**
4. Sound infrastructure
 - Refers to quality roads (QR) and wider roads (WR). The level of quietness means absence of noise from road traffic (Bender *et al.*, 2000).
 5. Quality product
 - Refers to quality finishes (QF) and design (D).

Research methodology

Organisation of study

The study was conducted in two phases and the methodology used in each phase will be discussed separately:

Phase 1: Qualitative approach

Qualitative study explores, identifies and can provide clarity about the kinds of variables requiring further investigation. Qualitative methods should be considered when the research aim is to investigate complex phenomena that are difficult to measure quantitatively, to generate data necessary for a comprehensive understanding of a problem, to gain insights into potential causal mechanisms, to develop sound quantitative measurement processes or to study special populations (A. Curry & H. Bradley, 2009). Little was known about the exact meaning of housing environment and the variables used to characterize such environment. A qualitative research design was therefore chosen to obtain by collecting variables from previous researchers to characterize housing environment in the context of Johor Bahru (see figure 1.1).

Phase 2: Quantitative approach

Target population

The target population for Phase 2 comprised all the housing consumers in Johor Bahru. With a total population of about 876 000 in the city, 1.73 million in large urban areas and 5.49 million in

the Singapore-Johor Bahru, the population growth rate is among the highest in Malaysia (Iskandar Regional Development Authority Website, 2013).

Sample

To achieve the second research objective, primary data would be obtained by conducting questionnaires through stratified sampling which focuses only housing consumers. A total of 384 questionnaires were sent to housing consumers in Johor Bahru according to the schedule recommended by Krejcie and Morgan (1970) in Table 2.1.

Table 1.2: Table for determining sample size from a given population (Krejcie & Morgan, 1970)

N	S	N	S	N	S
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note:
 N is population size
 S is sample size

Data collection

Data in this phase of the study will be collected by using structured questionnaires with closed-ended questions providing predetermined options. In this study, questionnaire surveys will be conducted primarily on face-to-face basis for a better communication with respondents about the intention of the research and specific terminology explanation. A structured questionnaire has been developed by the researcher for this purpose. The objectives of the study, the theoretical framework, the literature review and the findings of Phase 1 of this study guided the researcher in the formulation of questions.

Data analysis

Data from the structured questionnaires will be analyzed using analytical hierarchy process (AHP), a multi-attribute decision-making approach which is based on pair wise comparisons of the various criteria, and data capture done by using the statistical analysis of the frequency and SPSS computer program.

AHP process

Vaidya & Kumar (2006) provide some basic steps in AHP:

1. State the problem.
2. Broaden the objectives of the problem, or consider all actors, objectives and its outcome.
3. Identify the criteria that influence the behaviour.
4. Structure the problem in a hierarchy of different levels constituting goal, criteria, sub-criteria and alternatives.
5. Next is comparing each element in the corresponding level and calibrate them on the numerical scale as can be seen in Table 2.2. This requires $n(n - 1)/2$ comparisons, where n is the number of elements with the considerations that diagonal elements are equal or 1 and the other elements will simply be the reciprocals of the earlier comparisons.
6. After that, perform calculations to find the maximum Eigen value, consistency index CI, consistency ratio CR and normalized values for each criteria.

7. If the maximum Eigen value, CI, and CR are satisfactory then decision is taken based on the normalized values.

Conclusion

In order for the industry to be sustainable, the interests of housing consumers need to be taken into serious consideration since property overhang becomes the central concern to the Malaysian housing industry. A good housing environment project should be designed as a safe and secure neighbourhood. Therefore, housing developers should plan and design their housing products to ensure that safety, security and well being are guaranteed in the neighbourhood. With this in mind, it is hoped that housing developers will not overlook the community needs and to plan accordingly in future.

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