SUSTAINABILITY STRATEGIES ADOPTED BY MALAYSIAN PROPERTY DEVELOPERS VERSUS HOUSE BUYERS' PERCEPTION

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A project report submitted in partial fulfilment of the requirements for the award of Bachelor of Science (Hons.) Quantity Surveying

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DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

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Specially dedicated to

my late grandmother, loving parents, respected supervisor and supportive friends.

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ABSTRACT

The purpose of this research is to compare the sustainability strategies adopted by Malaysian property developers in promoting new projects or developments with the house buyers' perception. To do so, identification of the strategies adopted by property developers was done by studying and tabulating information of 32 property advertisements collected from newspapers and brochures. 'Lush landscapes' and 'recreational facilities' were the most advertised sustainability features. In order to compare the advertised features with house buyers' perception, questionnaire survey was conducted on 80 respondents and 'safe neighbourhood' was the most attractive and willing to be paid extra for feature. Developers tend to use physical attributes to promote sustainability in property whereas house buyers prioritise neighbourhood attributes when considering house purchase. Hence, there was a mismatch of the strategies adopted by Malaysian property developers. Additionally, males are significantly more attracted to energy efficient systems and proximity to shops compared to females. Young adults are significantly drawn to denser developments with convenient access to the city, shopping area and educational institutions. Adults on the contrary dislikes high dense areas but enjoys the freehold tenure feature. Other demographic factors such as household size, household income, educational level and occupation which may influence housing choice were not undertaken however, developers can benefit from this research by understanding the key features house buyers' seek and willing to pay more for a house to have. Advertisements can be made to become more appealing to house buyers by promoting the desirable features. Similar researches are encouraged to be carried out on commercial and industrial buildings as well.

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LIST OF SYMBOLS / ABBREVIATIONS

CBD	Central Business District
GBI	Green Building Index
IT	Information technology
SPSS	Statistical Package for the Social Sciences
TBL	Triple bottom line
VOC	Volatile organic compounds

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CHAPTER 1

INTRODUCTION

1.1   Background

The 'sustainable development' concept has been long established and probably in the past decades not much attention was given to it (Morris, 2002). Economic and social advancements were made through industrialisation at the cost of our ecology. As a result, greenhouse gases emission leading to global warming and climate change has become major concerns of the world (Department of Environment and Climate Change NSW, 2009). Depleting resources are also worrisome because mankind rely highly on natural resources to survive.

The construction industry is a major consumer of energy where around 50% of the energy produced is used for construction activities and throughout the life cycle of buildings (Reed and Sims, 2015 and Zhang et al., 2016). Construction works has also increased the demand for natural materials to be extracted and water usage as reflected by Priemus (2005). This clearly shows that the industry is contributing to environmental harm and damages. Zhang et al. (2016) pointed that incorporating sustainability into our built environment and promoting it, is believed to be capable of minimising impacts on the environment while providing economic strength and social well-being.

Sustainable construction, sustainable design and green buildings are efforts and improved working ways of the industry that embraces the sustainable development concept. These areas are gaining recognition worldwide as people in

general are becoming aware and concerned about their actions towards the environment. In Malaysia, property developers have started to introduce more sustainable products in the property market especially with the recently implemented Green Building Index (GBI) as mentioned by Muhammad Najib Razali Yasmin Mohd Adnan (2015). GBI is Malaysia's very own rating tool used to measure sustainability of buildings. To encourage the adoption of sustainability, the government has also offered financial benefits in form of tax exemption for owners of GBI-certified buildings and stamp duty allowance for GBI-certified house purchasers.

Due to the heterogeneity and uniqueness of each project (Abdul Hamid Mar Iman, 2015), different sustainable design and construction methods are applied depending on various factors such as geographical location, site conditions, availability of technology and expertise, cost, target market, availability of local materials and so on. With that, each project will carry similar or different sustainable features which might be used as key selling point to attract buyers in marketing and promotion of a project. Interestingly, Ho and Sim (1992) suggests that different groups of people have different preferences in choosing a house. Therefore, this research intends to compare the various sustainable strategies being marketed by property developers in Malaysia with house buyers' perception.

1.2 Problem Statement

Over the years, conventional working ways in the construction industry has brought detrimental effects to the environment. Excessive extraction of materials, over development of land, high energy and water consumption due to inefficient systems, waste generation and pollution resulting from building activities are now global concerns (Priemus, 2005 and Zhang et al., 2016). To address this issue, sustainable development has become the talk of the town. Many developed countries such as United Kingdom, Australia and Singapore have established major markets in sustainable property (Muhammad Najib Razali Yasmin Mohd Adnan, 2015). Malaysian developers are gradually joining the bandwagon with GBI in place and

government incentives as mentioned earlier. With that, the sustainable property market becomes more competitive, requiring developers to use correct marketing strategies to attract buyers. Abdul Hamid Mar Iman (2002) noted that marketing and promotion costs can take up to five percent of project funding. Hence, developers need to execute their marketing strategy well in promoting sustainable property in order to be able to recover the costs. Park et al. (2013) stressed that marketing sustainable buildings is only practical when house buyers' preferences are well-understood thus, justifying the intention of this research.

1.3   Aims and Objectives

This research aims to compare the sustainability strategies adopted by Malaysian property developers in promoting new projects or developments with the house buyers' perception. The following objectives were formulated to achieve the research aim:

a. To identify the sustainability strategies adopted by Malaysian property developers in promoting new projects or developments

b. To determine the most approved sustainability strategy by house buyers and compare it with the most adopted sustainability strategy by developers

c. To determine if there is any difference in attraction towards sustainable features between demographic groups

1.4   Scope and Limitation

The property market covers thousands of smaller markets in different locations, different type of properties and different demographic attributes (Abdul Hamid Mar Iman, 2002). This research will mainly focus on the residential type of property

which account for the highest number of property transaction in year 2015 (Jabatan Penilaian dan Perkhidmatan Harta, 2016). However, only new property or development particularly in the Klang Valley area market will be evaluated as there are more information readily available and most projects are concentrated in major cities or towns (Abdul Hamid Mar Iman, 2002). Therefore, new residential projects situated within Klang Valley will be analysed in this research.

Sustainable features of other property type such as commercial buildings, industrial and agricultural developments which are equally important in the context of the construction industry will not be studied. This is because other property type have different set of sustainability criteria which complicates and limits comparison. Additionally, new residential projects outside of Klang Valley will not be included in this research.

1.5   Method

In order to analyse the sustainability strategies used by developers to promote sustainable development, advertisements of new projects will be collected from various sources such as newspapers and brochures. Each advertisement will be studied to identify keywords that are related to the sustainable development concept. The findings will be tabulated to identify the most adopted strategy. A questionnaire survey will be carried out to gather house buyers' perception on the sustainability strategies being adopted by developers. With this, the appropriate comparison between developer and house buyers can be done. On top of that, the survey will help determine if demographic groups differ in attraction towards sustainable features via chi-square testing.

1.6   Report Structure and Outline

This report begins by exploring global environmental concerns that ultimately calls for sustainable development as a measure to minimise further damage and followed by a description of sustainability efforts in Malaysia. The disadvantages of working unsustainably, increasing competition in sustainable property market and effectiveness of marketing strategies were highlighted in problem statement. The research aim and three objectives were established. A scope of Klang Valley new residential properties was defined. The approach to be undertaken in this research will be evaluative in nature as explained in the 'Method' section of this chapter and followed by a walk-through of the report structure.

Chapter two brings about the concept of sustainable development which has been defined by different organisations and researchers. The aspects of sustainability particularly in the property sector were further discovered. Additionally, the house buyers' perception were reviewed by identifying major factors affecting housing choice and neighbourhood attributes being the most important influencing factor was discussed. Demographics, another influencing factor in house selection was investigated before concluding the chapter with a section on importance of the house buyers' perception in marketing.

In Chapter three, the rationale of using evaluative research design, archival and documentary research strategy, survey research strategy and non-parametric chi-square testing was justified. The five-sectioned questionnaire design, pre-testing, sampling and distribution method were also explained in details.

Chapter four contains all the findings obtained from the two research strategies conducted. The features being promoted in newspapers and brochures were tabulated. Responses from 80 survey participants were also analysed thoroughly and compared with developers' adoption. Significant differences in attraction were identified between males and females; young adults and adults. Moreover, house buyers' perception and developers' adoption of sustainability strategies were found to be mismatched and explained further in the 'Discussion' section.

The last chapter reviews whether the aim and objectives were achieved by highlighting the key finding of this research. It was found that sustainability strategies adopted by Malaysian property developers are mismatched with the house buyers' perception. Findings to answer the three research objectives were concisely elaborated as well thus, the aim was deemed accomplished. Implications to the construction industry, regulators and research field was revealed and followed by a reflection on the limitations of this research. Lastly, similar research on commercial and industrial property market were suggested.

CHAPTER 2

LITERATURE REVIEW

2.1   Sustainable Development

Morris (2002) suggests that sustainable development concept gained attention in the late 1980s when environmental policies were sprouting. Around that same period, United Nations World Commission on Environment and Development (WCED, 1987) had published a report entitled 'Our Common Future' whereby sustainable development was concluded as "…development that meets the needs of the present without compromising the ability of future generations to meet their own needs". This is one of the prominent definition established for sustainable development mentioned in countless research and textbooks (Reed and Sims, 2015; Muhammad Najib Razali Yasmin Mohd Adnan, 2015; Bramley and Power, 2009; Priemus, 2005; and Hill and Bowen, 1997).

The World Business Council for Sustainable Development (WBCSD) has also defined a well-received definition where sustainable development is "…the simultaneous pursuit of economic prosperity, environmental quality and social equity." (WBCSD, 2000 cited in Reed and Sims, 2015, p.277). The definition was derived from John Elkington's 'triple bottom line' (TBL) approach in conducting sustainable business as shown in Figure 2.1. The three aspects of TBL must be integrated and taken into account when achieving sustainable development. When only two dimension intersect, the situation becomes either viable, bearable or equitable (Kight, 2012). Priemus (2005) simplified sustainability as being accountable for the people, profit and planet.
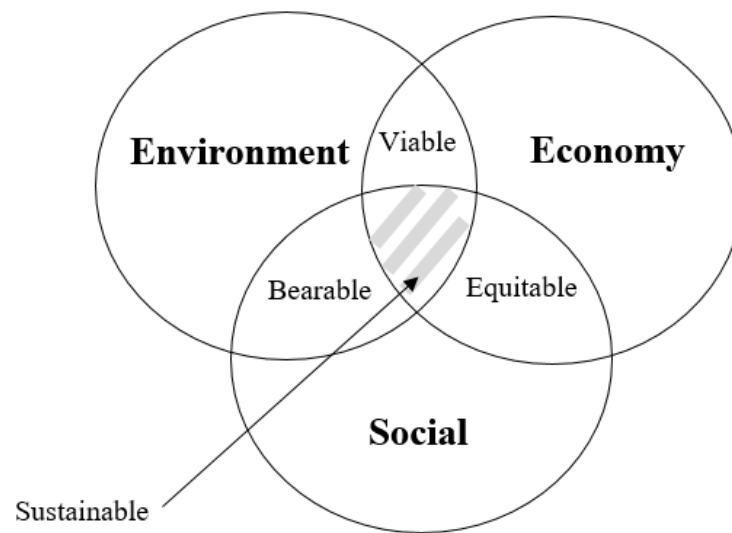
Figure 2.1 Triple Bottom Line
Adapted from Kight (2012)

A study conducted by Ebbesen and Hope (2013) have found that many project managers still have vague and non-holistic understandings of sustainability. They perceived sustainability concerns environmental problems. In actual, the interaction and relation between all three dimensions of TBL will lead to sustainability. Priemus (2005) highlighted that sustainability is beyond ecology, environment and technology. Instead it covers the relationships of society, forming a community, engaging people and lifestyles which are parked under the social dimension of the TBL. Social sustainability concerns the benefits and well-being of the society and quality of life. For instance, having access to local services such as education, health, social care and leisure opportunities; being in safe, healthy and friendly surroundings; surrounded by job opportunities and affordable houses are social sustainability features (Bramley and Power, 2009). Economic sustainability on the other hand, demands a more equally distributed resources within and across society (Lorenz, 2006) so that living standards are improved especially in developing and poor nations. Lorenz (2006) also highlighted that economic security is achieved by increasing people's capabilities via education and by producing useful goods and services. Ensuring affordability and employment are two other important principles of economic sustainability (Hill and Bowen, 1997).

2.2   Sustainability Strategies in Property Market

Sustainability is highly linked to the property sector because buildings affects the environment adversely by consuming enormous amount of energy, water and materials throughout its lifecycle. (Reed and Sims, 2015). Zhang et al., (2016) stated that sustainable buildings were perceived to be able to lessen the environment burden. Hence, many countries have introduced sustainable buildings gradually. Even in highly developed country like South Korea, Park et al. (2013) stressed that the sustainable property market is fairly new.

Developers are encouraged to adopt green or sustainability strategies because previous studies have proven that the strategies can be cost-effective options leading lowering operational cost and better building performance (Zhang et al., 2011). At the same time, they added that developers can contribute in protecting the environment and become more socially responsible. Table 2.1 shows the six aspects of sustainable buildings.

Zhang et al., (2016) discovered that there are developers who use sustainable features as their key selling point to convince environmental-conscious buyers to purchase their product. Example of distinguished features or new technologies being introduced to the market by property developers are green roofing, solar energy system, low emissivity windows, efficient equipment and appliance for natural ventilation (Zhang et al., 2011). Similarly, Reed and Sims (2015) argued that promoting sustainability features give developers a competitive edge in the property market.

Table 2.1 Aspects of Sustainable Buildings

Aspects	Explanation
Energy Efficiency	- Reduces the need to rely on generation of electricity from non-renewable sources which contributes to greenhouse gas emission such as carbon dioxide (CO_2). CO_2 causes global warming. - Use of renewable energy such as solar, wind and hydro energy promote sustainability and are environmentally safe. - Glazing offers natural lighting to cut down artificial lighting usage - Usage of energy efficient appliances
Water Conservation	- Usage of water efficient fittings for plumbing system - Reduce usage of potable water by harvesting rainwater for irrigation, flushing and other reuse - Adopt xeriscaping, a landscaping technique that help conserves water by reducing need of irrigation and selecting certain plant types (Friedman, 2007).
Building Materials	- Embodied energy is energy consumed during the production of a construction material (Reed and Sims, 2015). Low embodied energy materials are preferred. - Reusing and recycling materials from demolition activities help to minimise waste and production of virgin resources - Use low-volatile organic compound (VOC) materials to reduce risk to human health and environment - Use locally available material to decrease impact of transportation
Construction Waste	- Minimise disposal to landfill by having less waste - Reuse and recycle materials whenever possible - Have a proper waste management system - Design to suit standard sizes of material to reduce cutting that produces waste
Indoor Air Quality	- Ensure building has good ventilation and free of indoor pollutants from building materials and cleaning products containing VOC which are toxic (Friedman, 2007)
Site Management and Planning	- Redevelopment of brown sites or refurbishment of existing sites are preferred to mitigate greenfield sites - Situate site with readily available infrastructure such as roads, highways and bridges to minimise infrastructure construction which disrupts the natural environment, flora and fauna habitat. - Decrease usage of private transportation by locating site near public transportation access and local amenities such as schools and shops - Encourage cycling and walking where possible as alternative mode of transport

Adapted from Department of Environment and Climate Change NSW (2009), Pullen, et al (2010) and GreenBuildingIndex Sdn Bhd (2013)

2.3   House Buyers' Perception

2.3.1   Major Factors Influencing Housing Choice

Ho and Sim (1992) mentioned that different demographic groups have different preference in selecting a house. This is because there are many factors to be considered when deciding for a house purchase. In their study on selection criteria for condominium housing in Singapore, Ho and Sim (1992) introduced five main factors that influences housing choice as shown in Table 2.2. Wang and Li (2006) also discussed selection of housing based on four major groups namely accessibility to public transportation, living convenience, security of neighbourhood and current residential district. Other researchers have also identified five attributes that affect housing choice namely house price, physical quality of neighbourhood, social quality of neighbourhood, accessibility and characteristics of the property (Howie et al., 2010 and Visser et al., 2008, cited in Hu, Geertman and Hooimeijer, 2015). There are many similarities in the major factors that influence housing choice identified by previous researchers. For instance, other than actual physical characteristics of the house itself, the surrounding environment of the house which is the neighbourhood is an equally important factor in influencing house choice as agreed by the nine researchers.

Table 2.2 Consideration Factors in Selecting a House

Consideration Factors	Selection Variable
Physical characteristics	- Amenities or recreational facilities - Overall design - Unit design - Quality of finishes - Number of bedrooms
Peacefulness and prestige factors	- Peacefulness - Prestige
Locational or accessibility attributes	- Proximity to work - Familiarity of district - Proximity to shops - Proximity to friends - Proximity to public transportation
Cost consideration	- Reasonable price - Low maintenance charge - Availability of finance
Other factors	- Tenure - Developer reputation - Orientation or geomancy

Adapted from Ho and Sim (1992)

2.3.2 Neighbourhood Attributes as the Most Important Factor Influencing House Choice

Peacefulness of neighbourhood was ranked as the most important factor by condominium dwellers in Singapore (Ho and Sim, 1992). The peacefulness factor was ranked higher than physical characteristics of the condominium such as the recreational facilities and overall project design. Wang and Li (2006) obtained similar findings whereby safety of neighbourhood and convenience to public transportation and shops were perceived to be more important than the dwelling attributes when selecting a house. Research by Hu, Geertman and Hooimeijer (2015) also concludes that house buyers are drawn to sustainable houses located near to train services, job opportunities and free from air pollution provided the houses are

reasonably priced and affordable. Neighbourhood-related qualities are prioritised once again in that research.

2.3.3   Demographics as Factors Influencing House Choice

In terms of gender, age, family size and household income, the Singaporeans do not differ significantly (Ho and Sim, 1992). Wang and Li (2006) found that housing choice may be influenced by demographic factors like household income, education level and nature of employment organisation whereas only age was discovered to be a weak influencing factor. This means there are not much difference in housing choice between the young and the old people. Study conducted by Bramley and Power (2009), showed contrary findings where elder people living in dense neighbourhood were most dissatisfied with the area. This means older age group prefer to live in a less dense development compared to the younger age group. Bramley and Power (2009) added that accessibility to local services in low dense area are not as convenient compared to denser area. Ho and Sim (1992) also came to a conclusion that peacefulness of neighbourhood and freehold tenure are desirable to older people. Gender wise, Park et al., (2013) noted that males were willing to pay more for houses that are energy efficient and equipped with information technology (IT) facilities. Females on the other hand will pay more for houses that are low in volatile organic compounds (VOC). To high income earners, IT facilities (Park et al., 2013) and reputation of developer (Ho and Sim, 1992) are of high importance. Males also prioritise the reputation of the developer and freehold tenure more than females (Ho and Sim, 1992).

2.3.4   Importance of House Buyer's Perception in Marketing

Park et al., (2013) pointed that marketing sustainable buildings will not be effective without understanding house buyers' preferences resulting in low sales and slow disposal of project. According to World Green Building Council (2013) and Park et

al. (2013), sustainable buildings can be costly to develop and may incur additional construction costs compared to a conventional building. With such high cost risk to the developer, it is only appropriate to conduct a proper market research before undertaking sustainable property projects. Market research can provide various information on the existing supply and demand of the market, project competitors and target buyers or tenants (Reed and Sims, 2015). These information would help developers to undertake projects that are high in demand and likely to be sellable. Therefore, determining house buyers' needs is crucial to provide better satisfaction and choices to house buyers in return for profit, good reputation, competitive edge and long-term survival of the developer (Abdul Hamid Mar Iman, 2002).

CHAPTER 3

METHODOLOGY

3.1 Introduction

The chapter reviews the research design, two research strategies and data analysis methods applied in this research. The first section justifies how evaluative research design is appropriately used to answer the aim and objectives. This is followed by how the research strategies namely archival and documentary; and survey are applied to gather quantitative data. In the last section data analysis methods are discussed.

3.2 Evaluative Research Design

The purpose of this research design is to evaluate the performance of an existing business strategy, programme or policy, to test how well it can function (Saunders, Lewis and Thornhill, 2016). It is done by highlighting the 'how', 'what', 'why' and 'to what extent' questions in research (Saunders, Lewis and Thornhill, 2016). Therefore, evaluative research design was used to assess the sustainability strategies adopted by developers. The assessment was done by comparing the sustainability strategies adopted by Malaysian property developers in promoting new projects or developments with the house buyers' perception which was the aim of this research.

3.3   Research Strategies

3.3.1   Archival and Documentary Research

Archival and documentary research was conducted to answer the first objective that is to identify the sustainability strategies adopted by Malaysian property developers in promoting new projects or developments. Abdul Hamid Mar Iman (2002) noted that advertising is a very popular promotional tool. It is economical, reliable, flexible and available in various media. Therefore, advertising was chosen as a source to obtain information on the sustainability strategies adopted by developers in new projects or developments. Advertising itself consist of several types of media as shown in Figure 3.1.

A sample survey (1998) cited in Abdul Hamid Mar Iman (2002) have found that most consumers prefer newspapers and magazines media advertising because it is highly accessible, have large coverage and provide them with sufficient consideration space about the product. Hence, in this research, property advertisements were collected from mainly newspapers and brochures. A set of 26 sustainable features were compiled as a result from this research strategy. The features were used in the subsequent survey research strategy for evaluation purpose by the respondents.
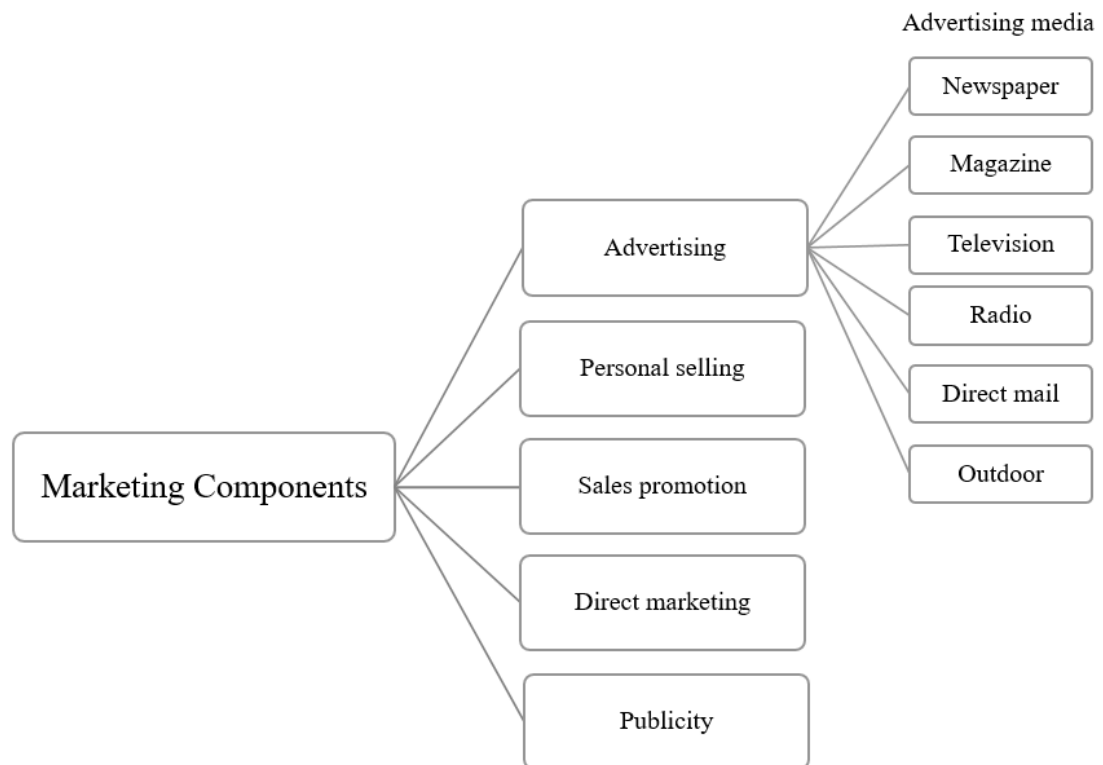
Figure 3.1 General Marketing Components

Adapted from Abdul Hamid Mar Iman (2002)

3.3.2   Survey

Survey was the second research strategy used to collect primary quantitative data. Through survey, answers to the second and third research objectives were uncovered. Questionnaire survey was chosen among the other type of surveys available due to its low cost, convenience, wide coverage reach and rapid data collection. Web-based programme, Google Forms was used to prepare the questionnaire which consist of five sections explained subsequently.

3.3.2.1   Introduction Section

The research title, aim and author's identity were introduced in the first section of the questionnaire. Confidentiality and anonymity were offered to encourage higher response rate and honest feedbacks from the respondents.

3.3.2.2   General Awareness and Preference Section

Section two consist of four warm-up questions to determine the respondents' general awareness towards sustainable development and Green Building Index (GBI), likeliness of purchasing a sustainable property over a non-sustainable property and property type preference. GBI is a rating tool to measure the greenness or sustainability of a building. Therefore, it is closely linked to the research.

3.3.2.3   Attraction to Sustainable Features Section

This section required respondents to select from the list of 26 sustainable features that they are attracted to when considering a house purchase. The second research objective where the most approved sustainability strategy by house buyers is determined through this question.

3.3.2.4   Willingness to Pay Additionally for Sustainable Features Section

Section four asks respondents to select from the same list as the previous section on sustainable features they are willing to pay extra for a house to have. This question is to further supplement answers from Section 3 during data analysis.

3.3.2.5 Demographics Section

In last section of the questionnaire, gender, age, ethnicity, household size and monthly household income of respondents were queried. Information gathered from this section will be used to analyse the difference in attraction between demographic groups and to answer the last research objective.

3.3.2.6 Pre-testing the Questionnaire

A pre-testing was carried out on ten respondents to check for correctness, clarity and adequacy of the prepared questionnaire. The feedback obtained was the list of sustainable features being lengthy and repetitive which made it cumbersome for selection. A total of 45 keywords or sustainable features were prepared in the initial questionnaire. After the pre-test, the keywords were rearranged into larger groups hence, the sustainable features were narrowed down to 26 which was more manageable.

3.3.2.7 Sampling

The target population for this research are individual end users who are eligible to own or buy a house in Malaysia. However, it is not possible to collect data from the whole target population. Hence, probability sampling was used to enable statistical findings of this research to be generalised for the target population.

3.3.2.8 Distributing the Questionnaire

The questionnaire was computer-delivered to respondents via email which also served as the survey participation invitation. Link to the questionnaire was attached

in the email to enable respondents to fill in their response. This is known as self-administered survey which is cheap, highly convenient and offer good sample accessibility (Cooper and Schindler, 2014). Furthermore, respondents were given the flexibility of answering the questionnaire at anytime and anywhere desired. The Google Form questionnaire is easy to use as it can be accessed and completed through a computer or smartphone with proper Internet connection and browser.

3.4   Data Analysis Methods

3.4.1   Analysing the Property Advertisements

As discussed in the earlier section, archival and documentary research was conducted which involved advertisements and brochures collection. After collection, the advertisements were studied carefully to help identify keywords that are relevant to sustainable development. Most advertisements contain other information such as the developer name, project name, location, property type and tenure which were extracted as well for recording purpose. All the information gathered were tabulated to compute the most advertised feature. It was noted that different wording may be used in advertisements to describe a particular feature. For instance, advertisement A uses 'lush landscapes', advertisement B uses 'green environment' while advertisement C uses 'lush greenery'. All these keywords are referring to the same feature that is having 'greenery and landscaped areas'. Therefore they were grouped together as a feature.

3.4.2   Analysing the Questionnaire Survey Data

After collection of responses was completed, data preparation which involved coding and data entry were done. Since Statistical Package for Social Science (SPSS) software was chosen to be used in this research for statistical analysis, proper coding must be done prior to analysis. Numerical codes was assigned to each of the

variables and choices in the questionnaire to facilitate analysis. This was followed by input of variables and data into SPSS readying it for testing.

Non-parametric chi-square test was used to determine the statistical significant differences (if any) in attraction towards the sustainable features between demographics groups. That answers to the third research objective. A very important assumption to be met when using chi-square test is 80% of the expected frequencies should be five or larger otherwise Fisher's Exact Test is used (Morgan, et al., 2014). While testing the significant difference in age groups, the condition of chi-square was not met because the expected frequency was less than five. Hence, the four age groups of 21 to 30 years old, 31 to 40 years old, 41 to 50 years old and 51 years old and above were regrouped into young adults (30 years old and below) and adults (31 years old and above).

Chi-square test determines the probability of the difference between groups occurring by chance alone. Therefore, the Pearson chi-square (p) should be lesser than five percent or 0.05 in order to conclude with 95% confidence that the difference is significant statistically and did not occur solely by chance (Saunders, Lewis and Thornhill, 2016). The phi (φ) was also determined to check the effect size or strength of the relationship (Cohen, 1988 cited in Morgan, et al., 2014). The interpretation of effect size is shown in Table 3.1.

Table 3.1 Interpretation of Effect Size

General Interpretation of the Strength of a Relationship	The r Family
	φ
Much larger than typical	$\geq \lvert 0.70 \rvert$
Large or larger than typical	$\lvert 0.50 \rvert$
Medium or typical	$\lvert 0.30 \rvert$
Smaller or smaller than typical	$\lvert 0.10 \rvert$

Adapted from Cohen, 1988 cited in Morgan, et al., 2014

CHAPTER 4

RESULTS AND DISCUSSION

4.1   Introduction

As two different strategies were used to collect data for this research, the first section will discuss findings of the archival and documentary research whereby sustainability strategies or features promoted by developers in advertisements were uncovered. The second section will describe and analyse findings obtained from the survey research whereby sustainability strategies most approved by house buyers will be compared against the developers' most adopted sustainability strategy. The difference in attraction between gender and age were also discussed. Lastly, this chapter is concluded with discussion of the results in relation to the literature.

4.2   Sustainable Features Promoted in Advertisements

Table 4.1 shows the tabulation result of 32 property advertisements sourced from newspapers and brochures. There were 26 sustainable features identified being promoted in the advertisements. The most marketed feature was found to be 'lush landscape, greenery, garden and park' and 'recreational facilities'. Both features at a tie were mentioned in 21 out of the 32 advertisements collected that is 65.6%. Other top features being promoted in more than half of the advertisements collected were 'spacious, comfortable and healthy living', 'accessible by highway and major roads', 'eco-friendly, nature, natural and sustainable' and 'gated and guarded compound'.

Features that appeared only once in the 32 advertisements were 'energy efficient systems', 'smart home automation controls' and 'low dense development' respectively.

Table 4.1 Sustainable Features in Property Advertisement

Features	Advertised (N=32)	
	n	*%*
Lush landscape, greenery, garden and park	21	65.6%
Recreational facilities such as swimming pool, gym, clubhouse and playground	21	65.6%
Spacious, comfortable and healthy living	19	59.4%
Accessible by highway and major roads	18	56.3%
Eco-friendly, nature, natural and sustainable	17	53.1%
Guarded and gated compound	17	53.1%
Close to shopping complexes or retail area	15	46.9%
Freehold tenure	13	40.6%
Peaceful and calm surrounding	12	37.5%
Integrated township	11	34.4%
Award winning development	11	34.4%
Close to city or CBD area	9	28.1%
Close to schools or universities	9	28.1%
By reputable property developer	9	28.1%
Close to train service	8	25.0%
Large windows for natural lighting	7	21.9%
Fresh air and good ventilation	5	15.6%
Safe neighbourhood	4	12.5%
Green-certified development	4	12.5%
Prime location and prestigious neighbourhood	4	12.5%
High speed connectivity with fibre optics	3	9.4%
Affordable	3	9.4%
Good orientation and geomancy (feng shui)	2	6.3%
Energy efficient system such as solar powered heaters	1	3.1%
Smart home with automation controls	1	3.1%
Low dense development	1	3.1%

4.3 Questionnaire Survey Results

4.3.1 Demographics of Respondents

A total of 80 responses (35 males and 45 females) were gathered from the 160 questionnaires sent out. The response rate obtained was 50.0%. The largest group of

respondents at 57.5% were adults below 30 years old while the smallest group at 6.3% were aged between 41 to 50 years old. Majority of the respondents, 82.5% who took part in the survey were of Chinese ethnicity. Among the three categories of household size, more than half (67.5%) the respondents live in medium size household which consists of three to five persons. In terms of monthly household income, 45.0% earn between RM1, 001 to RM5, 000 which is the largest group. The second largest group, 31.3% earn at a higher range between RM5, 001 to RM10, 000. Generally, the respondents are younger adults who are Chinese and live in a lower to middle class household. The demographic factors are shown in Table 4.2.

Table 4.2 Demographics of Survey Respondents

Attributes	*n*	% (N=80)
Gender		
Male	35	43.8%
Female	45	56.3%
Age		
21 to 30 years old	46	57.5%
31 to 40 years old	13	16.3%
41 to 50 years old	5	6.3%
51 years old and above	16	20.0%
Ethnicity		
Malay	9	11.3%
Chinese	66	82.5%
Indian	2	2.5%
Other	1	1.3%
Non-Malaysian/Expatriate	2	2.5%
Household size		
1 to 2 persons	12	15.0%
3 to 5 persons	54	67.5%
6 persons and more	14	17.5%
Monthly household income		
RM1,000 and below	9	11.3%
RM1,001 to RM5,000	36	45.0%
RM5,001 to RM10,000	25	31.3%
RM10,001 to RM15,000	5	6.3%
RM15,001 and above	5	6.3%

4.3.2   General Awareness and Preference towards Sustainable Development

Table 4.3 shows the results obtained from Section two of the questionnaire. Almost half the respondents (48.8%) have heard of and knew about sustainable development whereas only 1.3% that is one respondent has in-depth knowledge in it. The respondents' awareness however, dropped significantly regarding the GBI rating system. Almost half the respondents at 43.8% have not come across GBI before. Nevertheless, 18.8% respondents have heard of GBI and recognises its logo. As GBI is relatively new in Malaysia and was incorporated in year 2009, a low awareness on it was anticipated. Even so, there were four out of 80 (5.0%) respondents claimed to have specialised knowledge in GBI.

Table 4.3 Awareness and Preference of Survey Respondents

Details	*n*	% (N=80)
Familiarity with 'Sustainable Development' concept		
No, I do not know about it	22	27.5%
I have heard about it only	18	22.5%
Yes, I have heard about it and I know it concerns the environmental, economic and social dimensions altogether	39	48.8%
Yes, I have in-depth knowledge about it	1	1.3%
Familiarity with GBI		
No, I do not know about it	35	43.8%
I have heard about it only	26	32.5%
Yes, I have heard about it and I know its logo	15	18.8%
Yes, I have in-depth knowledge about it	4	5.0%
Likelihood to purchase sustainable property		
Very likely	12	15.0%
Likely	34	42.5%
Undecided	26	32.5%
Unlikely	7	8.8%
Very unlikely	1	1.3%
Preference of property type		
Landed unit	59	73.8%
Low rise unit	13	16.3%
High rise unit	8	10.0%

Despite the low awareness of GBI among respondents, more than half the respondents were keen in purchasing a sustainable property over a non-sustainable one. It was found that there is also a very high preference for a landed unit type of

property. Overall, respondents' awareness in sustainable development and GBI rating system has shown contrasting results where the former is better known than the latter. According to Figure 4.1, respondents have shown positive interests in sustainable property. More than half the respondents would purchase or rent a sustainable property over a non-sustainable property but there were also many who opined neutral. In terms of property type preference, almost three quarter of the respondents, 73.8% chose landed units as their most preferred type. Low and high rise properties were not popular choices among the respondents.
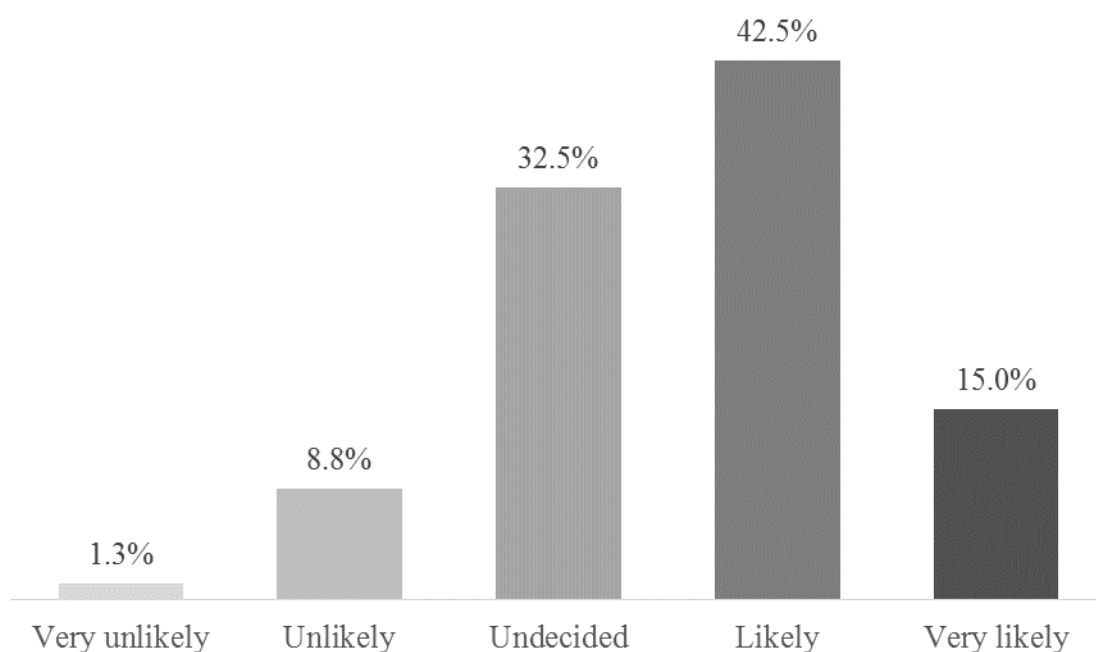
Figure 4.1 Respondents' Likeliness to Purchase Sustainable Property

4.3.3   Attraction towards Different Sustainable Features Compared to Advertisements Marketed by Property Developers

The questionnaire survey found that respondents are most attracted to the 'safe neighbourhood' feature (75%) and least attracted to 'award winning development' feature (8.8%). More than half of the respondents were also drawn to features such as 'eco-friendly, nature, and sustainable', 'spacious, comfortable and healthy living',

'affordable', 'fresh air and good ventilation', 'peaceful and calm surrounding' and 'lush landscape, greenery, garden and park'. Table 4.4 shows the attraction of respondents towards each feature compared to the occurrence of the feature in 32 advertisements.

There is a noticeable difference between the features respondents' are attracted to and the features that are actively promoted by property developers. For instance, 75% of the respondents have selected 'safe neighbourhood' as the feature they would look for when browsing through property advertisement however, only a mere 12.5% of advertisements were found to promote that feature. Similarly, as many as 68.6% respondents are drawn to the 'affordable' feature when considering a house purchase but, it is promoted in 9.4% of the advertisements only. This applies to other features as well such as 'fresh air and good ventilation' feature, 'energy efficient system' feature, 'smart home with automation controls' feature and 'low dense development' feature where the percentage difference are 51.9%, 44.4%, 33.1% and 31.9% respectively.

15 out of the 26 features (57.6%) have higher percentage of respondent's attraction compared to its occurrence in advertisements. This simply means there is more attraction but less advertised in the newspapers or brochures. On the contrary, 11 features being promoted by property developers do not appeal as much to the respondents because the attraction is lower but it is marketed more in the advertisements. For instance, 34.4% of the advertisements promote the 'award winning development' feature however, only 8.8% of the respondents are keen in this feature when considering a house purchase. Overall, the marketing of sustainable features adopted by property developers do not quite match features that are actually attractive to the house buyers.

Table 4.4 Attraction towards Different Sustainable Features Compared to Advertisements Marketed by Property Developers

Features	Attraction		Features	Advertised	
	n	% (N=80)		*n*	% (N=32)
Safe neighbourhood	60	75.0%	Lush landscape, greenery, garden and park	21	65.6%
Eco-friendly, nature, natural and sustainable	58	72.5%	Recreational facilities such as swimming pool, gym, clubhouse and playground	21	65.6%
Spacious, comfortable and healthy living	55	68.8%	Spacious, comfortable and healthy living	19	59.4%
Affordable	55	68.8%	Accessible by highway and major roads	18	56.3%
Fresh air and good ventilation	54	67.5%	Eco-friendly, nature, natural and sustainable	17	53.1%
Peaceful and calm surrounding	47	58.8%	Guarded and gated compound	17	53.1%
Lush landscape, greenery, garden and park	46	57.5%	Close to shopping complexes or retail area	15	46.9%
Energy efficient system such as solar powered heaters	38	47.5%	Freehold tenure	13	40.6%
Freehold tenure	37	46.3%	Peaceful and calm surrounding	12	37.5%
Accessible by highway and major roads	35	43.8%	Integrated township	11	34.4%
Recreational facilities such as swimming pool, gym, clubhouse and playground	34	42.5%	Award winning development	11	34.4%
Guarded and gated compound	31	38.8%	Close to city or CBD area	9	28.1%
High speed connectivity with fibre optics	30	37.5%	Close to schools or universities	9	28.1%
Close to shopping complexes or retail area	30	37.5%	By reputable property developer	9	28.1%
Smart home with automation controls	29	36.3%	Close to train service	8	25.0%
Close to train service	29	36.3%	Large windows for natural lighting	7	21.9%
Low dense development	28	35.0%	Fresh air and good ventilation	5	15.6%
Large windows for natural lighting	24	30.0%	Safe neighbourhood	4	12.5%
Green-certified development	23	28.8%	Green-certified development	4	12.5%
Close to schools or universities	22	27.5%	Prime location and prestigious neighbourhood	4	12.5%
By reputable property developer	22	27.5%	High speed connectivity with fibre optics	3	9.4%
Good orientation and geomancy (feng shui)	21	26.3%	Affordable	3	9.4%
Close to city or CBD area	19	23.8%	Good orientation and geomancy (feng shui)	2	6.3%
Integrated township	12	15.0%	Energy efficient system such as solar powered heaters	1	3.1%
Prime location and prestigious neighbourhood	8	10.0%	Smart home with automation controls	1	3.1%
Award winning development	7	8.8%	Low dense development	1	3.1%

4.3.4 Attraction Compared to Willingness to Pay Extra for Different Sustainable Features

Table 4.5 shows the comparison between respondents' attraction towards each feature and their willingness to pay extra for a house to have the features. Generally, respondents are cautious in spending more money for a house to have certain sustainable features. This is evident from Table 4.5 where the number of respondents who are willing to pay extra are lesser compared to the number of respondents who are attracted to that feature. For instance, 72.5% of respondents are interested with the 'eco-friendly, nature, natural and sustainable' feature however, only 45.0% are willing to pay additionally for this feature. There is a difference of 27.5% in response for attraction and willingness. Two other features with 27.5% difference in response are 'spacious, comfortable and healthy living' and 'fresh air and good ventilation'.

Nevertheless, 'safe neighbourhood' and 'eco-friendly, nature, natural and sustainable' remained as the top two features respondents are attracted to and willing to pay extra for. Only 8.8% respondents would pay extra for is 'integrated township' which is the least in number. 'Integrated township' also happened to be not very attractive to the respondents, being in third last position among the 26 features. Similarly, 'prime location and prestigious neighbourhood' was not very attractive, being in the second last position and most respondents would not pay extra to have this feature. It is noted that house buyers may not want to pay additional amount of money to have a particular feature even though they are attracted to it when considering a house purchase.

Table 4.5 Attraction Compared to Willingness to Pay Extra for Different Property Features

Features	Attraction		Features	WTP	
	n	% (N=80)		*n*	% (N=80)
Safe neighbourhood	60	75.0%	Safe neighbourhood	39	48.8%
Eco-friendly, nature, natural and sustainable	58	72.5%	Eco-friendly, nature, natural and sustainable	36	45.0%
Spacious, comfortable and healthy living	55	68.8%	Peaceful and calm surrounding	34	42.5%
Affordable	55	68.8%	Spacious, comfortable and healthy living	33	41.3%
Fresh air and good ventilation	54	67.5%	Fresh air and good ventilation	32	40.0%
Peaceful and calm surrounding	47	58.8%	Guarded and gated compound	32	40.0%
Lush landscape, greenery, garden and park	46	57.5%	Freehold tenure	29	36.3%
Energy efficient system such as solar powered heaters	38	47.5%	Recreational facilities such as swimming pool, gym, clubhouse and playground	28	35.0%
Freehold tenure	37	46.3%	Lush landscape, greenery, garden and park	27	33.8%
Accessible by highway and major roads	35	43.8%	Energy efficient system such as solar powered heaters	27	33.8%
Recreational facilities such as swimming pool, gym, clubhouse and playground	34	42.5%	High speed connectivity with fibre optics	27	33.8%
Guarded and gated compound	31	38.8%	Close to train service	23	28.8%
High speed connectivity with fibre optics	30	37.5%	Smart home with automation controls	19	23.8%
Close to shopping complexes or retail area	30	37.5%	Accessible by highway and major roads	18	22.5%
Smart home with automation controls	29	36.3%	Close to shopping complexes or retail area	17	21.3%
Close to train service	29	36.3%	Large windows for natural lighting	16	20.0%
Low dense development	28	35.0%	By reputable property developer	14	17.5%
Large windows for natural lighting	24	30.0%	Green-certified development	13	16.3%
Green-certified development	23	28.8%	Close to schools or universities	12	15.0%
Close to schools or universities	22	27.5%	Low dense development	12	15.0%
By reputable property developer	22	27.5%	Close to city or CBD area	11	13.8%
Good orientation and geomancy (feng shui)	21	26.3%	Award winning development	11	13.8%
Close to city or CBD area	19	23.8%	Good orientation and geomancy (feng shui)	8	10.0%
Integrated township	12	15.0%	Prime location and prestigious neighbourhood	8	10.0%
Prime location and prestigious neighbourhood	8	10.0%	Integrated township	7	8.8%
Award winning development	7	8.8%	Affordable	-	-

Note: WTP – Willingness To Pay

4.3.5 Difference between Male and Female in Attraction towards Sustainable Features

Generally, there were not much significant difference between both genders in terms of attraction except for the three features shown in Table 4.7. The Pearson chi-square results (p) indicate that males and females significantly differ in attraction to the 'energy efficient system' ($p = 0.015$), 'close to shopping complexes' ($p = 0.023$) and 'award winning development' ($p = 0.019$) features. However, the 'award winning development' feature did not meet the criteria for the use of chi-square test that is to have an expected frequency of at least five or larger. The Fisher exact test was used instead. It was found that it is not statically significant ($p = 0.808$). Therefore, in actual, there is a statistical significant difference between male and female in attraction to 'energy efficient system' and 'close to shopping complexes' features only.

Table 4.6 Difference between Male and Female in Attraction towards Sustainable Features

Feature	n (N=80)	Male (N=35)	Female (N=45)	$\chi2$	p
		Gender			
Energy efficient system				5.885	0.015
Attracted to	38	22	16		
Not attracted to	42	13	29		
Close to shopping complexes				5.150	0.023
Attracted to	30	18	12		
Not attracted to	50	17	33		
Award winning development*				5.489	0.019
Attracted to	7	6	1		
Not attracted to	73	29	44		

*Criteria for chi-square was not met. Fisher Exact Test was used and found to be not statistically significant ($p = 0.808$)

There is a higher percentage of males who are attracted to 'energy efficient system' and 'close to shopping complexes or retail area' features compared to the females as shown in Figure 4.2. With 95% of confidence, it can be concluded that

this difference did not occur solely by chance factors. The effect size of the two features were found to be smaller sized than typical as the Phi were -0.271 and -0.254 respectively.
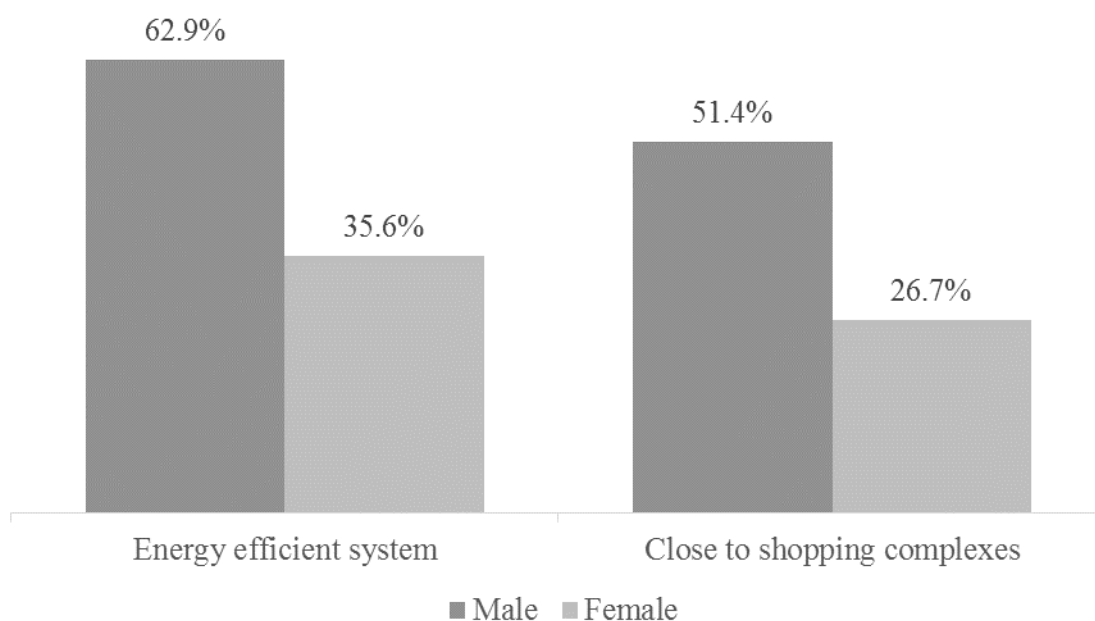
Figure 4.2 Percentage of Attraction to Sustainable Features between Male and Female

4.3.6 Difference between Young Adults and Adults in Attraction towards Sustainable Features

Young adults and adults were found to have significant statistical difference in terms of attraction towards the five features shown in Table 4.8. Both age groups differ significantly in attraction to 'close to city or CBD area' ($p = 0.007$), 'close to shopping complexes' ($p = 0.007$), 'close to schools or universities' ($p = 0.028$), 'low dense development' ($p = 0.016$) and 'freehold tenure' ($p = 0.017$). The effect size of the first two features were of medium size ($\varphi = -0.302$ and -0.300). The three other features were of smaller size than typical ($\varphi = 0.246$, 0.270 and 0.268)

Table 4.7 Difference between Young Adults and Adults in Attraction towards Sustainable Features

Feature	n (N=80)	Young adults (N=46)	Adults (N=34)	χ2	p
Close to city or CBD area				7.275	0.007
Attracted to	19	16	3		
Not attracted to	61	30	31		
Close to shopping complexes or retail area				7.216	0.007
Attracted to	30	23	7		
Not attracted to	50	23	27		
Close to schools or universities				4.855	0.028
Attracted to	22	17	5		
Not attracted to	58	29	29		
Low dense development				5.848	0.016
Attracted to	28	11	17		
Not attracted to	52	35	17		
Freehold tenure				5.725	0.017
Attracted to	37	16	21		
Not attracted to	43	30	13		

According to Figure 4.3, only 8.8% of adults were attracted to 'close to city' feature compared to the 34.8% young adults that were attracted. In other words, almost all adults (91.2%) were uninterested in a house that is 'close to city'. Similarly, there is a lower percentage of adults being attracted to 'close to shopping complexes' and 'close to schools or universities' features. The percentage of young adults were more than twice the percentage of adults being attracted to the both features. On the contrary, more adults were attracted to 'low dense development' and 'freehold tenure' features compared to the young adults. With 95% confidence level, it can be concluded that these differences did not occur by chance factor alone therefore, are statistically significant.
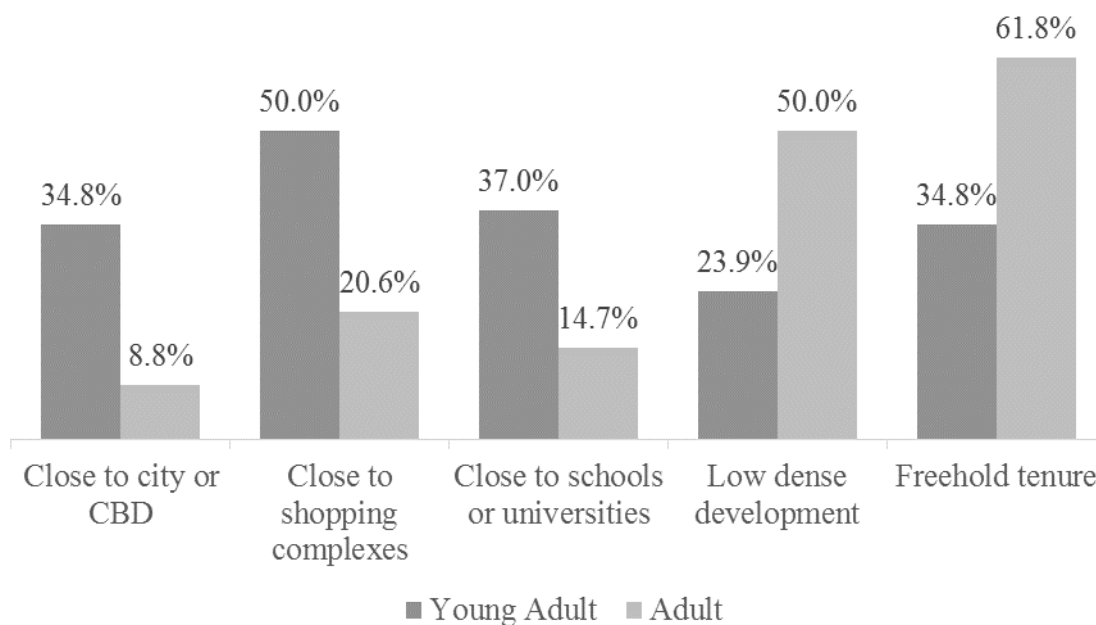
Figure 4.3 Percentage of Attraction to Sustainable Features between Young Adult and Adult

4.4 Discussion

Currently, there is a lacking of literature available examining on the marketing strategies used by property developers to promote new projects or developments, let alone sustainability marketing strategies. According to Muhammad Najib Razali Yasmin Mohd Adnan (2015), the sustainable property market in Malaysia is still at infancy stage compared to Singapore, Australia and United Kingdom. Therefore, it is highly possible that studies similar to this research are not conducted yet since the market is relatively new. It is also likely that adoption of marketing strategies by property developers is not popular topic among researchers which in turn contribute to this lacking. Nevertheless, sustainability marketing strategies discovered from this research will be discussed.

4.4.1 Physical Attribute is Most Advertised While Neighbourhood Attribute is Most Attractive

Advertising is a component of promotion used ultimately to increase sales (Abdul Hamid Mar Iman, 2002). This research found that the three most advertised features in newspapers and brochures are lush landscapes; recreational facilities; spacious, comfortable and healthy living. These features are physical attributes of the property itself (Ho and Sim, 1992). However, house buyers were attracted most to the neighbourhood-related attribute (safe neighbourhood) followed by two physical attributes (eco-friendly; and spacious, comfortable and healthy living), cost-related attribute (affordable) and another physical attribute (fresh air and good ventilation). Developers on the other hand, promote more on the three aforesaid physical attributes followed by a locational attribute (accessible by highways and roads) and another physical attribute (eco-friendly). In fact, Wang and Li (2004) found that neighbourhood-related attributes are more crucial compared to physical attributes when house purchase is considered. It is highly agreeable with this research.

4.4.2 Positive Interest and Awareness in Sustainable Development

About half the respondents have general awareness on the 'Sustainable Development' concept which validates the point of Reed and Sims (2015) that consumers are becoming more conscious of the environment and of being sustainable. In fact, the 39 respondents were well-informed that sustainable development is more than just environmental concerns. The positive interests displayed by respondents in the likeliness of purchasing a sustainable property over a non-sustainable one is consistent with the phenomenon that consumers' attitudes towards sustainability have shifted constructively as mentioned by Reed and Sims (2015).

4.4.3 Neighbourhood Attribute Is House Buyers' Most Approved Sustainability Strategy

Safe neighbourhood was the most attractive and top feature respondents were willing to pay additionally for. This is consistent with findings by Wang and Li (2006) that neighbourhood attributes are of high priority in home purchase decisions. To support this finding further, Ho and Sim (1992) concluded that neighbourhood security is one of the main factors in selection of condominium housing in Singapore. Peacefulness of the neighbourhood was ranked the highest among Singaporean condominium dwellers. In this study, 'peaceful and calm surroundings' was considerably attractive earning the sixth position. In terms of willingness to pay, it came in third position after safe neighbourhood and eco-friendly features.

The most approved sustainability strategy by house buyers would be neighbourhood-related attributes such as safe neighbourhood; peaceful and calm surroundings. This is opposite to the sustainability marketing strategies adopted by developers where physical characteristics of the property are emphasised more often in advertisements. Therefore, neighbourhood-related attributes should be highlighted as the key selling feature of sustainable houses instead of physical characteristics of the property (Wang and Li, 2006) to be more effective in capturing house buyers' interest.

4.4.4 Males Are More Attracted To Energy Efficiency and Proximity to Shopping Malls Compared to Females

No significant difference was identified between male and female in attraction towards majority of the sustainable features. Ho and Sim (1992) also noted in their study that both genders are only slightly different in housing selection. Though, there was an exception for this research. More males were attracted to the 'energy efficient system' and 'close to shopping complexes' features compared to the female counterpart. This finding is similar to the results of Park et al. (2013) where males were slightly more willing to pay for houses with lower energy consumption. They

suggested this may be due to males being keener on latest technology appliances resulting in better energy efficiency. Limited relevant literature were found to strengthen the finding on the higher attraction of male to 'close to shopping complexes' feature but suggestion by Park et al. (2013) can somewhat be linked to fuel energy consumption. Staying closer to malls or retail area reduces the usage of automobile transportation which in turn saves energy and possibly for convenience purpose.

4.4.5   Young Adults Are More Attracted to Locational Attributes

Between the young adults and adults, significant differences were discovered in attraction towards three locational attributes (close to city or CBD area, close to shopping complexes and close to schools or universities), one neighbourhood attribute (low dense development) and one other attribute (freehold tenure). Bramley and Power (2009), reviewed that proximity to education, health and social care services as well as leisure opportunities are usually associated with denser developments. In this study, higher percentage of young adults were attracted to the three locational attributes compared to adults. Incidentally young adults were not as drawn to 'low dense development' which coincides with Bramley and Power (2009). More young adults were drawn to the locational attributes possibly due to convenience. This is supported by Wang and Li's (2006) finding that end users would pay more for houses that are highly convenient to shopping venues. On the other hand, larger percentage of adults exhibit attraction to 'low dense development' and 'freehold tenure' features which fewer young adults were interested in. Adults prefer less compact residences that might be further from the city, shopping complexes and educational institutions as highlighted by Bramley and Power (2009). They found that elder people living in denser developments were highly dissatisfied with the neighbourhood. Ho and Sim (1992) also concluded that older age group prioritise peacefulness in their neighbourhood and freehold tenure of a property which incidentally was reflected in this research.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

This chapter will conclude the research by revisiting the comparison done between sustainability strategies adopted by Malaysian property developers in promoting new projects or developments with the house buyers' perception. A review of the identification of sustainability strategies adopted by developers, determination of the most approved sustainability strategy by house buyers and comparing it with developers' adoption as well as determination of difference in attraction towards different sustainable features between demographic groups were done. The implications of this study to the construction industry, regulators and academic field were discussed and followed by acknowledging the limitations of this research. To close the chapter, similar research on commercial property market was recommended.

5.2   Research Aim, Objectives and Key Findings Review

It was found that Malaysian property developers adopt strategies that are more to the physical and locational attributes of the project or development such as lush landscapes; recreational facilities; spaciousness, comfort and healthy living; being accessible by highway; and close to shopping complexes. This answers the first objective of the research. On the other hand, house buyers were most attracted to neighbourhood attribute that is safety of the neighbourhood. Most number of house

buyer were also willing to pay more for a house in a secured neighbourhood. Peacefulness and calmness of the surrounding was also another neighbourhood feature highly sought after by house buyers. Overall, the most approved sustainability strategy by house buyers would involve neighbourhood-related attributes which answers the second research objective. There is a mismatch of the strategies adopted by the developers with house buyers' perception.

Attraction towards different sustainable features between gender and age differed only slightly. Males were more interested in energy efficiency and proximity to shopping complexes compared to females. In terms of age, young adults were more attracted locational attributes which mean houses that are nearer to the city, retail area and educational institutions while adults prefer to be in less dense development and have freehold land tenure. With this, the third research objective was fulfilled.

The main aim of this research was to compare the sustainability strategies adopted by Malaysian property developers in promoting new projects or developments with the house buyers' perception. Since developers pay more attention to physical and locational attributes while house buyers prioritise neighbourhood-related features, it was concluded that sustainability strategies adopted by the local property developers are not quite aligned with what the house buyers are interested in and willing to pay for. Hence, the research aim was achieved.

5.3   Research Implications

5.3.1   To Construction Industry

The findings of this research provide basic information regarding the property market which are very relevant to the construction industry. Developers particularly in the housing projects should be convinced by this research that end users are becoming more conscious of the environment and embracing sustainable efforts. Therefore, developers should not be adamant to this slow yet steady changing trend to remain

competitive in the market (Reed and Sims, 2015) by planning and developing sustainable housing projects that are able to satisfy the market needs.

Marketing can take up considerable amount of time and cost depending on how fast disposal of the property can be done (Abdul Hamid Mar Iman, 2002). Thus, it is important to use effective marketing strategies and offer the products with desirable attributes as well as other efforts to capture more buyers. This research has revealed that house buyers sought for neighbourhood-related attributes when considering a house purchase whereas developers tend to push on physical attributes of the property. With this information in mind, developers can devise developments that have favourable neighbourhood attributes and use it as a key selling feature during promotion. This would possibly help to boost developers' sales especially for sustainable houses.

Knowing there are differences in attraction towards sustainable features between demographic groups, developers are encouraged to use two-tier marketing strategy described by Reed and Sims (2015) where two different strategies are used to target two different groups of house buyers to purchase the same product. This will enable developers to cater for a wider market and help increase company revenue.

Building material suppliers and manufacturers can also benefit from this research by noting on developers' marketing strategy and end users' preferences. With this information, suppliers and manufacturers can come out with a new production or source for sustainable building products to be offered to the industry. There is also a chance for the parties to monopolise the market if the product is relatively new and difficult to source for locally.

5.3.2   To Regulators

As for regulators particularly the town planners and local authorities, the most approved sustainability strategy by house buyers serve as a guideline to them.

Information on house buyers' preferences would help the regulators to draft town planning policies, development master plans and By-Laws that are sustainable to the environment and favourable to the house buyers' needs. This will create a harmonious living environment and ultimately contribute to the economy of the nation. Additionally, regulators may use the guidelines to justify developers' development proposals thus, encouraging incorporation of sustainability into more future buildings.

5.3.3 To Academic Field

Last but not least, this research can be expanded further as the property market is vast and diverse with different market segments. This study can be replicated to investigate effectiveness of sustainability strategies for commercial buildings and industrial buildings. Researchers wishing to look into niche area of the property market may also study on certain type of property only say, low-rise residential buildings or condominiums or high-end serviced apartments.

5.4 Research Limitations

This research was unable to explore the difference in preference towards sustainable features between other socio-economic characteristics of the sample such as ethnicity, household size, household income, education level, occupation and place living. To uncover these differences, a larger sample would be required for a more equally distributed data. Therefore, only two demographic factors namely gender and age were studied in this research.

In the archival and documentary research, property advertisements in newspapers and brochures were mainly used to gather information on sustainable features being promoted by developer. Advertisements per se have very limited and mostly general information of the project. As a result, chances of other sustainable

features being incorporated into the project but not mentioned in the advertisements are arguable. To overcome this weakness, future researchers may consider looking into other forms of promotions to source information on developers' marketing strategies. The phenomenon of 'green-washing' also limits this research as it is difficult to verify the sustainability efforts claimed by developers in advertisements will be reflected in the actual project. Study by Zhang et al. (2016) also pointed out that house buyers are doubtful over exaggerative and false advertising by developers thus, reinforcing the previous point.

The final limitation is the features that respondents claim to be attracted to and willing to pay more may not be the same as features they would go for during an actual house purchase. This is because in the questionnaire, respondents are not required to consider the cost when selecting the features they are attracted to. Similarly, respondents do not need to pay with real money when selecting the features that they are willing to pay more for (Park et al., 2012). Thus, the true features house buyers are attracted to and willing to pay more for may not be accurately reflected in this research.

5.5   Further Research

The author recommends further research on sustainability in other segments of the property market such as commercial buildings and industrial buildings. Niche markets such high-end serviced apartments, mixed developments and resort-homes may be looked into for a more focussed and unique research. The differences in preference between other socio-economic characteristics of house buyers is another potential area to be explored which was not covered in this research. Last but not least, future researchers may also consider comparing developers' sustainability marketing strategies from other promotional tools for instance, online brochures which would contain more comprehensive information about the project.

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APPENDICES

APPENDIX A: Questionnaire Survey

Questionnaire Survey for Research on 'Adoption of Sustainability Strategies by Property Developers versus House Buyers' Perception'

Dear Respondents,
My name is Lew Yin Ying and I am an undergraduate from Universiti Tunku Abdul Rahman (UTAR). I am conducting a research as per title above as part of the requirement for a Final Year Project. This research is targeted at potential house buyers and it aims to compare sustainability marketing strategies adopted by property developers in new projects or developments with house buyers' perception. All the answers provided will be treated with confidentiality and be used for this research purpose only. Therefore, your honest feedback will be useful and appreciated.

This survey will take about 10 minutes to answer.

Thank you for your time and cooperation in completing the survey.

General Awareness and Preferences

1. Are you familiar with the term 'Sustainable Development'?
Mark only one oval.

- ☐ No, I do not know about it.
- ☐ I have heard about it only.
- ☐ Yes, I have heard about it and I know it concerns the environmental, economic and social dimensions altogether.
- ☐ Yes, I have in-depth knowledge about it

2. Green building rating systems are used to measure how sustainable buildings are. 'Green Building Index' (GBI) is a rating system developed in Malaysia for that purpose. Are you familiar with GBI?
Mark only one oval.

- ☐ No, I do not know about it.
- ☐ I have heard about it only.
- ☐ Yes, I have heard about it and I know its logo.
- ☐ Yes, I have in-depth knowledge about it.

3. How likely would you purchase/rent a sustainable property over a non-sustainable property in the future?
Mark only one oval.

- ☐ Very likely
- ☐ Likely
- ☐ Undecided
- ☐ Unlikely
- ☐ Very unlikely

4. Which of the following would be your most preferred type of property?
Mark only one oval.
- ☐ Landed unit
- ☐ Low rise unit (Less than 5 storey)
- ☐ High rise unit (More than 5 storey)

Attraction to Sustainable Features

5. The following are common keywords used in property advertisements. Select the keywords you are likely to be attracted to when considering a house purchase. (You may choose more than 1 option).
Check all that apply.

- ☐ Ecofriendly, nature, natural and sustainable
- ☐ Lush landscape, greenery, garden and park
- ☐ Spacious, comfortable and healthy living
- ☐ Safe neighbourhood
- ☐ Peaceful and calm surrounding
- ☐ Integrated township
- ☐ Green-certified development
- ☐ Recreational facilities such as swimming pool, gym, clubhouse and playground
- ☐ Large windows for natural lighting
- ☐ Energy efficient system such as solar powered heaters
- ☐ Fresh air and good ventilation
- ☐ High speed connectivity with fibre optics
- ☐ Smart home with automation controls
- ☐ Guarded and gated compound
- ☐ Good orientation and geomancy (feng shui)
- ☐ Close to train service
- ☐ Close to city or central business district (CBD) area
- ☐ Close to shopping complexes or retail area
- ☐ Close to schools or universities
- ☐ Accessible by highway and major roads
- ☐ Low dense development
- ☐ Prime location and prestigious neighbourhood
- ☐ Freehold tenureship
- ☐ By reputable property developer
- ☐ Award winning development
- ☐ Affordable

Willingness to Pay Additionally for Sustainable Features

6. Which of the following features would you be willing to pay additionally for a house to have. (You may choose more than 1 option)
Check all that apply.

- ☐ Ecofriendly, nature, natural and sustainable
- ☐ Lush landscape, greenery, garden and park
- ☐ Spacious, comfortable and healthy living
- ☐ Safe neighbourhood
- ☐ Peaceful and calm surrounding
- ☐ Integrated township
- ☐ Green-certified development
- ☐ Recreational facilities such as swimming pool, gym, clubhouse and playground
- ☐ Large windows for natural lighting
- ☐ Energy efficient system such as solar powered heaters
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- ☐ Close to schools or universities
- ☐ Accessible by highway and major roads
- ☐ Low dense development
- ☐ Prime location and prestigious neighbourhood
- ☐ Freehold tenureship
- ☐ By reputable property developer
- ☐ Award winning development
- ☐ Affordable

Demographics
7. Gender
Mark only one oval.

- ☐ Male
- ☐ Female

8. Age
Mark only one oval.
- ☐ 21 to 30 years old
- ☐ 31 to 40 years old
- ☐ 41 to 50 years old
- ☐ 51 years old and above

9. Ethnicity
Mark only one oval.
- ☐ Malay
- ☐ Chinese
- ☐ Indian
- ☐ Other
- ☐ Non-Malaysian or Expatriate

10. Household size
Mark only one oval.
- ☐ 1 to 2 persons
- ☐ 3 to 5 persons
- ☐ 6 persons and more

11. Monthly household income
Mark only one oval.
- ☐ RM1,000 and below
- ☐ RM 1,001 to RM 5,000
- ☐ RM 5,001 to RM 10,000
- ☐ RM 10,001 to RM 15,000
- ☐ RM 15,000 and above