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GREEN HOMES DEVELOPMENT: FACTORS AFFECTING HOUSING DEVELOPERS' READINESS

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ABSTRACT

Housing can be inferred as an industry with activities that provide buildings and structures with the aim to fulfill the human needs for shelter, protection from any dangers and as a rest place after daily activities. The demand for housing keeps increasing in consistence with the rising number of global population as people seek for betterment of life in the modern civilization. The Malaysian housing industry experiences similar circumstances. However, Malaysian government has stressed that the provision of housing should be developed in a sustainable manner. In order to encourage sustainable practice in the housing industry, the government has urged the housing developers to develop green homes by introducing incentives in relation to green technology development as well as become a leader in green building design. Nevertheless, most of the housing developers are still reluctant to develop green homes. This study aims to identify factors that influence readiness of housing developers to develop green homes. A questionnaire-based survey was carried out within 395 housing developer firms and 249 questionnaires were duly returned. Statistical analyses such as descriptive analysis, exploratory factor analysis and multiple regression analysis were utilized to analyze the data. This study found that there are three significant factors influencing Malaysian housing developers' readiness to develop green homes that comprise of government supports, external expertise supports and housing market readiness. This implies that government's role, the availability of local green technology expertise and marketing research on housing market will facilitate the housing developers to develop green homes in Malaysia.

Keywords: green homes, housing developers, Malaysian housing industry.

INTRODUCTION

Shelter is the basic and essential human requirement that needs to be met on priority basis. In the modern civilization, housing is perceived as a crucial industry that enables mankind to meet this basic need, besides providing people a safety space from unwanted intrusions, environmental nuisances and climate conditions (Ibrahim, MohdShafiei, Said, and Ismail, 2013). Furthermore, the demand for housing keeps increasing in consistent with the growth of world population. As reported by UN-Habitat (2008), there will be an additional of 3 billion people by 2030 and 40% of the world population requires the access to housing which is equal to the demand for 4,000 units of new housing per days. In addition, half of the global populations are currently living in the urban areas that will be increased with additional 2 billion people for the next 25 years. The provision for new housing involved an exploration and acquisition of land in order to supply the basic amenities and infrastructures such as water supply, sanitation, educational and commercial building and other services that enable human daily activities. However, Jefferson (2006) indicated that the human activities have long caused devastating impact on the environment. This circumstance will result to a wide range of environmental problems such as environmental pollutions, life cycle impacts of materials extraction, timeless waste generation, greenhouse gases emissions and uncontrolled environmental extractions (Chen, Ganesan, and Jia, 2005).

In recent time, the environmental protection, conservation and preservation had sparked many debates from various parties such as public, politician and academics (Ibrahim, Mohd Shafiei, and Abdullah, 2011). This has urged the industries to adopt innovative approach that integrates environmental factor into their business practice. For instance, the research and development of hybrid transportation has become the top priority in the automotive industry, which aims to manufacture greener and more environmental-friendly transports. Therefore, similar practice needs to be adopted in the construction industry due to the fact that this industry is the best place to influence the environmental-friendly approach, as its 'end product', the built environment is the context for the majority of human activity (Addis, 2001; Wines, 2000).

Therefore, in order to provide an environmental-friendly built environment, the construction industry needs to change their current practice. The ideology of conventional construction practice is constantly focusing on triangle objectives namely time, cost and quality (Vanegas, duBose, and Pearce, 1996). With the purpose of striking a balance between protecting the environment and maintaining prosperity in development, these conventional triangle objectives needs a transformation of ideology that integrates sustainability elements such as minimization of environmental degradation, reduction of resources depletion and creating a healthier built environment (Kibert, 1994). This idea is supported by Zainul Abidin (2010) who stated that inevitably, the industry must change from its historic methods of operating with little regard of environmental impacts towards a new mode that drives the environmental concerns as the centre of its efforts. Furthermore, the industry are unable to declare its environmental targets without demonstrating dramatic reduction of environmental impacts from buildings and

infrastructure constructions unless it change the current practice of design and build (BERR, 2008). However, the sustainability concept in the construction industry requires proactive actions from all parties who engaged in the industry including those who provide design, consulting, and construction services.

The global interest on sustainability blooming gradually, Malaysia should not be lag in this aspect. Hence, this research investigates the current status of housing developers' readiness to develop green homes. This paper presents the current development scenario in Malaysia with particular emphasis on the efforts of government and non-government organizations in promoting green building design in the housing industry. The data are initially obtained through a self-administrated that sought the views of housing developers. These data are then analyzed, from which a number of conclusions and recommendations were developed. This has contributed the implications for government, non-government organizations, housing developers and their clients in terms of readiness and ramifications for the industry's attitudes towards greener built environment.

SUSTAINABLE CONSTRUCTION

The construction industry is acknowledged as one of the industry that has significant roles and functions in implementing sustainability. This is because the construction industry has the prospects in shaping the human life and encourages or enables the communities to live in a sustainable manner through finite resources consumption, contributes to the development of social interest and supports the local economy (William and Dair, 2007). Nevertheless, Vanegas and Pearce (1997) suggested that the sustainable goals must be achieved without sacrificing the satisfaction of human needs and inspirations. This argument is in line with the overarching principles of sustainable development; protects the environment and enables people to improve their life through the pursuit of economics and social objectives.

In further explanation, Bradley and Kibert (1998) had listed out seven cornerstone principles of sustainable construction as follows:

- **Principle-1:** Minimize resource consumption (conserve);
- **Principle-2:** Maximize resource reuse (reuse);
- **Principle-3:** Use renewable or recyclable resources (renew/recycle);
- **Principle-4:** Protect the natural environment (protect nature);
- **Principle-5:** Create a healthy, non-toxic environment (non-toxics);
- **Principle-6:** Apply life cycle cost analysis and true cost (economics); and
- **Principle-7:** Pursue quality in creating the built environment (quality)

Based on these principles, CIB W82 (1998) summarized the sustainable construction into three key criterions; reduce, conserve and maintain as presented in Table-1.

Table-1. Criterion, key issues and principles of sustainable construction.

Criterion	Key issue	Principles
Reduce	▪ Use of energy sources ▪ Use of mineral sources ▪ Use of water sources ▪ Use of land	Reuse, recycling, use of renewable resources, efficient use of water and energy, extended life-span of products, and multiple use of land
Conserve	▪ Natural areas ▪ Bio-diversity	Restricted land use, reduce fragmentation and toxic emissions prevention
Maintain	▪ Healthy indoor environment ▪ Quality of built-up environment	Low emission materials, efficient ventilation, compliance with occupant's need, provision of amenities, transport, recreation, security, abatement of noise, pollution and odorous, and restore or improve through renovation and rehabilitation

In the context of building sector, the concept of sustainability is generally represented by the shorthand term of 'green' which intends for being an environmentally responsible, economically profitable and healthy place to live and work (USGBC, 2006). However, Ibrahim *et al.* (2013) suggested that various terms have been used simultaneously to represent the application of sustainability in the building sector such as ecological building, energy efficiency building, healthy building and high performance building. For the purpose to clarify these terms, this study uses the word 'green' to describe the sustainable approach in the building sector.

Green building is defined as a whole systems approach for the design, construction and operation of buildings, which begins from the early stages of development and ends with the final finishes of the home (ACWMA, 2003). Similarly, OECD (2003) describes the green building as a practice that minimizes the adverse

impacts on built and natural environment, in terms of the buildings themselves, their immediate surroundings and expands to broader regional and global setting. Furthermore, the development of green building should be built based on five objectives, namely resource efficiency, energy efficiency, pollution prevention, environmental harmonization, and integrated management system (OECD, 2003).

From this point of view, it can be expressed that the sustainability of built environment draws the attention on two aspects, namely technical and non-technical. The technical aspect covers a few issues that accentuated on building design and development that emphasized on building materials, healthy outdoor and indoor environment, energy and resources consumption efficiency, resources and waste management, and energy related design concepts. The non-technical aspect engages with the betterment on quality of life, for instance, the provision of public transportation, infrastructures, human safety and security, and quality of services.

SCENARIO IN MALAYSIA

As the awareness on the needs for sustainable practice progressively thriving globally, the Malaysian government put a great emphasis on the sustainable issue. In the opinion of Mohd Yusoff (2005), the government has addressed this issue since 1970's. Continuously, the government keeps promoting and encouraging all construction industry players to implement sustainable practice. For example, in the 9th Malaysian Plan, the government had urged the construction industry to construct buildings that optimizes the energy consumption and prudently utilizes natural resources (EPU, 2006). In fact, the government had pledged to be responsible for to lead the green building design by introducing guidelines and green rating systems, ensures new government buildings meet the green rating standards and promotes green homes development (EPU, 2010). Additionally, MoNRE (2009) stated that Malaysia had declared to voluntarily reduce up to 40% the emission intensity of GDP by 2020 based on the levels in 2005. Hence, in order to demonstrate the determination of government in pursuing the national sustainability objectives, a number of new government buildings have been designed and developed to meet the green design requirements, such as Malaysia Energy Centre Green Energy Office, FELDA Tower, office building of Ministry of International Trade and Industry, Energy Commission Diamond Building and Sarawak Energy Berhad.

In the case of green homes development, the government had taken immense efforts to facilitate the housing developers to embark on these developments. For example, the government had allocated RM1.5 billion under the Green Technology Financing Scheme (GTFS) to provide a soft loan for companies that supplies and utilizes green technology besides assuring to cover up to 2% of the loan interest rate and provides a guarantee of 60% on the financing (Env Dev Malaysia, 2010).

In addition, the government had taken another proactive action by offering tax exemptions for the development that integrates renewable energy (RE) and adopts energy efficiency (EE). The incentives granted by the government are as follow (KeTTHA, 2010):

a) **Pioneer Status (PS):** The incentive is in the form of full income tax exemption on statutory income generated from RE business and EE projects for 10 years;

b) **Investment Tax Allowance (ITA):** The incentive is in the form of a tax allowance of 100% on qualifying capital expenditure incurred within 5 years from the date the first qualifying capital expenditure is incurred. Companies can use this allowance to offset against 100% of their statutory income in the year of assessment;

c) **Exemption from payment of import duty on machinery, equipment, materials, spare parts and consumables:** A tariff imposed on products that are imported into country. The tax rates vary according to the types of products and the origin of import;

d) **Exemption from payment of sales tax** on machinery, equipment, materials, spare parts and consumables: A local tax imposed on products, whether imported or locally produced; and

e) **Tax and Stamp duty exemption** for Green Building Index (GBI) certified property.

Abu Bakar, Abd Razak, Abdullah, and Awang (2009) indicated that the green homes development is still unfamiliar in the Malaysian housing industry. Therefore, it is expected that the green homes will be sold at high price compared to the conventional houses because the green homes development are considered as a new development in Malaysia housing industry. Hence, the incentives supplied by the government will ease the financial burden among housing developers in developing green homes. As stated by Alias, Sin, and Aziz (2010), the technology of building green homes need to be imported from the overseas as Malaysia still lack of some type of green technology besides it will facilitates the housing developers to offer green homes at affordable price for lower and middle income groups. In addition, in the attempt to stimulate and boosts the market demands for green homes, the government announces a few incentives for the green homes' house buyers as follows (MoF, 2010):

a) Building owners obtaining GBI Certificates from 24 October 2009 until 31 December 2014 and will be given income tax exemption equivalent to the additional capital expenditure in obtaining such Certificates; and

b) Buyers purchasing buildings with GBI Certificates from developers be given stamp duty exemption on instruments of transfer of ownership. The exemption amount is equivalent to the additional cost incurred in obtaining the GBI Certificates. This exemption is

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given to buyers who execute sales and purchase agreements from 24 October 2009 until 31 December 2014.

Apart from the government, the non-government organizations related to construction industry have shown their interest on the needs of green practice in the building development projects. The government's plans to devise a localized building performance tool had influence the Malaysian Institute of Architects (PAM) and Association of Consulting Engineers Malaysia (ACEM) to harness this opportunity by forming the Greenbuildingindex Sdn. Bhd. to develop green building rating systems based on tropical climate. As a result, the first version of green building assessment was established in 2009, known as the Green Building Index (GBI). The Greenbuildingindex Sdn. Bhd. are responsible for administrating the accreditation for GBI and supervises the training for GBI Facilitators and Certifiers besides providing the guidelines for green building assessment scheme for various categories of development such as new residential, new non-residential and existing residential (GBI, 2011). Therefore, Greenbuildingindex Sdn. Bhd. are perceived as an expert for green building developments that provides a platform for housing developers to acquire necessary supports in resolving any problems concerning the development of green homes.

The proactive actions taken by the governments and others in promoting the sustainability of the building industry should be harnessed by the housing developers to embark on green homes development. This is because the housing developers play a prominent role in spearheading the Malaysian housing development as the government had allowed them to outline their own path that suits the demands of the Malaysian house buyers since 1980's.

Unfortunately, most of the housing projects that are built by the housing developers does not complies the principles and criterions of green building. In fact, as of December 2013, GBI (2013) reported that only 84 new residential projects had been certified as green buildings under the GBI Assessment Scheme. This scenario explained that the green practice in housing sector is still at its infancy and still exploring the best way in developing green building. Therefore, the housing developers is hoped will be more aware on their responsibilities to build more homes that caters the social needs and economic profitability as well as emphasizes on the concept of green design and development that corresponds with the increasing demand from the house buyers for a green home.

METHODOLOGY

From the literature review, it is clear that with encouragement from the government and non-government organizations, the sustainability begins to patch up within the Malaysian building industry. To assess current readiness of Malaysian housing developers in green homes development, a survey was conducted from December 2010 to August 2011. This survey focused on the efforts taken by the governments and non-government organizations in affecting housing developers' readiness to change towards green homes development. Therefore, this study has developed a standardized questionnaire to ensure the same observation method is applied to all respondents. A nominal scale was used to collect information on respondents' background. A total of 21 items that assess the factors (Table-2) that influence the housing developers' readiness towards green homes development was measured by using 5-point Likert scale as follows; 1 = "Strongly Disagree", 2 = "Disagree", 3 = "Neutral", 4 = "Agree", and 5 = "Strongly Agree".

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Table-2. Items used.

Code	Item
Factors of readiness	
TFR01	My company understands that adding green elements into the development can increase the value of the house
TFR02	My company accepts that although green homes could be more expensive than the conventional ones, they can still be sold to the house buyers
TFR03	My company understands that the slightly higher prices of green homes will still have a similar take up rate with the conventional houses
TFR04	The increasing house buyers' awareness of the benefits of green homes can stimulate the sale of such homes
TFR05	My company is keen to offer green homes for sale to the house buyers
TFR06	My company has a commitment to offer affordable green homes to the lower-income group
TFR07	My company prioritizes the sale of affordable green homes to the middle-income group
TFR08	My company is ready to embrace green homes development because my company has a good track record to get loans from the financial institutions
TFR09	My company is ready to embrace green homes development because the viability of projects make it easier to the company to secure loans from the financial institutions
TFR10	My company is ready to embrace green homes development because the solvency of the company will allow it to repay the loans secured from the financial institutions
TFR11	My company is ready to embrace green homes development because the tax exemptions given by the government (in the form of income tax and import duty and sales tax, and investment tax allowance from the government for the energy efficiency and renewable energy projects)
TFR12	My company is ready to embrace green homes development because the government has promised to guarantee 60% of the financing under the Green Technology Financing Scheme (GTFS)
TFR13	My company is ready to embrace green homes development because the government promised to cover 2% of the interest rate under the Green Technology Financing Scheme
TFR14	My company is ready to embrace green homes development because the government had previously successfully developed their own buildings (e.g. Green Tech Corporation Malaysia, and Green Energy Office)
TFR15	My company is ready to embrace green homes development because the government makes a commitment to exempt the tax equivalent of the additional capital expenditure in obtaining Green Building Index (GBI) Certificates to the building owner
TFR16	My company is ready to embrace green homes development because the government exempt the stamp duty on instruments of transfer of ownership to the house buyers who purchase buildings that come together with Green Building Index (GBI) Certificates
TFR17	My company is ready to embrace green homes development because the fast track approval under the Green Lane Fast Track Approval scheme provided by the government
TFR18	My company is ready to embrace green homes development because of the government's promise for a reduction of bureaucracy of building plans submission and approval, that will reduce the company's holding costs
TFR19	If needed, my company will get our personnel trained by outside people for our green homes development
TFR20	If needed, my company will get outside help in resolving our unexpected problems associated with green homes development
TFR21	If needed, my company will employ skilled people from outside to help us in green homes development

The sample of the study was drawn from a list of housing developers who registered in the 5th Edition of Real Estate and Housing Developers Association Malaysia (REHDA) Directory. This directory divides the housing developers based on states branches and each branch was considered as a stratum. Disproportionate random sampling was chosen where the selection probabilities are varying for each stratum (Elliot, Golinelli, Hambarsoomian, Perlman, and Wenzel, 2006). Based on the suggestion put forward by Hilmi, Ramaya, Mustapha, and Pawanchik (2010), a single representative from each firm was considered sufficient to complete the survey of

study. Therefore, the manager or assistant manager from each firm were chosen to participate in the survey because naturally they are most important person at organizational management level and familiar with the subject matter and the running business. As a result, this study has successfully approached 395 respondents, but only 249 respondents gave practical responses. Thus, the effective response rate was 63.04%.

The survey data were analyzed by utilizing Statistical Package for Social Science (SPSS) software. The frequencies and descriptive analysis were employed to present the profile of respondents. The exploratory factor analysis with principal component analysis as an extraction method and Varimax with Kaiser Normalization as a rotation method was used to explore and summarize the structure of variable. The reliability of variable was tested using Cronbach's alpha coefficients. Additionally, multiple regression analysis was performed to identify the significant factors that influence housing developers' readiness to develop green homes. The results are discussed next.

RESULT AND DISCUSSIONS

Table-3 presents the demographic profile of the respondents. The result shows that the respondents who are in the lower management level forms the highest percentage in this sample (n=156). This is more than half of the total respondents. This is can be inversely compared with the respondents in the upper management level who forms only 37.35% from the sample (n=56). It can be assumed that the sampled respondents have the potential to give an appropriate data as most of them are involved at the level of organizational plans and policies implementations. In terms of age, more than half of the respondents are formed by respondents who aged between 20 to 29 years old (n=129). Only 2.4% of the respondents are aged between 50 years old and above (n=6). For a gender distribution, 60.2% of the respondents are female (n=150) with the remaining Figures being male respondents (n=99). The Malays are the highest number of respondents who cooperates in this study (n=138). This is followed by the Chinese (n=105), and Indian (n=6). The racial distribution of this sample reflects the national average population. In terms of educational qualification, respondents with a technical qualification forms the largest single group in this sample (n=96) this followed by people with a first-degree qualification (n=93). Respondents without any tertiary education, however, only represents just above 19.3% of the sample (n=48). The remaining respondents are those with post-graduate degree qualification (n=12). The pattern of this distribution indicates that the sampled respondents consist of highly educated people who could potentially give beneficial answers in answering the questionnaires. In terms of industrial exposure, most of the respondents have been involved in the construction industry between 1 to 10 years (n=207). The remainder of respondents have between 11 to 20 years of working experiences (n=33) with only 3.6% of sampled respondents have exposed to the construction industry with more than 20 years (n=9).

Table-3. Respondents' demographic.

Demographic of respondent		Frequency	Percent (%)
Job designation	Upper management	93	37.3
	Lower management	156	62.7
Age	20 - 29	129	51.8
	30 - 39	93	37.3
	40 - 49	21	8.4
	50 and above	6	2.4
Gender	Male	99	39.8
	Female	150	60.2
Race	Malay	138	55.4
	Chinese	105	42.2
	Indian	6	2.4
Educational level	Secondary	48	19.3
	Technical qualification	96	38.6
	Degree	93	37.3
	Post-graduate degree	12	4.8
Working experiences	1 – 10	207	83.1
	11 – 20	33	13.3
	21 – 30	9	3.6

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Table-4 shows the result of reliability test based on Cronbach's alpha coefficients for factors of readiness construct that using the Likert scale. The result of analysis shows that the Cronbach's alpha for this construct is 0.934. This implies that this construct has surpassed the reliability's desirable value of 0.7 suggested by Hair, Bush, and Ortinau (2000) and it highlights a high internal consistency of the measures and this suggests that the construct are statistically reliable.

Table-4. Reliability test for factors of readiness.

Variable	Number of items	Reliability (Cronbach's Alpha)
Factors of readiness	21	0.934

The exploratory factor analysis was carried out to determine the items into a meaningful, broader, underlying and evaluative dimension. The Barlett's Test of Sphericity shows a statistical significance with a Kaiser-Mayer-Olkin value of 0.896 that exceeds the minimum acceptable level of 0.5 as suggested by Walker and Maddan (2008). The principal component analysis reveals the presence of four main components with Eigenvalues exceeding 1, explaining 21.740%, 16.163%, 12.732%, and 12.325% of the variance, respectively. Table-5 presents the detail result of factor analysis for the factors of readiness. Based on this result of analysis, this study concludes that the factors that influence the readiness of housing developers to develop green homes could be summarized into four main components, namely government supports, housing market readiness, external expertise supports, and financial institution supports.

Table-5. Result of factor analysis for factors of readiness.

Factors of readiness	Factor loading				Commonality
	1	2	3	4	
TFR01		.726			.611
TFR02		.791			.703
TFR03		.667			.633
TFR04		.565			.588
TFR05		.522			.589
TFR06		.541			.557
TFR07		.512			.484
TFR08				.717	.695
TFR09				.586	.575
TFR10				.639	.756
TFR11	.713				.618
TFR12	.789				.716
TFR13	.696				.716
TFR14	.633				.574
TFR15	.494				.521
TFR16	.586				.599
TFR17	.777				.724
TFR18	.623				.617
TFR19			.689		.674
TFR20			.532		.591
TFR21			.702		.679
Variance (%)	21.740	16.163	12.732	12.325	
Eigenvalues	9.165	1.977	1.072	1.008	

Factors affecting housing developers' readiness

Based on the result of exploratory factor analysis, the multiple regressions stepwise analysis was carried out to determine the dimension of factors that significantly affecting the housing developers' readiness to develop green homes. Table-6 presents the result of regression

analysis stepwise. As stated in Table-6, the F value of 92.71 is significant at alpha 0.00 and this demonstrates that the model is almost acceptable. The value of 1.78 for Durbin-Watson is between 1.50 to 2.50. This shows that there is no auto-correlation problem. This paper refers to the threshold set for multicollinearity as suggested by

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Hair, Anderson, Tatham, and Black (1998). According to Hair, Anderson, Tatham, and Black (1998), the significant value for VIF metric for all components are below than 10 and the results shows that the condition index value are below 30. The result of regression stepwise analysis demonstrates three dimensions that have positive impacts on the housing developers' readiness to develop green

homes. These three components are government supports, housing market readiness, and external expertise supports. The adjusted value of R^2 is 0.53 which implies that approximately 53 percent of the variance in the housing developers' readiness can be explained significantly by these three components.

Table-6. Result of regression analysis.

Components	B	β	t	*p (Sig)*	**Contribution** (%)
Government supports	0.32	0.40	6.20	0.00	45.90
External expertise supports	0.24	0.30	4.46	0.00	5.60
Housing market readiness	0.12	0.14	2.56	0.01	1.10
Constant	1.24				
R	0.73				
R^2	0.53				
Adjusted R^2	0.53				
Standard error	0.14				
F value	92.71				
Durbin-watson	1.78				

Notes: Dependent variables: Housing Developers' Readiness, *p*< 0.05

The result of multiple regression stepwise indicated that the government support have the highest beta value, β=0.40, with t=6.20, *p*<0.05 which contributes 45.90 percent to housing developers' readiness to develop green homes. This study believed that the housing developers would be at their most ready and able to develop green homes if they received strong supports from the government. This finding supports the idea of Butler and Kaiser (1971), who stated that the government's potential impacts on the housing development can be obtained by influencing other agents in the housing development such as housing developers. Similarly, most of the housing developers welcome the government initiatives that intend to boost the green homes development. However, the initiatives granted by the government are being misconceived by the housing developers due to several reasons such as bureaucracy, imprecise procedures, and ambiguity of application processes.

The external expertise supports scored the second highest beta value, β=0.30, with t=4.46, *p*<0.05 which contributes 5.60 percent to the readiness of housing developers to develop green homes. In this study, external expertise refers to the third party who possesses green technology expertise and capabilities to assist the housing developers in solving matters that relates to green homes development. This study suggested that the greenbuildingindex Sdn. Bhd. can be perceived as green technology expertise within the context of green homes development in Malaysia. Therefore, the housing

developers should harness the services and expertise that can be offered by Greenbuildingindex Sdn. Bhd. as assistance in solving any difficulties that relates to green homes development. This study found that the housing developers will be more ready to develop green homes if they received supportive actions from the third party that includes the provision of green technology skilled people, green technology trainings and seminars and consultancy on green development. This finding is similar to a study conducted by Ungan (2007) who found that the third party plays a significant role to influence the organizational readiness to embark on innovation.

This study found another dimension, namely housing market readiness that also affecting housing developers' readiness to develop green homes is (β=0.14, t=2.56, p<0.05). The housing market readiness refers to the ability of house buyers to buy green home and the housing developers' willingness and their understanding on green homes development. The present study shows that the housing developers are more willing to develop green homes because they are aware that the green homes development could furnish the advantages of their market competitiveness by gaining image and reputation of firm and reduce the operational cost. However, it is expected that the green homes will be sold at higher price in comparison to conventional ones due to several issues such as the availability of local green technology and local technical expertise. Hence, the financial institutions must play their role by increasing the house buyers' purchasing power that includes providing loans to the house buyers

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who intends to purchase green homes. This study expected that the enhancement of house buyers' purchasing power will in turn encourages the housing developers to develop green homes.

CONCLUSIONS

The study contributes to the limited knowledge on sustainability efforts within the housing industry by focusing on the factors that affect the Malaysian housing developers' readiness to develop green home. As a result, the present study found several factors that significantly influenced the readiness of housing developers to develop green homes. This study summarizes these factors into three dimensions, namely government supports, external expertise supports and housing market readiness. In fact, it can be recapitulated that the housing developers will be more willing and will be most ready to adopt change towards green homes development if they received a strong supports from the main housing sector players, such as government and the third party, and acquires housing market readiness.

The results support the view held by Butler and Kaiser (1971) and Haverman (1992) who emphasized on the role of government in facilitating organizational readiness for change such as strong supports from the government includes leading by examples, provision of incentives, tax exemptions, and guarantee to reduce the bureaucracy of building plans submission and approval for green homes development projects could improve the perception of housing developers towards the green homes development. These incentives and initiatives would attract small and large size housing developers to embroil in the green homes development.

In addition, the findings of this study are consistent with the study of Thong (1999) and Ungan (2007) who affirmed that the external supports has the capabilities to encourage the organizational readiness to adopt change. The green homes development are perceived as a new development within Malaysian housing industry and thus, it is as expected that the housing developers might face difficulties in conducting matters that relates with green technology advancement. Therefore, the local green technology expertise are required to involve actively and supports the government in promoting green homes development and facilitates the housing developers by exposing them with knowledge and skills that are relatedto green homes development.

In fact, this study supports the findings of Slater and Narver (1995) and Yusof and Mohd Shafiei (2011) that indicates the market (e.g. price, demand, customers) as another factor that contributed to the readiness of organizational change. This study suggests that a thorough research on the marketing of green homes development needs to be carried out to obtain comprehensive information concerning the current housing market that relates with green homes development. In addition, the house buyers must be educated with the advantages of green homes as an effort to increase the demand for green homes. This study believes that both efforts will attract the housing developers to develop green homes.

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