SUSTAINABLE HOUSING PRACTICES TOWARDS CONSUMERS' WELL BEING

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Introduction

Sustainable development agenda in developing countries focus on relationship between construction and human development, alleviation of poverty and environment. These together with the lack of resources and capacities to improve technologies tend to marginalise the environmental aspects. These impacts are now beginning to be felt by Malaysians therefore, there is an attempt to balance environmental conservation with economic development (Shafii *et al.,* 2007). Sustainable housing is a new concept not only in Malaysia but in most developing countries. Currently, Malaysian housing industries face the challenge of producing an affordable and decent mass housing, especially when consumer satisfaction is a priority. A challenge for the housing industry is how to adopt modern construction technology and management to cater for customisation, without sacrificing the environment.

Recently, the Malaysian government has been focusing more on the housing quality rather than quantity so that residents can enjoy a higher standard of living in line with the nation's progress. Higher standard of living also means higher demand for quality homes. These demands and initiatives have brought changes to the housing industry with improvements from previous setbacks, to make houses more livable and comfortable. The motivation for improving housing quality relates to the overcrowding, insecurity, poor quality, poor ventilation and design, and strained physical infrastructure as well as social services (Shafii & Othman, 2007).

Therefore, under the Ninth Malaysian Plan (RMK9), the government realizes that since the agenda of sustainability focuses on the environmental problems, the government tries to concentrate more on sustainable building. With these realizations, the Malaysian government launched the green building mission on 15 March 2007 with the aim of raising the level of awareness, promoting and consolidating efforts in achieving sustainable

building and construction in Malaysia. According to Shafii and Othman (2007), the development of sustainable building in Malaysia is relatively slow and this might be due to the lack of incentives and regulatory procedures to guide sustainable building constructions. Because of this, it was contributed to a lack of sustainable housing practices in housing development in Malaysia (Abu Hassan *et al.,* 2010). Based on the above scenario, these study aims to look into the relationship between sustainable housing practices towards the consumers' well being.

Literature reviews

Fundamentally, sustainable housing has three main dimensions of sustainability which is social well-being, economic prosperity and environmental protection. By integrating these three dimensions of sustainability, the consumers' as well as occupants' well being can be achieved. Ramsay (2002) defined sustainable housing should meets the needs of present and future generations, promotes efficient use of resources, support the well-being of its occupants, and is accessible to all. Consumers' well being refers to the occupants' quality of life on their health, comfort, safety, financially affordable, socially acceptable and environmental-friendly as well as preserving the environment. For Malaysian context, sustainable housing is all about maintaining a balance between the human need for shelter and infrastructure for higher quality of well-being in one hand, while preserving natural resources and ecosystem, which we and future generation depends on (Nazirah, 2010).

In order to improve the consumers' well being, sustainable housing must be economically or financially viable, socially acceptable, technically feasible and environmentally compatible (Choguill, 2007). In this context, it is how much they are willing to pay for these sustainable housing which generate less damage to the environment, improve their health and their well-being. There is an urgent need to promote a wider notion of sustainability in housing in order to improve the environmental performance as well as creating a greater impact of sustainability upon the lives of the community. At the same time housing must be environmentally friendly and energy-efficient; life-sustaining, safe and healthy. Zuroni *et al*., (2009) found that to improve the environmental performance, sustainable housing must be focusing on five attributes; energy usage, rainwater harvesting quality, comfortable, greeneries and the house price. Although Malaysia has adopted some of these aforementioned measures, most are still at voluntary stage and needs further enforcements. However, according to Abdul Samad *et al.*, (2008), some of the developed countries such as United States, Canada and United Kingdom had already gone the full cycle. They had adopted the green practices in their

building constructions. However, the results were bad and now they are doing new rectifying measures to adopt better greener practices.

Public policies or strategies in Malaysian housing mainly deal with affordability rather than sustainable inhabitation. The main legislation that governs the housing sector in Malaysia is the Housing Development (Control and Licensing) Regulations 1989 which is under the purview of the Ministry of Housing and Local Government. The statutory provisions have conferred powers to the Ministry to make regulation, determine policy, monitor and supervise the performance of licensed housing developers. Xavier (1998) has given an overview of this legislation including the scope, the purpose and its application in Malaysia.

Meanwhile, Azlinor and Razanah (2008) have examined the existing measures of legal and administrative control related to the building of quality houses. The statutory roles of the local authorities, the Ministry of Housing and Local Government and the Construction Industry Development Board have been discussed to determine the effectiveness of these institutions and the adequacy of legislations in providing protection to consumers. The enforcement of law and policies of other countries, namely United Kingdom and Australia, have always been referred as reference for the construction of quality housing by the ministry. Nevertheless, in Malaysia the government under the Economic Planning Unit (EPU), only reviewed the strategy for low cost housing but not the other types of housing in building quality houses. To date, the sustainable housing concept has yet to be included in the legislations and housing policy. Therefore, this study would like to propose sustainable housing concept in this housing strategy to strengthen the legislations and housing policy for the benefit of consumers and the society. It is hope that in the near future, our Malaysian society would raise their awareness and practices on this sustainable housing.

Research methodology

Typical profiles were conducted to provide respondents' insights on socio-demography, sustainable housing practices, and their well being. Consumers' sustainable housing practices and their well being will be measured by five Likert-like scales.

Self-administered questionnaires had been used to obtain necessary data from 800 respondents among households of terrace houses in urban areas. There are four zones consists of the North, Middle, East and South of Peninsular Malaysia that were selected through multi-stage random sampling. Each zone was targeted to obtain 200 respondents. One state was selected from each zone and simple random sampling was employed from a municipal council

situated in urban areas based on a list of the municipal councils from the government websites. There were two municipal councils selected from the list requiring 100 respondents from each municipal council. Each of the municipal council selected was contacted to get a list of residential areas. Researcher then contacted each of the head or representatives of the residential areas to ask for their cooperation. Trained enumerators were conducted for the data collection. Data collections by enumerators were analyzed descriptively after being transferred into the computer by using SPSS for Windows version 18 programme.

Results and discussions

Characteristic of respondents

Table 1 shows the profiles of the respondents which involved 800 respondents from Selangor, Negeri Sembilan, Pahang and Penang. The respondents' characteristics such as sex, race, education level, marital status and monthly gross income were discussed. Respondents involved consist of 50.1% male and 49.9% female whichs quite balance. Approximately, 56.5% of the respondents' were Malay, followed by 31.1% Chinese, 11.6% Indian and 0.8% others.

In terms of level of education, a total of 29.5% respondents' completed at high schools education, followed by 29.1% were certificates or diploma holders and 21.2% holds a bachelor degree. Respondents who had no formal education (0.9%) and primary school (2.5%) showed the lowest percentages.

Majority of the respondents (64.4%) were married and 34.8% respondents were still single, while other categories had 0.9% respondents. For household income, majority of the respondents were class interval of RM2000 to RM4000 (69.1%), followed by class interval of RM4001 to RM6000 (18.6%), while the lowest number were class interval of RM8001 to RM10000 income (2.6%).

Table 1: Repondents' Characteristics

Characteristics	n=800	%
Location		
Selangor	205	25.6
Negeri Sembilan	198	24.8
Pahang	197	24.6
Pulau Pinang	200	25.0
Sex		
Male	401	50.1
Female	399	49.9
Race		
Malay/Native	452	56.5
Chinese	249	31.1
Indian	93	11.6
Others	6	0.8
Level of Education		
No formal schooling	7	0.9
Primary school	20	2.5
Lower secondary school	107	13.4
Higher secondary school	236	29.5
Certificate / Diploma	233	29.1
Bachelor	170	21.2
Master/PhD	27	3.4
Marital Status		
Married	515	64.4
Single	278	34.8
Others	7	0.9
Monthly Gross Income		
RM2000-RM4000	553	69.1
RM4001-RM6000	148	18.6
RM6001-RM8000	47	5.9
RM8001-RM10000	20	2.6
>RM10000	31	3.9

Sustainable housing practices

Table 2 shows the descriptive analyses for sustainable housing practices among respondents. A total of 17 statements were asked to the respondents regarding their sustainable housing practices.

Table 2: Sustainable Housing Practices

No.	Items	Never ⟷ Always						
		Frequency (n) & Percentage (%)					Mean	S.D
1.	I conserve rain water to wash car or water plants.	256 (32%)	136 (17%)	185 (23.1%)	115 (14.4%)	108 (13.5%)	2.60	1.407
2.	I open window when at home.	29 (3.6%)	45 (5.6%)	127 (15.9%)	195 (24.4%)	404 (50.5%)	4.12	1.096
3.	I choose not to use air conditioner (air-condition) at home.	110 (13.8%)	104 (13%)	270 (33.8%)	156 (19.5%)	160 (20%)	3.19	1.281
4.	I plant at least 2 trees around my house.	103 (12.9%)	103 (12.9%)	217 (27.1%)	203 (25.4%)	174 (21.8%)	3.30	1.295
5.	I use save-energy refrigerator.	82 (10.2%)	87 (10.9%)	264 (33%)	197 (24.6%)	170 (21.2%)	3.36	1.220
6.	I recycle trash that can be recycled such as old clothes / bottle / newspaper.	59 (7.4%)	94 (11.8%)	192 (24%)	207 (25.9%)	248 (31%)	3.61	1.240
7.	I switch off the light/ fan when leaving a room.	13 (1.6%)	21 (2.6%)	99 (12.4%)	182 (22.8%)	485 (60.6%)	4.38	0.915
8.	I collect clothes up to maximum capacity before using a washing machine.	34 (4.2%)	51 (6.4%)	163 (20.4%)	192 (24%)	360 (45%)	3.99	1.137

Table 2 (Continued)

9.	I turn off the faucet while brushing my teeth.	52 (6.5%)	86 (10.8%)	169 (21.1%)	178 (22.2%)	315 (39.4%)	3.77	1.253
10.	I iron only a few clothes at one time.	102 (12.8%)	127 (15.9%)	290 (36.2%)	137 (17.1%)	144 (18%)	3.12	1.244
11.	I enjoy in the garden during my leisure time.	79 (9.9%)	104 (13%)	252 (31.5%)	201 (25.1%)	164 (20.5%)	3.33	1.219
12.	I choose reading materials that are related to environment.	135 (16.9%)	156 (19.5%)	317 (39.6%)	130 (16.2%)	62 (7.8%)	2.78	1.139
13.	I purchase an environmentally friendly product even its price is more expensive.	118 (14.8%)	170 (21.2%)	324 (40.5%)	140 (17.5%)	48 (6%)	2.79	1.083
14.	When I go for shopping at supermarket, I did not use plastic bag when I buy only a few items.	77 (9.6%)	126 (15.8%)	294 (36.8%)	169 (21.1%)	134 (16.8%)	3.20	1.178
15.	I purchase food labeled 'organic' or 'natural'.	89 (11.1%)	137 (17.1%)	301 (37.6%)	183 (22.9%)	90 (11.2%)	3.06	1.137
16.	I use a compact fluorescent bulb.	98 (12.2%)	120 (15%)	269 (33.6%)	171 (21.4%)	142 (17.8%)	3.17	1.239
17.	I participate in environmental education programs.	183 (22.9%)	162 (20.2%)	275 (34.4%)	105 (13.1%)	75 (9.4%)	2.66	1.228
	Total						**3.32**	

The highest mean value is a statement about 'I switch off the light/fan when leaving a room' by 4.38. This is followed by the statement 'I open window when at home' with a mean value of 4.12, 'I collect clothes up to the maximum capacity before using a washing machine' and 'I turn off the faucet while brushing my teeth' with values of 3.99 and 3.77, respectively. The total mean value for all sustainable housing practices statement reconsideration wills with mean value of 3.32. While the statement 'I conserve rain water to wash car or water the plants' with a mean value of 2.60, which is the lowest mean value. These show that the respondents' practices at home still need to improve because the overall mean value falls at the stage of 'sometimes'.

Figure 1 shows the overall total score of the respondents to sustainable practices at home. There are three levels of the score which are: not good, average and good. Most of the respondents were at the average level of 75.6% and 21.4% of respondents had a score of good. Only three percent of respondents were categorized as not good in their practices. These show that the levels of sustainable practices among prudent respondents are still at the good level and they still like to adopt these practices in their day life.

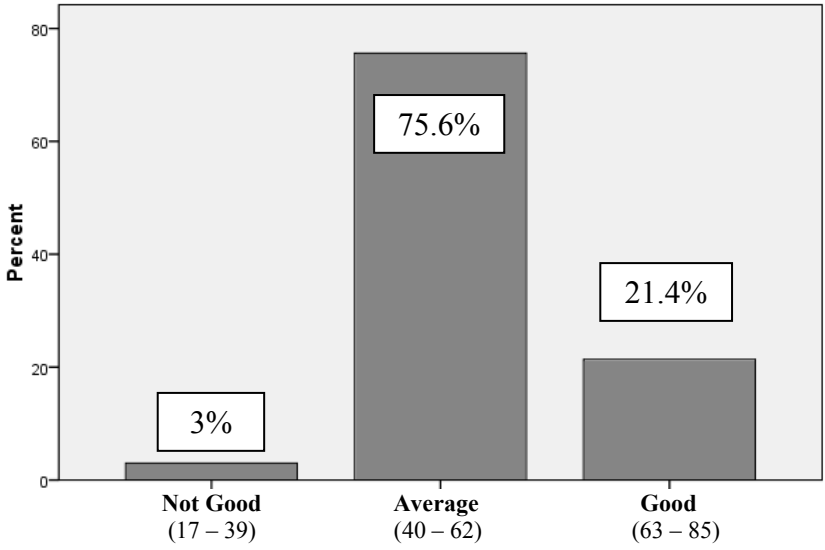

Figure 1: The Score of Sustainable Housing Practices at Home

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Table 3: Respondents' Well Being

No.	Items	← Strongly Disagree				Strongly Agree →	Mean	S.D.
		Frequency (n) & Percentage (%)						
1.	Generally, my life is almost perfect.	27 (3.4%)	73 (9.1%)	355 (44.4%)	250 (31.2%)	95 (11.9%)	3.39	0.928
2.	My life situation is excellent.	30 (3.8%)	103 (12.9%)	345 (43.1%)	229 (28.6%)	93 (11.6%)	3.32	0.965
3.	Currently I am satisfied with my life.	26 (3.2%)	99 (12.4%)	321 (40.1%)	246 (30.8%)	108 (13.5%)	3.39	0.975
4.	Until now I have got everything I want.	50 (6.2%)	147 (18.4%)	326 (40.8%)	201 (25.1%)	76 (9.5%)	3.13	1.024
5.	If I could turn back, I would not change anything about my life.	205 (25.6%)	130 (16.2%)	235 (29.4%)	130 (16.2%)	100 (12.5%)	2.74	1.335
	Total						**3.19**	

Note: S.D. is Standard Deviation

Table 3 shows the items relate with the human life well being. There are five (5) statements about the well-being have been asked to the respondents. Statements which have the highest mean value was 'currently I am satisfied with my life and 'generally my life is almost perfect' have the highest mean score with the mean value of 3.39, respectively. This is followed by the statement 'my life situation is excellent' at the value of 3.32, while the statement about 'until now I have got everything I want' at the mean value of 3.13. The statement with the low mean value is 'if I could turn back, I would not change anything about my life', and the mean value was of 2.74. This mean value shows that the respondents want to change their lives if they had been given the chance. Overall mean for all statements was 3.19. This shows that most respondents are satisfied of their well being

Figure 2 shows the overall score for the well being of the respondents were at the average level, 61% and 27.5% of the respondents were at a high level of their well being. Respondents at the low level of well being consisted of 11.5%. This shows the level of well being among respondents were at a good level.

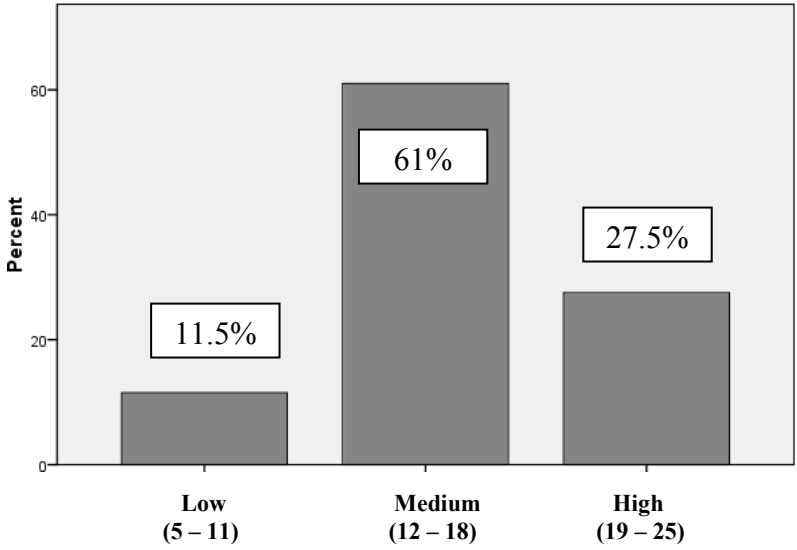

Figure 2: Status of Well Being among Respondents

Conclusion

In conclusion, we can see that our Malaysian society is in line with the sustainable housing practices and their well being status currently are at the

average level. There is a need for continuous campaigns and programmes to promote and to raise awareness especially on sustainable development issues. By increasing the level of awareness, the sustainable housing practices will also increase. Moreover, there is also need for a change of our culture with regard to housing development in Malaysia which places sustainability at the centre stage. To make these sustainable housing practices successful in near future, there is also a need for the government to provide some incentives for energy efficient in homes and other incentives to stimulate the sustainable housing practices, as well as the establishment of government legislation on this matter. Rising of awareness is important among consumers in Malaysia towards sustainable housing practices. Lastly, when the consumers have a good level of sustainable housing practices, these may increase their quality of life and at the same time all Malaysians will increase their well being level.

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