Proceedings of Malaysian Technical Universities Conference on Engineering & Technology (MUCET)
3-4 December 2013 , Kuantan, Pahang

Indicators of Low-Cost Housing Demand in Malaysia

Nadzirah Roslan*, Aftab Hameed Memon & Noor Yasmin Zainun
Faculty of Civil and Environmental Engineering, University Tun Hussein Onn Malaysia
***Corresponding author: nzierah@gmail.com**

Abstract

Government of Malaysia has introduced low-cost housing schemes to tackle the squatter problems of citizens from lower income as they do not afford to have their own house. However, yet the demand of low cost housing has been higher than the available number of houses. This demand depends on various indicators which are important to know so that the demand of the people for low cost housing can be met. Hence, this study focused on identifying indicators of low-cost housing demand in Melaka. It involved a questionnaire survey among citizens of Melaka, Developers, Local Housing Authority, Contractors, Consultants and personnel from Department of Statistic. Analysis of data was carried out statistically by the Average Index method. Survey form contained 9 indicators (identified through a comprehensive literature review) and the analysis results of the survey showed that top 4 indicators of low-cost housing demand are income rate, housing stock, population growth and gross domestic products.

Keywords
Low-cost housing demand, Average Index method, indicators of low-cost housing

1. Introduction

Construction industry provides the major infrastructure required for sustaining life such as roads, hospitals, schools and houses. Among these, housing is a major concern for all people in every corner of the world as the wellbeing of a country is reflected in its people enjoying a certain standard of living. Government of Malaysia is striving for ensuring that each group of people such as high-income, middle income or lower income can afford to own a house. Mainly, the objective of country development is to provide affordable housing for the people in urban and rural area for families with low income. The low-cost housing will fulfill the need for individual and families with a monthly income below RM2, 500 depending on the types of houses. The government has targeted 78,000 units of affordable houses to be built, consisting of 38,950 units under the People's housing Programmed (PHP) and 39,050 units under programmed to relate to the Ministry of Rural and Regional Development to meet the needs of the low-income groups and squatters in the 10MP [1].

Basically, the process of urbanization and industrialization has caused the housing problems in Malaysia. This process brings along many immigrants from the rural areas. Hence, it created high demand for housing, especially for the immigrants from the lower income groups even in the urban area [2]. Besides that, the housing problems can also arise when the developers in the urban areas, have less interested to build low cost housing [3]. This is because the margin or profit earned is small. Private housing developers controlled most of the land in major towns and cities are interested to develop high cost or luxury housing for bigger margin or profit. Thus, the immigrants found that, the price of the houses offered in the urban area is beyond their affordable income. It created housing problems to the immigrants with medium and lower income especially in the urban areas. People with low income are not afforded to have their own houses, so they had to live in squatter to survive their life. Realizing this problem, the government introduced the low-cost housing scheme to tackles the issues. This is in line with the government's desire to increase home ownership among Malaysians. But yet the demand of low cost houses is higher than availability. This high demand is caused by various indicators which are very important to uncover. Hence, this study focused on assessing critical indicators of low-cost housing demand in Malaysia. However, the scope of this study is limited to the state of Melaka only.

2. Previous Study

In this study, all parameters, factors or variables that can affect the demand of low cost housing are described using one word i.e. indicators. The indicator provides evidence that there are certain conditions or certain results have or have not achieved [4]. In order to determine significant indicator affecting housing demand in Melaka, literature

review was done to identify indicators highlighted by previous researches. This resulted in identifying 9 common indicators as shown in Table 1.

Table 1: Indicators affecting housing demand

No	Indicators	References						
		[6]	[7]	[11]	[10]	[8]	[9]	Frequency
1	Birth rate					X	X	**2**
2	Child mortality rate	X				X	X	**3**
3	Gross domestic products (GDP)				X	X	X	**3**
4	Household income rate		X			X	X	**3**
5	Housing stock				X	X	X	**3**
6	Inflation rate					X	X	**2**
7	Population growth	X	X	X	X	X	X	**6**
8	Poverty rate					X	X	**2**
9	Unemployment				X	X	X	**3**

From Table 1, it can be seen that the population growth is the most common indicator affecting low-cost housing demand. The population growth rate is defined as the change in population over a specific time period expressed in percentage of the number of individuals in the population at the beginning of that period [5]. It can also be defined as the ratio of live births during a year to the mid-year population in that year, per thousand populations [5]. This population growth can be resulted from child mortality rate, birth rate and migration. Child mortality rate is also a major indicator of housing demand. It shows the social and economic standard of the population and can be used as the best demographic independent variable to determine housing demand [6].

Another indicator affecting housing demand is housing stock. It is defined as a total unit of the house that have been built or under construction in a year [5]. Besides that, income rate, poverty rate, inflation rate, gross domestic products and unemployment rate are equally important indicators for determining the housing demand where income rate is reflect 'income amount' you earn, derive or receive for your own use or benefit, or a periodical payment or benefit you receive as a gift or allowance. The poverty rate is the ratio of people having income below the poverty line [5].

Inflation rate is defined as a sustained or continuous rise in the general price level or, alternatively, as a sustained or continuous fall in the value of money [9]. It is reflected as the rate of increase of numerical measure to compare how the prices of some classes of goods or services differ between time periods [5]. Gross domestic products is the total value of goods and services within a given period, after deducting the cost of goods and services used up in the process of production but before deducting allowances for the consumption of fixed capital while unemployment rate refers to actively unemployed persons in the labor force [5].

3. Research Method and Data Collection

In order to assess the importance of the indicators, data collection focused on a quantitative method of questionnaire survey among personnel of the Local Housing Authority, Department of Statistics, developer, contractors and the community who live in low-cost housing. A total of 100 questionnaires were distributed to the respondents, out of which 60 valid responses were obtained. Data gathered from this survey was analyzed using descriptive statistics with Average Index method (AI) using the following formula as adopted from [12].

$$AI = \frac{\sum(1x_1 + 2x_2 + 3x_3 + 4x_4 + 5x_5)}{\sum(x_1 + x_2 + x_3 + x_4 + x_5)} \quad (1)$$

Where;
1 = No. of respondents for “Not Significant”
2 = No. of respondents for “Slightly Significant”
3 = No. of respondents for “Moderately Significant”
4 = No. of respondents for “Very Significant”
5 = No. of respondents for “Extremely Significant”

4. Data Analysis

4.1 Demography

The demographic analysis presents the detailed characteristics of the respondents. The characteristics are gender, age, employment status, household income and family members live in their house. The results are represented by the table 2 below.

Table 2: Demographics Analysis

Characteristics	Frequency	Percentage (%)	Cumulative Percentage (%)
Gender			
Male	40	66.0	66.0
Female	20	34.0	100.0
Age			
18 – 25 years	10	16.7	16.7
26 – 49 years	30	50.0	66.7
50 – 64 years	16	26.6	93.3
65 and above	4	6.7	100.0
Employment Status			
Developers	4	6.7	6.7
Local Housing Authority	8	13.3	20.0
Unemployment	8	13.3	33.3
Government	9	15.0	48.3
Private Company	8	18.3	66.6
Contractor	11	13.3	79.9
Department of Statistic	3	5.0	84.9
Consultant	4	6.7	91.6
Others	5	8.4	100.0
Household Income			
Less than RM2,500.00	31	51.7	51.7
RM2,500.01 - RM3,000.00	15	25.0	76.7
RM3,000.01 – RM4,500.00	7	11.7	88.4
RM4,500.01 and above	7	11.6	100.0
Family Members			
Below 5 persons	38	63.3	63.3
6 – 10 persons	22	36.7	100.0
Above 10 persons	0	0.0	100.0

Table 2 shows that among respondents, there are 40 males and 20 females. This means the majority of respondents with 66.7% are male and 33.3% are females. Besides that, the respondents to this survey are persons with age of 18 years and above. The ages are classified into four classes which are 18 to 25 years, 26 to 49 years, 50 to 64 years and 65 and above. There are 16.7% respondents were from age group of 18 to 25 years old. 50.0%, respondents are from the age group of 26 to 49 years. 26.7% respondents were from age group of 50 to 64 years while only 6.7% respondents belonged to age group over 65 years.

The respondents participating in the survey were engaged with contractors, consultants, developers, local housing authority and department of statistics. Since the survey was conducted in the low-cost housing area which

most of them are working in a private's company, government's company and also unemployed people were 6.7% respondents are developers and consultant, 13.3% are from the Local Housing Authority, unemployment and contractor 5.05 from the Departments of Statistics, 15.0% are the government's staff and 8.3% are others workforce belonged to various household income levels. The majority respondents with 51.7% have a total household income less than RM2, 500.00 followed by 25.0% with income of RM2, 500.01 to RM3, 000.00 and 11.7% of respondents have the total household income of RM3, 000.01 to RM4, 500.00.

4.2 Indicators of Low Cost Housing Demand

In determining the most significant indicator, the ranking of the indicators was assessed based on the significance level calculated by Average Index (AI) value. The ranking was done based on highest value to a smaller value where the highest AI value represents the most significant indicator while the lowest AI value indicates that the indicators of least importance. The ranking of indicators in Melaka is presented in table 3 below.

Table 3: Ranking of Low-cost Housing Demand

Indicators	**No. of Respondents**					**Average Index (AI) value**	**Rank**
	NS	**SS**	**MS**	**VS**	**ES**		
Income Rate	1	7	8	23	21	3.93	1
Population Growth	2	6	13	22	17	3.77	2
Housing Stock	1	9	12	19	19	3.77	2
Gross Domestic Products	3	5	18	19	15	3.63	3
Birth Rate	3	5	18	21	13	3.60	4
Poverty Rate	4	8	13	19	16	3.58	5
Inflation Rate	4	9	13	20	14	3.52	6
Unemployment Rate	3	14	17	14	12	3.30	7
Child Mortality Rate	11	18	21	7	3	2.55	8

Note;
NS = Not Significant
SS = Slightly Significant
MS = Moderately Significant
VS = Very Significant
ES = Extremely Significant

Table 3 shows that income rate is the most significant indicator in affecting low-cost housing demand in the state of Melaka and is placed in as the 1st rank with the AI value is 3.93. It shows that the income rate is the most significant indicators of low-cost housing demand and it is supported by [6] on the previous research on "Housing needs versus effective demand in Malaysia". The AI value of 3.77 for population growth and housing stock both indicators are placed as 2nd rank showing that the both indicators have a same effect level of low cost housing demand as previous researchers had examined the indicators [8–10]. The 3rd rank indicator is gross domestic products with AI value of 3.63 as [8-10] while the child mortality rate was found as least important indicator in causing demand for low cost housing.

5. Conclusion

This study investigated the indicators affecting housing demand in the state of Melaka. Investigation involved 9 indicators identified from literature review which include (1) population growth; (2) birth rate; (3) child mortality rate; (4) unemployment rate; (5) poverty rate; (6) income rate; (7) housing stock; (8) inflation rate; and (9) gross domestic products.

Data gathering involved questionnaire among citizens of Melaka, Developers, Local Housing Authority, Contractors, Consultants and personnel from Department of Statistic. All data was analyzed statistically using Average Index formula. From the study it was found that:

- In Melaka, the demand of low cost houses is higher than availability.
- Income rate is the most significant of housing demand.
- Housing stock are also major contributes to housing demand.

Based on findings, it can be recommended that the government needs to take necessary steps to increasing number low cost housing schemes and also labor wage be revised to ensure that every citizen of Melaka must own the most fundamental need of life i.e. "house".

Acknowledgements

The authors are very much thankful to University Tun Hussein Onn Malaysia for support and encouragement. The authors pay special thanks to respondents for participating in survey and spending their valuable time. Without that, it was not possible to finish this project.

References

[1] Department of Planning and Economic Units Malaysia, 2010. "The Tenth Malaysia Plan, 2011-2015". Kuala Lumpur: Percetakan Nasional Malaysia Berhad.

[2] Zainun, N., Y., and Abd. Majid, M., Z., 2003. ''Evaluation on Various Forecasting Models Using Artificial Neural Networks (ANN)", 2nd International Conference on Innovation in Architecture, Engineering and Construction (AEC), UK.

[3] Noor Yasmin Zainun and Muhd Zaimi Abd. Majid, 2004. ''Low Cost Housing Demand Predictor (LOCHDEP)", International Exhibiton-Ideas-Invention-New Product (IENA) 2004, Nuremberg, Germany.

[4] Horsch, E.J., 2008. "Quantifying the Economics Effects of Invasive Species: A Nonmarket Valuation Analysis of Eurasian Water Milfoil", Presented at the 2008 AAEA&ACCI Joint Annual Meeting, Orlando, FL, July 27-29.

[5] Department of Statistic Malaysia, 2007. Population and Housing Census, Malaysia 2007. Putrajaya: Department of Statistics, Malaysia.

[6] Chander, R., 1977. Housing Needs versus Effective Demand in Malaysia. Kuala Lumpur: Department of Statistics Malaysia.

[7] Yang and Packer, 1997. "Applying Artificial Neural Networks to UK Construction Demand Forecasting (Private Sector)." RCIS Construction and Building Research Conference (COBRA '97) University of Portsmouth, p. 1 – 16.

[8] Yahya, K. and Abd. Majid, M.Z., 2002. "Comparative Study on Forecasting Demand on Low-cost House in Urban Areas Using Artificial Neural Networks and ARIMA Model", First International Conference on Construction in the 21st Century (CITC2002), USA, p. 687 – 694.

[9] Zainun, N. Y., Eftekhari, M., 2010. Forecasting Low-Cost Housing Demand in Johor Bahru, Malaysia Using Artificial Neural Networks2 (ANN), Journal of Mathematics Research. 2(1), 14-15.

[10] Goh, B., H., 1998. "Forecasting Residential Construction Demand in Singapore: A Comparative Study of the Accuracy of Time Series, Regression and Artificial Neural Network Technique", Engineering Construction and Architectural Management, Vol. 5, no. 3, p. 261 – 275.

[11] Selim, H., 2009. Determinants of house prices in Turkey: Hedonic regression versus artificial neural network. Experts System with Applications, 36 2843- 2852.

[12] Memon, A., H., Rahman, I., A, and Aziz, A., A., A, 2011. "Preliminary Study on Causative Factors Leading to Construction Cost Overrun", International Journal of Sustainable Construction Engineering and Technology, 2 (1).