Affordable Housing Performance Assessment: Applying the Concept of Grow Home as One of the Measurement Criteria

Penilaian Prestasi Rumah Mampu Milik: Aplikasi Konsep Rumah Berkembang sebagai Salah Satu Kriteria Penilaian

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ABSTRACT

In an attempt to fulfill the basic needs of proper accommodation for its people, governments of all countries strive to ensure that every household is able to have a home. Thus, the concept of affordable housing has become widespread around the world. In addition, the concept of Grow Home was established to encourage more families to buy their own houses. The Grow Home concept is based on the notion of affordable housing. This article aims to consider the concept of Grow Home as one of the Affordable Housing Performance Assessment for the landed housing in the central region of Peninsular Malaysia. It consists of two criteria; landed properties and new spaces. Taman Selasih and Taman Lukut Makmur, constructed in Negeri Sembilan, the central region of Peninsular Malaysia were chosen for the case study. The sample consists of 155 units in Taman Selasih and 93 units in Taman Lukut Makmur. A physical survey was conducted to assess the grow home measurement item in Taman Selasih and Taman Lukut Makmur through field observation and informal interviews with the residents at the site. The findings from this case study showed that Grow Home could be considered as an affordable housing performance assessment since the criteria of landed properties and new spaces affect the housing industry performance as a whole.

Keywords: Affordable housing; Grow Home; housing; landed houses; performance criteria

ABSTRAK

Dalam memenuhi keperluan asas untuk kediaman yang selesa kepada rakyat, kerajaan di semua negara berusaha bagi memastikan setiap isi rumah dapat memiliki rumah sendiri. Lantaran itu, konsep rumah mampu milik telah merebak ke seluruh pelusuk dunia. Tambahan lagi, konsep Rumah Berkembang (Grow Home) telah diwujudkan bagi menggalakkan lebih ramai keluarga membeli rumah mereka sendiri. Konsep ini berasaskan idea dari konsep rumah mampu milik. Makalah ini bertujuan untuk mempertimbangkan konsep Rumah Berkembang sebagai Penilaian Kemajuan Rumah Mampu Milik bagi rumah bertanah di wilayah tengah, Semenanjung Malaysia. Terdapat dua kriteria yang diambil kira dalam indikator ini: hartanah bertanah dan ruang baru. Taman Selasih dan Taman Lukut Makmur terletak di Negri Sembilan, wilayah tengah Semenanjung Malaysia, telah dipilih sebagai sampel dalam kajian kes ini. Taman Selasih mengandungi 155 unit rumah manakala Taman Lukut Makmur terdapat hanya 93 unit rumah sahaja. Kajian rentas telah dilakukan bagi mendapatkan data bagi mengukur item penilaian rumah berkembang di kedua-dua taman tersebut melalui kaedah pemerhatian dan temubual secara tidak formal dengan penduduk di tapak sampel. Dapatan kajian menunjukkan Konsep Rumah Berkembang boleh dipertimbangkan sebagai Penilaian Prestasi Rumah Mampu Milik disebabkan kriteria hartanah bertanah dan ruang baru memberi kesan kepada kemajuan industri perumahan secara keseluruhan.

Kata kunci: Mampu milik; rumah berkembang; rumah; rumah bertanah; kriteria prestasi

INTRODUCTION

Affordability is one of the three standard criteria to evaluate the housing needs apart from adequacy and suitability (TD Economics 2003). The affordable housing expression has replaced terms such as public, social or low cost housing (Gabriel et al. 2005). Affordable housing emphasises on making housing affordable for every household. However, low prices does not mean a lesser quality product. The value or performance of a product is generally reflected in its price (Kim & Kaplan 2004). Affordable housing is a feature of housing and housing service in relation to consumer ability and desire to own or buy the houses (Yang & Shen 2008). However, the increase in housing prices, particularly in certain states in Malaysia, has affected the availability and affordability of prospective buyers (Zainal Abidin 2010).

Affordable housing is defined in several ways. One of the most commonly accepted definitions is "Affordable housing refers to any housing that meets some form of affordability criterion, which could be income level of the family, size of the dwelling unit or ratio of house price to annual income" (Gopalan & Venkataraman 2015: 130). Gabriel et al. (2005) differentiated between two interpretations as affordable housing and housing affordability. Housing affordability is related to the amount of income which households should expect to pay for their housing. Whereas, affordable housing refers to making the houses affordable for the residents without compromising on the qualities of the materials used. This study will use the expression of affordable housing because its interests are in the qualities of the housing and not only on the income issues.

Fourteen criteria for measuring the affordable housing performance are outlined by Mulliner and Maliene (2012) and Friedman and Cammalleri (1994). The initiators of the study come from their role to classify the Mulliner and Maliene criteria into four indicators, namely; income ratio, facilities and services, safety, and quality management. Moreover, the study operates the Grow Home concept as a fifth indicator. These indicators are utilized to evaluate the performance of affordable housing projects in Malaysia, precisely the landed houses in the central region of West Malaysia.

The component of income ratio involves house price in relation to annual income. Housing affordability is defined as a ratio of property values over the yearly gross income of an individual, with a ratio of 2.5 as the yardstick. The facilities and services components include access to employment opportunities, public transport services, proximity to the schools, shopping facilities, health services, early childhood care services, leisure facilities, and open green public spaces. The safety component could be measured by the crime rate from the police station. While the quality management component involves the quality of housing and energy efficiency of housing. The component of Grow Home includes land properties such as house area (small, medium and large), and the number of new spaces that were added to the original after the houses were occupied.

This study aims to consider the concept of Grow Home as Affordable Housing Performance Indicators (AHPI). Grow home is a concept of affordable housing that is widely implemented effectively in Canada. Developed by McGill University Affordable Homes Program in 1990 under the direction of Dr. Avi Friedman, Grow Home concept has been adopted by Renaissance Group as its model for construction. It aims to create an affordable home to low income households. The importance of affordable housing performance comes from its outcomes that affect various fields related to everyday life. Building performance evaluation contains many issues such as physical, functional, environmental, financial, economical, psychological and social (Gabriel et al. 2005; Gopalan & Venkataraman 2015). According to Friedman and Cammalleri (1994), Grow Home aims to build houses for sale, which can be afforded by low-income families.

In Malaysia, the concept of flexible houses, a similar idea of Grow Home, gives the owners a chance to design their own house that reflects their lifestyle and configuration. The relationship between housing design and the way of life of the people has resulted in behavioural adaptation and housing adjustment which subsequently leads to changes in some features of the Malay culture (Zaiton & Hariza 2012). A house comprises of spaces which are organised according to a certain order of social values. This general regulation varies between cultures as it does not only affect the size and configurations of the spaces, but also the relationship between the residents and visitors (Omar et al. 2012). As Malaysian households prefer to be different from their neighbours and have different needs through time, the housing system should offer adaptability for serving areas, where the serving areas, catering to most basic

human needs, can show similar aspects from one dwelling unit to another (Asiah et al. 2012).

Home renovation is becoming a 'culture' in Malaysia. Mahmud Jusan (2007) stated that homeowners renovate the homes in order to increase congruence with their home environment. Renovation improves thelevel of privacy for the homeowners and the functional features of the house. Five distinctive methods were found which are extension, addition, reduction, removal, division and relocation. The most common technique employed is the extension (Omar et al. 2012).

Occupants may need to improve the quality of their houses to enable them live their lives more comfortably in line with the family's growth. In Malaysia, most house owners, especially terrace houses, would renovate or extend their houses while they are still living in them. The renovations involve numerous sections such as the kitchen, rooms, bathrooms, and so forth (Jamel & Utaberta 2011). The kitchen is one of the favorite spaces to be renovated (Omar et al. 2010), while the living room is considered as a substantial space in the house that most occupants intended to modify (Saleh et al. 2014).

Renovation is done to the original plan for various reasons such as a family expands either by growth or being economically stable. Moreover, the house renovation supports the sense of belonging and self-identity, which is the same idea of Grow Home that gives the chance to the occupants to make a renovation and extend their home according to their needs (Saleh et al. 2014).

According to Asiah and Fadziah (2009), most of the residents in Malaysia are fairly satisfied with their house finishing. Cracks remains the highest case of defect noted for the houses in Malaysia, mainly for single and double storey terrace housing. As for these cases, maintenance of external wall tiles is needed once every twenty to thirty years, basically in terms of masonry joint repair. In addition, most Malaysians prefer to improve their house by doing renovation and extension (Asiah & Fadziah 2009).

GROW HOME

The concept of Grow Home seeks to ensure that the prices offered in the market are affordable, whereas the second concept of self-built flexible plan is a concept whereby owners can rearrange and renovate their own rooms from the basic houses provided for them. This concept actually serves as a strategy to give an opportunity to the middle-income earners to own landed homes like the terrace houses with reasonable prices. The young earners will be able to own their own landed houses at an affordable price, and still being able to obtain basic houses and expand according to their needs, like adding more rooms without involving wet construction, and adding more levels to 2 or 3 without affecting the existing structure of the house. By examining the level of acceptance of the Malaysian community, especially young executives, construction structure, construction costs and minimum span of the land, this concept should be able to overcome the issue of affordability among the young executives when it comes to being in possession of their own landed property (Mulliner 2012).

Grow Home is a town house which covers approximately 92.9 m^2 of area, built with a three-storey that is 4.27 m wide. Grow Home originates with a living room, dining room, kitchen, bathroom, and one or two bedrooms on the second floor. The upper levels in the Grow Home are un-partitioned at the time of selling, to give a chance to the home owner to complete it according to their financial resources and the family's needs (Figure 1) (Friedman & Cammalleri 1994; Mulliner & Maliene 2012).

In Canada, Grow Homes sell for USD60.86 to USD88.95. Grow Home is so affordable since their monthly payments are less than what they spent on rent. Grow Home has grown widespread internationally; North America has 10,000 units and 6,000 in Canada. Grow Home reserves cost in numerous methods (Friedman & Cammalleri 1994);

1. Reducing land costs by building it in small lots.
2. ConsequenTSy, this reduces the per unit hard infrastructure costs by 60%.
3. Decreasing the amount of labour and building material needed for construction.
4. There are 33 different options available at various costs.
5. $5,000 is reduced from Grow Home price for each unfinished floor.
6. Reducing energy costs for heating and cooling.

Grow Home has been developed in recent years and these include the green Grow Home and the next home. Affordable housing is often used interchangeably with social housing; however, social housing refers to rental housing subsidized and one category of affordable housing. Affordable housing is a much wider term and consists of housing delivered by the private, public and not-for-profit sectors as well as all forms of housing occupation (rental, ownership and cooperative ownership). Affordable housing includes any part of the housing categories, namely; temporary emergency shelters through transition housing, supportive housing, subsidized housing, and market rental housing or market home ownership (Friedman & Cammalleri 1994).

Grow Home becomes affordable in several ways. For example, by reducing costs of land when Grow Home units are built on small lots or by reducing hard infrastructure costs per unit by up to 60% when a small lot size and high area density are used, compared with single houses on regular lots. Furthermore, a small building area decreases the number of workers needed to construct a house. Grow Home includes various criteria such as land properties, house area (small, medium and large), location and price, number of workers needed to build the house. Grow Home options include unfinished levels, the number of new spaces that were added to the original plan and family type.

In Malaysia, the concept of flexible house, which has the same idea of Grow Home, gives the owners the chance to design their own house which reflects their lifestyle and configuration. Till and Schneider (2005: 287) defined flexible house as "that can adapt to the changing needs of users, which is by design a broad definition". Flexible house helps the home owners to extend their home upwards and renovate the floor area according to their economic affordability (Saleh et al. 2014).

Newlyweds	One floor plan
Family	Growing plans

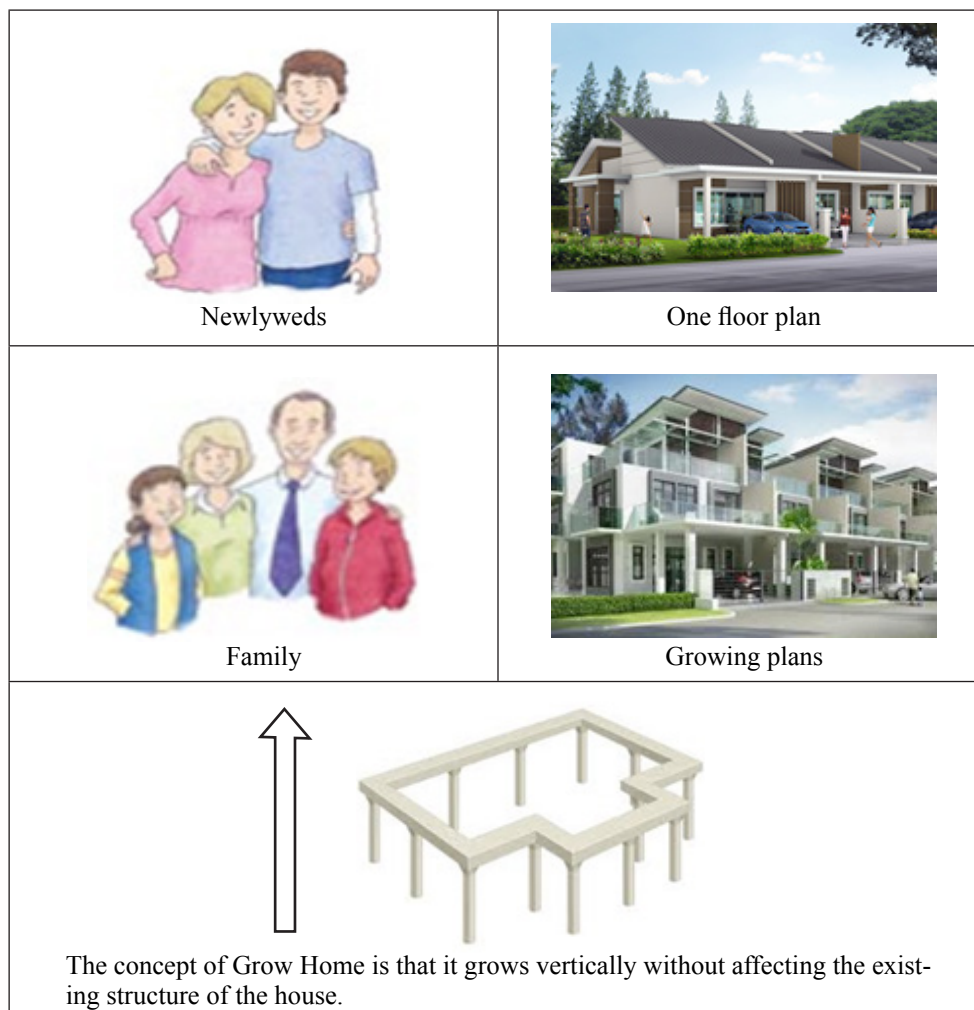The concept of Grow Home is that it grows vertically without affecting the existing structure of the house.

FIGURE 1. The Concept of Grow Home

Affordable housing performance can be assessed by using various criteria. These criteria are classified into five components namely income ratios, facilities and services, safety and comfort, quality management and Grow Home. These components could be considered as an Affordable Housing Performance Indicators (AHPI) to be used for measuring affordable housing performance for landed houses in the central region of Peninsular Malaysia (Labin et al. 2014). For the purpose of this article, the study only reports the concept of Grow Home and its measurement item i.e. land properties and the number of new spaces that were added to the original plan of the houses.The rationale for this is each and every five components mentioned above is too detailed to be discussed in one article. Furthermore, focus discussion can be conducted on Grow Home concept to demonstrate the AHPI in a larger perspective.

METHODOLOGY

This study referred to literature review for secondary data and a physical survey using field observations. Informal interviews focusing on demographic profile with the residents of the landed properties in Taman Selasih (TS) and Taman Lukut Makmur (TLM) werealso carried out to assess the concept of Grow Home as affordable housing performance assessment. All data presented are in the form of descriptive statistics from frequency count.

The constructed affordable housing projects in Malaysia were determined, focusing on landed housesrather than strata property (high-rise residential scheme).Then the landed properties(single storey houses) in the central region of Peninsular Malaysia were chosen as a case study to be evaluated. The study consisted of two sample schemes as there are two house schemes; the first sample were the houses assessed in TS and the second sample were houses assessed in TLM. Since this study focuses on landed property of affordable housing, the sample was taken from a housing project developed by Syarikat Perumahan Negara Berhad (SPNB) – under the category of landed housing. Generally in Malaysia, affordable housing is in the form of stratified property or multi-ownership housing like apartments and flats. There are not many affordable housing projectsthat are developed as landed properties.

TS consists of 260 houses.All of them are occupied, while only 120 of the 200 houses in TLM are occupied. Kotrlik and Higgins (2001) provided a table for determining the sample size from a given population. According to Kotrlik and Higgins (2001), the table of sample size for the 260 houses in TS is 155, while the sample size for the 120 houses in TLM is 92.

FINDINGS

Interviews were conducted with the residents in TS and TLM to collect data about their family members, monthly income, and whether the houses were renovated after being occupied.This study was carried out in two neigbourhood areas; TLM and TS. TLM, with 200 houses mostly yet to be occupied, is in Lukut, a town in Negeri Sembilan. It serves the middle income class and all of the residents are the owners themselves. There are three housing schemes and prices are listed in Table 1.

TABLE 1. Housing Schemes and Prices in TLM

Taman Lukut Makmur	
House area (m²)	House price (RM)
120.77	94930
132.85	106040
315.87	143410

The majority of the households (32.3%) are families with one child, whereas 28% of the sample are newly weds. 21.5% of the households are categorized as families of four while 14% of the them consist of five people. Only 2.2% are households with six or more than seven people.

The households' income varies. The majority earn from RM2000 to RM3999 monthly, and they represent 51.6% of the sample. While 26.9% of the households earn RM4000 to RM6000 monthly, and 14% of the households earn less than RM2000 per month. The minority 7.5% of the households earns more than RM6000 monthly.

TS a housing area with all 260 houses occupied, is located near Kuala Pilah in Negeri Sembilan. It serves the middle income class and all of the residents are the owners themselves. The houses are of three different schemes and prices as shown in Table 2.

TABLE 2. Housing Schemes and Prices in TS

Taman Selasih	
House area (m^2)	House price (RM)
102.19	40000
120.77	59000
130.06	75000

The majority of the households (32.3%) are families consisting of three members.While 28% of the families do not have any children, 25.8% of the sample are families comprising four people. 21.9% of the householdsare families of five and 9% are families of six people. A small percentage (2.2%) of the sample are families with more than seven people.

TS households' income also varies with 7.7% of the households have a monthly income of less than RM2000. The majority (69%) of the households have monthly income ranges from RM2000 to RM3999, whereas 29% of the households' monthly income ranges from RM4000 to RM6000. Only 4.5% of the sample's monthly income is more than RM6000.

Based on this demographic profile, it shows that the residents and their families are within the affordability level for house purchase. The income bracket that ranges from RM2000 until RM6000 is a clear indication about this factor. Only a minimal percentage exceedsthe monthly income of RM6000. This information shows the ability of the residents to renovate their house, thus supporting the concept of grow home.

SCORING BAND FOR LANDED PROPERTIES

Friedman and Cammalleri (1994) suggested that the cost of savings of Grow Home are achieved by building it in small lots, thereby reducing land costs. Smaller lot size and high density, reduce the hard infrastructure costs per unit by 60% compared to single family houses on regular lots. Small building size reduces the amount of labour needed for construction and the amount of building materials that are needed.This study classified land properties score band into three levels based on the house's area: large area (315.87 m^2 in TLM and130.06 m^2 in TS), medium area (132.85m^2 in TLM and 120.77m^2 in TS), and small area (120.77m^2 in TLM and 102.19m^2 in TS).The land cost increases with the expansion of area (Table 3).

TABLE 3. Landed Properties Levels Scoring Band

House area	Associated score	
Small area	High	3
Medium area	Medium	2
Large area	Low	1

SCORING BAND FOR NEW SPACES

Thirty-three different options are available in Canada for homeowners to customize the Grow Homeallowing them to make trade-offs between amenities and their budget. For example, a balcony can be added for USD350, a sloping dormer roof with a window can be added for USD1,000, or a deck can be added for USD610. Molding can be added for USD375. Each floor left unfinished in the Grow Home reduces construction costs by USD5,000 (Friedman & Cammalleri 1994).

This study suggests that the concept of Grow Home can be assessed by using the number of new spaces that are added to the original plan of the house. It can be classified into three levels: low, if no new spaces were added after the house was bought, average; if one new space was added; and high, if two new spaces were added after the household bought the house (Table 4).

TABLE 4. New Space Scoring Band

Number of new spaces being added	Associated score	
No new spaces	Low	1
One new space	Average	2
Two new spaces	High	3

Renovating a house has become a 'culture' in the Malaysian housing development even if the house is still brand new (Omar et al. 2012). Omar et al. (2012) studied the physical modifications of houses by homeowners in the Klang Valley area.

The solution of "one design fits all" could not accommodate the individual's specific needs. It has been pointed out that mismatch between house design and the user's values and lifestyle will lead to dissatisfaction. This is a gap that Tipple (2000) considers as "housing stress". It is generally accepted that the goal of any modification is to create a "home". By doing so, homeowners are able to achieve or improve certain aspects of the home, which will ultimately increase their satisfaction. A

house will only turn into a home through a process of change made by the occupants (Gifford 1997; Russell et al. 2008).

The kitchen is one of the favourite renovated spaces in local housing development. Findings from the interviewconfirmed that the kitchen is often very significantly modified. Nearly all of the houses added a "wet kitchen" to facilitate cooking and washing. Bedrooms are another feature which is commonly modified. Enlargement or additional new bedrooms suggests there is a need for more space to accommodate a growing household. In order to improve privacy, five distinctive approaches were found which are extension, addition, reduction, division, removal and relocation. The most commonly method employed is the extension (Russellet al. 2008).

DISCUSSION

The two aspects of Grow Home were assessed via a physical survey in TS and TLM. The houses in both TS and TLM vary according to three differentplans (Figure 2 & Figure 3) based on the area size.

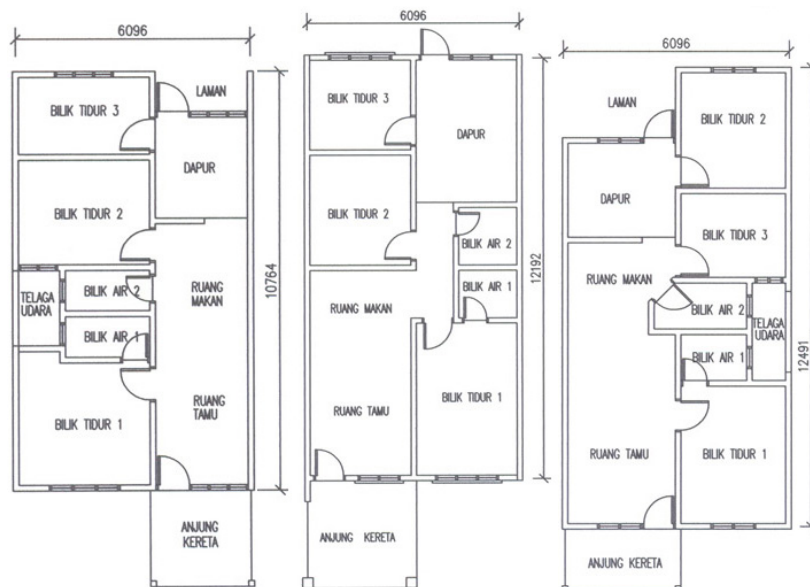FIGURE 2. Plans in TLM (120 m^2, 132.8 m^2 and 315.8m^2)

FIGURE 3. Plans in TS (102m^2, 120.7m^2 and 130m^2)

TABLE 5. Land Properties

Area	Score band	TLM		TS	
		Area	%	Area	%
Large	Low	315.87m^2	15.1%	130.06 m^2	23.9%
Medium	Average	132.85m^2	48.4%	120.77 m^2	27.1%
Small	High	120.77m^2	36.6%	102.19 m^2	49%

LANDED PROPERTIES

When comparisons are made between the landed properties in TS and TLM,it is discovered that 15.1% of the sample in TLM falls within the large area category (315.87m^2); while in TS 23.9% of the sample falls in the same category(130.06m^2). 48.4% of the sample in TLM represents the area category of 132.85m^2 and 27.1% of the sample in TS (120.77m^2) is in the category of medium area. The small landed properties in TLM constitutes 36.6% of the sample, while it is 49% in TS (Table 5).

Based on the score band classification, TLM is within the average score band as the majority (48.4%) of the sample are within a medium area, while TS is within the high score band as the majority (49%) of the sample constitutes a small area.

TS was built before TLM, and hence all the houses in TS were occupied. On the contrary, most of the houses in TLM were not occupied yet (at the time of the study). Thus, the more established a housing scheme is, the more people will stay there, as compared to a new housing scheme, which normally takes time for people to move in. Moreover, the area of the houses in TLM is bigger than in TS for each category. Consequently the price is doubled in TLM compared to TS.

NEW SPACES

No renovation work is carried out in 89.2% of the sample in TLM and 54.2% of the sample in TS. The reason is that renovation process requires authorisation from the local authority. While 8.6% of the sample in TLM and 23.9% of the sample in TS have new space that was added to the original plan either in the back yard as a small kitchen or store or in the front yard. 2.2% in TLM and 21.9% in TS added two new spaces (Table 6).

The houses with two new spaces are larger as there are extra land area in the back and front

TABLE 6. New Spaces

	Score band	TLM	TS
No new spaces	Low	89.2%	54.2%
One new space	Average	8.6%	23.9%
Two new spaces	High	2.2%	21.9%

yard of the houses and in TS the percentage of the large houses are more compared to TLM. Consequently the percentage of the houses with two renovations are more in TS. Based on the score band classification, 89.2% of the sample in TLM and 54.2% of the sample in TS are within the low score band. While 8.6% of the sample in TLM and 23.9% of the sample in TS are within the average score band. The high score band constitutes 2.2% of the sample in TLM and 21.9% of the sample in TS.

Most of the spaces that are added serve various functions such as for parking space, laundry area, living area and as an additional room (Figure 4).

GROW HOME AS MEASUREMENT CRITERIA

The component includes landed properties and new spaces. Table 7 shows the result in TLM where 29% of the sample presents the low score band and 6.5% of the sample constitutes the high score band. Only 64.5% of the sample presents the average score band. As the mean is 1.77, this component is considered within the average score band.

Table 8 shows the result in TS where 1.3% of the sample presents the low score band and 98.7% of the sample presents the average score band. The mean is 1.98 and this component is considered within the average score band. Table 9 explains the descriptive statistics as mean and standard deviation in TS and TLM.

Table 10 concludes the components' impact on the affordable housing performance for TS and TLM. Based on the table, if the score band of the component is high, it has three points. If the

FIGURE 4. Functions of Additional Spaces

TABLE 7. Grow Home in TLM

	Frequency	Percent	Valid Percent	Cumulative Percent
Low	27	29.0	29.0	29.0
Average	60	64.5	64.5	93.5
High	6	6.5	6.5	100.0
Total	93	100.0	100.0	

TABLE 8. Grow Home in TS

	Frequency	Percent	Valid Percent	Cumulative Percent
Low	2	1.3	1.3	1.3
Average	153	98.7	98.7	100.0
Total	155	100.0	100.0	

TABLE 9. Grow Home Descriptive Statistics in TS & TLM

	N	Minimum	Maximum	Mean	Std. Deviation
TS	155	1.00	2.00	1.9871	.11322
TLM	93	1.00	3.00	1.7742	.55421

score band is average, it has two points and if it is low it has one point. The overall points were then calculated to determine the affordable housing performance for each site. As a result, TS and TLM have an average score band since TS has 4 points (2.00, average score band), while TLM has 3 points (1.5, average score band).

TABLE 10. Grow Home Score Band in TS and TLM

Criteria	TLM		TS	
	Points	Score	Points	Score
Land properties	●●	Average	●●●	High
New spaces	●	Low	●	Low
	3/6	1.5	4/6	2.00

Both TS and TLM have the average score band, which means that The Grow Home scheme could be considered as an indicator to evaluate the affordable housing performance for the landed houses. Most of the sample in TS and TLM are within the average score band in the landed properties, while it is within the low score band in the new space criterion. The reason is that both of TS and TLM are built recently. The landed properties criterion has high score band especially for the small area, which means that it might growfurther in the future, based on the number of the family and financial circumstances.

Grow Home item of landed properties achieves its affordability concept by reducing land costs via small lot construction from the start itself. It will also reduce cost of the infrastructure and building materials during construction. Once these properties are occupied, the energy cost is also reduced because it is operated in a small area of the house. After about 2 years or so, the house owner will normally carry out a renovation. It is in this aspect that the concept of Grow Home is applied and is being measured in this article. In the bigger picture, the Grow Home concept contributes to the affordable housing performance assessment.

A clear contribution of this study is bringing the Grow Home concept as one of the measurement criteria that contributes to performance assessment. While existing studiescovermostlyon social impact of affordable housing and its community, this study sets a new dimension by introducing technical criteria (Grow Home) as assessment tools. The ability of the house owner to renovate their house indirectly portray their improved lifestyle and monetary income. This study takes the scenario as a healthy movement of individuals to seek better living environment for their family.

CONCLUSION

Grow Home was evaluated as an affordable housing performance assessment, for the landed houses in the central region of West Malaysia. It has two main criteria; landed properties and new spaces. This study considered the single storey or landed houses in the central region of Peninsular Malaysia as a case study.The price of the houses in TLM is considered high compared to TS. Both TS and TLM are in the average score band; the reason is most of the sample in TS and TLM are within the average score band in the landed properties, while it is within the low score band in the new space criterion. The reason for this finding is that both TS and TLM are built recently, and it takes time for the house owner to make the renovation.

This paper has identified that the Grow Home conceptis viable to evaluate the affordable housing performance for the landed houses. The implication of this study is towards the housing performance as a whole. The subject of affordable housing mostly discussed on the aspects of supply methods, i.e. how to deliver affordable home to Malaysians. This article fills the gap by focusing on the post-deliverable aspect or post-construction aspect i.e. how the housing scheme performs, and how Grow Home concept contributes to this measurement.

The focus of construction activities has regularly been shifting from the quantity to the quality of housings. This studycan be used as a tool that assesses critical aspects of building performance systematically, by testing new buildings and providing design guidance and criteria for future structure.Findings from this study can influence the satisfaction level of the affordable housebuyer. It also supports the National Housing Policy that stresses on quality home for Malaysians. The government does not only want to provide physical houses, but it also has to be able to cater for the contemporary needs of the housebuyers as well. Being able to own a house and make it bigger in near future is actually the dream of everyone. This is where the Grow Home comes in as one of the important criteria to be measured.

It is hoped that the parameter of AHPI developed in this study can be applied as a base for measuring

the performance of landed houses. For further future research, this study can be replicated as several variables such as families' circumstances, the number of people in the household, and renovations carried out may change according to the increasing needs of the families. Thus, this itself will affect the concept of Grow Home. Future research may also assess other similar projects (landed houses) in the central region as it is now under construction for example add the full name for PRIMA PR1MA Seremban Utara.

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