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## Assessing factors influencing Performance of Malaysian Low-Cost Public Housing in Sustainable Environment

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### Abstract

Housing is a basic social need where families can have a comfortable living and work in a sustainable environment. This study aims to determine related factors that influenced the performance of multi-storey low-cost public housing in Malaysia. The data are collected through a semi structured interviews and critical observation on site conducted in four location of public housing in Selangor. Analysis has been made from feedback by the property management, residents and non residents. Findings identified will improve social and physical management requirements and the needs of the residents which can create a better, successful, conducive for affordable low cost public housing.

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*Keywords:* Public housing; building defects; residents satisfaction; housing management

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### 1. Introduction

Public housing is one of the important affordable homes for all citizens particularly on low income group. In Malaysian development programs, provision of adequate, affordable accommodation, quality, safe housing and related social services which take precedence of all others aimed at improving the quality of life and contributing towards the formation of a caring society. The Ministry of Housing and Local Government (Kementerian Perumahan dan Kerajaan Tempatan-KPKT) via the National Housing

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Department (Jabatan Perumahan Negara -JPN) are responsible in managing and monitoring the construction of public housing programs projects. Various public housing projects have been implemented by the government amongst which are Projek Perumahan Awam Kos Rendah (PAKR), Projek Perumahan Rakyat (PPR) Bersepadu (MTEN), Projek Perumahan Rakyat (PPR) Disewa Dasar Baru and Projek Perumahan Rakyat (PPR) Dimiliki Dasar Baru.

Malaysian government are committed in providing adequate, affordable and quality housing for all Malaysian, particularly the low income group Under the Seventh Malaysia Plan (1996-2000) and Eight Malaysia Plan (2001- 2005). The Government continued to provide low-cost houses in the Ninth Plan (2006-2010) period, under People's Housing Program (Program Perumahan Rakyat-PPR) while the Syarikat Perumahan Negara Berhad (SPNB) will complement the government's efforts by building more than 29,000 low- and low-medium cost houses in urban and rural areas. Since there are so many public housing projects provided by the government, many issues have been researched related to public housing. The purpose of this study is to assess factors that influences the performance of low cost public housing in Malaysia towards a sustainable environment. Kuala Lumpur Structure Plan 2020 have been identified the low qualities of building materials and workmanship as the main problems in low-cost housing.

## **2. Problem statement and issues of Low-Cost Public Housing in Klang Valley**

Many PPR housing has been built during the Eighth Malaysia Plan to overcome the issue of squatters as well as to provide affordable houses for the low income group. Since many of these housing projects are completed and occupied, assessment has yet to be done to analyst and describe the quality of construction. The public housing management in Malaysia is also not exempt from problems in managing their units. The root causes leading to this problem have been identified as vandalism, repairs and most glaringly, is the high rent arrears rates faced by public housing managements (Jabatan Perumahan Negara, 2007 and Dewan Bandaraya Kuala Lumpur, 2007). Former Prime Minister of Malaysia, Datuk Seri Abdullah Ahmad Badawi reviewed that it is very common to see most government buildings were not regularly maintained because most faults cannot be distinguished at their early stage (Malaysia, 2006a), he has suggested that in order to identify any damage from the early stage, the building maintenance guidelines need to be prepared (Malaysia, 2006b). In this respect, this study is to determine factors influencing the overall building defects in public housing. It is very important to observe and monitor the physical condition of public housing building from time to time so that effective actions such as repairs or upgrades can be taken to sustain the performance of public housing in order to guide the urban governance of the local authorities, towards the way ahead and helps in the monitoring of housing policy in the country.

Basically, most of developers or property manager have their own procedures in handling any issues of the residents, however due to inefficient and ineffective procedures has been resulted in more complaints from residents and the solution of defects in their unit is not properly resolved. According to Siegert (2004), the repair and maintenance of public housing is a long-term task that must be performed consistently over time to ensure that buildings remain in good condition and to avoid the risk of accidents caused by deteriorated infrastructure to preserve the capital value of the structure. Therefore, this study is to investigate public housing management and necessary strategies for better building management.

The performance of public housing program does not only rely on the number of units have been completed but also the satisfaction of residents in their units. Residential satisfaction reflects the degree to which individual housing needs are fulfilled. There were various researches that have been studied in residential and neighbourhood satisfaction. The determination of satisfaction factors is an important indicator of housing quality and condition, which affects individuals' quality of life and essential inputs in monitoring the success of housing policies. Salleh (2008), identified the satisfaction levels are generally higher with dwelling units and services provided by the developers than neighbourhood facilities and

environment. The contribution factors are poor public transportation, lack of children playgrounds, community halls, car parks, security and disability facilities (Salleh, 2008). Hence, this research is to investigate resident's satisfaction towards the building services and its facilities of low cost multi-storey public housing using case studies of PPR's housing in Selangor. The investigation is including the satisfaction with dwelling unit, satisfaction with services by building management and also satisfaction towards neighbourhood facilities and environment.

Several issues were also recognized related to low cost housing based on Kuala Lumpur Structure Plan 2020 which includes low space standards, under the provision of community facilities, shortage of car parking spaces, high maintenance costs and poor quality of construction and materials in low cost housing projects. The performance public low cost housing management is the main focus of this study. This study limited to rented low-cost public housing located in Selangor, which is multi-storey height, 11-12 or 16-18 storeys in the major town and 5th storeys in smaller town.

### 3. Literature review

The earliest research on housing identified qualitatively the type of housing was not been satisfied to the family housing needs, comfort, social, cultural and religious needs (Sulong, 1984; Tan, 1980). The research on residential satisfaction on low-cost public housing in Kuala Lumpur found majority respondents wanted a dining space, to separate bathroom and toilet in their units and also dissatisfied with the characteristics in their dwelling units (Husna, 1987). The design of low-cost housing in Malaysia has been changed from the provision of two to three bedrooms with the addition of dining area, a separate bathroom and toilet and also the additional of drying area (Construction Industry Development Board (CIDB), 1998, National housing standard for high –rise low cost housing – Construction Industry Standard (CIS-2) 1998, CIDB, Kuala Lumpur (1998). Satisfaction with dwelling space is a function of three variables : user characteristics, physical attributes of the space, and beliefs and perceptions of the user about space (Atlas, 1998)

Studies on housing satisfaction of middle income households in Bandar Baru Bangi, Malaysia, the research revealed that the residents were highly satisfied with the space and price of the house owned but not satisfied with the size of the kitchen, plumbing and public facilities such as recreational areas, playground, taxi and bus services in the housing area (Oh, 2000). According to Oh (2000), there are three main qualities which impact the quality of housing that are quality of the dwelling, quality of the close environment and also the quality of the urban site. Besides facilities in the house, basic facilities such as shops, markets, schools, clinic, mailing system, community hall, playground, and others are important to support the daily life of the dwellers, and enhance residents' quality of life (Nurizan, 2001). Location characteristics are important considerations for understanding the formation of residential satisfaction among public housing tenants (Baker, 2002). Affordable and accessible housing, transport, healthcare, education and training, leisure and recreation facilities, other public amenities, and opportunities for social interaction are the most basic requirements of living, working and playing in urban communities that most people share (Williams, 2008).

Housing offers varied levels of satisfaction and has a social representation that motivates household mobility. Housing also tests the state's vigour in managing basic welfare provision as well as aspirations for improved quality and status when the middle classes rise in numbers who increasingly reject public housing as a mass-produced consumer well (Wong, 2002). In Singapore housing policies, if perceived as political skills, have evolved from managing basic needs to managing aspirations. The investigation on residential satisfaction in two states at Pulau Pinang & Terengganu found that the neighbourhood factor is the dominants factors affecting the level of housing satisfaction in private low cost housing in Malaysia (Salleh, 2008). Studies on level of tenants satisfaction towards neighbourhood aspect at public housing

under Majlis Bandaraya Ipoh (MBI), Perak, Malaysia, identified cleanliness and hygiene factors in public housing often become the bone of contention among residents of this housing units (NA Salleh, 2010).

Maintenance can be defined as those activities required to keep a facility in as built condition and therefore, continuing to have its original productive capacity. The nature of things, nothing man-made is indestructible, but performing repairs at intervals by an activity known as maintenance can extend the useful life (Reason, 2000). A definition of building maintenance is to keep a building in a condition appropriate to its use (El-Haram, 2002) and the work undertaken to keep or restore a facility to an acceptable standard (Boussabaine, 2004). To ensure the buildings remain in good condition and to avoid the risk of accidents caused by deteriorated infrastructure, a long term task of repair and maintenance of public housing must be performed consistently over time to preserve the capital value of the structure (Siegert, 2004).

Development in technology and management techniques and priorities have put increasing power of various kinds in the hand of multifarious and diverse building users and have facilitated new approaches to the maintenance and management of premises. Bringing these innovations together under the flag of building care reflects a renewed interest in these vital yet undervalued activities and encourages further thought on how professional premises related services may best be introduced to meet the changing needs of today (Wood, 2003). Previous research on tenant satisfaction toward public housing management agreed that good management and maintenance of public housing portrays a positive image of public management especially in the public sector and will simultaneously eradicate any negative connotations often labelled on public housing managements (NA Salleh, 2010).

#### 4. Research methodology

The measurement technique in this research applied mixed research design. Collecting and analyzing of data mixing both quantitative and qualitative in a single study is a procedure to understand a research problem (Bryman, 1988; J. W. Creswell, 2005; J. W. Creswell, 2009). Mixed methods of quantitative and qualitative approaches have been widely used in a variety of research disciplines, and it is considered as relatively new distinct research (J. W. Creswell, 2009). The information regarding overview of low cost housing, public housing, multi-storey housing, elements in low-cost public housing, responsibilities and issues related to property management, residential perception and satisfaction, defect, problem and common issues is very useful for this study. That information has been gathered from various sources using journal, articles, newspaper, unpublished research, textbooks and internet.

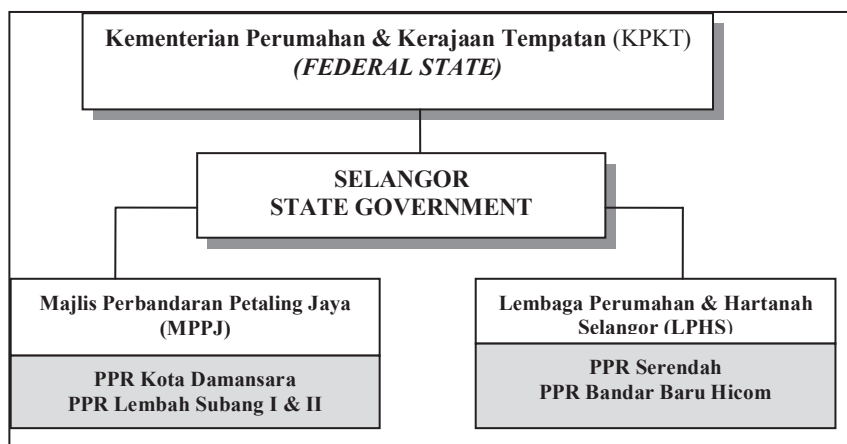


Fig. 1. Flow chart of selected case study of PPR in Selangor

Three set of questionnaire have been designed to collect data from the management, residents and non residents. The purpose questionnaire designed is to evaluate on issues related to the factors influencing the overall building defect, the management of the public housing and the satisfaction of residents towards the dwelling units, satisfaction with services and also satisfaction neighbourhood facilities and environment.

The questionnaire for building management was divided into two main sections. Section A is to get general information of property manager. Section B is to get info based on the respondents' experience of the public housing management towards the common complaints by tenants, problems faced by building management and also the maintenance work schedule that have been implemented on the PPR housing. The respondents were asked to rate their preferences in ascending order with likert scale ranging from 1 to 4 in ascending order where 1 for "totally disagree"; 2 for "disagree"; 3 for "agree" and 4 for "strongly agree".

The questionnaire for residents is to measure their rate of satisfaction with dwelling units, with services by building management, neighbourhood facilities and environment and also types of defect experience in their units. The respondents were asked to select the relevant answer from the choices provided. Four-point of likert scale was used, where 1 represented "very unsatisfied", 2 for "unsatisfied", 3 for "satisfied" and 4 stood for "very satisfied. The observations on site on the defects were further illustrated using photographs. The questionnaire for non-residents also has been developed. In this questionnaire, the respondents were also asked to indicate their perception and preference of future intentions towards public housing.

## **5. Data collection**

According to Malaysian Department of Statistic, Selangor has the largest population in Malaysia at 5,411,324 as of 2010. Under the public housing program (Projek Perumahan Rakyat- PPR), the Selangor state government successfully relocate thousands of squatters to that proper housing scheme in a move towards the Zero Squatters program. These housing schemes units either sold or rented out for the relocation of squatters began sprouting in all parts of Selangor. In this research, all data collected from the case studies and questionnaire survey have been analyzed, discussed and evaluate between four (4) cases studies of public housing program in Selangor consist of PPR Serendah, PPR Kota Damansara, PPR Lembah Subang and PPR Kg Baru Hicom.

Analysis has been made from the feedbacks given by the management, residents and non residents. Despite administering the questionnaire, the researcher also conducted interviews and did some critical observation on the sites. The case studies concentrated on research the management of multi-storey low-cost public housing approach, from the management point of view as well as operational. In addition, the case studies also investigated whether these buildings are properly maintained and promote good well being to its residents. The information gathered from the questionnaire answered by the building manager, residents and non residents of each building.

Through this study, overall 4 semistructured interviews with building management were carried out. The interviews contained various sections such as general information of the building or property manager, common complain lodge by tenants in public housing, maintenance works schedule and related issues in managing the public housing.

A total of 400 questionnaires were distributed to the residents to these 4 PPR. The aim was to study the residential satisfaction public housing towards dwelling units, neighbourhoods and environment and also defect experience with dwelling units. 50 questionnaires were also distributed to the non residents of the PPR to study the perception towards low-cost public housing (PPR). These questionnaires created for non residents in order to identify the satisfaction with dwelling units, neighbourhood facilities and environment. Their preferences of future intentions of residential, type of area and their needs in the future are also studied.



Fig. 2. Overview location of case study on PPR flats at Selangor

## 6. Result and discussion

### 6.1. Case study and observation

One of the methods of data collection in this study is through observation. The detailed results of this research identified basic causes of defects are dampness, movements and chemical or biological change. Littering is the most serious problem in public housing especially at the public space such as walkways, in the lift car, staircases, letterbox areas and playground areas. Illegal parking of motorcycles, vandalism, graffiti, stray cats and dogs are the common issues and problem facing by the management in managing the public housing.

### 6.2. Residents expectations on their dwelling units

Most of the residents were generally satisfied with their units might be influenced by the total units of residence and in terms of total member in one family stayed in dwelling units. Most residents of PPR unsatisfied with clothes line, natural lighting and also space in the kitchen provided by PPR Selangor. PPR residents generally satisfied with the electrical and sanitary fitting provided and also garbage line system.

### 6.3. Residents expectation with their services provider

Except for the pipes repairs in their dwelling units and safety which needed improvement in their housing areas, most of the residents satisfied with the service provider. From the observation on site, in term of safety, only PPR Serendah provided a proper entrance complete with post guard and main gate compared to PPR Kota Damansara, PPR Lembah Subang and PPR Kg. Baru Hicom.

### 6.4. Expectation on facilities and environment needs

The location of institutions of learning such as preschool, elementary and secondary school, and health care facility such as clinic or hospital ranked the most unsatisfied. The residents satisfied with community hall with Relatives Index 0.500. The overall finding shown the level of satisfactions in these four locations off PPR was different. Residents of PPR Kota Damansara very satisfied with public transport provided with Relatives Index 0.954 compared to PPR Serendah, PPR Lembah Subang and PPR Kg. Baru Hicom



with Relative Index less than 0.50. Residents of PPR Serendah very satisfied with parking lots provided and access road compared to PPR Lembah Subang, PPR Kota Damansara and PPR Kg. Baru Hicom

#### *6.5. Type of defect experience with dwelling units*

The major defect categories identified, namely rain penetration, cracking, staining of fittings, staining at vanity top, staining at ceiling finishes, staining of tiles, uneven of tiles, paint defect, spalling of concrete, water leakage through crack, leakage through pipe fittings, leakage through joint, corrosion of pipe and waterproofing. Waterproofing claimed the highest frequency (87%). Water leakage through joint ranked second (74%) followed by water leakage at pipe fittings.

#### *6.6. Non-residential expectation of Low Cost Public Housing.*

Non-residents of PPR most satisfied with garbage line with Relatives Index 0.750 followed by ceiling height with Relatives Index 0.705 and electrical fittings with Relatives Index 0.682. The nonresidents most unsatisfied with space in the kitchen, space in the living room and air circulation at dwelling units. Non-residents were very satisfied with location of mosque/temple/church, access road and telephone. Non-residents were very unsatisfied with location of pre-school, primary school, secondary school, clinic/hospital and nurseries.

#### *6.7. Future dwelling type and area*

The following analysis examines preferences for various types of accommodations. Most of the respondents aimed to be living in the terrace house in the in the future, open countryside, nicer neighbourhood, more space with garden, closer to family and good community.

### **7. Conclusion**

The aim of the study is to assess the factors influencing performance of Malaysian low-cost public housing. To achieve the research aim, the following objectives have been measured for this study including determining factors influencing the overall building defects, to investigate public housing management and to provide necessary strategies for better building management. In this study also investigated resident's satisfaction towards the building services and its facilities of low cost multi-storey public housing

This study examined the major defect categories identified waterproofing claimed the highest frequency followed by water leakages at jointing and piping system. The finding identified that quality of materials and construction, maintenance practices and management plays an important role to ensure the sustainable of public housing. Based on the result, most problems that are faced by the property manager of public housing are house rules abuse by residents and vandalism cases. From the management experience, most of them found that the problem associated the house rules is an obstruction to common area. Only some of them disobey the house rules.

Based on the results of analysis, the main unsatisfied indicators related with dwelling units are clothesline facilities, natural lighting, air circulation and space in the kitchen. The main unsatisfied with residential community, facilities and environment are related to public transport, educational and health facilities and also parking lots. Besides that, residents felt that they had a problem with safety and noise. Despite having reasonable level of satisfaction, many residents wanted to move out from their house. The main reasons given by residents in Selangor were to move to a safer place, to move to a nicer neighbourhood and to get a more space.

## 8. Recommendation

By identifying the problem and needs of the building and the needs of the residents, public housing management can provide service successfully. There are numerous approaches to the social and physical management of public housing which can create a better, successful, conducive for affordable low cost public housing. The residents who live in public housing highlighted their dissatisfaction situation in terms of natural lighting, space in the kitchen, clothes line, air circulation, garbage, noise, public transport and institution of learning and health care facility. Co operations of the residents are very important in public housing management to tackle social issues and to be responsible in taking care of their units as well as their related surrounding areas. It is recommended that further studies be carried out on certain issues on multi-storey low-cost public housing such as to propose a framework of strategic building adaptation for existing public housing towards enhancing the sustainable performance of managing public housing in Malaysia.

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