

Outdoor Environment of Low-cost Housing: A case study of Flat Taman Desa Sentosa

Mohd Farid Mohamed¹, Sudharshan N. Raman², Tito Maulana Iman Pratama³, Wardah Fatimah Mohammad Yusoff⁴

^{1,2,3,4} Department of Architecture, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia

Abstract. One of the early objectives of high-density low-cost flat housing is to overcome the squatter problems in urban areas such as in Kuala Lumpur. As the country progresses towards being a developed nation, the quality and standard of living of its people have also improved. Low-cost flat housing initiative has also gone through changes to provide better living quality. This paper discusses on the occupants' satisfaction perception of outdoor environmental quality (OEQ) of a selected high-density low-cost flat housing located in the state of Selangor in Malaysia. The objective of the paper is to obtain the level of perception by the occupants of low-cost flats on the OEQ. The methodologies used in this study are site observation and questionnaire survey. This study found that the OEQ in the low-cost flat has generally fulfilled the five out of 6 elements of OEQ. The only element that found to have poor perception is the level of safety.

1 Introduction

Low-cost housing is an important housing category in Malaysia where one of its initial objective is to overcome the squatter problem in urban areas such as in Kuala Lumpur. Low-cost housing is very important in Malaysia since it provides cheap and affordable homes for low-income families throughout Malaysia. In urban areas, high-density low-cost housings are provided as a result of high land price. Due to the importance of low-cost housing in the development of Malaysia, there are various studies were conducted on the low-cost housing such as by Mohit et al. [1], Abdul Ghani [2] and Idrus and Ho [3].

According to the National Housing Company Malaysia (Syarikat Perumahan Negara Berhad or SPNB), a government-owned company under the Ministry of Housing and Local Government, it defines the low-cost house under its program as a house with built-up area of 700 square feet (50 square feet more than the previously introduced three bedroom low-cost flat) and priced from MYR35,000.00 in Peninsular Malaysia (or from MYR50,000.00 in East Malaysia or Malaysian Borneo) [4].

The People Housing Program (Program Perumahan Rakyat) is a program under the National Housing Department of Malaysia [5] which provides low-cost housing. Under this program, the selling prices of low-cost houses are MYR30,000.00 or MYR35,000.00 in peninsular Malaysia. Multi-storey low-cost housing between 5- to 18-storey with the minimum floor area of 700 square feet

are built under this program. Each unit is provided with a living room, a dining room, three bedrooms, a kitchen and 2 bathrooms.

An important indicator of housing quality and condition which affects the occupants' quality of life is residential and neighborhood satisfaction [3]. Therefore, ensuring occupant's satisfaction in housing is critical to obtain good quality of life. In the context of low-cost housing, with the limitations discussed previously, the risk of poor OEQ in this type of housing is much higher compared with the others, particularly with gated community. The importance of outdoor environment in low-cost housing is more critical where the indoor space limitation may encourage the occupants to spend more time outside with various activities, especially to children and teenagers.

The outdoor environments such as in housing estates have unique and natural characteristics, which are very important to support children's development. This is crucially important in low-cost flat where the indoor spaces of their home are limited, thus children tend to spend more time outside, particularly, at the children playground. It is common to find unsupervised children playing at the low-cost flat's playground, especially after afternoon school. Away from supervision of their parents or elder siblings, this could lead to unnecessary incident or even kidnapping to occur. Therefore, for the health and well-being of the occupants, especially for children who grow up in low-cost flat, a good outdoor environmental quality (OEQ) is very important.

Among all types of high-density housing, low-cost housing is always associated with poor quality of outdoor environment. This is due to various factors such as low quality of workmanship, minimum quality of materials, poor maintenance, lack of facilities, lack of security as well as minimal car parks. For example, an authority's requirements [4] on the lowest parking spaces and highest maximum development density compared with other types are some of the contributing factors. These minimum requirements lead to insufficient parking spaces and large ration of occupants to the area of open spaces. On the other hand, the developers of low-cost housing also tend to only comply with the minimum standard requirements by the related authorities. The major factor contributing to this is the financial limitation as a result of below cost selling price. Being the only housing project that is sold below construction cost with ready buyers, the quality of any development of low-cost housing is potentially compromised, thus could also lead to a poor OEQ.

However, do the occupants of low-cost flat actually have the poor perception of OEQ in their neighborhood? In order to comprehend this, a study needs to be completed to understand the perception of the occupants of low-cost flat on OEQ. Therefore, the objective of this study is to evaluate the satisfaction perception of outdoor environment quality by the occupants of high-density low-cost housing. Understanding the perception of the flat occupants is important to help designers or planners to design a better high-density housing, particularly low-cost housing. Earlier existing study by Abdul Ghani [2] has shown that the contributing factors for the low level of satisfaction with the neighborhood and environment of low-cost housing are poor public transportation and lack of children playground, community halls, car parks, security and disability facilities.

Bonaiuto F, Fornara, & Bonnes [6] had categorized four features to investigate residential environmental quality: architectural/town-planning features, functioning features, context features and neighborhood attachment. Under these features, there are a total of 20 perceived residential environmental quality indicators. Using Bonaiuto F, Fornara, & Bonnes [6] as a general reference, for the purpose of this limited study, five indicators were to be evaluated (landscape quality, level of design user-friendliness, safety within the neighborhood, provided facilities, and occupants' involvement in the society of the housing) plus a question on overall outdoor environmental quality.

2 Methodology

The methodology adopted for this study is a combination of site observation, and questionnaire survey. The site observation was completed prior to questionnaire survey where the authors

experienced the outdoor spaces of the low-cost flat housing. The objective of the site observation was to have a general perception of the living condition within the low-cost flat. Once the site observation was completed, the questionnaires' survey was distributed to the occupants while having informal discussions with the occupants. The purpose of the informal discussion with the occupants was to explain the questions and to have better and clearer description of the neighborhood and their perception.

The questionnaires' survey consisted of two sections, i.e. (a) questions on demography and information on the flat, and (b) questions related to the perception of outdoor environmental quality. The questions related to demography were questions concerning respondent's profile, which are gender, age, ethnicity, marital status, duration of stay, total of occupants, and monthly income. The second section consists of six questions. The questions related to outdoor environmental quality were concerning overall outdoor environmental quality (OEQ), landscape quality, user-friendly level (for children, disabled, and the elderly), safety level, provision of public facilities, and community involvement in social activities.

The answers were rated using a 5-point Likert scale: 1-very unsatisfied, 2-unsatisfied, 3-neutral, 4-satisfied and 5-very satisfied. The survey covers 45 respondents who were selected randomly. The survey was completed within four days, from 21st June until 24th June 2013. Out of the 45 respondents, 25 respondents were males and 20 were females. Of these, 32 were married while the others were single. Out of 45 respondents, 60% or 27 respondents have lived within the neighborhood for more than five years. For the occupancy numbers of the flat, the survey indicated that 34 respondents have three to five persons living together, and 11 respondents have more than five members. In the case of the age of respondents, 14 respondents were below 25 years of age, 29 respondents were between 25 to 45 years old and 2 respondents were above 45 years old. All the respondents were of Malay ethnicity and, according to interviews with two locals, almost all of the residents are Malays as the low-cost flat is on a Malay reserve land.

3 Case Study



Figure 1: Taman Desa Sentosa Flat

The investigated low-cost flat (Taman Desa Sentosa Flat) (Figure 1) is situated in the Sepang District of Selangor, Malaysia. It is approximately 30 kilometers from Kuala Lumpur, the capital city of Malaysia. It is neighboring to Bandar Baru Bangi, and its distance to the Bandar Baru Bangi's commercial district is approximately 7 kilometers. The overall residential development at the site has seven residential blocks which consist of 3 blocks of medium-cost apartment (the three blocks at the top) and four blocks of low-cost flat (the four blocks at the bottom). This study only focuses on the low-cost flat where the total number of units is 280. The development is located at a less-developed area close to a planned township of Bandar Baru Bangi. The flat is close to a river on the south-east side and surrounded by lush greenery.

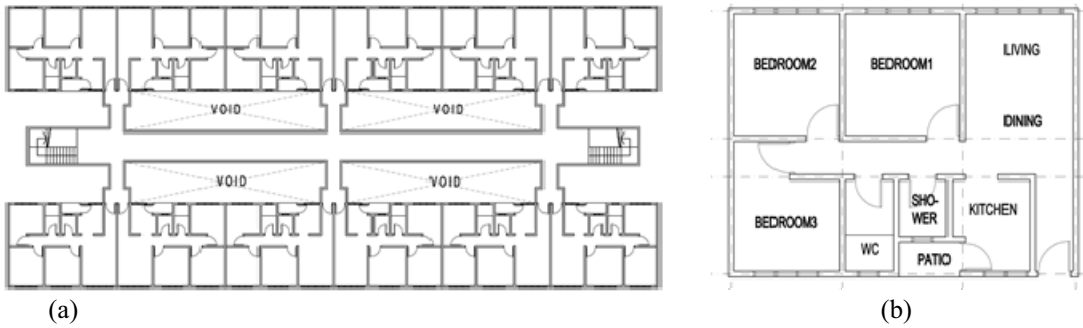


Figure 2: (a) The layout plan of one of the apartment blocks; (b) Flat unit floor plan

The layout plan of one of the four low-cost blocks is shown in Figure 2a. It has a typical typology of low-cost housing, which is commonly found in Malaysia. The overall layout of the flat is simple, thus may contribute to cost saving. The block has two rows of flats with air-wells corridor and two stairs at each end. Each row has 6 units making each floor to have 12 units. It is a five-storey walk-up apartment, thus the block has 30 units. The provision of air-well contributes towards better ventilation for each unit as well as providing additional daylight along the internal corridor and into the flats. In the case of the floor plan of each unit flat, the layout is simple that all spaces are located within a rectangular frame (Figure 2b).



Figure 3: Facilities: (a) muslim prayer hall, (b) multi-purpose hall, (c) kindergarten.

Among the public facilities provided (see Figure 3) for the residents are a prayer hall, public toilet, multipurpose hall, kindergarten, waste chamber and playground. It is important to note that the management of the low-cost flat is not under the local authority (the Sepang Municipal Council) as the residents have opted for self-maintenance through the resident association. However, the collection of garbage is still under the responsibility of local authority. All facilities are functioning; however, the maintenance of two facilities (public toilet and multi-purpose hall) is poor.



Figure 4: (a) internal corridor with parked motorcycles, (b) extended parking spaces on soft landscape and (c) clothes were hung on windows.

In the case of the provision of parking spaces which is low, there are various initiatives by the local residents to solve this issue. One of the solutions is to provide new motorcycle parking close to their building blocks. In addition, the residents have also allowed motorcycles to be parked within the

internal corridor (Figure 4a); however, the owners are not allowed to bring in motorcycles with running engine to avoid noise. According to the locals interviewed, the main reason for allowing motorcycles to access the corridor is due to many cases of motorcycle theft, and this option helps to reduce theft. In the case of insufficient car park, the parking spaces have been extended to the soft landscape next to the building blocks (Figure 4b). It is also observed that buses are parked outside the perimeter of the housing, with provided bus waiting areas.

Due to the limited floor area, the space for laundry drying is not adequate, where only a small balcony is provided next to the kitchen. Besides laundry drying, this space is also used for other purposes such as storage, extended kitchen as well as locating a washing machine. In Malaysia, it is uncommon to have a dryer, especially in a low-cost housing. As a result of these various factors, some of the flat owners hang their laundry on windows (Figure 4c), thus results in poor view and interrupted natural lighting and ventilation.

4 Analysis and Findings

As stated earlier, the objective of this study is to obtain the perception of OEQ by the occupants of low-cost flats, where one question is on the perception of overall OEQ, while the other five questions are on the significant OEQ indicators. The first question in the second section of questionnaires is the occupants' perception of the overall outdoor environmental quality (Figure 5). The survey found that 55% (25 respondents) gave neutral perception of the outdoor environment quality. 31% (14 respondents) felt satisfied with the outdoor environment quality, followed by 7% or a total of 3 respondents felt very satisfied. Only 7% or 3 respondents chose unsatisfied. The outcome of the first question suggests that the residents are generally satisfied with the overall outdoor environmental quality.

Landscape is one of the key elements to achieve good OEQ of which it should be clean and neat. For the question related to landscape quality (Figure 6), the survey found that 47% or a total of 21 respondents chose neutral, while 38% or a total of 17 respondents chose satisfied. 2 respondents stated very satisfied, 7% or 3 respondents chose poor perception; and 2 respondents were very unsatisfied with the landscape conditions. This is similar to findings during the site observation, where the cleanliness of landscape is good, though generally, the landscapes are not attractive.

On the user-friendliness (Figure 7) of the flat design such as on accessibility by elderly; and safety for residents' activities (Figure 6), it was found that 56% or a total of 26 respondents chose a neutral perception, while 18% (8 respondent) selected satisfied. 12% or 5 respondents chose very satisfied; and 12% or a total of 5 respondents chose unsatisfied. Finally, only 1 respondent chose very unsatisfied. Even though only 6 respondents had chosen either unsatisfied or very unsatisfied, it may not suggest that staircase as the only option to upper levels is sufficient, rather it may suggest that the respondents feel satisfied with the overall design of the low-cost flats for the price they paid.

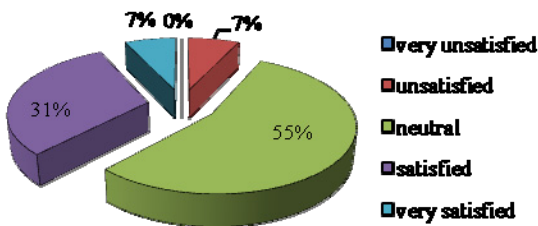


Figure 5: Overall Outdoor Environmental Quality

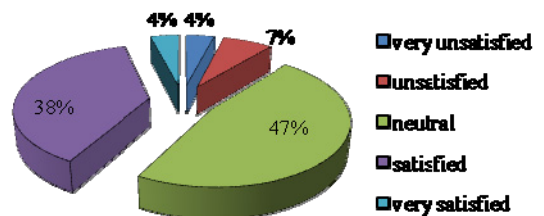


Figure 6: Landscape Quality

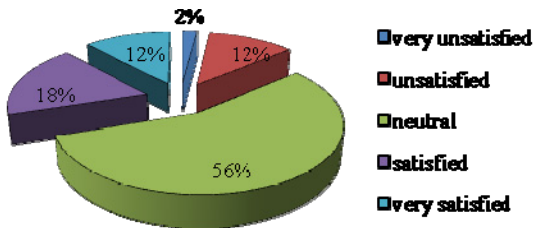


Figure 7: Level of User-Friendliness

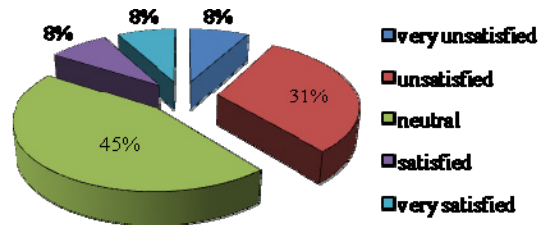


Figure 8: Security Level

On the security issue (for children, disabled, and elderly) (Figure 8), the interview with the respondents indicated that the main concern is theft. This includes motorcycle theft. This finding is supported by the questionnaire survey. The survey shows 31% (14 respondents) selected unsatisfied, followed by 8% (4 respondents) chose very unsatisfied. 45% (19 respondents) chose neutral. For satisfied and very satisfied, only 8% or a total of 4 respondents chose each of them. The perception on security issue is the worst compared to the previous three questions but still the number of respondents who chose unsatisfied and very unsatisfied were small compared to others. This finding suggests that the security issue is an important issue to the residents in low-cost housing. This could be due to lack of security in the area where security fencing is not provided as well as personnel to supervise the security of the resident.

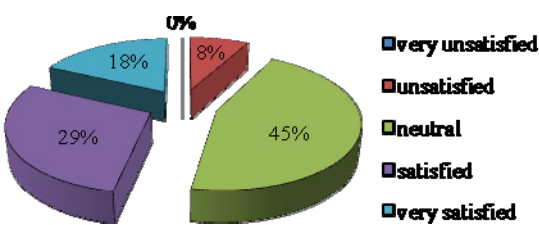


Figure 9: Provision of Public Facilities

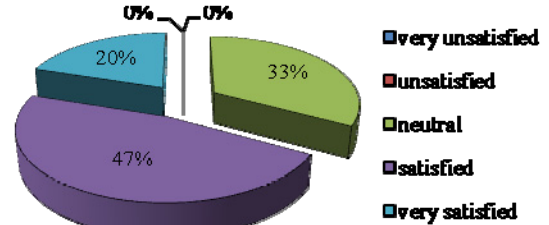


Figure 10: Community Involvement in Social Activities

For the provision of public facilities (Figure 9), this survey found that 45% or 20 respondents chose neutral, and 29% or 13 respondents selected satisfaction, followed by 18% (8 respondents) chose very satisfied. 8% or 4 respondents chose unsatisfied, and none chose very unsatisfied. These findings are interesting since based on the site observation, facilities such as multi-purpose hall is poorly maintained where it can be clearly observed that some of the doors, windows and lightings are broken. This is also similar to a poorly maintained toilet. Hence, the findings suggest that some of the residents were not concerned much about appearance of the buildings as long as it is functional. The findings also prove that the residents are willing to adapt to their environment, for example, the originally provided parking spaces are insufficient; however, the residents have solved the issue by allowing additional motorcycle parking and allowing soft landscape to become parking areas (Figure 4b).

In the case of community involvement in social activities (Figure 10), 33% (15 respondents) chose neutral, 47% (21 respondents) expressed satisfaction, followed by 20% (9 respondents) selected very satisfied with community involvement at the flats. None of the respondents chose unsatisfied and very unsatisfied. This finding suggests close relation between the residents, and it also shows high tolerance between the residents and their willingness to get involved in local community activities. This situation may be the results of the decision by the residents not to pay maintenance fee to council thus all maintenance costs (excluding rubbish collection) have to be borne by the residents. Therefore, the only options to maintain their flats are through good community cooperation.

5 Conclusions

This study concludes that the outdoor environmental quality in these low-cost flats is generally acceptable by the occupants of the low-cost flats, where the worst perception is on security issue, which can be potentially solved with security fencing and appointment of security guards. This finding is agreed well with the researches by Mohit et al. [1] and Abdul Ghani [2] that suggests security control is one of the factors that is required to be improved to increase residential satisfaction of public low-cost housing. Nevertheless, these findings do not necessarily describe the actual needs of the residents. For example, even though perception on the provided facilities and the user-friendliness of the flat design is positive, the reality at the site suggests that these factors need a great improvement. The findings also may not describe overall perception of high-density low-cost housing in urban areas since the community integration in the case study is very strong, therefore, it creates good outdoor environment such as better cleanliness. Good community integration may not be common in other high-density low-cost housings. Thus, further investigation is required to better understand their responses. For example, a study to answer these questions: does these positive findings on Outdoor Environmental Quality (OEQ) are as the results of the residents being in low income group and easily being satisfied due to their financial situation? Or does the findings in this pilot study is valid to describe the occupants' perception of OEQ? It is also the limitation of this study that only a single type of low-cost flat had been chosen for survey. Therefore, it is the attention of the authors to extend the research to include another two low-cost flats within Selangor. Hopefully, by the completion of the subsequent research, the outcomes could better describe the occupants' perception of outdoor environment of low-cost flat and support the current findings.

Acknowledgements

This research was funded through the Fundamental Research Grant Scheme (FRGS/1/2012/TK07/UKM/03/3) of Ministry of Education of Malaysia; and the Research University Grant (GUP-2013-016) of Universiti Kebangsaan Malaysia.

References

1. Mohit, M.A., M. Ibrahim, and Y.R. Rashid, Assessment of residential satisfaction in newly designed public low-cost housing in Kuala Lumpur, Malaysia. *Habitat International*, 2010. **34** (1): p. 18-27.
2. Abdul Ghani, S., Neighbourhood factors in private low-cost housing in Malaysia. *Habitat International*, 2008. **32** (4): p. 485-493.
3. Idrus, N. and C.S. Ho, Affordable and quality housing through the lowcost housing provision in malaysia, in *Seminar of Sustainable development and Governance*. 2008: Japan.
4. Syarikat Perumahan Negara Berhad SPNB - Housing for all. 2013 [cited 2013 20.10.2013]
5. Jabatan Perumahan Negara. Program Perumahan Rakyat (PPR). 2013 [cited 2013 02.10]
6. Bonaiuto, M., F. Fornara, and M. Bonnes, Perceived residential environment quality in middle- and low-extension italian cities. *Revue Européenne de Psychologie Appliquée/European Review of Applied Psychology*, 2006. **56**(1): p. 23-34.