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SOCIAL INTERACTION IN MALAYSIAN AFFORDABLE VERTICAL HOUSING: PRIMA PRECINCT 11, PUTRAJAYA

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Abstract

High degree of social interaction, being a major component of social sustainability, is crucial in ensuring development that best suits the civil society evolution. Perbadanan PRIMA Malaysia (PRIMA) is one of the major developer in Malaysia that emphasise on providing affordable housing. However, typical solutions unbacked by any significant social feasibility study are usually employed for the design. As large proportion of the population inhabiting these affordable vertical housing schemes, it is of paramount importance to ensure they are socially sustainable. This study aims to enhance Malaysia's affordable vertical housing social sustainability aspect. The objectives are to identify the variables of social interaction in vertical housing; to evaluate the degree of social interaction in the case study; and to establish connection between all the developed variables of social interaction. For the purposes of this study, a survey on the case study, based on the variables developed through literature review, is conducted using questionnaires and observation. The results reveal that PRIMA Precinct 11 demonstrates a moderate degree of social interaction, with mean value of 1.84 on a scale of 1 (low) to 3 (high). The significant finding is the social interaction has a direct relationship with all social variables, while has an indirect relationship with all physical and spatial variables.

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Keywords: Social sustainability, social interaction, affordable vertical housing, common spaces.



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1. Introduction

Often neglected, social sustainability received lesser attention in the mainstream sustainable development discussion, in comparison with its environmental and economic sustainability counterpart. Nevertheless, it is an important pillar of sustainability that should not be neglected. As per the 1992 UN Earth Summit, “social concerns will be taken up for due consideration in the sustainability agenda” (United Nations, 1993). Polèse and Stren in 2000 describe social sustainability as an advancement that attuned harmoniously with civil society evolution, nurturing environment that favour coexistence of various communities in term of its culture and social, while simultaneously stimulate social integration, together with quality of life enhancement for every section of the population.

As urbanisation become more inevitable, vertical housing has become an inevitable solution to accommodate the rate of global urban population growth. Thus, efforts in addressing the challenge of social sustainability increasingly depend on the living environment quality of vertical housing, especially those that are affordable to most of the population. There are numerous studies support that excessive crowding in high-density living results in social withdrawal, which is detrimental to social interaction (McCarthy & Saegert, 1978). The spatial configuration of most apartment blocks has been found to manipulate activity patterns of residents and reduce social interaction among them (Abu-Ghazze, 1999).

2. Problem Statement

Vertical housing has become the default housing option in land-scarce urban centres globally and Malaysian cities are no exception. Perbadanan PR1MA Malaysia (PR1MA) is one of the major affordable housing providers in Malaysia. However, profit-centred designs employed often neglect any social impact on the community. As large proportion of the population inhabiting these affordable vertical housing schemes, it is of paramount importance to ensure they are socially sustainable. Thus, a deeper understanding of the determinants of social interaction in these affordable vertical housing is warranted to ensure high degree of social interaction and ultimately towards social sustainability.

3. Research Questions

- What are the parameters to measure the degree of social interaction in vertical housing?
- What are the influencing factors of social interaction in vertical housing?
- What are the relationships between the factors of social interaction in vertical housing?

4. Purpose of the Study

This study aims to enhance the social sustainability of affordable vertical housing in Malaysia by understanding the determinants of social interaction through a case study. Henceforth, this study will address the following objectives: to identify and develop the variables of social interaction in vertical housing; to evaluate the degree of social interaction in the case study based on the developed variables; and to establish connection between all the developed variables of social interaction.

5. Research Methods

5.1. Survey and Data Collection

PRIMA's first housing scheme, PRIMA Precinct 11, Putrajaya is chosen as the case study. The survey is conducted in 2019, four years after its first resident moved in. One respondent of each house is surveyed representing each unit, with a total of 30 respondents being surveyed. Based on the variables developed in Section 5.2, a structured questionnaire with closed questions, consisting 6 questions assigned to 2 groups of questions is developed: level of social interaction, and demography.

5.2. Variable Development

Based on the literature review, variables that influence social interaction in Malaysian affordable vertical housing are developed. These variables are being classified as dependent variable (level of social interaction) and independent variable (variables impacting social interaction).

5.2.1. Variables of Social Interaction

Since vertical housing involves large community of people sharing common spaces, its effectiveness to facilitate social contact are referred to assess social interaction degree. The identified variables are quantity of acquainted neighbour and common space usage frequency. The variable of quantity of acquainted neighbour is developed to examine the extent of acknowledgement of neighbour households sharing the same common spaces at different scale; within the same floor and on other floors. As there is 16 units per floor on the case study, this variable is coded from 1 (3 or less households, which is a quarter of floor) to 3 (more than 7 households, which is half a floor) for acquainted neighbour on same floor; 1 (8 or less households, which is half a floor) to 3 (more than 16 households, which is an entire floor) for acquainted neighbour on other floors. The variable of common space usage frequency is to examine the possibility for social contact. This variable is coded from 1 (rare/ low) to 3 (always/ high).

5.2.2. Variables Affecting Social Interaction

The two identified parameters that influence social interaction: social parameters and physical parameters, are developed into variables to observe the degree of social interaction determinants. The social variable is developed to examine the socio-demographic construct of the studied community. Factors such as household composition, occupancy status and duration of occupancy are relevant socio-demographic elements supposedly correlated with social interaction (Haggerty, 1982). Household composition is examined in terms of number of age groups within a household. Occupancy status is to examine the legal situations of households concerning the occupancy of their residence. Duration of occupancy is to examine the length of time the respondents have stay in the chosen case study.

On the other hand, physical and spatial variable is developed to examine the space layout, activity types, and physical features of the common spaces shared by the community. Space layout is to examine the configuration and arrangement pattern of spaces within the housing scheme. Jacobs in 1961 wrote that traditional neighbourhood's configuration can strengthen social life. Activity types is to examine the availability of mixed land uses to support variety of activities. Three types of activity in outdoor public spaces identified by Gehl (1987), namely necessary activity, optional activity, and social activity.

Accordingly, certain physical settings are required to facilitate the occurrence of each activity type in the spaces, and the physical environments needed for different types of activity are significantly different from each other. Hence the next variable, physical features, to examine the quality of outdoor common spaces, in terms of the presence and quality of seating, visual focus, and greenery, to attract and sustain activities.

5.3. Data Analysis

From the completed questionnaires, the degree of social interaction is defined quantitatively by calculating the average of all three variables of social interaction in Section 5.2.1. The value of each variable covers a range of values from 1 to 3. While to examine the determinants of the degree of social interaction, the variables that affect social interaction are analysed qualitatively; thus, facilitating the establishment of connection between all the developed variables of social interaction through interpretation. The social variables involved will be analysed from the demographic data obtained from the questionnaires. While the physical and spatial variables are analysed through onsite field study and observation, and analysis of the architectural drawings to understand the spatial layout pattern, physical features, supported activities, and existing conditions of the studied housing scheme.

6. Findings

6.1. Assessment of Social Interaction in PR1MA Precinct 11, Putrajaya

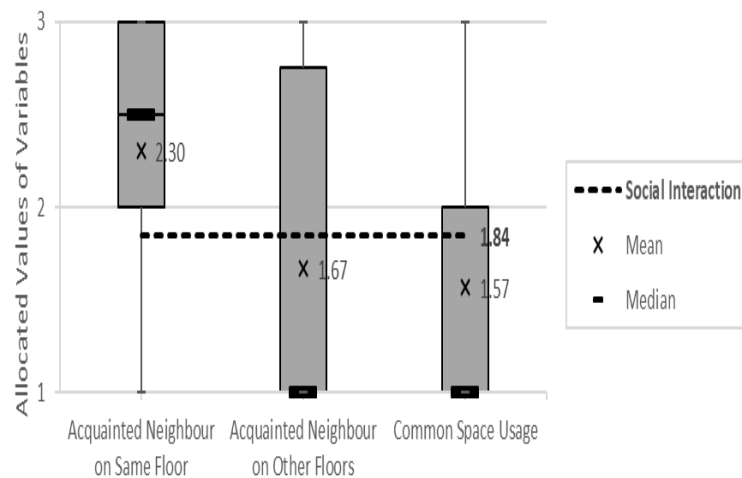


Figure 01. Boxplot of variables to determine the degree of social interaction.

Note: $n = 30$. The dash line represents the arithmetic mean of all the variables (the degree of social interaction); the \times represents mean; the thick bar represents median.

The analysis of the quantity of acknowledged neighbour at different scale and common space usage frequency of the residents at PR1MA Precinct 11 is examined and presented in a box plot (Figure 1). The boxplot indicates various ranges for each variable, however overall results are positively skewed.

The variable acquainted neighbour on same floor demonstrates a balanced distribution with the median at the centre of the box. The result mostly reaches value higher than 2, suggesting that most respondents acquainted neighbour over a quarter of the floor (Value 2 and Value 3), extending beyond the adjacent neighbours. Whereas, acquainted neighbour on other floors is a variable with the tallest box. This

indicates that the respondents have a varying degree of acquainted neighbours on other floors. The result also demonstrates positive skewness with the median having the same value as the lower quartile. This suggests that very high concentration of respondents acquainted less than half a floor of neighbours on other floors (Value 1). Similarly, common space usage also demonstrates positive skewness with same median and lower quartile. This suggests that very high concentration of respondents rarely use the common space (Value 1). The arithmetic means of these three variables are then used to calculate PR1MA Precinct 11's degree of social interaction. The result shows a moderate degree of social interaction, with a value of 1.84 (dash line in Figure 1).

6.2. Analysis of variables influencing social interaction

6.2.1. Social variables

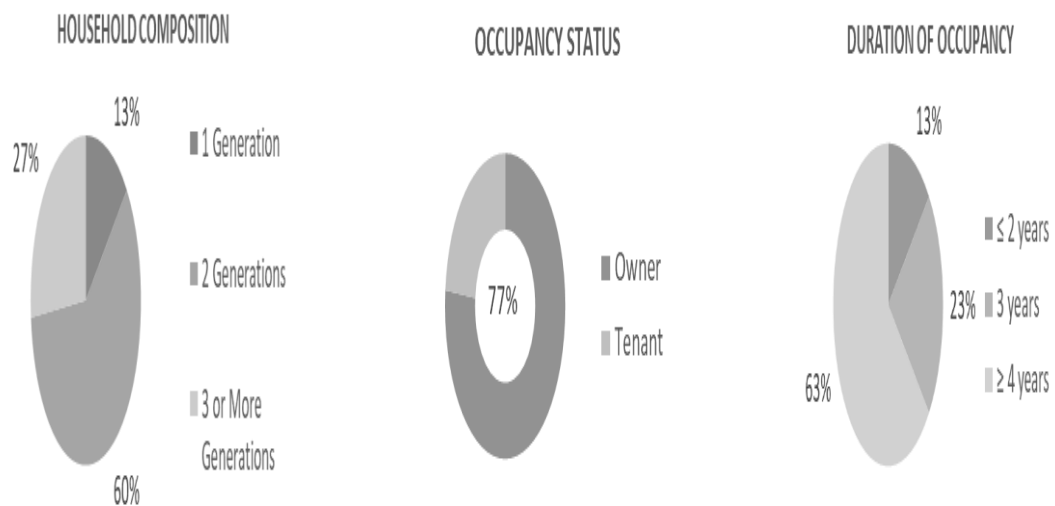


Figure 02. Pie charts of household composition, status of occupancy and occupancy duration.

The analysis of the household composition, status of occupancy and occupancy duration regarding the residents at PR1MA Precinct 11 is examined and presented in pie charts (Figure 2). The first pie chart shows that most respondents (27% and 60%) are composed of multi generation families. This most probably due to the three bedrooms layout type offered which can accommodate up to six members. The second pie chart shows that over three quarter (77%) of respondents are owners. This probably due to the fact that PR1MA housing schemes are intended to be affordable. The third pie chart shows that most respondents (63%) have stay there since the apartment completed four years ago. This proves that the residents in PR1MA Precinct 11 should already have ample of time to establish relationships with their neighbours.

6.2.2. Physical and spatial variables



Figure 03. Left: overall layout of PR1MA Precinct 11 (Komuniti PR1MA Presint 11 Putrajaya, 2015); Right: Typical floor plan of PR1MA Precinct 11.

The space layout analysis is based on the spatial arrangement of the housing scheme in terms of overall site and typical apartment floor (Figure 3). The overall site arrangement of PR1MA Precinct 11 uses centralised organisation, where 3 apartment blocks along with a row of commercial and a community hall are arranged around a central residents' facilities. Each block of apartment is divided into two wings of 8 apartments by a central lift lobby and core. Along the corridor of each wing, two nodes are formed as apartments entries are recessed from the circulation route.

The activity types supported by the housing scheme is considerably varied due to mixed land use through the introduction of a row of commercial centre within the housing scheme. The commercial centre along with the residents' facilities can accommodate diversity of activities; necessary activities such as grocery shopping, laundry and dining; and optional activities such as recreation. Theoretically, social activities will evolve from these two types of activities as people in the same space meet (Gehl, 1987). However, these particular activities rely heavily on external physical features.

The analysis of physical features of PR1MA Precinct 11 is conducted through an observation checklist to examines the presence of seating, visual focus, and greenery in the open recreational area within the housing scheme. From observation, seating and greenery are present at the recreational area of the housing scheme; however, the area lacks a visual focus.

The quality of seating present at the recreational area is observed to be designed without its functionality in mind. Although the seating has a concave layout which allows facial contact and encourages interaction (Huang, 2006), its concrete material absorbs heat during the day and stays warm during the night, thus making it uncomfortable to be used. This is made worse with it being exposed to the weather. Worpole and Knox (2005) suggest that protection from the weather had a significant effect on the vibrancy of outdoor public spaces. Besides, the orientation of the benches also stares into blank space. The outlook from seats should take advantage of the site character or particular features (Lisney & Fieldhouse, 1990). Hence, the seating provided is unable to sustain activity for long period of time.

Greenery and visual focus are important to create a scenic space that encourage social interaction (Huang, 2006), which is aligned with Sherrod (1977) and Nasar (1994) findings. The lack of visual focus

observed at the recreational area of PR1MA Precinct 11 means that in order to create a scenic space, the area need to rely on the quality of greenery and plants. Unfortunately, the ground cover suffers from recurring foot traffic, causing barren patches of soil to be visible. The trees also do not thrive and appear stunted even after four years, some of them even observed to be dying. These small stunted trees do not contribute much to the aesthetic value of the area. Thus, the greenery quality of the PR1MA Precinct 11's recreational area is unable to provide a scenic space to sustain activities.

6.3. Discussion on relationships between variables

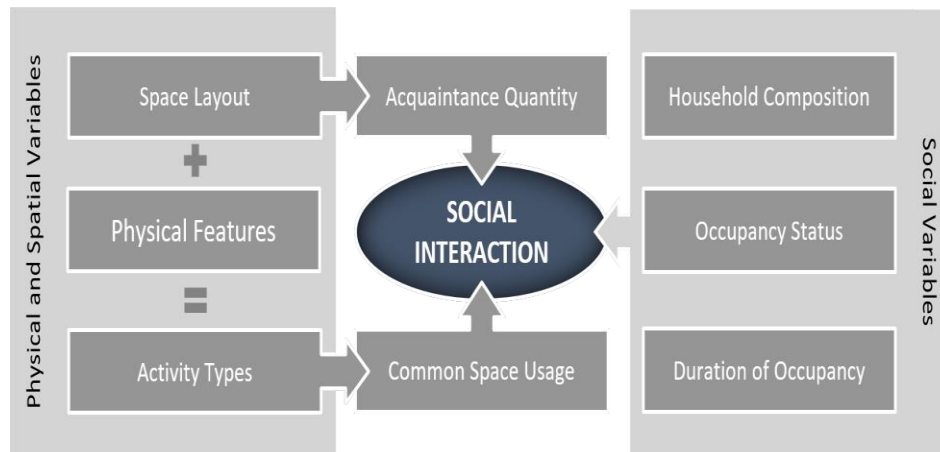


Figure 04. Relationships between the variables of social interaction.

Based on Section 6.1 and Section 6.2, the results are interpreted to establish connection between all the variables of social interaction in the context of vertical housing (Figure 4). Based on the result, most respondents know at least 4 neighbours on the same floor. The nodes in front of their apartment entries easily accommodate for temporary stops and a proper conversation distance as opposed to the long and narrow corridor, which is supported by the findings of Huang (2006). Besides, the result also suggests that most respondents know their neighbour beyond the ones directly next door. By relating this to the straight corridor layout, it can be interpreted that the sharing of circulation corridor indirectly increases the chance for physical contact. As the likelihood for physical contact increases, the chance for social interaction increases (Huang, 2006; Ebbesen, Kjøs, & Konecni, 1976).

The poor acknowledgement level of neighbours on other floors can be interpreted as the resultant of the weakness in vertical spatial arrangement. The conventional circulation core as the predominant vertical access system for tall buildings often acts as a mean of separation (Heckmann, 2014). Using lifts in access cores extremely limits the common time residents spend together in their common interface. To this effect, vertical circulation cores disjoint the apartment levels with its inhabitants from one another.

The overall spatial layout of the housing scheme using centralised organisation around the common facilities reflects Jane Jacobs' theory (1961) of safe street, where buildings are oriented towards the street or in this case the common facilities to induce safety through eyes on the street. The central location of the common facilities also means that the distances from any direction are similar. As Harrison (1983) suggests, residents tend to utilise open spaces that are near to their house. Hence, the position of the common facilities is theoretically optimum for the housing scheme.

However, the ability of the common facilities to accommodate for social activities is very dependent on its physical features (Gehl, 1987). As explained in section 6.2.2, the seating and greenery available at the recreational area fail to provide comfortable and scenic spaces required to sustain social activities for long period of time. These poor physical features of the common spaces partly contribute to the low frequency of common space usage. As suggested by Gehl (1987), only strictly necessary activities occur when outdoor areas are of poor quality. However, as PR1MA Precinct 11 has a mix of land use, necessary activities can be used to generate social interaction through chance encounter.

Despite all these shortcomings of the physical and spatial attributes of PR1MA Precinct 11, its residents' level of social interaction is still within a moderate level. This demonstrates that common spaces are not the catalyst of neighbourly interaction, as supported by the results of common space usage, showing a very low value. However, the moderate level of social interaction and high degree of acquaintance have a direct relationship with the socio-demographic construct of the community. As most of the respondents are permanent residents who have stay there for a long duration, strong relationships are established through recurring interactions. These interactions are indirectly motivated by the fact that most residents are owner themselves, as they would want to establish sense of belonging and meaningful long-term relationships with their neighbours. This reflects Maslow's theory (1954), where humans need to feel a sense of belonging and acceptance among social groups. The study results also revealed that a majority of the respondents have similar socio-demographic conditions. As mentioned by Haggerty (1982), residents' living style, their ways of using open spaces and the patterns of social interactions are naturally influenced by socio-demographic characteristics. Thus, a homogenous population also has a direct influence towards the social interaction level in PR1MA Precinct 11.

7. Conclusion

Vertical housing social interaction variables can be classified into dependent (level of social interaction) and independent variable (variables impacting social interaction). The three dependent variables are: (1) acquainted neighbour on same floor, (2) acquainted neighbour on other floors, and (3) common space usage. As developed from literature review, independent variables influencing social interaction are classified into two: (1) social variables, and (2) physical and spatial variables. The social variables include household composition, occupancy status, and duration of occupancy; the physical and spatial variables include space layout, activity types, and physical features.

Based on the aforementioned variables, PR1MA Precinct 11, Putrajaya demonstrates moderate level of social interaction. The key findings of the relationships between the variables are as follows:

- The degree of social interaction has a direct relationship with all social variables, while has an indirect relationship with all physical and spatial variables.
- Combination of good space layout and physical features are important to support broad spectrum of activities in common space
- Common space usage has a direct relationship with activity types supported by the space
- Degree of acquaintance has a direct relationship with space layout, horizontally and vertically

Further research with larger resident sample size and additional case study to better represents the results is warranted to generate more accurate findings.

Acknowledgments

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References

- Abu-Ghazze, T. M. (1999). Housing layout, social interaction, and the place of contact in Abu-Nuseir, Jordan. *Journal of Environmental Psychology, 19*, 41–73.
- Ebbesen, E. B., Kjos, G. L., & Konecni, V. J. (1976). Spatial ecology: its effects on the choice of friends and enemies. *Journal of Experimental Social Psychology, 12*, 505-518.
- Gehl, J. (1987). *The Life Between Buildings*. New York: Van Nostrand Reinhold.
- Haggerty, L. J. (1982). Differential social contact in urban neighborhoods: environmental vs. sociodemographic explanations. *Sociological Quarterly, 23*, 359–372.
- Harrison, C. M. (1983). Countryside recreation and London's urban fringe. *Transactions of the Institute of British Geographers, 8*(3), 295–313.
- Heckmann, O. (2014). Passages through high-rise living. *European Network for Housing Research*. <https://doi.org/10.13140/RG.2.1.1626.0886>
- Huang, L. S. C. (2006). A study of outdoor interactional spaces in high-rise housing. *Landscape and Urban Planning, 78*, 193–204.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Random House
- Komuniti PR1MA Presint 11 Putrajaya. (2015, March 16). Profile Pictures [Facebook page]. Retrieved from <https://www.facebook.com/Komuniti-PR1MA-Presint-11-Putrajaya-1558243194453738/>
- Lisney, A., & Fieldhouse, K. (1990). *Landscape design guide: volume 2 hard landscape*. Aldershot, UK: Gower Publishing Ltd.
- Maslow, A. H. (1954). *Motivation and Personality*. New York: Harper & Row.
- McCarthy, D., & Saegert, S. (1978). Residential density, social overload, and social withdrawal. *Human Ecology, 6*(3), 253-272.
- Nasar, J. L. (1994). Urban design aesthetics: the evaluative qualities of building exteriors. *Environment and Behavior, 26*(5), 377-401.
- Polèse, M., & Stren, R. (2000). Understanding the New Socio-cultural Dynamics of Cities: Comparative Urban Policy in a Global Context. In M. Polèse & R. Stren (Eds.), *The Social Sustainability of Cities*, pp. 3-38. Toronto: University of Toronto Press.
- Sherrod, D. R. (1977). Environmental attention, affect, and altruism. *Journal of Applied Social Psychology, 7*, 359-371.
- United Nations. (1993). *Agenda 21*. Proceeding of United Nations Conference on Environmental and Development, June 3-14, Rio de Janeiro, Brazil. New York: United Nations
- Worpole, K., & Knox, K. (2005). *The social value of public spaces*. York, UK: Joseph Rowntree Foundation.