



JOJAPS

eISSN 2504-8457



Journal Online Jaringan Pengajian Seni Bina (JOJAPS)

Honeycomb Housing: Resident Level of Acceptance and Satisfaction

Badariah Daud

POLYTECHNIC OF PORT DICKSON
(badariah@polipd.edu.my)

Abstract

The level of acceptance and satisfaction study amongst the residents in newly Honeycomb housing are vital to evaluate the house performance, to improve the design and development for the future Honeycomb housing project and consequently, increasing the quality of life of the resident. Hence, this study determined the level of acceptance perceived by the resident, their level of satisfaction with facilities, services and infrastructure and also the internal and external house design of the housing. From the census survey of the selected housing project, Nong Chik Heights in Johor Bahru where only 50 houses are occupied from the total, 133 units. 46 questionnaires which consist of 3 parts; demographic background, homeownership status and level of acceptance and satisfaction were answered. The survey also guided by using the Cul-de-sac Courtyard Physical Environment Evaluation Toolkit (CPEET). Generally, they are satisfied with the facilities provided, but scored a moderate level of satisfaction with the services and infrastructure and also a moderate level of satisfaction with internal and external condition of the house concept. Through this study, researcher obtained positive and negative feedback and views from residents about the new concept which could provide the essential information in order to evaluate the house performance and to improve the design and development for the future honeycomb housing project.

© 2020 Published by JOJAPS Limited.

Key-word: - Honeycomb housing; Census survey; Resident acceptance and satisfaction

1.0 Introduction

Honeycomb housing concept, a new Malaysian architectural concept, form of cul-de-sac layout with a courtyard was introduced in 2003 by Architect Mazlin Ghazali, a Kuala Lumpur-based under the name of Arkitek M.Ghazali. The Honeycomb housing style is based on geometrical planning known as tessellation, a system of patterns being repeated so that there are no overlaps and gaps. With it, houses can be built around small parks with large shade trees in hexagonal cul-de-sacs (Figure 1), which can then be interlocked to form townships that from the sky resemble a Honeycomb. This kind of repetition can make the use of land more efficient. Hence, it will help to increase urban development densities without compromising lifestyle, community, land title or market acceptance, while improving security, affordability and also encourage sustainable design (Davis et.al, 2006).

There are three pioneer Honeycomb housing project implemented currently in Malaysia. However, this research only covers the Honeycomb housing project in Nong Chik Heights in Johor Bahru (Figure 2). The 14 acres Nong Chik Heights Honeycomb housing is divided into three phases according to the construction phase. The first phase which is Phase 1 consists of 82 units of house, Phase 2 with 51 houses and the third phase or phase 3 has 34 houses. Hence, overall there are total of 167 units of house. This research will only cover the Phase 1 and Phase 2 of Nong Chik Heights Honeycomb housing which comprises 133 units as the Phase 3 of the project is still pending for the Certificate of Completion and Compliance (CCC).

This development also includes in it shops, offices and a new mosque. No study has been done to assess the residents' satisfaction

* Badariah Daud. Tel.: +0189107424 ; fax: 066622026

E-mail address: badariah@polipd.edu.my

Badariah Daud / JOJAPS – JOURNAL ONLINE JARINGAN PENGAJIAN SENI BINA 0189107424

in Honeycomb housing. Therefore, a research should begin to study the acceptance and satisfaction of the population who are experiencing life in the Honeycomb housing at Nong Chik Heights, Johor Bahru. Furthermore, a continuous assessment of the real residential acceptance and satisfaction of Honeycomb housing concept is essential for future improvement of the Honeycomb housing project.



Figure 1

Perspective of Honeycomb Housing Concepts showing cluster houses facing the community courtyard with large trees shading the road, Arkitek M.Ghazali (2006)



Figure 2

Honeycomb Housing Project in Nong Chik Heights, Johor Bahru, Bajunid (2012)

1.1 The Honeycomb House

* Badariah Daud. Tel.: +0189107424 ; fax: 066622026

E-mail address: badariah@polipd.edu.my

Badariah Daud / JOJAPS – JOURNAL ONLINE JARINGAN PENGAJIAN SENI BINA 0189107424

Honeycomb houses are unique in design where all the houses have wide frontage and small green space at one side of the compound (Figure 3). The houses are clustered, joined side-to-side in quadplex and sextuplex party wall, back-to-back in duplex partition (Figure 2.8). As a result, all of the dwelling units are corner lot as bungalow or semi-detached houses. Other than that, all houses will be facing the communal space in the middle of a courtyard neighbourhood. This will put on a better observation of the activities done at the small park. Thus, it will be a safer place for kids, elderly and even disabled people (Nordin, et al., 2005).



Figure 3
Types of house in Honeycomb housing arranged in a courtyard
Source: Davis, et al. (2006)

Types	Plan view	Perspective view
Duplex		
Triplex		
Quadplex		
Sextuplex		

Figure 4
Types of house in Honeycomb housing arranged in a courtyard
Source: Davis, et al. (2006)

* Badariah Daud. Tel.: +0189107424 ; fax: 066622026
 E-mail address: badariah@polipd.edu.my
 Badariah Daud / JOJAPS – JOURNAL ONLINE JARINGAN PENGAJIAN SENI BINA 0189107424

Honeycomb layouts contain housing whose basic shapes support various combinations of different types of housing units:

- **Duplex house**
The duplex house is the Honeycomb back-to-back semi-detached house version. Hence, it looks like a detached house from the entrance. For best economy the shared party wall needs to be as long as possible (Davis M.P., et al., 2006). Each duplex house is facing a different cul-de-sac.
- **Triplex house**
The triplex house is a novel three units back-to-back house type (Figure 4), with each house facing a separate courtyard. The tessellation planning method of designing housing layouts discover this type of unique house. it also looks like a detached house from the entrance.
- **Quadruplex house**
The quadruplex is Honeycomb cluster house type which has four units connected back-to-back and side-to- side. It is also the corresponding of the terrace house due to two party walls for each quadruplex and in construction cost per square foot aspect. Party walls are walls that are shared between two units to avoid fire expanding. The construction cost of house is cheaper if part walls are more. A quadruplex house is a better alternative to the terrace house due to wide frontage. However, it has a longer part wall compare to equivalent terrace house.
- **Sextuplex house**
The sexplex house is an innovative six units back-to-back house type (Figure 4), with two block sharing a same courtyard. This housing composition is derived from the triplex house. The tessellation planning method of designing housing layouts results this type of unique house. It also looks like a semi-detached house from the entrance.

2.0 Methodology

This study has implemented the census survey method or house-to-house survey which involving the process of collecting information about each resident of the population. The target respondents are the resident i.e. household head or his wife. From the census survey, researcher found that only 50 houses are occupied from the total, 133 units. 46 questionnaires which consist of 3 parts; demographic background, homeownership status and level of acceptance and satisfaction were answered. The last part which is the level of acceptance and satisfaction of the resident are divided into three components which are;

- Facilities satisfaction
- Service and infrastructure satisfaction
- External and internal design of house satisfaction

The collected data which is based on 5-point Likert Scale has been analysed by using a maximum and minimum value, mean and standard deviation. The range calculation to classify the satisfaction or agreement level are then determined by Mean Scale Range as in Table 1.

Table 1: Classification of the level of satisfaction or agreement based on Mean Scale Range

Scale	Range	Level
1	- 1.8	Very Dissatisfied
2	1.81 – 2.6	Dissatisfied
3	2.61 – 3.4	Moderate
4	3.41 – 4.2	Satisfied
5	4.21 – 5.0	Very Satisfied

3.0 Demographic Data

There are about 38% of the houses are occupied which means majority of the house are unoccupied due to renovation process or waiting for renter. From data collected, the highest age group percentages among the respondents are 41 years old and above. Most of them are the head of household or wives. Since the land is Malay reserved, all 46 respondents or 100% of them are Malays.

From this survey, the main reasons they want to have this property at the first choice is because of the location due to close to their

* Badariah Daud. Tel.: +0189107424 ; fax: 066622026

E-mail address: badariah@polipd.edu.my

Badariah Daud / JOJAPS – JOURNAL ONLINE JARINGAN PENGAJIAN SENI BINA 0189107424

work place. The highest household size is among the respondents are between 3-4 people. Majority of the respondents are living in quadruplex house type.

4.0 Results & Discussion

The outcomes of the research are discussed based on these aspects:

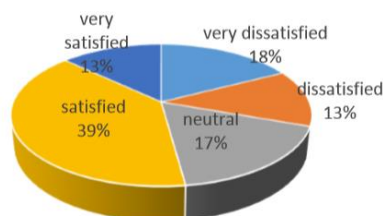
4.1 Level of Satisfaction with Facilities

Table 2: Mean Satisfaction with the Facilities

No	FACILITIES	N	Minimum	Maximum	Mean	Std. Deviation
1	Housing design satisfaction	46	1	5	3.17	1.322
2	Courtyard satisfaction	46	2	4	3.11	.737
3	Masjid as community center	46	1	5	3.98	1.164

Among the public facility that provided in this area which includes; Housing design, Courtyard and Masjid. Residents are generally satisfied with some facilities provided (Table 2). The satisfaction of every facility provided will be explained in detail.

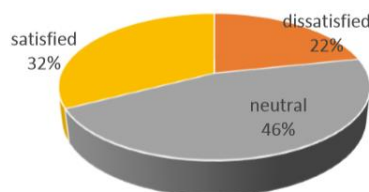
4.1.1 Honeycomb Housing Design Satisfaction



Pie Chart 1: Housing Design Satisfaction

Majority of the respondents are satisfied with the Honeycomb housing design at 39%. This shows that the resident have high level of acceptance to Honeycomb Housing Design, the culde-sac with courtyard concept. Most of the resident who satisfied with the concept is among age 41 and above. This proved that high satisfaction of housing was tending to achieved by older people (Teck-Hong, 2011).

4.1.2 Courtyard Satisfaction



Pie Chart 2: Courtyard Satisfaction

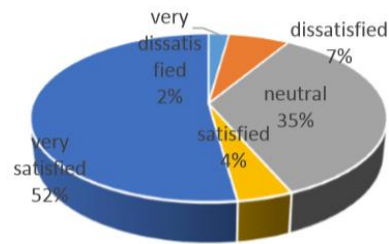
From data collected, most of the respondents feel neutral with the courtyard at 46%. This factor is due to the courtyard provided for each houses are different from each other in term of size and facilities provided. Some of the houses are not face any courtyard. Every courtyard is turf and plant with trees. Since the neighborhood area is still new, the trees are still small and unable to give shade yet. Playground and bench are provided but not all courtyards have.

4.1.3 Masjid As Community Center Satisfaction

* Badariah Daud. Tel.: +0189107424 ; fax: 066622026

E-mail address: badariah@polipd.edu.my

Badariah Daud / JOJAPS – JOURNAL ONLINE JARINGAN PENGAJIAN SENI BINA 0189107424



Pie Chart 3: Masjid as Community Center Satisfaction

Based on Pie Chart 3, most of the respondent is satisfied with the Masjid function as a community center for them to make a meeting or other community function since 100% of the residents are Malays or a Muslim practice. There are about 52% of the respondent are very satisfied, 35% are neutral, 7% are dissatisfied and 2% are very dissatisfied. This various perception among the residents is probably due to an existing of another masjid just across the neighbourhood.

4.2 Services & Infrastructure Satisfaction

Table 3: Services & Infrastructure Satisfaction

No .	SERVICES & INFRASTRUCTURE	N	Minimum	Maximum	Mean	Std. Deviation
1	Pedestrian walkway	46	1	5	3.59	1.203
2	Trees	46	1	5	3.15	1.247
3	Safety	46	2	4	3.35	.647
4	Garbage collection	46	1	4	2.43	.620
5	Lamp post	46	1	4	3.02	.906
6	Road	46	2	4	2.72	.720

Residents are generally having moderate level of satisfaction with the services and infrastructure provided which are pedestrian walkway, trees, safety, garbage collection, lamp post and road (Table 3). According to the observation, the level of satisfaction probably high due the provision of the pedestrian walkway along the neighborhood street by developer is acceptable in term of size and some green elements available. High level of satisfaction is probably due the provision of the courtyard and effort done by the developer to plant trees. However, the trees are still small, lack of leaves and thus, unable to provide greeneries yet. The high level of safety satisfaction among resident is due to the advantages of Honeycomb housing which may create a better environment in reducing incident of crime and provide safety street design.

The dissatisfaction among resident in garbage collection is due to the late of waste garbage collector truck since the garbage area is not provided. Most of the courtyards in the Nong Chik Heights Honeycomb housing are provided with 2 lamp posts. However, the resident felt dissatisfied about this and acquire more lamp posts along the road to give adequate lights to the area during night time for security reason. Base on observation, the road become narrow as the courtyard was surrounded with a row of cars due to inadequate car porch in their house. As a result, the resident gain a moderate level of satisfaction with the road provided.

* Badariah Daud. Tel.: +0189107424 ; fax: 066622026

E-mail address: badariah@polipd.edu.my

Badariah Daud / JOJAPS – JOURNAL ONLINE JARINGAN PENGAJIAN SENI BINA 0189107424

4.3 The Internal and External Design of House Satisfaction

Table 4: The Internal and External Design of House Satisfaction

No	HOUSING DESIGN	N	Minimum	Maximum	Mean	Std. Deviation
1	Living Room	46	2	4	2.85	.729
2	Kitchen	46	2	4	2.91	.865
3	Rooms	46	2	4	3.07	.800
4	Bathroom	46	1	4	2.96	1.010
5	Yard	46	2	4	3.11	.900
6	Gate	46	1	4	2.91	.939
7	Car porch	46	2	4	3.00	.730
8	Finishing	46	1	3	2.02	.774

Housing characteristic may include the internal and external condition of the house. The internal attributes consist of area of living room, kitchen space, number of room and bathroom. Whilst the external design of the house elements are yard, car porch, gate and finishing. According to Table 4, respondent are generally having average level of satisfaction with internal and external condition of the Honeycomb house particularly the quadruplex type since it is the major house type of the respondent. Large number of the respondent are not satisfied with the space provided in term of size which is small and there is also difficulty in placing the furniture due to the odd shape of the house. Besides that, residents also made complain about the length of the stairs which are very narrow.

For the external aspect of the house, the respondents also have an average level of satisfaction with the yard due to a privacy issue. The neighbors still can see what they do even though they are doing activities within their own house compound. Apart from that, the occupants also not satisfied with the doors, windows, gate and fences provided by the contractor which are using a low grade material in order to minimize the cost. Quality of the whole house finishing gains the lowest satisfaction among the residents. For example, a broken tile, cracked frame and other poor workmanship products due to the inexperienced contractor.

5. Conclusion

From the census survey of the selected Honeycomb housing project, Nong Chik Heights in Johor Bahru where only 50 houses are occupied from the total, 133 units. 46 questionnaires which consist of 3 parts; demographic background, homeownership status and level of acceptance and satisfaction were answered. Generally, they are satisfied with facilities provided such as Courtyard and Masjid as community center. However, residents have a moderate level of satisfaction with the services and infrastructure provided which are pedestrian walkway, trees, safety, garbage collection and road. Respondent also have a moderate level of satisfaction with internal and external condition of the Honeycomb house. Hence, the public facilities provision should be improved and the house space should be reviewed and constructed with better workmanship. Through this study, researcher obtained positive and negative feedback and views from residents about the new concept which could provide the essential information in order to evaluate the house performance and to improve the design and development for the future honeycomb housing project.

References

- Abdullah Shah Aimin, A. (2006). Thermal Comfort at low cost housing in hot humid climate. (Civil Engineering), University Teknologi Malaysia.
- Agbomanyi, F. K. (2008b). Affordable Energy Efficient Housing. (Master of Architecture), Kwame Nkrumah University of Science and Technology.
- Amin, N. M. (1994). Towards an integrated society through a new pattern of housing in Malaysia. (Master's Degree in Urban Design), Oxford Brookes University.
- Bajunid, A. F. I., & Abbas, M. Y. (2012). Identification Processes of Culs-de-sac in Shah Alam: Preamble to Neighbourhoods' Way of Life. *Procedia - Social and Behavioral Sciences*.

* Badariah Daud. Tel.: +0189107424 ; fax: 066622026

E-mail address: badariah@polipd.edu.my

Badariah Daud / JOJAPS – JOURNAL ONLINE JARINGAN PENGAJIAN SENI BINA 0189107424

Davis, M. P., Ghazali, M., & Nordin, N. A. (2006). Thermal Comfort Honeycomb Housing: The Affordable Alternative to Terrace Housing. Serdang, Malaysia: Institute of Advanced Technology, Universiti Putra Malaysia.

Nordin, N. A., & Wan Muhd Zin, W. F. (2005). Incorporating Children in Neighbourhood Design and Planning. Paper presented at the 8th International Conference of the Asian Planning Schools Association, 11-14 September 2005, Penang, Malaysia.

Nurhasni, Sharum (2008). Kajian Perbandingan Perancangan Rekabentuk pembangunan Perumahan “Honeycomb” dan Teres. (Bachelor of Civil Engineering), Universiti Tun Hussein Onn Malaysia.

Othman, S., & Said, I. (2012). Affordances of Cul-de-sac in Urban Neighborhoods as Play Spaces for Middle Childhood Children. *Procedia - Social and Behavioral Sciences*, 38(0), 184-194. doi: 10.1016/j.sbspro.2012.03.339

Read, D. C., & Tsvetkova, A. (2012). Housing and social issues: A cross disciplinary review of the existing literature. *Journal of Real Estate Literature*, 20(1), 3-35.

Teck-Hong, T. (2011). Housing satisfaction in medium- and high-cost housing: The case of Greater Kuala Lumpur, Malaysia. *Habitat International*.

* Badariah Daud. Tel.: +0189107424 ; fax: 066622026

E-mail address: badariah@polipd.edu.my

Badariah Daud / JOJAPS – JOURNAL ONLINE JARINGAN PENGAJIAN SENI BINA 0189107424

