

# Benefits of the Principles of Perry Neighborhood Unit through Supply Chain Strategy in Nong Chik Heights, Johor Bahru, Malaysia

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**Abstract**— This study attempts to investigate the combination of new towns concept goal of honeycomb concepts integrated through the application of the supply chain strategy in Perry Neighborhood Unit Principles founded on "the life of a family community" to achieve the balance of human life. The combination of these goals provides the concept of new housing by applying the social element in physical influences so that the elements of village goodness that once existed in the past can be restored in the goodness of today's urban community. The aims of this study is to identify the Principles of Perry Neighborhood Unit through supply chain strategy that is applied in the implementation of the concept of honeycomb and the benefits obtained from the application. This study using participant observation, in-depth interviews and questionnaires. The 275 samples were selected as respondents (questionnaire through cluster sampling technique) while 3 as a subject of study (in-depth interviews with study techniques chain). The success of the concept of honeycomb in Nong Chik Heights has influenced People's Dream House Policy under the National Affordable Housing Policy (2018-2025). This study found that the concept of honeycomb apply the objective of affordable houses, namely, ensuring quality and cohesive neighborhoods by providing and maintaining facilities and quality services in the neighborhood to support the life of the community. It is in line with the slogan of "housing for all and quality homes of hope of the people".

**Keywords**— *Perry neighborhood unit, Supply Chain Strategy, Honeycomb housing, Sustainable development*

## 1. Introduction

Honeycomb housing concept is a modern design in the category of cluster housing. Use method tessellations of a hexagonal (six in terms of geometry) such as honeycomb in concept layout, houses are arranged in the form of private cul-de-sac-de-sac with open spaces close to create a courtyard neighbourhood. Each courtyard neighbourhood will be linked with the distribution

road junction in the form Y. Across the courtyard is only about 150 feet. Within this distance, someone standing at his front garden would be able to make out the facial features of other people outside [1-7]. The concept of honeycomb strives to integrate spiritual values in the planning and development such as human relations with the creator, human relationship with humans and the human relationship with the environment. All three relationship stated in the Universal Planning and Development Guidelines (UPDG) referred to the joint National Municipal Policy (NMP), the Second National Physical Plan (2<sup>nd</sup>NPP), National Housing Policy (NHP) and the tenth Malaysia Plan (RM10). Its purpose is to prevent various problems in housing development involving actions and long-term changes of the planning (forward planning) until the control, monitoring and implementation planning that require improvements to the mechanisms and regulations planning [8, 9]. According to Perry most of the development fail because can't identify and realise the association between existing developments with planned development so that mutually support the continuity. Therefore, housing honeycomb successfully fulfilled existing development needs thus supports the continuity of ideal habitat in the future [10-17].

## 2. Methodology

This research applied the mixed method approach for explaining design exploration thru case studies to gain knowledge. Qualitative approach in this study using participant observation methods and in-depth interviews. While the quantitative approach, using a questionnaire which result alfa Croanbach high and satisfactory. Research involves 278 samples consist of 275 respondents (questionnaire) and 3 subjects (in-depth interviews). Sampling techniques for questionnaire is Clustered Sampling (Sampling Clusters). While the sampling

techniques, to in-depth interview was using Chain Study (Snowball Sampling). Study on using descriptive analysis (frequency and percentages). Meanwhile, the content analysis (triangulation) are used to support findings of the questionnaire. Next, SPSS 20.0 used to encode and analyze data so that the findings can be translated into the form of information that is easy to understand. The subject and the respondents in this study comprised the Town Planning and Management from the technical group of Johor Bahru City Council (MBJB) only. This is because they are the group who know, understand, and practised theory of Neighborhood Perry in housing development in Nong Chik Heights. The time taken to answer the questionnaire is 10 to 15 minutes as was done by Peter Davis; Bukryman Sabri; Mohd Peter Davis, Bukryman Sabri and Nurizan Yahaya; Mohd Peter Davis and Mazlin Ghazali [18-22]. While in-depth interviews for the session did take about an hour.

### 3. Results and Discussion

The five main advantages of the Principles of Perry Neighbourhood Unit, Nong Chik Heights, Johor Bahru namely human factors, economic factors, social factors, safety factor and the nature around.

#### 3.1 Human Factor

Human factors prove each of the 275 respondents (100%) of the strongly agree that there is a direct link between human factors with housing needs hierarchy (Table 1). This aspect needs hierarchy emphasizes the physiological, safety, social needs, needs appreciation and achievement of personal desire. All this needs is a parameter in the form the ideal human life. It involves the quality of home and location, physical safety, emotional, properties, a living environment free from noise, public nuisance and criminal threats. Next, enable the man making love, protect each other, have a stable life in addition to appreciate and respect the rights of privacy and rights among neighbours. Thus, the ideal neighborhood materialised. In the implementation of the concept of honeycomb in Nong Chik Heights, human factors being the main focus. It is in line with the concept of honeycomb which provide an ideal life to men through the application of Maslow's needs Hierarchy to the hierarchy so that the housing needs of human life balance can be achieved [23-30]. Indirectly concept honeycomb enabled proactive and progressive society.

**Table 1:** Human Factor

Human Factor	Frequency	Percent (%)	Cumulative Percentage
Very Agree	275	100.0	100.0

The second subject subject said that 'as town planner i seen this honeycomb is able to build an ideal habitat features. It fits the concept of

renewable and combined with current requirements. Honeycomb can bring together social and physical contact in a single integrated design. Honeycomb also gives us an option to try to achieve a more perfect life habitat. Honeycomb can be counted is not a new but develop elements of utopia to the global community. Yes, i admit that honeycomb try towards the'.

The second subject, described as a member of town planner, he saw that the concept of honeycomb has the potential and constitute an ideal habitat features in the human life. This is driven by the concept of honeycomb that can be adapted according to current needs. In addition, the concept of physical elements into the honeycomb is capable with the enhancement of social elements through integrated design. Therefore, honeycomb provide opportunities for people to enjoy a better life. In fact, honeycomb work towards developing elements of utopia to the general public.

#### 3.2 Economic Factor

Economic factors prove a total of 245 respondents (89.1%) of very agree than 30 respondents agree (10.9%) of that the efficiency of land use as a land/net area can be increased in a concept of honeycomb (Table 2). Backlanes repealed and the remaining land used for home use and open spaces. The savings also could be done because the circulation system use different types of private cul-de-sac-de-sac compared to direct road (shorter hexagonal perimeter of 7 percent compared to rectangular perimeter with an area of same). In fact, the number of housing units that can be built have also increased. Next, the construction and infrastructure cost savings can also be achieved in particular savings in the work of draining water, sewerage, drainage, roads and road building. Typically, in the concept of honeycomb 1 acres of land to build 14 houses honeycomb (subject to the type of home), compared with 8 of the same land area. This, when compared with the Neighbourhood Unit of 5 units of Perry to acres of land compared to the honeycomb with 14 acres of the showed that the lump could built housing honeycomb almost three fold as you do by quadruple house. At the same time also no patchwork of land left in the component development (avoiding caviat land). This shows every inch of land used optimum. Then, the issue of waste land does not exist in the concept of a honeycomb. Further, the reduction in the use of land for the purpose of construction of roads (the system private cul-de-sac-de-sac) can influence the amount of land area (average lot size of a house) to the buyer. Indirectly, the buyer obtained House area, spacious and comfortable. At the same time, the developer can also reduce the cost of construction. This shows the win-win situation between buyers and developers [31-35].

**Table 2:** Economic Factor

Economic Factor	Frequency	Percent (%)	Cumulative Percentage
Agree	30	10.9	10.9
Strongly Agree	245	89.1	100.0
Total	275	100.0	

The first subject confirms "honeycomb in terms of land use is the optima, which enabled every corners of the land developed for residential and commercial purposes. He is also very stressed the balance of nature around. From the aspect of economic development because economic development is indeed no honeycomb patchwork of land left in the construction".

The first clear statement of the subject proves that land use in the honeycomb is optimum because all the facets of land developed for residential and commercial purposes as well as on environmental balance. Thus, the use of land in the honeycomb was seen very optimal and economical.

### 3.3 Safety Factor

Safety factors prove a total of 268 respondents (97.5%) of very agree than 7 respondents (2.5%) of the who agreed that security can be established through environmental design which includes the basic surveillance, natural path, clarity control border, maintenance and management (Table 3). Crime prevention through the distribution hierarchy zone (public zone, semi-public zone, semi-private zone, and private zone) capable of creating a sense of community and a sense of belonging. Traffic safety can also be achieved through the design of a private cul-de-sac that serves as a local road for each residential units. Next, the concept of "shared street" (sharing the use of the road in a residential area) allows cars, pedestrians and children are able to use the road jointly. In the implementation of the concept of honeycomb in Nong Chik Heights, safety factors apply fully the spirit and design private cul-de-sac-de-sac in the internal road system that could affect the safety of the community. This is because circulation private cul-de-sac is very appropriate in particular in terms of housing cluster traffic safety, the environment, crime prevention and space efficient [36-40].

**Table 3:** Safety Factor

Economic Factor	Frequency	Percent (%)	Cumulative Percentage
Agree	7	2.5	2.5
Strongly Agree	268	97.5	100.0
Total	275	100.0	

The first subject said "Although the circulation path is not conducive, but to me it is very happy. For example, strangers want to run away else can go astray. Safety is very good. This is because cul-de-sac form. The development area of the hexagon is indeed very helpful in terms of prevention for the

crime, the safety of individuals and property, emphasizing the privacy elements and has the capacity of nature around the good, green, clean, and harmony. I agree with the concept of a honeycomb housing successfully implemented by Mudra Tropica Developer. One concept that allows nature about escorting preclude". A concept that allows the environment to regulate their own community".

The first subject acknowledges that form maker cul-de-sac is not attractive but he is very happy. For example, can confuse the strangers. Safety is very good because with the hexagon is very helpful for the crime prevention aspect, security of person, property, privacy, besides having a natural harmony. Thus, he agreed with the implementation of the concept of the honeycomb are successfully implemented by Mudra Tropica Developer thru characterizes the concept to allow natural honeycomb about escorting preclude.

### 3.4 Social Factor

Social factors in the implementation of the concept has been able to set up honeycomb. Thus, a total of 264 respondents (96%) of the strongly agree and 11 respondents (4%) also agreed in this regard (Table 4). This is because social factors such as communal feelings can be created through effective space restructuring so as to enable one-to-one occurs in measure distance ecology. In turn, could give rise to feeling secure in terms of psychological and psychosocial [41, 42]. Thus, social concepts such as group chat, group sympathy, and social collaboration materialised for together overcome social neighborhood. In the meantime, the provision of open spaces in the courtyard neighbourhood can also be used as a place to do joint activities, recreation and relaxation at once formed social closeness. This shows the implementation of the housing of the honeycomb in Nong Chik Heights seeks to realize processes of socialization in the neighbouring among neighbors. It is associated with the preparation of the home in the form of a hexagon, and the cluster has a honeycomb shape maker allow interlacing neighborhood social force in the natural state. For example, in the concept of honeycomb housing units for a constricted neighborhood i.e. 5 to 40 housing units. It is supported to the spontaneous meeting further circulation of the cul-de-sac causing any occupants need to do one time around either when entering neighborhood or during out of area neighborhood (Figure 1). Such matters, allowing the encounter occurred well on the way. This shows the compilation of public aid in the social process so that community while nurturing honeycomb mutual interaction effective as practiced in rural communities. This is what is said to be unite harmonious life in rural society of the city so that the neighborhood is seen as a big family

in which there is room for mutual love and protect each other [40].

**Table 4: Social Factor**

Economic Factors	Frequency	Percent (%)	Cumulative Percentage
Agree	11	4.0	4.0
Strongly Agree	264	96.0	100.0
Total	275	100.0	



**Figure 1.** Each Occupant Should Do a Round of Circulation in Private Cul-De-Sac-De-Sac Either When Entering the Neighborhood or While Out of the Neighborhood. It Allows Spontaneous Gatherings Occur Naturally [26].

The second subject stating "through the maker forms and stacking set honeycomb i sure can foster interaction and ideal relationship in communities. Even the positive spiritual values will be born indirectly. Further stacking feature which allows spontaneous meeting is natural and relaxed. Or in other words would or would not every homeowner must meet with the neighbouring next to contiguous parts. For example, when about to come out of their homes must then also houses neighbouring the others because of the characteristics of the circulation form maker cul-de-sac which requires every user of the highway makes one complete cycles prior to discharge. Plus it shows an aspect of shared values and integrated in the community. Even stacking set is highly encouraged in a housing cluster".

Statement from the subject of the Second explains that layout design of honeycomb can build social interaction in community relations. Indirectly contribute to the appearance of a positive spiritual values in the community. This is because the layout of the honeycomb allows the encounter happened spontaneously, natural and relaxed. Furthermore, this layout causes each occupant is always met. For example, the complete round private cul-de-sac-de-sac should be done before tribes out of the neighborhood. Round private cul-de-sac-de-sac resulted in vehicles going through the home units in the neighborhood until the accidental meeting pose. Connotes system, private cul-de-sac-de-sac is creating shared values to foster a sense of

belonging. In fact, the use of private cul-de-sac-de-sac very encouraged in cluster housing.

**3.5 Natural Factor**

Natural factors appreciated in the implementation of the concept of a honeycomb. As a result of many as 240 respondents (87.3%) strongly agreed and 35 respondents (12.7%) undertook to agree (Table 5). In the implementation of the concept of natural factors around like honeycomb preservation network access according to the contours and topography can be done. Whereas, the temperature can be controlled also by planting trees that are able to reduce the impression shade of heat island. In fact, the process of condensation than leaves can also cool the temperature of the neighborhood. Indirectly, plant a tree shade contribute to the survival of urban biodiversities (a source of food and habitat to the species of birds, small animals, and butterflies). Next, the remainder in the housings can be made into soils neighborhood either temporary or eternally. In addition, the soft landscape can influence a healthy lifestyle (mental, emotional soul and residents). Honeycomb housing construction at Nong Chik Heights are based on different contours of the levels of height and adapted according to the type of home (storey house) was built. For example, houses built to 1 level is different slope level than 1½ house, double storey house, 2½ storey house to 4 storey house. This shows the level of the slope and slope strength needs to be tailored to the type of house construction (profiles of land). Furthermore, the shading tree was planted in each unit that acts as an agent of neighborhood absorbent heat, the habitat of birds, and made into therapies for health [6, 8, 13, 20, 23, 28]. By the way, the implementation of the honeycomb concept was seen trying to achieve the balance in life of the ecosystem with green areas in the new town concept as the proposed by Perry "life of a family community".

**Table 5: Natural Factor**

Economic Factors	Frequency	Percent (%)	Cumulative Percentage
Agree	35	12.7	12.7
Strongly Agree	240	87.3	100.0
Total	275	100.0	

The subject of the Second stated "the concept of this honeycomb has been able to meet the needs of the original concept that is developing housing in accordance with the willingness of the slope for highlighting an image next to provide luxury honeycomb added value to general visual. It allows panoramic in Johor Bahru. Moreover each contour made by developers serve as a natural wall. This is interesting but needs the expertise and high costs to ensure sustainability. Thus, the developer does not have to provide fencing to fence the entire center of the neighborhood. Merely, wall of natural indirectly could carry the community appreciate the

environment and life nature united with God's creation. Like learn something from nature that is shared values, respect for universal rights and tolerant in the ecosystem. At once, instilling give and take within the community and realize the town of carbonised low".

The second subject that described the concept of honeycomb is in accordance with the original concept, namely the housing development based on contour for highlighting the image of prestige in the city of Johor Bahru. Next, the willingness of the slope acts as a natural wall which causes the developer need not be the neighborhood overall encloses. Indirectly, this factor to educate the community to appreciate the environment God's creation. Like the beginning nature and learn from them about respecting the right ecosystem to be comprehensive in the universal life. It is also affecting climatology which makes the city of carbonised low.

#### 4. Conclusions

The findings prove the 162 respondents (58.9%) strongly agreed and 113 respondents (41.1%) agreed that the application of the Principle of Perry Neighborhood Unit in the implementation of the concept of honeycomb in Nong Chik Heights, Johor Bahru have been applied across the board, practiced by local needs, and tailored to development concepts (boundary road network system, the size, public facilities and institutions, density, and retailing and open spaces). Meanwhile, a total of 150 respondents (54.5%) strongly agree than 125 respondents (45.5%) agreed that the application of the Principle of Neighborhood Units in the implementation of the concept of honeycomb Perry has five main advantages of human factors, economic factors, safety factors, social factors and environmental factors. Hence, these advantages help to balance the needs of human life from the psychological and psychosocial aspects. Moreover, the combination of these goals has the potential to create and promote the integration planning includes human relationship with the creator, man and man and man and the environment. This combination meets the goals of the country's aspiration to provide a liveable housing, quality, safe and affordable housing occupied build sustainable livelihoods.

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