Conference Paper

Optimization on Space Utilization in Penjaringansari Flats Surabaya

Syaifuddin Zuhri

1Faculty of Architecture and Design, Universitas Pembangunan Nasional "Veteran" Surabaya, East Java, Indonesia

Abstract

Residential Housing are the current solution in the provision of houses for urban communities, especially for people who have limited ability in home ownership. A vertical housing is a collection of residential units are arranged vertically with a limited area, such as type 18 m² up to 36 m². Residential units of towers usually consist of a space without borders with a bathroom or no bathroom inside, as well as a back porch for a clothes line or other service functions. Unrestricted residential units allow the occurrence of uncontrolled spaces of function or the occurrence of spaces that are multi-function and interfere with comfort or privacy, even increasing in line with the development of occupant characteristics. Optimal spatial arrangement is expected to realize harmony between humans, activities and built environment so that it does not create impact when utilization. And space actually shows the functional expressions that determine where the form should be found (Lutfiah, 2010), Space is something objective or real and subjective as the result of the human mind. This research is done by descriptive exploratory method (Marpaung, 2010) to know the background of the formation of a space that occurs after the residential process takes place. From these results will be able to determine what types of space is needed and often occurs in a development of residential apartment. So that later can be made guidance needs of the early space adaptive to the needs of residents towers.

Keywords: Adaptive, residential units, vertical housing

INTRODUCTION

The city of Surabaya is a densely populated city with rapidly growing population, and it adds to the difficulty of providing housing for residents because of some problems such as the difficulty of obtaining land for new housing or settlements, inadequate occupancy, limited availability of housing facilities. So the solution of the supply of flats is the best solution for the provision of housing or settlements for the community.

According to data from the Department of Population and Civil Registry (Dispenduk Capil) of Surabaya City, it is said that the total population until 2015 reaches 3,110,187 people with the highest population growth in 2 (two) subdistricts of Sawahan reaching 222 thousand inhabitants, and Tambaksari sub-district in Semampir 177 thousand inhabitants. According to Bappeko Surabaya, the population density is seen in the new housing settlement that reaches 1,600 households. In 2015, Surabaya city can only provide 50% of that need.

* Corresponding author
Email address: syafruddin.upn@gmail.com

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Flats are houses that are built vertically and communally used by the community, and are able to minimize land use. Especially in big cities, it’s like Surabaya who have problems in the provision of healthy and cheap homes for people whose needs continue to increase throughout the year.

Residential unit tower is a house unit arranged in a row horizontally and vertically or said as a house. According to WHO the definition of a home is a shelter from weather and environmental conditions, unites a family, improves the growth and development of every human life, and become part of the human lifestyle. And the house should be able to accommodate the activities of its residents and wide enough for all users, so the needs of space and activities of each occupant can run well. The home environment should also avoid factors that can reduce of health (Hindarto, 2007).

Many problems obtained from the application of architectural design of towers experiencing conditions that’s not in accordance with the expectations of residents. In addition to designing or construction factors, maintenance and hygiene factors are also a post-habitation problem. From the results of this study it is expected that the problem of building the tower obtained after the habitation can be minimized, because this can add burden for residents who will occupy. It is important to know the condition of the apartment buildings including the function of space and the availability of facilities that will be occupied by the occupants do not experience degradation of quality or dysfunction of space and facilities that’s have been provided.

With a design built for the minimal number of residents will certainly affect the activity of the apartment inhabitants with a capacity more than desired. The size of flats in Surabaya has an area ranging from type 18m², type 21 m², type 36m² up to 48m² type. With a minimum size inversely proportional to the number of occupants will be quite difficult for residents to perform aktivias especially with the effort to divide the space by way of insulating with the partition. This will cause a mismatch between space and the expected functions so that the space becomes uncomfortable.

The importance of optimizing the layout of space for towers Penjaringansari in order to maintain the effectiveness of space based on the comparison between the availability of room space space with residential functions as required in Permen PU Nu. 06/PRT/M /2007 on general guidelines of the building and environmental plan. If current and future implementation is not controlled and does not have a clear spatial concept then it is feared to cause discomfort inhabiting due to the emergence of functions that are not expected due to spatial arrangement that is not terkonsep well.

There are researches that there are five facilities that become the main priority to be increased are the waste water disposal facilities, clothesline facilities, non-residential space, rental results, infrastructure and facilities by improving the professionalism of managers and participation of residents in the utilization and maintenance of rental facilities, optimize the utilization of assets rusunawa, accelerating the grant process from the central government to local governments.

Through this research, it is expected to produce a recommendation of spatial layout of tower units of Penjaringansari by maximizing space utilization to support residential function as a provider of home facility with efficient space utilization based on consideration of limited space availability in order to make optimal occupancy function based on comfort, safety and beauty.

**METHODS**

The object of research is the characteristics of the inhabitants, which are specifically divided into three categories of behavior, namely domestic, economic, and social behavior. Population and Sample The population in this study is the family inhabitants of the apartment apartment Penjaringansari. The sampling technique used in this study is to use random sampling or random sampling of the existing population, ie sampling technique in which each element of the population has equal opportunity to be taken as a sample (Arikunto, 2002). The number is taken with the consideration that the minimum sample size suggested for this type of comparative study is as many as 15
respondents for each block.

The instrument to collect data is a tool used by researchers to retrieve data in the field. The instruments of data collection are: (1) questionnaire sheet, in the form of researcher’s guide during field observation related to data problem that will be needed for research; (2) digital cameras, to take photographs of existing buildings and the behaviour of building occupants; (3) digital and manual meters, to measure the size of the existing space in each residential unit; (4) interview guides, to collect data on the behavior of the residents’ residents before and after the inhabitants of the flats and the factors that cause behavior change.

Questionnaires are in the form of open questionnaires, which provide an opportunity for the respondent to alternative answers to a broader range of answers. Data Sources Research, either through direct observation or interviews aims to collect physical data, facts, opinions, or attitudes of the respondents. Data analysis is done by descriptive exploratory method (Marpaung, 2010) to know the background of the formation of a space. Marpaung (2010) explains that human needs are the background for concrete spaces. From the approach it can be concluded that the behavior in this research is the action done in the framework of the utilization of a space, so that the behavior in concrete manifested in the form of space. Furthermore, based on the background of research that there are characteristic behavior that is typical in flat society which become the boundary of behavior in this research.

RESULT AND DISCUSSION

In the design of a simple house healthy, must meet the demands of basic space for residents in an effort to improve the quality of comfort and health. For that, the space that needs to be provided at least consists of:

- A sleeping room, which meets security requirements with parts covered by walls and roof and has adequate lighting and is protected from weather. The bedroom is an intact space, in accordance with its main function.
- A multipurpose room, in which interaction activities are carried out between family members.
- A bathroom used as a service room, especially for bathing, washing and toilet.

The three spaces mentioned above are minimal spaces that must be met as minimum standards in meeting basic space needs to meet the standards of comfort, safety and health of residents so that it becomes a simple healthy home. Thus it can be seen that the house is a basic necessity for humans because in this house where people live, place of family coaching, place of work and determine the productivity of the family.

The Penjaringansari apartment is one of the towers developed by the Surabaya City Government since 1992-1994 to overcome the rapidly growing needs of the homes for the urban community and the impacts of unmet demand for low-cost housing for some of the city’s limited incomes. This will lead to some residential areas that become very crowded and slum. On this basis the city government seeks to provide cheap and comfortable homes, or the terms of Mrs. Risma (the chief of Surabaya Government) says that’s “rumah susun dengan rasa apartemen”. This has already begun in the tower Penjaringasari III which became a tower that won the national champion III as a pilot model that is able to create security order and environmental hygiene.

This apartment collection complex of Penjaringanansari I and Penjaringanansari II is a complex built in stages since 1992-1994 in this Penjaringansari area. The tower of Penjaringansari 1 was originally used to accommodate residents evicted from several illegal settlements in Surabaya, especially from the Karangmenjangan area, Dr.Soetomo Street, Wonorejo area, and the riverside area because it was considered an improper and slum settlement area and occupied the space utilization is not appropriate so it needs to be done relocation. In its development it turns out the need for cheap dwelling is very needed citizens, especially those who have limitations in home ownership.
Occupancy Penjaringansari I block has a unit area of 18 meter squares (3x6m²) of 24 units per floor or 96 units per block with 2 types of residential units, ie units that have bathrooms outside residential units and units that have bathroom inside. Penjaringansari I blocks consisting of 3 building blocks have the characteristics of buildings and the composition of residential units each floor has the same characteristics (typical) with the number of residential units as many as 288 units of dwelling and is divided into 3 RT.

The physical condition of each Penjaringansari I tower, Penjaringansari II and Penjaringansari III have different conditions of residential units, this is possible because the characteristics of the residents of each tower are different, whether viewed from the aspect of age, occupation, education and the number of family members each residential unit.

The residential unit of Penjaringansari I type 1 only has a terrace facing the outer space, while the other room with area of 15 square meters serves as a multi function room. This space can be flexibly used by occupants according to the occupants’ needs for the required functions.

Profile of the Penjaringansari I type 2 occupancy unit has an area of 18 square meters of space consisting of a bathroom of 3 square meters and 15 square meters of empty space without any other spaces. The use of space adapted to the functions that will be developed by their respective residents, so that the function of space is dynamic as needed.

Penjaringansari II occupancy block has a type of 21 m² with a size of 3.5x6 m² of 24 units with bathrooms outside the residential unit, or in every 1 block of housing there are 96 units of residential units. So typically the tower blocks in the tower Penjaringansari II consisting of 5 building blocks have the characteristics of the buildings and the arrangement of residential units each floor has the same characteristics with the number of residential units as many as 480 units of dwelling and divided into 5 neighborhood units (RT).
Profile of Penjaringansari III residential units has a space of 36 square meters, consisting of 31.20 square meters of empty space, 6.6 square meters of terrace and a bathroom space of 3.00 square meters. The use of space in accordance with the functions that will be developed by their respective residents, so that space functions are dynamic as needed.

The discussion on the characteristics of the Penjaringansari residents towers, based on some variables obtained during the study that is based on age group, type of work, type of education, and the number of children in each family of respondents. This group-appropriate study was conducted to determine the characteristics of the towers and their behavior in the process of inhabiting and arranging space according to their needs during the inhabitant process from beginning to currently.

Based on the data on Penjaringansari I and Penjaringansari II, it is found that residents are dominated by residents with some age groups 36-50 years old (PS 1 27% and PS 2 33%) and over 50 years (PS 1 73% and PS 2 53%). It is said that the change of spatial functions is dominated by age group of some age group 36-50 years old and above 50 years dominated mostly in blocks of PS1 towers and rusun PS 2. This is possible because in the above age group already have children who have stepping on teenagers who need additional space for their activities, such as studying, sleeping, or receiving guests. The distribution pattern of occupants by age group can be described as below.
And the occurrence of less dominant space changes is also true in Penjaringansari III although their age distribution is spread over the age group of 21-35 years (40%) and age group 36-50 years (60%).

From the distribution of questionnaires, it can be described that the changes in space that occur in Penjaringansari I and Penjaringansari II are dominated by labor type (Penjaringansari I 27% and Penjaringansari II 33%) and traders (Penjaringansari I 45% and Penjaringansari II 47%). This is possible because of the behavior of occupations as laborers and traders at interviews with respondents and direct observation that many of their merchandise are made, stored or made in residential units, such as in living room, front hall, with a sleeping room. The distribution pattern of occupants based on work can be described as below.

The above conditions are not found in PS3 which dominates their occupations as private employees, traders or laborers whose employment behavior does not take advantage of space in residential units but elsewhere.

Further changes in space based on the type of education in each tower block can be explained in the diagram below.
Based on the results of the questionnaire distribution, it was found that the characteristics of the occupants of Penjaringansari I at the school level did not reach primary school (9%), completed primary school (27%), junior high (45%) and senior high school (18%). In block Penjaringansari III the characteristics of the occupants increased from the aspect of the type of education which tended to be dominated by senior high school (equal to 60%), Academy or university (27%) and junior high school or equivalent (13%) which can be illustrated that the level of education on Penjaringansari III differs significantly from Penjaringansari I and Penjaringansari II. Or it can be said that the understanding of the quality of their lives is better than the residents of towers Penjaringansari I and Penjaringansari II.

Similarly, if dilihar of the aspect of the number of family members in each tower block. Is there a relationship between changes in space utilization and the number of family members in residential units, as illustrated in the table below.

Based on the results of the recapitulation of questionnaires using a simple random sample method that has been distributed in the study area, indicating that the number of family members is equal to 4 people (Penjaringansari I 33% and Penjaringansari II 29%) and same or more than 5 people (Penjaringansari I 33% and Penjaringansari II 20%) so that it can be said the number of family members on the Penjaringansari I and Penjaringansari II in 1 unit of occupancy pretty much means the need to change or take advantage (intervention) of existing space will be greater.

Actually spatial intervention also occurred in Penjaringansari I tower that the composition of the number of family members only 2 people (husband and wife) of 20%, 3 people (33%), 4 people (40%) and same or more than 5 people (7%). Why this happens because at the time of direct observation can be seen that most residents
are still relatively new and young families or said the addition of the number of family members is still possible to occur, so that changes in the utilization of space is also still possible.

The physical condition of the identified occupancy unit of the residential units in the collapse tower can be illustrated in the following explanation.

Living room that also functions as a family room.

Clothes cupboard as a divider of the bedroom and living room or family room.

Shared space together between parents and children, there is no division of sleeping space for children.

Bedrooms are only limited to cupboard with living room / family room.
The kitchen is at the back of the dwelling unit and sometimes serves as a warehouse.

The kitchen has a fairly complete kitchen.

Bathrooms with decent enough and clean enough, and enough lighting and ventilation.

The bathroom is located on the rear side of the dwelling unit, next to an opening that is used for clothesline and ventilation.
Selasar as public space which is utilized as terrace of residential unit so that accessibiltas and circulation function become disturbed

Terrace that serves as a residential facility for shoe / sandal shelves

Terrace as a space of interaction between residents with guests or other neighbors

Selasar is used as a place to sell / place of business so that the façade of dwelling becomes disturbed

Selasar is used as a place to sell / place of business so that the space becomes more narrow and even its function is not optimal

CONCLUSION

The results showed that there is a change in the behavior of the occurrence of space in the apartment residents. This is due to the presence of spaces to accommodate domestic behavior occurring within residential units. In Penjaringansari I and Penjaringansari II the occurrence of economic behavior through increased use of space for economic activity within residential units or in flats.

In addition, the use of space is multi-function due to the lack of space to accommodate the functions that arise, such as the kitchen into a place to sell, living room and family room into one, even sleeping space between parents and children who grow up resulting in the expansion room. This is mostly happening in the block Penjaringansari I and Penjaringansari II, while the Penjaringansari III is not too much change. Also the use of common space such as front hall for residential units for public functions of residents towers, such as hanging clothes, shoe / sandal store, or untu activities of receiving guests and for social interaction of citizens. The higher the type of residential units and their social characteristics, the impacts are smaller.
From the results of the study, it is advisable to planners to really take into account the space requirements and possible spaces that will arise in the future, and take into account the possibility of residence behavior. This is to minimize the occurrence of multiple functions on space, or planners take into account the use of flexible barriers.

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