

The Preference of Industrial Workers to Workers' Flats in Industrial Estate, Case Study: Rungkut, Surabaya, Indonesia

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Abstract—The development of urban industry triggered the flow of urbanization so the number of residents in the area around the industry soaring rapidly and causing the effects of increasing demand for shelter. Industrial companies do not provide shelter for their workers so inhabit many rented houses because of the efficiency of time and cost. Population density causes the growth of irregular settlements, not following the pattern of road networks, causing declining environmental conditions and tend to become slums. The need for shelter by industrial workers is very urgent to cause the eligibility of the residence to be unnoticed.

In order to overcome the above problems it needs sustainable development that aims to improve the quality of human life and ensure its sustainability. Limited land in urban areas, especially in industrial areas, has resulted in the need for sustainable housing development for industrial workers, to meet the needs of shelter and reduce the density and slums in the villages around the industrial estate. So the first step that must be done is to know how the preference of industrial workers to stay in a sustainable apartment in the industrial area. It aims to be able to get a place to live in accordance with the wishes and needs of industrial workers to live in a sustainable apartment later in order to support their lives. The purpose of this study is to describe the preference of industrial workers towards sustainable housing projects in industrial estates.

This research is a descriptive quantitative research using research strategy of division of kuisoner to industrial workers with middle and lower income penghasilan. Quantitative analysis uses descriptive statistics of SPSS program factor analysis.

The expected result of this study is a description of the preference of middle to lower-income industry workers to stay in apartment houses with a sustainable concept in an industrial area.

Keywords: *Flats; Industrial zones; Sustainable development.*

I. INTRODUCTION

Along with the modern era, the development of urban industry is growing rapidly and triggering the flow of urbanization. The pace of urbanization makes the need for affordable housing for all people in big cities has become a serious problem because of the practice of land speculation and the limitations of government subsidies (Kuswartojo T et al, 2005).

The increasing number of people causes an increase in housing needs, facilities and infrastructure of settlements. The increasing demand for shelter is faced with limited housing. As a result, the land will be intensified and the settlements become more solid (Fandell, 2004).

High population density will cause the environmental conditions of the settlements to decline and tend to become slums. The condition of the decline of the settlement environment is marked by a decrease in the condition of the appearance of the building, the lack of facilities and infrastructure of the settlement environment, and the slum culture (Clinard, 1968).

Sometimes the industrial estate is not planned properly, the surrounding neighborhood is not planned to accommodate workers from outside the region. To meet the needs of residence, local residents rent their homes to workers. The current condition of residence becomes uninhabitable. Such dwellings eventually become unhealthy both physically and socially, the standard of space and the quality of a decent dwelling are neglected. Unfortunately this condition is not an option but a reality that must be faced by all the people who live in the industrial area.

In order to overcome the above problems then came the idea of sustainable development that aims to improve the quality of human life and ensure its sustainability. Sustainable development began to be echoed since the 1980s. The first time the paradigm appeared in the World Conservation Strategy of the International Union for the Conservation of Nature in 1980 (Keraf, 2002).

Limited land in urban areas, especially in highly densely populated industrial areas lead to sustainable development that can be implemented that is in the form of Sustainable Housing development with the status of "lease" ownership to meet all the needs of community residence and in an effort to improve the quality of the neighborhood. However, it is worth noting that the preference of industry workers in choosing their residence in this case is to stay in the apartment houses in the industrial area.

II. LITERATURE REVIEW

A. Settlements in industrial areas

Industrial activity in urban areas is an attraction for rural communities outside the city area, especially for people who are experiencing economic pressure, because economic activity in the industry sector is a sector that absorbs many workers, especially middle-low-income workers (Herlianto, 1997).

Housing for industrial workers also needs to think about the character of their lives. As with other low-income societies that rely on the life of the community, the symptoms are apparent in the lives of industrial workers. Environmental stewardship is more reliant on the local community due to the long working hours (Suparti Amir Salim, 1994).

Wijaya, A (1983), says that the procurement of settlement development for low-income communities, especially industrial workers, is not an isolated undertaking. But influenced by factors that are: First, the development has big multiplier effect. Second, the procurement of cheap housing requires exploration of new businesses to be cheap and efficient.

Coulson and Fisher (2009) explain that the purpose of providing shelters for industrial workers is to minimize or eliminate transportation costs borne by industrial workers. If the location of industrial workers with industrial estates are close, then create a walk-to-work condition for industrial workers. In addition, according to Coulson and Fisher (2009), to obtain greater capacity, the construction of residential more directed to vertical housing with rental system. Emphasis in the provision of occupancy by the rental system due to the implementation of industrial activities of course there is a change of workforce staff so that occupancy with rent system is considered more effective. In addition, occupancy with rental system is very suitable for workers and industrial workers who come from outside the city. If you are not working in the industrial area, workers and industrial workers can reside in the city of origin.

B. Sustainable Flats (Flats)

Sustainable development is seen as a multi-dimensional process of environmental protection with economic, social, and cultural development. All these aspects are interrelated and are considered as four dimensional approaches in sustainable development (Habitat, 2012).

The scale used in the sustainable housing in the apartment is Micro scale (Environment and Household), which consists of (UN-Habitat, 2011):

1. Environmental Dimensions

- Ensure energy efficiency, water and resource efficiency
- Green design, using locally sustainable construction and local materials.
- Sanitation, preventing harmful materials and pollution.
- Use of affordable resources.
- Improve resilience and adaptation of the home

From the above theory we get the variables for the questionnaires are: clean water flowing smoothly, personal electricity meter, natural carriage, natural lighting, clean sanitation, regular waste disposal, healthy environment, clean environment.

2. Social Dimension

- Empower communities and ensure public participation.
 - Ensure the health, safety, well-being of the dwelling.
 - Creating a sense of togetherness, "sense of place" and identity.
 - Meet specific needs and wants in housing (including those related to gender, age and health).
 - Provide access to public infrastructure and space
- From the above theory we get the variables for the questionnaire that is : Gathering facilities, health facilities, religious facilities.

3. Cultural Dimensions

- Residential cultural responsive and home planning and design.
- Improve the aesthetics, diversity and cultural sophistication of the built environment and residence.
- Helps the community's creativity (ie through facilities, affordable sports, cultural and entertainment facilities.
- Helping the shifting of slum communities to decent shelter or multifamily housing.

From the above theory got the variables for the questionnaire are: entertainment facilities, sports facilities.

4. Economic Dimension

- Ensuring housing affordability for different social groups.
- Provide adequate shelter to improve labor productivity and ensure housing teringrasi with work.
- Support domestic and corporate economic activities.
- Housing and maintenance management.
- Strengthen housing resilience.

From the above theory got the variables for the questionnaire are: dining facilities, shopping facilities, cheap rental.

In this research, the sustainability aspect focuses on the preference of industrial workers to the apartment houses in the industrial area.

C. Preference Theory

Preferences relate to behavior, perceptions, responses, and responses in decision making on some alternative options (Triyuly, 2005). Housing preferences relate to a priority scale where low-income communities place greater importance on the location of housing close to their workplaces than land tenure and housing quality (Turner, 1972, 166-168). From the theory, the variables for questionnaires are: location near workplace, quality of house / building.

Decisions on location are often linked to the characteristics of occupancy, status, prestige, social homogeneity, greening, topography, and views, security, good schools, and the application of environmental and social character (Rapoport, 1977). The quality of the housing environment depends on availability that includes the availability of location, environment and home. The quality of the housing environment is determined by accessibility factors, the achievement (transportation) and distance to the municipal facilities, the arrangement of the housing environment which includes the arrangement of physical and social conditions as well as the settlement with house planning taking into account the use of construction, model

and availability of home facilities (Rappoport, 1977). From the theory, the variables for the questionnaire are: location, green environment, green open space facility, security from thieves, safe environment, near school, school facilities, friendly neighbors, by public transportation, close to the city center, physical house building, Availability of facilities, home building model.

Man as a civilized being, always changing and looking for a new form of his place of residence. Kenginan always wants to have a house with cheap price and luxurious facilities. Environmental factors also affect the election where humans live. Tranquility, proximity to the city and facilities or infrastructure becomes the dominant choice. In addition to comfortable environmental conditions, friendly and friendly neighbors are also an option (Kuswanto, 2005). From the theory, the variables for questionnaires are: the factor of cheap rent, the availability of facilities, the state of the environment, the quiet environment, near the city center, close to infrastructure, comfortable environment, friendly neighbors.

Environmental factors are also a consideration in choosing a residential location according to (Bourne, 1982) are:

- Accessibility to the city center: major highways, schools and recreation areas.
- Physical characteristics and settlement environment: road conditions, pedestrian, road patterns and tranquility.
- Facilities and services: quality of utilities, schools, police and firefighters.
- Social environment: socioeconomic, ethnic and demographic composition.
- Characteristics of house site: land area, building area, number of rooms and maintenance cost.

From the theory, the variables for the questionnaire are: the surrounding environment, location, near the city center, near the main road, near the school, entertainment facilities, physical house, quiet environment, availability of facilities, home quality, school facilities,

Criteria affecting site selection (Catanese, 1996):

- Law and environment, building permit, parking requirements, maximum height of building.
- Means, requiring installation of water, electricity, drainage network.
- Location, accessibility, bypassed public transport.
- Aesthetics
- Society, traffic congestion and noise.
- Service facilities, garbage disposal, and schools.
- Cost

From the theory, the variables for the questionnaire are: environmental condition, water flowing smoothly, natural lighting, natural air, clean sanitation, location, public transportation, home model, quiet environment, availability of facilities, routine waste disposal, school facilities, cheap.

III. RESEARCH METHODOLOGY

This research is a descriptive quantitative research to get the order of importance of the preference of industrial workers to live in worker's apartment house in industrial area. This research was conducted in Rungkut, Surabaya, Indonesia which is the largest industrial area in Surabaya.

Methods of data retrieval is done by distributing random sampling to industrial workers with low income level living in Rungkut area. The number of respondents in this study were 162 respondents.

From the literature review on preference and sustainable flats as well as observing the needs of today's society, we get 38 variables which are then grouped into 5 groups that have proximity to facilitate in conducting research and data processing.

Results of data generated from questionnaires are then tabulated and analyzed by descriptive quantitative method with SPSS program using factor analysis to get priority order preference of workers in choosing flats as residence.

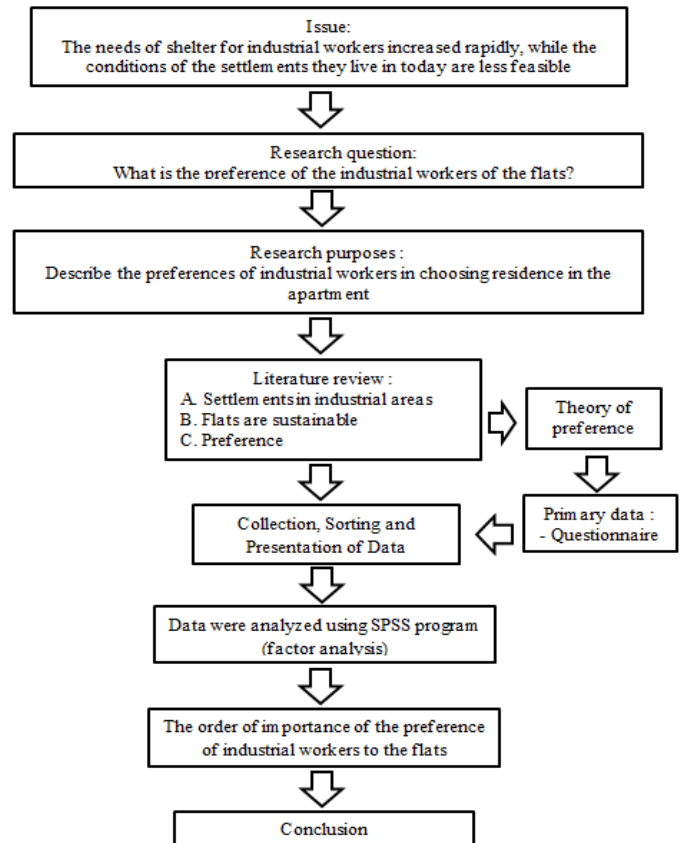


Figure 1. The Research Flow
 Source: Author, 2017

VI. OVERVIEW OF STUDI OBJECTS

The study area that became the case in this research is Rungkut Sub-district, Surabaya City, take the village area in Kalirungkut village. The study area was chosen because it is a residential area located in the largest industrial area in Surabaya, namely SIER (Surabaya Industrial Estate Rungkut). So that the settlements in Rungkut many of which become rental occupancy. But the increasingly crowded housing conditions make the housing complexes unsustainable.

The administrative boundaries of Rungkut Sub-district are:

- North : Sukolilo District
- East : Penjaringan Sari Sub-district
- South : Gunung Anyar District
- West : Tenggilis Mejoyo District

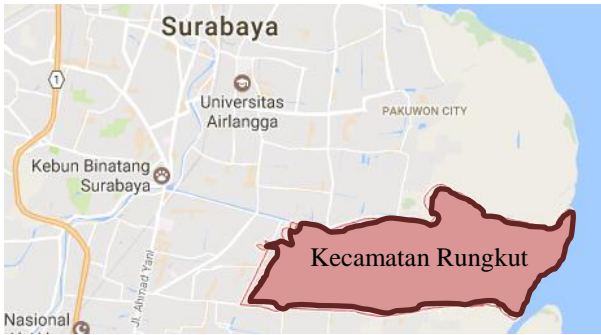


Figure 2. Map of district Rungkut, Surabaya
Source: author, 2017



Figure 3. Environmental conditions of settlements Rungkut,
Source: author, 2017

There are many rental houses in Rungkut village, with various forms and condition of boarding house. Some have private bathrooms and kitchens, some are not, some have vehicle parking spaces, some do not, some have existing terraces that are not. The location was different there is apart in the access of 4 wheeled vehicles that can only be accessed by a 2-wheeled vehicle. Type or area of this rental room also varied, ranging from 3x3 meter size to 3x6 meters.



Figure 4. The condition of rental housing in Rungkut, Surabaya
Source: author, 2017

V. RESULTS AND DISCUSSIONS

Factor Analysis

From the theory of preference generated 38 variables of preference to flats, to facilitate then the variables are grouped into 5 groups that represent the variables in it. So in doing factor analysis done based on groups that have been formed, and after done factor analysis using program of SPSS from group there is fixed in one factor, there are become 2 factor and 3 factor (table.1). From all factor analysis done there is no reducing factor.

Rating percentage of importance as follows:

- Level of interest 75.01% -100%: very important
- Level of interest 50.01% -75%: important
- Level of interest 25.01% -50%: not important
- Level of interest 0% -25%: very unimportant

No.	Variable Preferences	Percentage of interests
1.	Location	36,4%
	Factor 1 :	
	1. Near the educational facility	82,4%
	2. Close to the workplace	72,7%
	3. Close to downtown	72,7%
	4. Close to family	71,7%
	5. Close to the main road	70,9%
	6. Close to the hospital	68,6%
	7. Near the shopping center	57,8%
	Factor 2 :	
	1. By public transport	62,8%
2.	Building Quality	24,1%
	Factor 1 :	
	1. Routine waste disposal	83%
	2. Natural penghawaan	81,9%
	3. Clean water flows smoothly	81,6%
	4. Natural Lighting	77,8%
	5. Clean sanitation	77,3%
	6. Cheap rental rates	72%
	7. Security from thieves and CCTV	64,9%
	8. Personal power meter	64,6%
3.	Environmental conditions	22,8%
	Factor 1 :	
	1. Healthy environment	91,4%
	2. Environment is safe	89,8%
	3. Clean environment	88%
	4. The environment is calm	82,9%
	5. Green environment	80,4%
	6. Friendly neighbors	77,3%
4.	Physical building	9,3%
	Factor 1 :	
	1. There is a private Kitchen	78,5%
	2. There is a private bathroom	75,5%
	3. There is a private balcony	71%
	4. The size of the room is spacious	71%
	5. Number of rooms in flats unit	70,3%
	6. Material material materials	69%
	7. Model of flats units	64,5%
5.	Availability of supporting facilities	7,4%
	Factor 1 :	
	1. Outdoor green / garden facilities	70,9%
	2. Shopping facilities	68%
	3. Educational facilities	67,8%
	4. Facilities of worship	66,7%
	5. Dining facilities	65,9%
	6. Entertainment facilities	56,7%
	7. Facilities gathered	55,8%
	Factor 2 :	
	1. Health facilities	64,7%
	Factor 3 :	
	1. Sports facilities	53,5%

Table 1. The order of variables of the flat housing preferences of the industrial workers with the lower middle income level
Source: author, 2017

So it can be said that all the variables of the flats' preference have the importance of "very important" and "important" for industry workers to live in flats to support their activities.

VI. CONCLUSION

The result of the research which can be concluded is the order of preference of the flats based on the importance of the industrial workers with the middle to lower income level is the location, the quality of the building, the condition of the surrounding environment, physical building and the availability of supporting facilities.

The results are consistent with Turner's (1972) theory, which states "Housing preferences relate to the scale of priorities in which low-income communities place greater importance on the location of housing closer to their work than land tenure and housing quality", but in this study low-income communities are limited On industry workers.

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