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Interiority Study: Quality of interior rental flats desired by low-income communities in urban areas

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Abstract
Objective: to identify what interiority looks like and the interior quality (flexibility and adaptability) of rental flats, and to find out the residents' actions to overcome it. Method: descriptive qualitative to understand social reality. Results: Interiority: The concept of interior flexibility is that there is no change in vertical partitions, horizontal planes, and levels, and the flexibility of furniture in type and use is flexible. Adaptation concept: spatial adaptation, communal space, privacy space, condition, and aesthetics. Conclusion: Interiority and interior quality in the interior of flats can be used to create vertical housing that is efficient, affordable, safe, and supports communal living.

Keywords: Interiority; interior; quality; flats

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1.0 Introduction

City development is always in line with population growth. Population growth has spatially severe consequences, namely the need for land as a place to live. The current situation is that many people need help to afford to live in decent houses, especially in areas around urban areas. This can result in the emergence and formation of slum areas. The construction of flats is expected to encourage urban development and improve the quality of settlements on limited land.

According to Lawi (2018), collective housing problems at the apartment building scale: the building is too monotonous; there is a lack of natural light and air circulation; units are small and crowded; there are Inflexible units, narrow and long corridors, there is a lack of collective space, far from health facilities, far from active facilities, far from educational facilities. Lack of green open space. Simple rental flats that have been established and used in DIY include Rusunawa Cokrodirjan Kodya Yogyakarta (R1), Rusunawa Bener Kodya Yogyakarta (R2), Rusunawa Graha Bina Harapan Kodya Yogyakarta (R3), Rusunawa Mranggen Gedung Hijau Sleman (R4), Rusunawa Dabag Sleman (R5), Rusunawa Gemawang Sleman (R6), Rusunawa Tambak Projotamansari 2 Bantul (R7), and Rusunawa Tuksono Kulonprogo (R8).

Research problem formulation: What are the interior flexibility problems of residential units in simple rental flats (rusunawa) in Yogyakarta? What adaptations do residents of Rusunawa in Yogyakarta make to overcome flexibility problems?

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The research aims to identify the interiority; flexibility and adaptability of the interior of residential units in rusunawa in Yogyakarta, and find residents' actions to overcome these problems.

2.0 Literature Review

2.1 Interiority

Interiority, or the quality of interior space, is the concept of limitation and openness, both physically and culturally. Physically, interiority is the product of boundaries; culturally, it implies the presence of others, or the outside, to create the conditions that make it inside. The presence of the exterior demands a relationship between what is outside and what is inside. Design professionals work with interiority as a space created and conditioned by the exterior by the building's walls, form, or skin.

According to Cindy Coleman (2002), interiority, or the quality of interior space, is a concept of boundedness and openness, both physically and culturally. Within boundaries, interiority is created, but culturally, it requires the other, or exterior, to create the conditions that make it inside. Interiority, or the quality of interior space, is the concept of limitation and. openness, both physically and culturally. Physically, interiority is the product, while culturally, boundaries imply the presence of the other, or the exterior, to create the conditions that render it inside. According to Nickvdleek, the definition of interiority is as follows: 1). interior quality or character, and 2). inner life or substance: psychological existence. Interiority/interiority is the quality or character of interiority and inner life or substance: psychological existence (https://www.instagram.com/nickvdleek/p/Bolx_96FrTG/).

Interiority is an approach or concept that creates a quality of space within a building. Designing interiority involves several aspects of the “experience of a five-space”, which can be done by Understanding the context (social, cultural, and history of the space and the user). It helps create a design that suits and reflects the user by considering the context, social, cultural, and history of the space and its occupants. Representing subjective life by also focusing on the inner lives of users, not only focusing on aesthetics, creating a sense of boundedness and openness to create a sense of comfort and openness for the user, Considering the relationship between space and activity by creating functional spaces that encourage specific activities and roles, and incorporating sustainable and progressive design. It is essential to consider the environmental impact on users' welfare (Ionescu, 2018).

Interiority is a spatial concept and a union between body, mind, and space. The presence of the self creates a sense of comfort and user interaction with the space to carry out the best possible activities. Interiority becomes important when behavioural issues are ddressed. Interiority can be defined as the thoughts, feelings, and reactions of character struggles and how we behave. Interiority in Rusunawa housing refers to the optimal interior design and layout to create a comfortable and functional space for the occupants. Interiority is how interior design elements such as lighting, colour, texture, and furniture interact and create a pleasant atmosphere in the flat. A successful interior design will consider factors such as efficient use of space, good organisation, and occupant comfort as top priorities. The flats' interiority can create an inspiring and relaxing environment by considering the occupants' needs and preferences.

A house is an activity system. Any change in the use of the house, occupant and physical needs, and cultural environment requires a flexible system to adjust according to the changes. In general, flexibility is the ability and potential of a building to change, adapt, and reorganise itself in response to change (H. Estaji, 2017). Typically, researchers and architects use “flexible” for physical changes and “adapt” for non-physical changes. Steven Groak (1944-1998) defined “adaptability as the ability of different social uses and flexibility as the ability of different physical arrangements”.

Flexibility is the ability and potential of a building to change, adapt, and reorganise itself in response to change (H. Estaji, 2017). According to Carmona et al. (2003), the concept of flexibility is temporary and can change according to the needs of user activities. The flexibility of space is studied on the temporary nature that can be seen from three aspects of the temporal dimension: time cycle and time management, continuity and stability, and implementation over time.

Flexibility is defined as the ability to adjust. Flexibility can mean adjusting the space by utilising one or more of its functions in a space. Flexibility of space use is also a characteristic of the possibility of using a space for various properties and activities, and it can be done by changing the arrangement of space as needed without changing the order of the building.

Flexible buildings can accommodate occupants' activities and allow for changes. One factor popularising flexible architecture is the development of human creativity to meet people's needs better. “Where functional problems have necessitated a responsive, built environment, flexible architecture has formed at least a part of the solution” (Kronenburg, 2007).

According to Toekio (2000), there are three concepts of space flexibility in applying flexible space elements: 1) Expansibility: design spaces that can accommodate growth through expansion as needed; 2) Convertibility: the space design allows changes in orientation and atmosphere without significant overhauls; and 3) Versatility: the flexibility of a multi-functional container to accommodate multiple activities at different times. Emamgholi's theory (2011) mentions three main points that focus on interiors: 1) Flexibility in vertical partitions; 2) Flexibility in horizontal plots and levels; and 3) Flexibility in furniture.

Adaptability is the ability to use different social media, and flexibility is the ability to use different physical settings (Steven Groak, 1944–1998). Over time, changes to buildings are inevitable. Changes in buildings occur due to adjustments between building occupants and their buildings. When building changes benefit occupants, they are positive. Generally, buildings change because they adapt to their surroundings. As Robert Kronenburg stated, "Architecture designed for adaptation recognises that the future is not finite, that change is inevitable, but that a framework is an important element in allowing that change to happen” (Kronenburg, 2007).

Buildings do not experience the same changes; the degree of change depends on the building type. Commercial, domestic, and institutional buildings experience different levels of change. 1) Commercial buildings are buildings for commercial purposes, such as shops, offices, and shopping centers. Commercial buildings adapt quickly. Therefore, commercial buildings often change and are often

called 'forever metamorphic'. 2) Domestic buildings are residential buildings, such as houses and apartments. Changes in domestic buildings are usually stable and not as drastic as in commercial buildings. 3) Institutional buildings are intended as educational institutions, such as schools or campuses. Changes rarely occur in institutional buildings; changes are sometimes avoided so that the system that runs in it does not experience chaos because changes in institutional buildings concern the interests of many people (Brand, 1994). "*Adaptable buildings are intended to respond readily to different functions,* patterns of use, and specific user's requirements of the building" (Kronenburg, 2007).

Adaptable design is a strategy for responding to conditions where a building will not always be inhabited by a person or a group (family) only but by a group of other people who will inhabit the building in the future. With an adaptable architecture approach, the building has the potential to change sustainably. Buildings with adaptable character accommodate changes in the room's layout to respond to changes in the use of the building. This adaptability is based on the context of buildings being flexible to building-use changes. "A room can have many functions simultaneously or at different times." A multi-functional space that can accommodate several activities in one room is a strategy to fulfil adaptable architecture. By providing multi-function spaces, different activities can be done in one room; "the multi-functioning room is a truer answer to modern architecture's concern with flexibility" (Venturi in Lang, 1987).

2.2. Interior

Interior design is the art of building functional and aesthetically pleasing interior spaces. Its essence is the reality of built space that can foster an excellent dialogic atmosphere between humans as users and the space itself.

Definition of interior design from several sources:

1. According to Ching (2002), interior design is planning a building's layout and space to develop the room's function, aesthetic enrichment, and psychological enhancement.
2. According to Standard (1995), interior design is a system or way of organising inner space that can meet the requirements of comfort, safety, and satisfaction of physical and spiritual needs for its users without neglecting aesthetic factors.
3. According to Ching (1996), the scope of interior design includes interior forming elements: floors, walls, partitions, and ceilings; transition elements: doors/main entrance and internal doors and windows; and space-filling elements: furniture and aesthetic elements/accessories.

2.3. Rusunawa

Simple rental flats (Rusunawa) are multi-story buildings built in an environment divided into functionally structured parts in horizontal and vertical directions. They are units, each used separately. The ownership status is leased and managed by the local government and built with APBN or APBD with the primary function of housing (Permenpera No.18/permen/M/2007 concerning Rusunawa Management).

There are two types of runaway: low-rise and high-rise. Regulation of the Minister of Public Works Number: 05/Prt/M/2007 on Technical Guidelines for the Construction of High-Rise Simple Flats defines a High-Rise Rusunawa is a simple flat building with more than eight floors and a maximum of 20 floors. Rusunawa is for low-income people, so the development targets include rusunawa for TNI / POLRI, rusunawa for workers, and rusunawa for boarding education.

3.0 Methodology

This study used a descriptive-qualitative method. A qualitative approach is better able to understand social reality in depth. Reading problems in society or social reality is seen through the five senses and must be listened to and researched through understanding and interpretation (Creswell, 2008). This exploratory research aims to provide various information about flexibility and adaptability problems according to Rusunawa residents in Yogyakarta regarding changes in housing needs.

1.1. Data collection technique

Data was collected through interviews with residents of Rusunawa in Yogyakarta. Respondents were asked open questions to obtain diverse data. Questions were divided into three groups, namely: 1) personal data of respondents; 2) the description of the interior flexibility problem of residential units; and 3) adaptations made by flat residents in Yogyakarta to overcome flexibility problems. The units of observation are 1) flexibility, namely flexibility of vertical partitions, the flexibility of horizontal planes and levels, flexibility in furniture, and 2) adaptation of flat residents seen from activities and time.

1.2. Sample selection technique

This research's respondents were residents of flats in Yogyakarta. Respondents were selected using a snowball sampling technique, namely rolling from one respondent to another (Neuman, 2003).

1.3. Data analysis technique

This research has two units of analysis: 1) flexibility: physical changes, and 2) adaptability: non-physical changes. This research focusses on the flexibility seen in the interior elements of residential units, which can change according to the time and activities of the flat residents.

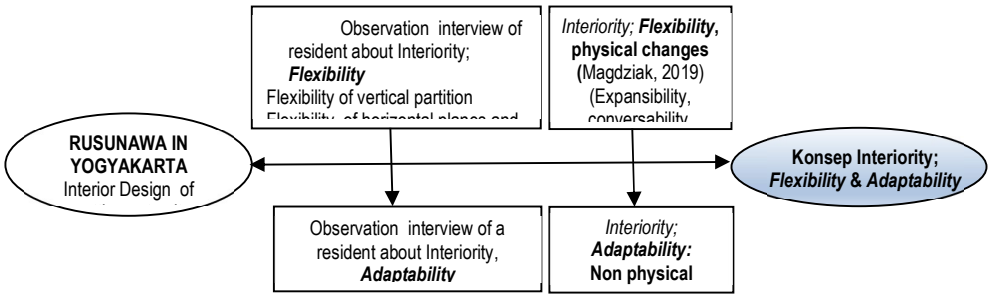

Fig. 1: Research roadmap chart
(Source: Author, 2023)

4.0 Findings

4.1 Typology of residential units in Yogyakarta's rusunawa:

1. Type 24 residential unit; a) has 1 bedroom. (R1, R3, R4), b) has a family room integrated without walls with the bedroom (R1, R3, R6), c) has a separate living room with a bedroom (R4), d) having 2 bedrooms, one of which is a living/family room (R7).
2. Type 36 residential unit; a) has 2 bedrooms (R2, R5); a) has 1 bedroom and a living/family room integrated with an additional bedroom (R8).
3. Furniture in residential units in Yogyakarta rusunawa: a) Tenant-owned, R1, R3, R4, R5, R6, R7, b) Provided by the rusunawa, R2, R8.

4.2 The concept of flexibility in the interior of residential units in Yogyakarta's rusunawa:

1. Flexibility in vertical partitions; a)There is no change in vertical partitions in the rusunawa residential units because there is a regulation about not allowing tenants to change residential units with partitions (R1, R2, R3, R4, R5, R6, R7, R8), b) In Rusunawa Cokrodirjan (R1), tenants use curtains as non-permanent insulation, c) The walls between rooms are made of 6 mm plywood (R7).
2. Flexibility in horizontal planes and levels; a) Mats or carpets are rolled up when not in use. If there are guests or gathering or sleeping activities, mats/carpets are spread out (R3, R4, R5, R6, R8), b) Expansion of clothesline to the corridor as an adaptation because the balcony has no sunlight penetration (R1, R5), c) Expansion of goods into the corridor as a place to store sandals/shoes or others (R2, R4).
3. Flexibility in furniture; a) Furniture is used as a partition between public and private zones (R1, R5, R6), b) Furniture is not yet multifunctional (R1, R2, R3, R4, R5, R6, R7, R8). Multifunctional activities have not been supported by multifunctional furniture. In the general zone in the living/family room, namely the area to receive guests and gather only using mats/carpets and additional activities to sleep using mattresses that are propped up when not in use, c) Bunk beds are provided by the flat but are not multifunctional and are large (R2, R8). Tenants use push mattresses to save space (R7).

4.3 Adaptability by residents of Rusunawa in Yogyakarta to overcome flexibility problems

In general, the activities of rusunawa tenants in residential units are; a) Bedroom: sleep, change clothes, make up, pray, b) Bathroom: MCK, c) Living room and family: working, entertaining guests, watching television, relaxing, family gathering, d) Kitchen: preparing, mixing, serving, washing dishes, e) Balcony: drying and washing clothes, f) Corridor/terrace: receiving temporary guests.

4.4 Time-related residential activities in residential units in Yogyakarta rusunawa:

1. Spatial adaptation to a narrow space layout; a) rest/sleep activities usually in the private zone (in the bedroom) are also carried out in the public zone (living/family room) at night as an adaptation of tenants due to limited additional sleeping space. Mattresses are propped up during the day when not in use (R3, R4, R5, R6, R7), b) eating activities in the living/family room (R4, R5, R7), c) food preparation activities in the bedroom (R2), d) work area activities in the living/family room (R4, R7, R8), e) storage activities in the living/family room (R3, bedroom (R2, R4, corridor (R1), F0 additional drying activities in the bathroom (R6).
2. Adaptation to communal spaces: Residents occupy communal spaces, consisting of the corridor in front of the residence, the hallway near the stairs and the ground floor (R1).
3. Adaptation to limited privacy space: partitioned with curtains (R1), furniture (cupboard/credenza) (R5).
4. Adaptation to space conditions: The activity of sunbathing clothes is done in the corridor if the balcony is not exposed to sunlight in the morning/afternoon (R1, R5).
5. Adaptation of space aesthetics: Greening in the corridor in the form of small plants as greenery (R5). Time-related residential activities in residential units in Yogyakarta rusunawa:
6. Spatial adaptation to a narrow space layout: a) rest/sleep activities usually in the private zone (in the bedroom) are also carried out in the public zone (living/family room) at night as an adaptation of tenants due to limited additional sleeping space. Mattresses are propped up during the day when not in use (R3, R4, R5, R6, R7).b) eating activities in the living/family room (R4, R5, R7). c) food

preparation activities in the bedroom (R2). d) work area activities in the living/family room (R4, R7, R8). d) storage activities in living/family room (R3, sleeping room (R2, R4, corridor (R1), e) additional drying activities in the bathroom (R6).
7. Adaptation to communal spaces: Residents occupy communal spaces, consisting of the corridor in front of the residence, the hallway near the stairs and the ground floor (R1).
8. Adaptation to limited privacy space: blocked with curtains (R1), furniture (cupboard / credenza) (R5).
9. Adaptation to spatial conditions: The activity of sunbathing clothes is done in the corridor if the balcony is not exposed to sunlight in the morning/afternoon (R1, R5).
10. Adaptation of space aesthetics: Greening in the corridor in the form of small plants as greenery (R5).

The Interiority: the concept of space flexibility that can be in the residential units of Rusunawa in Yogyakarta:
1. Expansibility is a space design that can accommodate growth through expansion as needed. However, residential units do not allow horizontal and vertical expansion due to space limitations and manager regulations.
2. Convertibility: The space's design allows changes in orientation and atmosphere without a significant overhaul. Convertibility in residential units is through furniture layout as needed. The orientation and atmosphere stay mostly the same; only the space layout reduces the privacy level in the public zone, which is blocked by furniture.
3. Versatility is the flexibility of a multifunctional container to accommodate multiple activities at different times. Residential units can be versatile by optimising the function of multifunctional living rooms by adding eating, working, gathering, and resting activities at different times.

The concept of flexibility in the Rusunawa residential unit in Yogyakarta is the concept of convertibility and versatility applied to the space envelope elements.

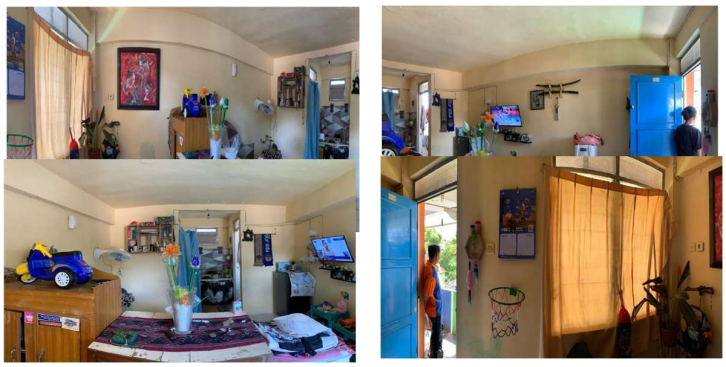

Fig. 2: Unit hunian tipe 24 m^2 di Rusunawa Cokrodirjan
(Source: Author, 2023)

5.0 Discussion

A flexible building can accommodate the activities of its occupants and allow changes to occur within the building. The development of human creativity to better meet their needs is one of the factors that later popularised flexible architecture. "*Where functional problems have necessitated a responsive, built environment, flexible architecture has formed at least a part of the solution*" (Kronenburg, 2007). Emamgholi's (2011) theory regarding the concept of flexibility in interiors, namely: 1) flexibility in vertical partitioning, 2) flexibility in horizontal plane and level, and 3) flexibility in furniture. A space's flexibility is defined as adapting one or more functions. Flexibility in the use of space means that a space can be used for various characteristics and activities. It can be done by changing the spatial arrangement according to needs without changing the layout of the building. There are two concepts of flexibility in the interior of residential units in Rusunawa Yogyakarta:

5.1. Flexibility in vertical partitioning

No changes are made to vertical partitions in flat residential units because regulations prohibit tenants from changing residential units with partitions (R1, R2, R3, R4, R5, R6, R7, R8).
a. In Rusunawa Cokrodirjan (R1), tenants use curtains/curtains as non-permanent partitions.
b. The walls between the rooms are made of 6 mm ply7).

5.2. Flexibility in the horizontal plane and level:

a. Mats or carpets are rolled up when not in use. If there are guests or gathering or sleeping activities, a mat/carpet is laid out (R3, R4, R5, R6, R8).
b. The clothesline was moved into the corridor because the balcony doesn't get sunlight (R1, R5).
c. Expanding items into the corridor as a place to store sandals, shoes, or other things (R2, R4).

5.3. Flexibility in furniture:

a. Furniture is partitioned between public and private zones (R1, R5, R6).

b. Furniture still needs to be multifunctional (R1, R2, R3, R4, R5, R6, R7, R8). Multifunctional activities still need to be supported by multifunctional furniture. In the public zone in the living room/family room, namely the reception and gathering area, only a mat or carpet is used, and a mattress that is propped up when not in use is used for additional sleeping activities. Flatbeds are provided in flats but are not multifunctional and large (R2, R8). Tenants use slide-out mattresses to save space (R7).

Residential activities related to time in residential units in *Rusunawa* Yogyakarta:

a. Spatial adaptation to narrow spatial layout:

1. Rest/sleeping activities usually occur in the private zone (bedroom). They are also carried out in the public zone (living/family room) at night as an adaptation for tenants due to limited additional sleeping space. The mattress is propped up during the day when unused (R3, R4, R5, R6, R7).
2. The activity in the living/family room (R4, R5, R7) is eating.
3. The activity in the bedroom (R2) is preparing food.
4. Work area activities in the living/family room (R4, R7, R8).
5. storage activities in the living/family room (R3), bedroom (R2, R4), and corridor (R1).
6. the activity of drying clothes in the bathroom (R6)

b. Adaptation to communal spaces: Residents occupy the communal space, which consists of the corridor in front of the residence, the hallway near the stairs, and the ground floor (R1).

1. Adaptation to limited privacy space: partitioned with curtains (R1), furniture (cupboard/credenza) (R5).
2. Adaptation to spatial conditions: If the balcony is not exposed to sunlight in the morning/afternoon (R1, R5), clothes-drying activities are carried out in the corridor.
3. Aesthetic adaptation of space: greenery in the corridor in the form of small plants as greenery (R5).

5.0 Conclusion and Recommendations

Interiority: The quality of flexibility and adaptability of interiors in residential units in rental flats in Yogyakarta, as well as the actions of residents in dealing with the interiority and the concept of interior design.

5.1. The Interiority: the concept of flexibility in the form of physical changes:

a. Flexibility in vertical partitions: The vertical partition in the dwelling unit does not change, but for non-permanent partitions, the occupants use curtains and plywood walls.

b. Flexibility in horizontal and level planes: Flat residents can use mats or carpets that are rolled up when not in use.

c. Flexibility in furniture: Furniture is also used as a room divider. Multifunctional furniture is not used in rooms that are already multifunctional. Residents' sleeping needs, sliding beds, and additional mattresses are used to save space. In addition, bed furniture is designed as a bunk bed that can be used as a storage area.

5.2. The concept of interior design adaptation to residential units in flats in Yogyakarta:

a. Spatial adaptation to a narrow space layout:

b. Residents rest in the living room/family room at night, which serves as an extra bed. If not used during the day, the mattress is propped up.

c. Residents' eating activities are in the living room/family room.

d. Food preparation activities are carried out in the bedroom

e. Work activities are carried out in the workroom.

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Paper Contribution to Related Field of Study

The fields of study related to this paper are interior design and architecture.

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