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MAPPING SETTLEMENT TYPOLOGIES AND BUSINESS FUNCTIONS IN YOGYAKARTA RIVERBANK AREA

PEMETAAN TIPOLOGI PERMUKIMAN DAN FUNGSI USAHA DI KAWASAN BANTARAN SUNGAI KOTA YOGYAKARTA

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ABSTRAK

Rumah tinggal memiliki fungsi sebagai tempat berhuni. Pada beberapa kondisi, hunian dapat bertransformasi menjadi ruang usaha maupun produksi yang dilakukan secara bersamaan. Ruang usaha atau ruang produksi membutuhkan persyaratan kenyamanan ruang, seperti standar minimal pencahayaan ruang. Namun kondisi permukiman yang padat memiliki keterbatasan dalam memenuhi persyaratan minimal pencahayaan. Hal ini akan berpengaruh terhadap tipologi ruang usaha yang menyatu dengan fungsi hunian. Penelitian ini merupakan bagian dari kajian kenyamanan visual atau pencahayaan pada ruang usaha. Tahap penelitian ini dilaksanakan dengan tujuan untuk melakukan identifikasi jenis-jenis hunian yang mengalami perubahan fungsi menjadi fungsi hunian yang sekaligus menjadi fungsi usaha pada permukiman yang padat seperti di perkampungan. Lokasi studi terletak di wilayah Kelurahan Suryatmajan Kota Yogyakarta pada kampung-kampung, yaitu: Ledok Macanan, Gemblakan Atas, Gemblakan Bawah serta Cokrodirjan. Identifikasi akan menghasilkan pemetaan yang memberikan informasi terkait tipe hunian dan usaha yang ditemukan pada lokasi studi. Metode penelitian yang digunakan adalah deskriptif-kualitatif dengan pengambilan data melalui observasi lapangan, melakukan redrawing dari observasi, serta wawancara singkat kepada pengguna yang ditemui pada obyek amatan. Hasil yang ditemukan pada studi ini adalah 6 tipologi hunian dan ruang usaha yang cukup sering ditemukan pada empat kampung di atas.

Keywords: *bantaran sungai; fungsi bisnis rumahan; kenyamanan pencahayaan; permukiman perkotaan; ruang produksi.*

ABSTRACT

A residential property functions as a place to live. In some conditions, a residential space can be transformed into a business or production space simultaneously. Business or production spaces require indoor comfort, such as the minimum standards for indoor lighting, which can be challenging to achieve in a dense residential area. This affects the typology of business space, which is integrated with the residential function. This research is part of a study of visual comfort or lighting in workspaces or business spaces. This research aims to identify types of dwellings that have changed from residential to business functions in dense settlements such as urban kampungs or villages. The study is in the Suryatmajan subdistrict in Yogyakarta City, including the urban villages of Ledok Macanan, Gemblakan Atas, Gemblakan Bawah, and Cokrodirjan. The identification will produce mapping that provides information regarding the types of residences and businesses found at the study location. The method used is a descriptive-qualitative study, which collects data through field observations, redraws from observations, and short

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interviews with residents of the study location. The study found six typologies of residential and business space commonly found in the four urban villages in Yogyakarta..

Keywords: *home-based business function; production spaces; riverbanks; densely urban settlements; visual comfort.*

INTRODUCTION

Urban development influences the changes in the morphology and typology of urban settlements. The formation of the city's spatial structure is influenced by changes in city morphology in line with existing economic, political, and socio-cultural developments [1], [2]. Several urban morphological factors that influence the formation of urban spatial structure include land availability, infrastructure, accessibility, settlements, population, and road patterns. Suryatmajan Village, the study location, is east of the Malioboro tourism and business area. The development of Malioboro as a tourist and business area has also impacted on the development of the surrounding villages, including kampungs in the Suryatmajan area. Providing tourism-supporting infrastructure requires the involvement of many tourism actors, from tourism services to culinary, souvenirs, and accommodation. There has been a change in the city's morphology driven by the development of tourism-supporting businesses [3], [4]. Villages around the Malioboro area are slowly undergoing this morphological and typological transformation. One form of transformation carried out is adjusting the function of the residence, which also functions as a business space, production space, and workspace [1], [5], [6], [7]. Adaptation of this function is carried out as a direct impact on the economic fulfillment of the community as well as efforts to improve the welfare of residents [6], [8] living in villages around the Malioboro area.

A house that also functions as a place of business is often defined as home-based enterprises (HBEs) [1], [9], [10]. Residential houses that combine daily activities with business activities are also called productive houses [11]. Home and business functions do not arise alone but rather because of driving factors such as culture [2], health, and the economy [1]. Adapting a residence to a business function is divided into three types [9], [5]: sharing of space, extending of space, and shifting of space. Sharing adaptation focuses on adapting space and furniture that can be used together for daily and business activities. Extending adaptation focuses on adding space explicitly used for business space, while shifting adaptation focuses on space and furniture that can be used interchangeably [1], [12]. A previous study by Wiyatiningsih [11] identified patterns of occupant adaptation from domestic to production space during the pandemic in a residential area in Cangkringan, Sleman. The findings indicated that the spatial changes resulted from the adaptation process during the pandemic. Business activities began to occupy many domestic spaces at home, and there were also impacts from changes in economic activity during that period.

Additionally, other adaptations were a result of implementing health protocols. When comparing the strategy of health protocols with this research, it appears that economic aspects, leading to residential owners primarily influenced the changes in space function to modify the function of their residential space. Natural lighting was also identified as a critical factor driving business and residential space layout changes.

Changes in the function of a residential house will impact the necessary adjustments [10]. Rooms previously in the domestic realm have become spaces more open to changes in economic dynamics within the family, such as workspaces, business spaces, and production spaces [13], [14]. Residential comfort has different standards than comfort for work functions [15]. For example, a room that functions as a living or family room have different visual comfort standards from a bakpia (small round-shaped Indonesian pastries) production room or a gas stove service work room. The lighting quality is one factor that influences the adaptation process for a productive home. According to [15], lighting greatly influences production activities. Poor lighting

quality can tire eyes quickly and cause work accidents. Several factors that can influence the quality of lighting that support productive activities include building design, space dividing materials, furniture, and the openings in the building [15]. Indoor lighting that is not planned correctly will interfere with vision and reduce the users' productivity [15], [16]. Therefore, visual comfort should follow established principles, one of which is the optimal use of natural light [16]. The principle of utilizing natural light is applied to realize work effectiveness and productivity, including energy savings in residences and residences with particular work areas. Light that is not optimal can hurt the visuals of people who have activity in it, such as decreasing concentration, getting tired quickly, increasing the risk of errors, increasing the risk of work accidents, and decreasing work productivity [16], [17], [18]

When transforming a residential house into a business or production space, it is necessary to make adaptations, adjustments, or accommodations for comfort, such as meeting minimum room lighting standards [19], [20]. However, densely populated residential areas may have difficulty meeting these minimum lighting requirements. The minimum lighting in indoor rooms will affect the design of business spaces integrated with residential functions. This study focuses on visual comfort and lighting in residential and business spaces [21], [22]. Field observations were conducted to measure lighting intensity, identify activities, redesign the layout of spaces, and observe the arrangement of objects. The goal is to understand how natural lighting influences the transition or addition of residential functions to economic functions [3]. This research aims to identify the types of housing changing their function and the alterations in residential houses that also serve as business functions in densely populated areas such as urban kampungs.

METHOD

The research is conducted in a densely populated residential area near the Malioboro tourism and business district, Suryatmajan Kampung, part of the Kapanewon Danurejan in Yogyakarta City, Indonesia. Suryatmajan Kampung has a total area of around 0.35 km^2. Most residents work as traders, small business owners, and employees. The study area includes Ledok Macanan, Upper Gemblakan, Lower Gemblakan, and Cokrodirjan villages. This area is located on the east side of Jalan Malioboro, with Jalan Mataram to the west and the Code River to the east (see Figure 1).

In the initial phase of this research, the main goal is to thoroughly observe all houses in the four villages that also function for productive purposes. Houses that function as homestays or accommodations are excluded to ensure the study's focus. This exclusion is because of the similarity in activities and functions between homestays, lodgings, and residential homes, which do not indicate differences in the need for visual comfort or lighting.

Field survey activities begin by initially identifying the research location. First, we used Google to pinpoint the research area. Then, we divided it into two sections: the villages east of Jalan Mataram Yogyakarta and the area west of the road. This division makes planning and conducting field surveys easier for our field research team. The next step is identifying residences that also serve as business spaces. Based on the criteria provided before, the study objects were chosen.

Figure 1.
Research location in the Suryatmajan sub-district area
Source: googlemap and modified by author (2024)

This research employs a descriptive-qualitative approach. Data is collected through field observations, redrawing objects of observation, and conducting brief interviews with the residents. The object of observation is a residential unit or dwelling that has experienced a change in function for a business activity, which includes a production space, business space, workspace, or workshop room, while still functioning as a residential. The research limitations include defining residential typologies using field observation data and then characterizing the typologies' attributes. The typology that resulted in research findings was then studied to identify types of residential buildings that simultaneously function as businesses. Changes in a residential building will indicate lighting needs that follow activity needs. Differences in light intensity suggest that visual comfort in productive spaces needs further research.

Lighting requirements for general and rough work will differ from the standards for special lighting requirements or types of work requiring detail. For example, a house that also functions as a grocery store will have lighting demands different from a tailor's. The research stages are as follows (see Table 1).

Tabel 1.
Research Stages

Stages	Activities	Objectives	Methods	Expected findings
Stage 1	Initial identification of research location	Determining suitability of research location with research objectives	Checking local government documents (RPJM) and Google map	Location of study villages around tourism and business supporting areas
Stage 2	Creating indicators for observation objects	Obtaining a house typology that doubles as a place of business	Team discussion, making a list of criteria and matrix	Researcher produces a list of indicators for observation objects in the field for major observations.
Stage 3	Study location survey	Conduct field checks	Field surveys, interviews with community leaders/residents, and discussions	Villages around the Malioboro area
Stage 4	Observe and document the object layout.	Identifying residences with business space functions.	Field surveys, observations, brief interviews, and sketches of objects under observation.	Identified houses that also serve as business spaces, as well as field sketches directly on site. Later it will produce digitalized data.
Stage 5	Digitizing sketch results of observed objects	Making sketch documentation into digital data for analysis	Using Sketchup software	Redrawing sketches in the form of digitalized and measurable data files
Stage 6	Analysis of findings.	Knowing the typology is found based on indicators.	Classification of findings from sketch or digital data.	Analyzing of the results of findings

Source: Author (2024)

The research was conducted in six stages (Table 1), beginning with (1) location identification, (2) creating assessment indicators for objects of observation, (3) conducting location surveys by making observations, (4) observing and documenting through photos and sketches, then (5) digitizing raw data from sketches using Sketchup, and finally (6) data analysis.

RESULTS AND DISCUSSION

This study revealed several innovative ways to repurpose housing units. These typologies, derived from field research using sketches and photographs, offer valuable insights into the potential for adapting housing to other functions. Interviews were conducted with residents and business space users. The interviews showed that 21.7% of building users had been doing business for 3-5 years, 23.9% of building users had been doing business for 1-3 years, and 21.7% had been in business for more than five years. This shows that some business space users are new, but some also said that the buildings they use existed long before they rented out part of their house for business space.

It is well-known that natural lighting is essential for certain types of businesses, particularly those outside residential areas. Businesses that use outdoor spaces, such as workshops and productive spaces, benefit greatly from natural light. Conversely, business spaces inside the houses rely heavily on additional lighting from lamps, mainly if they operate round the clock. An exciting discovery from the research interviews was that lamp lighting and natural sunlight are crucial for supporting work that demands precision, such as printing businesses or repair workshops.

Typology I: Business space outside the residential area.

The location of business activities is outside or in front of the house. Business space takes up space from the village road (see Figure 2). Lighting needed for working activity is provided by natural lighting because the position of the business space is outside the house building (village road).

Typology II: Business space and residence in one building.

The location of business activities is on a different floor from the domestic activities of the house. In this case, the business space is on the first floor, and the residence is on the second floor of the building. These two functions are in one building, connected using a stair. The business space covers half of the floor area on the 1st floor. Access to the residence is through the business space below. Since the business activities are in front of the house, the access to the house must be through the business space.

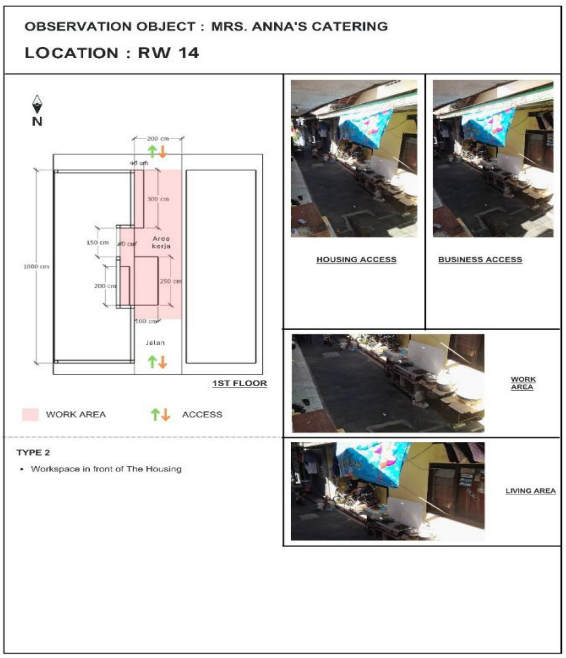

Figure 2.
Typology I: Outside the house
Source: field research (2024)

Figure 3.
Typology II: the business space inside the house, but on a split level.
Source: field research (2024)

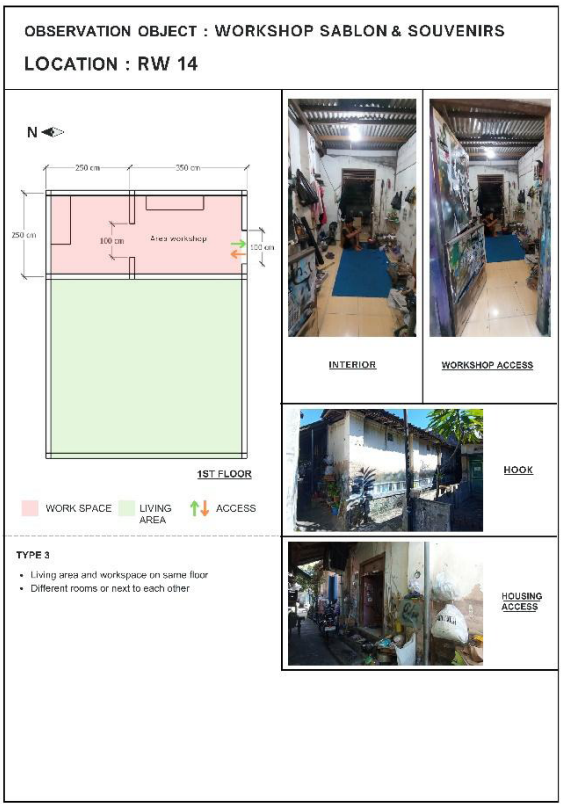

Figure 4.
Typology III: Business space is in front of the house; in the same building.
Source: field research (2024)

Typology III: The business space is located at the front of the residence and is part of the same building.

These two functions are in one building. Visual comfort really depends on light, even during the day. In the business area, there are no window openings that can provide sufficient lighting.

Typology IV: The business space and the residential area are still part of the same building.

In this typology, the business area is a section of the house's interior that doubles as a workshop space. Access to the workshop uses the same access to the residential spaces. Workshop activities require a certain level of visual comfort in lighting because they involve precision. Through field observations, it is revealed that lamps still operate during the day, indicating that lighting needs to be sufficient for thorough work activities like screen printing.

Figure 5.
Typology IV: Inside of the house; in the same building.
Source: field research (2024)

Figure 6.
Typology V: The business space is in front of the house, consisting of more than one type of business.
Source: field research (2024)

Typology V: The business space is in front of the house, consisting of more than one type of business.

The entrance to the residential part of the house is on a different side from the business space but is still connected from inside the building. The business space is almost half of the total floor area of the building. This type of business located in residential houses relies heavily on additional lighting. However, what is interesting about the interior space is the attempt to provide natural lighting through skylights from the roof/tiles.

Typology VI: Business space is located outside the house and inside the house.

This typology is unique because this type of business is carried out on the side of the village road, right next to the entrance to the stall business. This indoor business activity is equipped with lighting from the shop's front window but requires additional lighting on cloudy days. Business activities outside the home may not be carried out at night, so activities occur during the day in sunlight.

Figure 7.
Typology VI: Business space is located outside and inside the house.
Source: field research (2024)

CONCLUSION

This research identified six typologies of spatial adaptation in outdoor and indoor spaces due to changes in residential function. Social, economic, or cultural aspects can cause changes in the function of a residence. In the case of this research, changes in residential function are strongly influenced by economic aspects and social welfare. There is a need for spatial adaptation to adjust to these activity changes. Among the six typologies, similarities can be seen in business activities carried out outside and inside the home. Using outdoor space as business space by encroaching on the village road disrupts circulation and access for people passing by.

However, in the kampung context, this is considered understandable. This culture of mingling and socializing continues to be accepted even though the nature of the activity is an economic endeavor. Of the six typologies, interior comfort has not been given much attention. This shows that the process of adapting residential homes and business spaces has not considered the feasibility and adequacy of lighting. This is thought to cause the expansion of outdoor space as an overflow from activities inside the residence. Future research is needed to quantitatively measure the quality of lighting to produce a reference for the adequacy of lighting for workspaces or business spaces in densely populated urban areas.

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