

CHANGE ANALYSIS OF THE CULTURAL HERITAGE BUILDING FUNCTION AND FACADE IN KOTABARU, YOGYAKARTA, INDONESIA

Suparwoko^{1*}, Nur Ain Lagonah¹

¹*Department of Architecture, Islamic University of Indonesia, Indonesia*

ABSTRACT

The purpose of this paper is to analyze changes in the function and facade in cultural heritage buildings in Kotabaru, Yogyakarta. Kotabaru has been designated as a cultural heritage district (Governor's Decree No. DIY 186 / KEP / 2011 about the Cultural Heritage Region). Kotabaru closely related to the Dutch colonial era which was built in 1917 as a residential area. However nowadays, most of the buildings function and facade in Kotabaru has changed. This study looks at several residential blocks in Kotabaru area, namely Sabirin Street, Supadi Street, Sajiono Street, and Serma Taruna Ramli Street. Methods of data collection are literature study, observation, and documentation. A comparison table between the reference library and the condition of the building in terms of aspects and functions of the building's façade is performed in the analysis. Measurement of changes in the function and the building's facade is prepared by scoring scale Likert and images or graphics. The results show: 1) More than 50% of residential buildings turned into commercial functions, 2) Conversion of the facade of a lot going on, especially in Jalan Suroto, 3) Storefront commercial buildings is still dominated by the original, 4) Signs with small scale still dominates the building with presentations 40-50% and 20-25% whereas large scale. It can be concluded that the change in the function of residential-commercial building in a heritage building in Kotabaru will drive changes in the facade of the building. To support the preservation of the cultural heritage in the function of environmental changes Kotabaru necessary restrictions on the number and residential blocks to reduce the process of changing the facade of a residential building as a cultural heritage asset of the Kotabaru history in Yogyakarta, Indonesia.

Keywords: Building facades; Commercial; Cultural heritage; Kotabaru; Residential

1. INTRODUCTION

Population growth in Yogyakarta City has fluctuated from 2008 to 2013. The population in 2008 about 390.783 people and in 2009 decreased to 389.685 people. However, in 2013 the population increased into 402.709 people (BPS-Statistics of D.I. Yogyakarta Province, 2014). High of economic activities improve the growth of population in society. The increasing of economic can be seen by the growth of industry in this town. Type of industry trade and service are found such as restaurants, clothing stores, educational institution and so on. Economic development with limited land in urban areas resulted many heritage buildings use for commercial. Use of heritage building as commercial activities increasing. Kotabaru has been designated as one of cultural heritage area in Yogyakarta that consists of old buildings from Dutch's Colonial period (Gubernur Daerah Istimewa Yogyakarta, 2011). The old buildings that

*Corresponding author's email: wokosuparwoko@gmail.com

used to be for dwellings, now many of those use for commercial activities. In 1996 it was noted Kotabaru consists of 31 blocks with 269 houses (Umezu, 2001). As the area of land use and commercial services increased, which in 1936 amounted to 1.3%, in 1993 1.8% and in 2004 by 1.8%. Instead of land use as a function of housing has decreased in 1936 by 33.8% to 15.4% in 1993, and in 2004 to 11%, or about 4.34 ha (Yose, 2005). Facade can be regarded as a reflection of the characteristic of the building so as to describe the identity of a neighborhood. Changes in function lead to changes that also occur on the facade of the building. The condition of the building in 2004 showed that 28% of the original buildings, building additions to the original 26%, and a new building / modern 46%. Residential functions are still using 43% of the original building and the commercial functions that use the original buildings are 22%. The rest is the original building with the addition of new buildings (residential 27%, commercial 33%) and the whole is a modern building (40% residential, 69% commercial) (Yose, 2005). Changes that occur can be seen from the facade changes that alter the original form or even not at all according to the original form.

2. METHODOLOGY/ EXPERIMENTAL

The research method conducted a descriptive analysis which was supported by data collection through surveys and literature (Creswell, 1994). The survey was conducted on-site to see the function of buildings and facades. The literature used in connection with heritage buildings, the function of the building and the building's facade. All literature will guide the work for analysis part especially for the façade building.

2.1. Cultural Heritage

Cultural Heritage is immaterial form of objects of Cultural Heritage Buildings, Structures heritage, the heritage, and Cultural Reserve on land and/or water need preserved its existence because it has important value for the history, science, education, religion and or culture are preserved through the process of establishing (Gubernur Daerah Istimewa Yogyakarta, 2013). The preservation of cultural heritage including the authenticity of the building, administration building, the facade of the building, as well as the condition of the building (Pemerintah Daerah Istimewa Yogyakarta, 2012).

2.2. Function of Building

The function of cultural heritage buildings in Kotabaru generally as residential buildings which converted into a commercial buildings. A study in Kotabaru divided the area into seven blocks resulted that most of the residential building has been changed into commercial functions by the rise of economic activity (Wahyu, 2011). Some areas in Kotabaru changes the function of residential into commercial facilities where the original building or Indies turned into modern buildings, and open spaces were turned into offices and housing. (Yose, 2005).

2.3. Residential Building Facade

According to Design Guidelines for Residential Historic Districts (2013) by McKibben and Cooper Architects who did a case study on Boise's Residential Historic Districts: guidelines for the residential areas are included: 1) Mass and Form, design of the building retains the similarity of the building, roof shape, and a front porch in accordance with characteristic historical buildings and convey human scale. 2) Doors, Windows, Entrances, using an exterior wall material in accordance with other historical

buildings, and the texture of the material accordingly. 3) Roof, adding a new building with a roof that is associated with the overall size, shape, tilt, color, and texture of the adjacent roof in other areas of the region. 4) Trims and Details, using forms and architectural details that illustrate the history of the region's identity.

2.4. Commercial Building Facade

Design Guidelines for Commercial Historic Districts (2009) by McKibben and Cooper Architects who did a case study on Boise's Commercial Historic Districts which also outlines the direction of the commercial buildings in the historical district. Research on commercial buildings takes parameters of residential buildings, so that only a few guidelines are taken as follows. 1) Doors, windows, entrance, storefront, using the ratio of the wall in accordance with other historical buildings, windows and doors pattern corresponding primarily to other buildings. 2) Signage design is very important to give the identity that gives an overview on the history of the region. Parameters that needs of research on the building's facade are mass and form, roof, door pattern, pattern of windows, facade ornaments, and the material (paint). Additional parameters specifically for commercial buildings are storefront and signage.

3. RESULTS

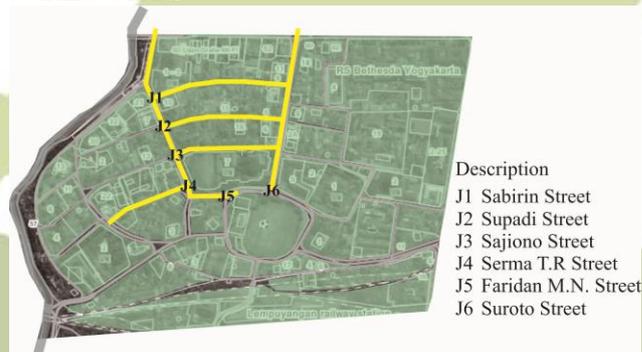


Figure 1. Research Location

The study was conducted on the buildings located in Kotabaru neighborhood, Yogyakarta. This study take several waypoints in Kotabaru, they are Sabiri Street, Supadi Street, Sajiono Street, Serma Taruna Ramli Street, Faridan M. Noto Street, and Suroto Street. The object of research are buildings located on either side of the street.

3.1. Typology of Building Function

Table 1 shows the change in building function in each street as the research location from early function in colonial era to modern era today.

Table 1. Analysis of Building Function in Kotabaru

Function	Streets						All
	Sabirin	Supadi	Sajiyono	Serma T.R.	Faridan M.N.	Suroto	
Early Function							
Dwelling	95%	100%	100%	90%	100%	94%	97%
Education	5%	-	-	10%	-	-	1%
Health	-	-	-	-	-	6%	1%
Current Function							
Dwelling	54%	70%	80%	40%	56%	22%	50%
Education	23%	4%	-	23%	6%	-	10%
Health	4,5%	-	-	-	-	6%	2%
Office	4,5%	13%	-	-	16%	28%	11%

Trade and Services	14%	13%	20%	37%	16%	38%	18%
Tourism	-	-	-	-	6%	6%	2%
Others	-	-	-	-	-	-	7%



Figure 2. Land Use in 2016

The results showed coincident presentation of residential and commercial building about 50% : 50%, where the Sabirin Street and Suroto Street are the most changing area. Sabirin Street mostly 50% are commercial functions while on Suroto Street 68% of buildings are commercial functions and the rest are residential.

3.2. Typology of Building Facade

Building facade typology consists of 8 elements both for residential and commercial buildings. For residential buildings, they are:

1) Form and Mass of the building mostly a one-story building with Dutch colonial architectural style. Using a traditional roof style and orientation of the building facing the main road. Some of the new buildings have more modern or minimalist style. The use of a flat roof and glass wall with door and window patterns that not appropriate as the original form. **2) Roof**, the buildings consists of one floor so as to form a line roofline. There are several forms of roofs on residential buildings such as: roof forms which are common in residential buildings is a hipped-roof style that has a slope that is not so steep and is often known as shield roof, combination of hipped (shield) roof and gable-roof on the back and side of the building, and half-hip roof or better known as jerkinhead roof. A half roof style are not entirely closed, and modern roof style or flat roof. Generally, this type of roof used on new buildings or residential buildings which are modified forms on the roof. **3) Doors Pattern**, the type of original door consists of two models, the two doors and one door. Commonly used wood and glass material with a square or rectangular pattern. Typically using iron bars for building security. There is also door with Krapyak (Blinds) style that usually use for the garage door. **4) Windows Pattern**, the window like to use patterns of square, rectangular and blinds using wood materials and glass. Iron bars are generally used for safety. Another variation used on colorful stained glass window. The window consists of two with openings to the outside. At the top there is a ventilation with rectangular shape. **5) Facade Ornament**, ornaments of facade can be seen from the use of architectural elements with Dutch colonial style. Generally, residential buildings using lacquered wooden ornaments and decoration stones stacked on the walls. **6) Material (Building Colour)**, traditional buildings have muted or pale paint colors with dominant white color combination, gray, and brown on the roof. White color used on the walls and windows and doors of the building, while the bluish gray color is used in some parts of the course such as cantilever.

For commercial building there are two main elements as a part of facade analysis, they are: **1) Storefront and Entrance**, the main entrance and storefronts in a commercial building using the doors and glass display case with a modern style, but some are still maintaining the original style of the building. Storefront categories are: a) Building with a modern storefront and glass doors that go directly to the entrance of the building, b) The building which uses lots of windows and doors either with the original form or not, c) Building with original storefront using traditional doors and windows. Such a force contained in the old building.

2) Signage a sign generally placed on the side of the building or the side of the road by using a billboard pole. Sign categories area, a sign with large-scale that covered up the detail or architectural components of the building, a sign with medium scale that does not dominate the facades of buildings, a sign with small scale placed on the side of the building so it does not covered up the architectural details of the building.

Table 2. Analysis of Building Facade

Sabirin street		
Small	Medium	Large
Natasha Skin Care, Learning Guidance ELTI, Nutellaria, houses (8)	Pura Raharja Maternity Hospital, Dealer Suzuki Finance, Palm Kids Pre-School/Kindergarten	Matahari Office Solution, ELTI Gramedia English Course, Neutron Learning Guidance, Houses (3)
55%	15%	30%
Suroto Street		
Golkar Office, Kucala Medical Center, Department of Tourism and Culture, Fashion Outlet, Houses (1)	Toga Mas, Kompas Gramedia, Bentara Budaya, Houses (2)	Calais, Miracle Aesthetic Center, Roemi Ice Cream, Houses (1)
35%	35%	30%

Research of the facade made by the method of scoring of the building elements that consist of mass and form, roof, doors pattern, windows pattern, facade ornaments, and the material (paint). Assessment facade done in both residential and commercial buildings which in turn are grouped into three categories changes, large, medium, and small or nonexistent. Large-scale buildings are not included such as high school building Stella Duce 1, Bulog office, London Beauty Center, Scholastic Library and the city of Yogyakarta. From the analysis above, it is known that the changes that occurred on the Sabirin street still dominated by small scale, while major changes occur in commercial and residential buildings.

3.2.1 Storefront of Commercial Buildings

Grouping consists of three categories, namely storefront using entirely glass, the use of many windows and glass, and that use original doors and windows as a storefront. The analysis showed that both of Sabirin and Suroto street about 60% of the building used as the original doors and windows, especially storefront building using the old building.

Table 3. Analysis of Storefront Category

Sabirin Street		
Glass	Consist of Many Windows	Original Windows and Doors
Matahari Office Solution, ELTI Gramedia English Course	Learning Guidance ELTI, Neutron Learning Guidance	Natsha Skin Care, Pura Raharja Maternity Hospital, Dealer Suzuki Finance, Palm Kids Pre-School/Kindergarten, Nutellaria

20%	20%	60%
Suroto Street		
Miracle Aesthetic Center	Calais, Toga Mas, Roemi Ice Cream	Golkar Office, Kucala Medical Center, Kompas Gramedia, Bentara Budaya, Department of Tourism and Culture, Fashion Outlet
10%	30%	60%

3.2.2 Signage of Commercial Buildings

Signage consists of three categories, namely large-scale, medium scale, and small scale. Every buildings on street placed in the appropriate category of signage.

Table 4. Analysis of Signage Category

Sabirin Street		
Small	Medium	Large
Matahari Office Solution, Dealer Suzuki Finance, Pura Raharja Maternity Hospital, Natsha Skin Care, Nutellaria	Learning Guidance ELTI, Neutron Learning Guidance	ELTI Gramedia English Course, Palm Kids Pre-School/Kindergarten
50%	25%	25%
Suroto Street		
Kucala Medical Center, Department of Tourism and Culture Kompas Gramedia, Fashion Outlet	Calais, Miracle Aesthetic Center, Golkar Office, Bentara Budaya	Roemi Ice Cream, Toga Mas
40%	40%	20%

4. DISCUSSION

4.1 Building Function

Based on the result of building function analysis, many of residential buildings are turn into commercial. If this continues to happen, it can lead to the possible loss of the historical heritage of Yogyakarta especially for Dutch colonial heritage buildings. For that reason it is necessary to limit the construction of commercial buildings. From the research, it is highly recommended for the Sabirin Street, Supadi Street, Sajiyono Street and Serma Taruna Ramli Street keep being as residential area, while Suroto Street and Faridan M. Noto Street as commercial area.

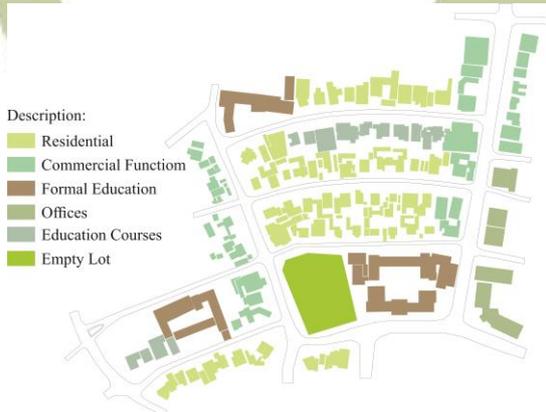


Figure 3. Land Use Recommendation

Classification of area based on the character of building and site. Analysis of the land use specifically done with a benchmark of the elements of the domain of urban design, which are grouped into 8 elements, namely land use, building form and massing, circulation and parking, open space, pedestrian ways, activity support, signage and preservation (Shirvani, 1985). The elements are used according to the potential site in each area.

4.1.1 Residential Area

Residential areas are located on Sabirin Street, Supadi Street, Sajiono Street, and Serma Taruna Ramli Street. Land use of his area is recommended as residential because the function of the building as a dwelling still at the level of 40% to 80%. Elements of building and form strongly show the character of residential with colonial architectural. Area was selected as a residential area because it is located on a secondary road that does not have a high level of vehicle so it's more quieter. In addition, the use of the park as a green space of the building is still applied in this area. Thus, recommendations on fourth street is a residential area of the New Town.

4.1.2 Commercial Area

Object research takes on the Faridan M. Noto Street and Suroto Street as a commercial area. Commercial building on those streets are about 45% to 85%. Regarding building form and massing of the building there are commercial premises and modern style of the old building with a facade that is more varied impressions or sell. Elements of the shape and mass of the building strongly show high of commercial atmosphere on both roads.

Most of the buildings are trade and services. Generally, form the majority of the same roof, but some buildings extremely high enough so that the rhythm of the building is not in harmony. Based on some urban elements that have been discussed, Suroto Street and Faridan M. Noto Street has a higher density because it is located in major transportation lines and arterial lines so that the building is more widely used as commercial. Other elements such as open space or yard used as parking lots as public area. Thus, these two roads is extremely recommended as a commercial area in Kotabaru.

4.2 Recommendation of Building Facade

Samplers for building facade take some commercial buildings with major change at Suroto Street. Elements of building facade are visual continuity, patterning of building components, horizontal and vertical alignments, building height, the details of the façade building, signs and awnings (Town of Richmond Hill, Walk This Way).

4.2.1 Visual Continuity

The setback of the building based on Indies dwelling house is within 8 meters of the pedestrian street. The border road is generally equal to a distance of 10 meters (Study of Cultural Heritage Region in Kota Baru, 2013). It is suggested that building along the streetscape should follow the overall original building, which is a maximum of 8 meters. Maximum distance backward or forward is one meter. The building facade is not entirely fully or can be split into two parts to reduce massive impression (Wibisono, 2014).

4.2.2 Patterning of Building Components

1. Sign

Sign should not cover the architectural details of the building. Commercial buildings can use the same type of the sign so that the continuity of the building is consistent.



Figure 4. Sign Position Recommendation

2. Model of Facade Recommendations

Facades devised based on the recommendations that have been given. There are several models that can be used on building.



Figure 5. Facade Model Recommendation

3. Application of Model in Existing Buildings

Application on building took on major category changes on Suroto street, they are Calais and Roemi Ice cream with 80% change of facade and Miracle Aesthetic Center with 87,5% change from the original shape. All those three building will be in-treatment as exemplars in facade recommendations.

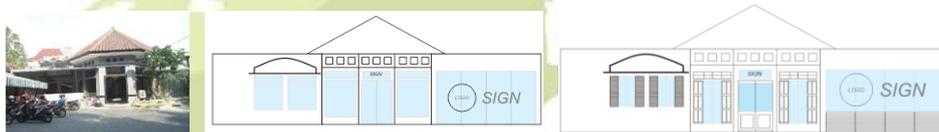


Figure 6. From left: Visualisation of original building, Calais facade recommendation

The first building, Calais. This building use more wide windows which is dominated by glass. Treatment is done in part by reducing the use of glass storefront and the sign placed above the main entrance. While the wall on the right side use patterns such as garage doors residential or Krapyak, however, continue to use glass as part of its transparency. Results showed changes of 50% or reduced by 30% into the small category. As for the sign also fit into the small category because it does not cover the details of the building.

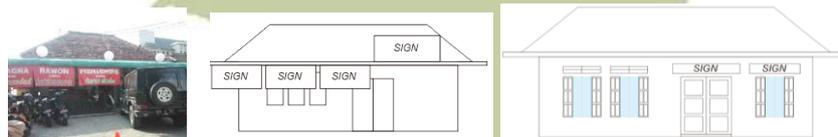


Figure 7. From left: Visualisation of original building, Roemi facade recommendation

The second building, Roemi Ice Cream. This building also use more wide windows with glass material. Treatment is done at the storefront with more shows the original facade. The use of forms of traditional doors and windows and remove the signs on the front to the top of the door and window. Results showed changes in 54% or less by 33.5% and into the moderate category. The sign previously categorized as large scale after the change becomes smaller scale



Figure 8. Visualisation of original building, Miracle facade recommendation

The third building, Miracle Aesthetic Center. This building uses a lot of signs that cover the details of the building. Treatment is done at the storefront by adding Krapyak pattern on the facade of glass and doors with original style. Results showed changes of 50% or a decrease of 37.5% and from medium category to small category.

5. CONCLUSIONS

Changes of Building Function on Sabirin, Supadi, Sajiono, and Serma Taruna Ramli Streets are recommended to be remained as residential areas because they consist of 40% - 80% houses. This is supported by environmental condition located on a secondary road, the dominance of one-story building, quieter atmosphere, and still found a lot of private green space. Faridan M. Noto and Suroto Streets are recommended as a commercial area because they are consist of 80% commercial building and located on arterial roads with high transport density and many buildings more than two floors. The green room is very minimal and is generally used as public open space. **Changes to the building facade** on the Sabirin Street are still dominated by small-scale changes by 55%, and Suroto Street change by 35% small category, 35% medium and 30% large. The use storefront is still dominated by the original with a percentage of 60% because many buildings in this area (old and new buildings) were still respected to the Dutch architectural style or original Kotabaru building heritage. **Typology Storefront and Signage** on Sabirin Street still dominated by small scale by 50%, while Suroto Street use sign with small scale 40%, 40% medium and 20% large categories. Results of treatment carried out on the building facades (Calais, Roemi Ice Cream and Miracle Aesthetic Center) show a change of 30% closer to the shape of the originale building in Kotabaru heritage area. In this respect, more researches and government policies are needed to support and protect the distinctiveness value of the heritage buildings in Kotabaru Yogyakarta, Indonesia.

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