Identified Physical Settings Determinants of Public Activities in the Sidoarjo City Square

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Abstract: Physical environment settings are believed to be able to influence public activity patterns by facilitating the interaction between physical spatial space with its users. As one of the public green open areas and main civic activities points, the Sidoarjo City Square also has a variety of user activity patterns, which are both suitable and unsuitable to its design purposes. This article attempts to identify the physical settings determinants that affect public space activities in Sidoarjo Square. Behavior mapping and time budget techniques were used to collect data and analysis was conducted through data tabulation. The study identified at least five physical settings factors that influence the Sidoarjo Square user activities, including shaded spaces, sitting and relaxing areas, plazas, pedestrian paths and artificial lighting.

1 INTRODUCTION

The provision of green open space in Indonesia is regulated through Law No. 26 of 2017, which requires a minimum of twenty percent of the city to be public open space. A good public open space must be able to function and be used by the community to gather, interact, and move safely and comfortably (Siahaan, 2010).

In reality, there was a significant reduction in the number of public open spaces in urban areas due to public open land conversion into urban infrastructure (Dwiyanto, 2009). This condition will certainly lead to a decline in the quality of urban public open spaces in Indonesia where they serve an important function by contributing to the quality of life of urban citizens (Ostermann, 2010).

The decline of the quality of public open spaces is often encountered as common problems arise, such as the lack of seating and gathering places, visually poor entrance accesses, dysfunctional features, winding paths, dead zones and unreachable bus stop locations (Siahaan, 2010).

This phenomenon was also found in the district of Sidoarjo. As with other cities in Indonesia, the existence of the city square as a public open space has also become a feature of urban spaces (Nas, 1986), including Sidoarjo. Sidoarjo City Square, as the only open public space in the area, also experienced problems related to the quality of its public open space. (Bilqisa, 2014) in her research stated that the comfort of Sidoarjo Square users was still not well-optimized due to the various economic and recreational activities that take place there and have not been facilitated by a good physical settings arrangement. A good physical settings arrangement in an area is believed to be able to influence the activities and social behaviour of its users (Rapoport, 2016). Understanding user requirement activities will help designers set up appropriate public facilities (Courage and Baxter, 2005). This article will attempt to identify the various factors that affect the physical settings of Sidoarjo Square's user activities.

2 RESEARCH METHOD

A qualitative approach was used to ensure the sharpness of the research analysis, objectivity, and systematicity in obtaining accuracy in interpretation. We used direct observation techniques in addition to behavioral mapping and time budget techniques to map user behavior related to the physical settings of Sidoarjo Square.

The purposive sampling technique was also used to determine the observation subject, which was observed during five different time periods for five consecutive days (Sunday to Friday). Data analysis

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was carried out through the data coding stage and data interpretation to obtain a research conclusion.

3 DISCUSSION

Located in the heart of the city, Sidoarjo Square has become one of the landmarks of Sidoarjo City. In the past, the square was more often used as a shopping location by the residents of Sidoarjo. However, the number of street vendors grew rapidly and caused the square to become chaotic and disorganized, which led to the square being revitalized into a green open space. Broadly speaking, the activities in the Sidoarjo Square are divided into several zones, comprising of the sport zone, playground zone, and shelter zone (see figure 1).

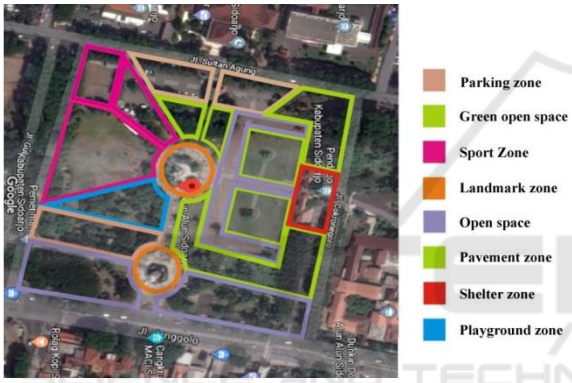

Figure 1: Zoning of the Sidoarjo square.

The next section will discuss the Sidoarjo Square visitor movement patterns in the sports, playground and shelter zones. We have observed the visitor movement patterns in those zones at three different time points: in the morning (9am), day (1pm) and afternoon (4pm).

3.1 Movement in the sports zone

The visitor movement pattern in the sports area in the morning tends to be more crowded in the park. This is because the conditions around the park are shadier and have more park seating compared to other points in the sports area.

During the day, the movement pattern tends to be more concentrated in parts around the Sidoarjo monument. This condition is caused by hot temperatures during the day at the observation site, so visitors who have just arrived will consider where to first sit and relax.

The visitor movement pattern in the afternoon tends to be more crowded in the area around the Sidoarjo monument, specifically in the gazebo and group seating areas close to the fitness area. This condition is most likely due to visitors preferring to sit and relax together.

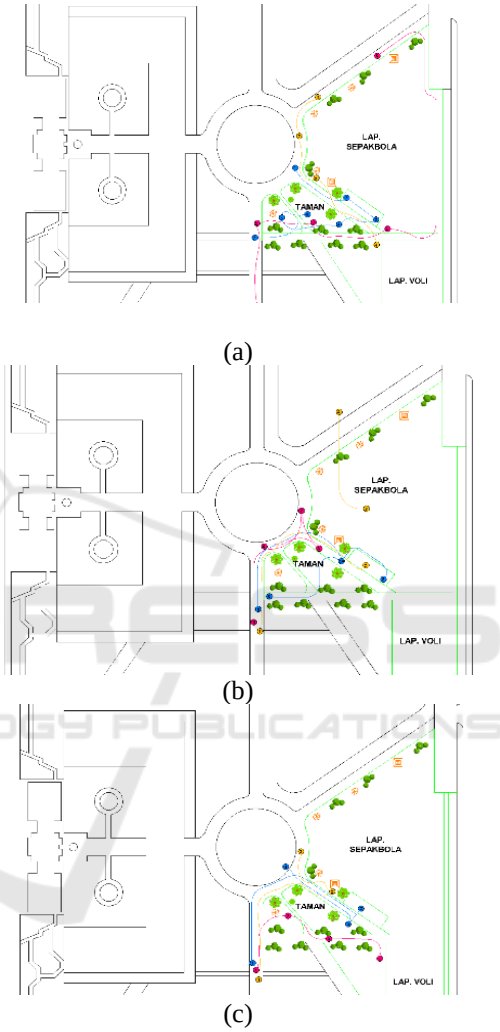

Figure 2: Visitor movement patterns in the sports zone at (a) 9 am, (b) 1 pm, and (c) 4 pm.

The observation results in the sports zone show that the most frequently passed points and a large number of activities occur in the park area and around the sports field. There were no striking differences regarding the movement of visitors in the morning or evening. A difference was only seen in the age group of visitors, where there were more adult visitors in the morning and evening who tend to visit the sports zone just to take a break after their daily routine.

3.2 Movement in the playground zone

The visitor movement pattern in the children's playground zone in the morning tends to be more crowded in the children's playground area. The cool morning atmosphere encourages visitors to take their children to play or just watch the children's playground. During the day, the visitor movement pattern in this area tends to be more concentrated around the children's playground and seating area near the shady trees. The scorching heat of the sun encourages visitors to rest in a shady spot, but tends not to use the play equipment. Whereas in the afternoon, the movement of visitors also tends to be concentrated around the children's playgrounds and seats close to the shade of the trees. Visitor activities were dominated by recreational activities as well as watching over their children play.

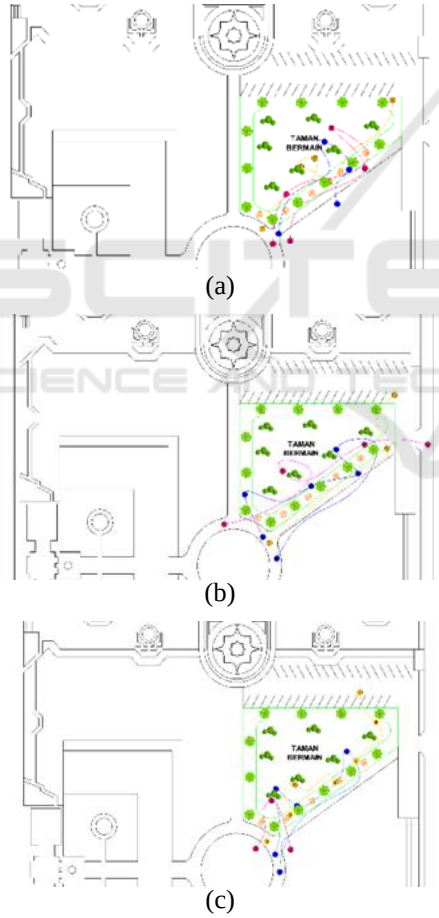

Figure 3: Visitor movement patterns in the playground zone at (a) 9 am, (b) 1 pm, and (c) 4 pm.

From the observation results in the playground zone, it can be seen that the children's playground and seating areas were the most frequently passed points where most activities were conducted.

3.3 Movement in the shelter zone

The visitor movement pattern in the shelter zone in the morning tends to be concentrated around the plaza area. The cool morning atmosphere encourages visitors to do various physical activities such as walking, jogging, doing gymnastics etc. The grass tends to be moist due to dew, which causes visitors to be reluctant to step on it. During weekdays, the pavement on the side of the field was often used for exercise and morning jogging. These activities were generally carried out by middle-aged to elderly men.

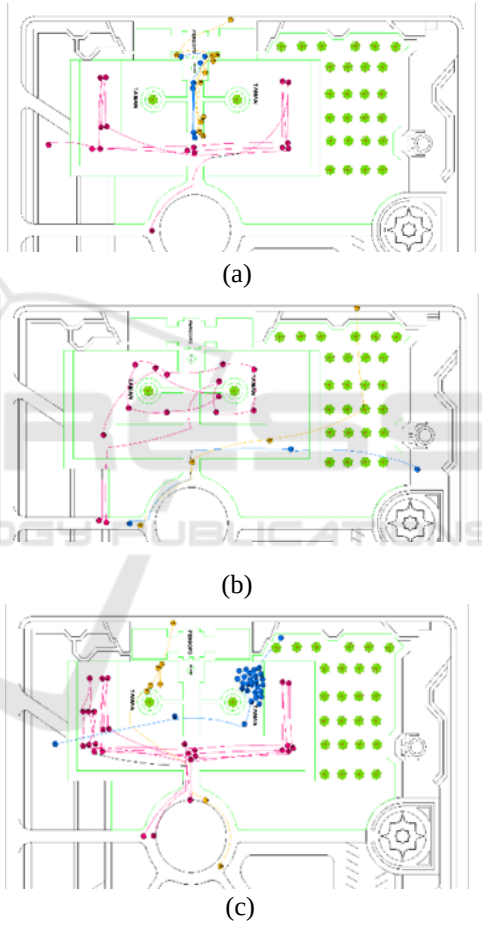

Figure 3: Visitor movement pattern in the shelter zone at (a) 9 am, (b) 1 pm, and (c) 4 pm.

During the day, the visitor movement pattern at the plaza area tends to be less crowded than in the morning, where this area was often traversed by visitors. This was because the area did not have an adequate shade, so visitors tended to look for other shady locations. In the afternoon, the movement pattern of visitors tends to become more crowded around the plaza and park. This area was not only

used for sitting, the green grass area was very popular among children and adolescent visitors for playing football. The plaza area was also used for certain community activities, such as the photography, dance, and automotive communities. Conducive weather conditions also encourage visitors to be more active in this area.

3.4 Identifying the relationship between physical settings and visitor activities

From the observation results, we attempted to analyze the correlation between the physical settings variables with user activities utilization (see Table 1 below).

Table 1: The relationship between physical settings in influencing visitor activities

	Shading area	Sitting points	Outdoor Lighting	Accessibility	Sanitation	Food facilities	Park	Plaza
Shading area		***	***	**	*	***	***	*
Seating points	***		**	*	*	**	**	***
Outdoor Lighting	*	***		***	*	***	**	**
Accessibility	**	**	*		*	**	**	**
Sanitation	*	*	*	**		**	**	**
Food facilities	**	**	**	**	*		***	**
Park	***	***	***	**	*	*		*
Plaza	*	*	***	**	*	**	**	

remarks:
* : weak influence
** : sufficient influence
*** : strong influence

From the results of the analysis, it can be seen that the visitor activity of Sidoarjo Square was more likely to be influenced by spatial factors (such as shading areas and plazas) and supporting elements and facilities such as seating, accessibility, outdoor lighting and food facilities.

4 CONCLUSION

From the analysis results it is concluded that there were at least four physical settings that were found to be the public activities determinants in the Sidoarjo Square, which include shaded areas, relaxation and resting spaces, the plaza setting, and visitor accessibility. Shaded area has become the most important element in shaping visitor behavior, considering that many Sidoarjo Square users preferred to engage activities in shady areas. Seating was the second most important element; however the usage of the park benches in Sidoarjo Square was also influenced by the location and shade patterns of the seating areas. Meanwhile, the existence of the plaza as the center of activity was the third most important element considering the very large plaza area and high frequency of activities conducted there compared to other areas. The characteristics of the square users were also varied and came from all age groups.

Accessibility was the fourth most important element in Sidoarjo Square. This is due to the pedestrian pathway in Sidoarjo Square becoming a gathering point for visitors to conduct various activities such as sitting, resting, and holding meetings among communities. There are also a number of vocal points in this pedestrian area, such as the Sidoarjo Monument and Jayandaru Monument, which have become photo spots for visitors.

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