The Influence of Physical Quality on Service Scale and Frequency of Visits in “Alun-Alun Malang” City Square Park

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Abstract. Malang City is one of the cities with rapid physical growth, but the availability of green open space (RTH) is inadequate. The construction of RTH as a solution to fulfill 20% of public RTH raises new problems of: the occurrence of inequality in the use of city parks. There are city parks that are not functioned optimally, judging from the intensity (number and frequency). Based on these conditions, the study aims to assess the performance, service scale and frequency of visits in Alun-Alun Malang Park, Klojen District, Malang City. The method of analysis utilizes park quality analysis, park service scale analysis, frequency of park visits analysis, and multiple linear regression analysis. Based on the results of the regression test, it is apparent that there is an influence between the park service scale and the services quality of Alun-Alun Malang Park, including amenities (X1), easy access (X4), and facilities completeness (X5). Based on the regression analysis using the successive intervals method, it is obvious that variables which significantly influence the frequency of parks visits, are amenities (X1), security and safety (X2), parks identity (X3), easy access (X4), facilities completeness (X5), park beautiness (X6), activity diversity (X7), user diversity (X8).

Keywords: park quality, service scale, frequency of parks visits.

1. Introduction

Open space or public space is an important element in planning a city. Public space has an important role that is not only concerned with environmental, economic and social aspects but also plays a role in the quality of life and sustainability aspects of a city [1,2]. Good public space is a public space for all groups of society, without the dominance of certain groups, which is a safe and friendly for all societies including women [3]. City parks are defined as open land with social and aesthetic functions as a means of recreational activities, education or other activities at the city level [4]. City parks and open spaces are considered able to support the welfare of the community, promoting lifestyle changes, and contributing to the development of the social capital and healthy cities [5]. Planning an open space must consider various attributes such as: the needs of users, population, population density, people's preferences, and accessibility to reach open spaces. The quality of public space is not only seen from the number of people’s visit, diverse activities, spatial planning that has aesthetic value, but is seen from a quality public space, which is easily accessed by the public [3].

Malang City is one of the cities with rapid physical growth. The total population of Malang City on the Year 2017 was 861,414 people [6]. However, the rapid development of Malang City's population is not matched by the availability of green open space (RTH). The requirement for providing green open
space (RTH) in a city is 30% of the total city area consisting of 20% public green open space (RTH) and 10% private green open space (RTH) [7]. Whereas, based on existing conditions the percentage of public green open space (RTH) in Malang City, it is still less than 20%. The width of public open space in Malang City is 1,760.15 hectares or 15.92% of the total area of Malang City [8]. The percentage of public green open space (RTH) is dominated by the border of the river reaching 11.41%, while the city park and urban forest had a percentage of 1.82% and 0.35% of the total area of the city.

Malang City Government through The Housing and The Settlement Area Agency (Disperkim) supports the efforts to fulfill 30% of green open space (RTH). New development, as well as the revitalization of green open space (RTH), is being actively carried out in Malang City. The development of green open space (RTH) is more focused on the construction of active parks that can be used as a place of interaction and socialization of the community. The development and design of open green space must pay attention to the needs of its users including the provision of supporting facilities. However, there are imbalances in the utilization of city parks in Malang City. There are city parks that are not functioned optimally, judging from the intensity (number and frequency) of the small number of visitors, and visitors who come only from the vicinity of the park. However, there is a city park that is crowded with visitors and even parks visitors from outside the Malang City. Based on the initial observations of the researchers, Alun-Alun Tugu and Alun-Alun Malang are city parks that are often visited by visitors who come from outside Malang City, especially during weekends. While city parks such as Kunang-Kunang Park and Ronggowarsito Park, in addition to having fewer visitors, visitors come to these parks only from around the park's location.

Therefore, it is estimated that there are factors that influence the utilization of each city park. Therefore, a study was conducted on the relationship between the influence of the city parks quality on service scale and the frequency of city park visits in Alun-Alun Malang Park, in Klojen District, at Malang City.

2. Methods

The analytical methods used in the study were park quality analysis, park service scale analysis, frequency of park visits analysis, and multiple linear regression analysis. Variables and sub-variables used in the study are sourced from previous research and literature review (Table 1).

| Aim | Variable | Sub Variable | Analysis Techniques |
|------|----------|--------------|---------------------|
| Identify the park physical quality characteristics in Alun-Alun Malang | Site [9] | • Size and area arrangement  
• Regional link  
• Legal description  
• Natural physical features  
• Artificial physical features  
• Circulation  
• Utilities  
• The five senses  
• Climate | Park physical quality analysis with descriptive methods |
| Identify the service scale in Alun-Alun Malang Park | The visitor radius service scale | | Park service scale analysis with descriptive-quantitative methods |
| Identify the frequency of visits to Alun-Alun Malang Park | The frequency of visits by visitors | | Frequency of park visits analysis with descriptive-quantitative methods |
| Identify the influence of physical quality on service scale and frequency of visits | The influence of physical | • Amenities  
• Security and Safety  
• Park Identity | Multiple linear regression analysis |
Aim Variable Sub Variable Analysis Techniques
quality on service scale and frequency of visits • Easy Access • Facilities Completeness • Park Beautiness • Diversity of Activities • Diversity of Users • Park Hospitality

3. Result and Discussion

3.1. Physical Quality Characteristics of Alun-Alun Malang Park

The physical characteristics of Alun-Alun Malang Park are seen in ten aspects which mention information in site planning seen from the size and territorial, regional links, legal descriptions, natural physical features, artificial physical features, circulation, utilities, five sensories, humans and culture, and climate [8]. The quality of Alun-Alun Malang Park is based on nine variables. Each variable consists of 5 ranges of values from very bad to very good. The evaluation of the Alun-Alun Malang quality is based on the sample of visitors to Alun-Alun Malang (Figure 1).

![Figure 1. Quality Chart of Alun-Alun Malang by Park Visitors Perception](image_url)

3.2. Service Scale of Alun-Alun Malang Park

In this research, the service scale is based on the reach of the park radius. The service scale for city parks in Malang City has a different range of radius for each park. Alun-Alun Malang Park has a reach radius up to the outside of Malang city with a range radius of 13.5 km and 11.2 km (seen in Table 2).

| Distance Visitors Origin | Nearest Service Scale | Average of Service Scale for Each Park |
|--------------------------|-----------------------|---------------------------------------|
| 13,5 km Pagentan, Singosari | 1,8 km Bareng | 6,81 km |

3.3. Frequency of Park Visits Analysis in Alun-Alun Malang Park
The characteristics are based on the frequency of the visit including the number of visits or the number of times when visitors visited the city park. The number of visits is calculated based on the number of visits made by visitors before the survey activities conducted by researchers, until the visit was made when filling out the research questionnaire. Figure 2 reports that as many as 17% of respondents first visited Alun-Alun Malang. The highest number of respondent visits to Alun-Alun Malang is 2-3 times of the frequency of visits (33%). However, the respondents visiting Alun-Alun Malang in > 7 times are only 17%.

![Figure 2. Percentage of City Park Visitors Characteristics Based on Visit Frequency](image)

3.4. The Influence of Physical Quality on Service Scale and Frequency of Visits

3.4.1 The Influence of Physical Quality (X) on Service Scale (Y)

Linear regression analysis of the city parks quality with a coverage radius of the park was carried out by using SPSS with the enter method. The results of the Ftest (Table 3) show that the Fcount value in the research model is 20.902 with a significance level of 0.000. A significance value of less than 0.05 indicates that the data will produce a good model.

| Model | Sum of Squares | df | Mean Square | F       | Sig. |
|-------|----------------|----|-------------|---------|------|
| 1     | Regression     | 105.420 | 9 | 11.713 | 20.902 | .000* |
|       | Residual       | 78.453 | 140 | .560 |         |      |
| Total |                | 183.873 | 149 | | | |

a. Predictors: (Constant), Amenities, Security and Safety, Park Identity, Easy Access, Facilities Completeness, Park Beautiness, Diversity of Activities, Diversity of Users, Park Hospitality.

b. Dependent Variable: Coverage Radius

| Table 4. Model Summary |
|------------------------|
| Model | R         | R SQUARE | ADJUSTED R SQUARE | Std. Error of the Estimate |
|-------|-----------|----------|--------------------|---------------------------|
| 1     | .757*     | .573     | .546               | 0.748586                  |

The goodness of fit test aims to see the suitability of the model, or the ability of the independent variable to explain the dependent variable variance. Table 4 presents an R-value of 0.757 and the value of R-square is 0.573, indicating that the ability of the independent variable to explain the variance of the dependent variable is 57.3%.

| Table 5. Coefficients |
### Model

| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. |
|-------|-----------------------------|---------------------------|---|------|
|      | B     | Std. Error | Beta |      |       |
| I (Constant) | -0.750 | 0.425 | -1.764 | 0.080 |
| Amenities | 0.228 | 0.088 | 0.192 | 2.589 | 0.011 |
| Security and Safety | 0.006 | 0.071 | 0.005 | 0.091 | 0.928 |
| Park Identity | -0.044 | 0.072 | -0.036 | -6.08 | 0.544 |
| Easy Access | 0.200 | 0.076 | 0.164 | 2.646 | 0.009 |
| Facilities Completeness | 0.547 | 0.101 | 0.465 | 5.436 | 0.000 |
| Park Beautiness | -0.028 | 0.104 | -0.019 | -2.68 | 0.789 |
| Diversity of Activities | 0.97 | 0.095 | 0.069 | 1.021 | 0.309 |
| Diversity of Users | -0.012 | 0.087 | -0.009 | -1.33 | 0.895 |
| Park Hospitality | 0.102 | 0.084 | 0.083 | 1.210 | 0.228 |

T-test (partial) aims to see the influence of the variables that most influence the dependent variable. The independent variable that has the most influence on the dependent variable is based on the significance value of <0.05. T-test results in Table 5 indicate the three independent variables that have a significance value of <0.05 including variable amenities, easy access, and facilities completeness. Based on the results in Table 5, the regression equation can be arranged as follows:

\[ Y = -0.750 + 0.228X_1 + 0.200X_4 + 0.547X_5 \]

Information:
- \( Y = \) Park coverage radius
- \( X_1 = \) Amenities
- \( X_4 = \) Easy access
- \( X_5 = \) Facilities completeness

#### 3.4.2 The Influence of Physical Quality (X) on Visit Frequency (Y)

The independent variable forming the regression model is considered to have a significant influence together on the dependent variable if \( \text{Fcount} > \text{Ftable} \) or significant \( \alpha = 0.05 \). Based on the results of regression models test (Table 6), the obtained \( \text{Fcount} = 22.677 \) (Sig F=0.000). \( \text{Ftable} \) at the 5% level with independent degrees of 10 and 189 at 1.88. Because \( \text{Fcount} > \text{Ftable} (22.677>1.88) \) and Sig F<5% (0.000<0.05) then \( H_0 \) is rejected which means that the variables such as amenities (\( X_1 \)), security and safety (\( X_2 \)), park identity (\( X_3 \)), ease of access (\( X_4 \)), facilities completeness (\( X_5 \)), park beautiness (\( X_6 \)), diversity of activities (\( X_7 \)), diversity of users (\( X_8 \)), park hospitality (\( X_9 \)) have a significant influence on visit frequency variables (\( Y \)).

### Table 6. F Test

| Model | df | Fcount | Ftable | Sig.  |
|-------|----|--------|--------|-------|
| Regression | 10 | 22.677 | 1.88 | 0.000 |
| Residual | 189 | | | |

Partial regression models test is used to determine whether each of the independent variables forming the regression model individually with a significant influence on the dependent variable or not. The independent variable forming the regression model is assumed to have a significant effect if \( \text{Tcount} > \text{Ttable} \) or significant \( \alpha = 0.05 \). The value of \( \text{Ttable} \) is obtained by using \( \text{Ttable} (\text{df} 189) \) and significant level of 0.05 that is 1.973. After obtaining \( \text{Ttable} \) value, the next step is to compare the \( t \) value on each variable. The independent variable will have a significant effect on the dependent variable if the value of \( \text{Tcount} > \text{Ttable} \), indicating 8 independent variables that affect the dependent variable. Variables that influence are variables such as: amenities (\( X_1 \)), security and safety (\( X_2 \)), park identity (\( X_3 \)), easy access (\( X_4 \)), facilities completeness (\( X_5 \)), park beautiness (\( X_6 \)), diversity of activities (\( X_7 \)), diversity of users (\( X_8 \)), and park hospitality (\( X_9 \)).


X3), ease of access (X4), facilities completeness (X5), park beautiness (X6), diversity of activities (X7),
and diversity of users (X8).

### Table 7. T-test

| Independent Variable          | T_count | Sig. t | Ttable | Information   |
|-------------------------------|---------|--------|--------|---------------|
| Amenities (X1)                | 3.602   | 0.001  | 1.973  | Significant   |
| Security and Safety (X2)      | 3.230   | 0.001  | 1.973  | Significant   |
| Park Identity (X3)            | 2.659   | 0.008  | 1.973  | Significant   |
| Easy Access (X4)              | 2.881   | 0.001  | 1.973  | Significant   |
| Facilities Completeness (X5)  | 2.367   | 0.030  | 1.973  | Significant   |
| Park Beautiness (X6)          | 4.445   | 0.000  | 1.973  | Significant   |
| Diversity of Activities (X7)  | 2.106   | 0.028  | 1.973  | Significant   |
| Diversity of Users (X8)       | 2.950   | 0.002  | 1.973  | Significant   |
| Park Hospitality (X9)         | 0.587   | 0.664  | 1.973  | Not significant|

Independent variable included in model regression is an independent variable that takes significant
influence corresponding with T-test results that have been carried out. Table 8 presents the constant
value and coefficient value of the independent variable included in the regression equation.

### Table 8. Results of Multiple Regression Calculation

| Unstandardized Coefficients | Standardized Coefficients |
|-----------------------------|---------------------------|
|                             | B            | Std. Error | Beta   |
| (Constant)                  | -1.943       | 0.330      |        |
| Amenities (X1)              | 0.200        | 0.056      | 0.202  |
| Security and Safety (X2)    | 0.177        | 0.055      | 0.171  |
| Park Identity (X3)          | 0.138        | 0.052      | 0.137  |
| Easy Access (X4)            | 0.156        | 0.054      | 0.154  |
| Facilities Completeness (X5)| 0.126        | 0.053      | 0.125  |
| Park Beautiness (X6)        | 0.264        | 0.059      | 0.257  |
| Diversity of Activities (X7)| 0.116        | 0.055      | 0.114  |
| Diversity of Users (X8)     | 0.154        | 0.052      | 0.155  |

The coefficient values included in the regression model are taken from the B value (beta) in the
Unstandardized Coefficients table, where the regression model is:

\[
Y = -1.943 + 0.177X2 + 0.200X1 + 0.154X8 + 0.116X7 + 0.156X4 + 0.138X3 + 0.264X6 + 0.126X5
\]

Information:

- Y = Frequency of Park Visit
- X1 = Amenities
- X2 = Security and Safety
- X3 = Park Identity
- X4 = Easy access
- X5 = Facilities completeness
- X6 = Park Beautiness
- X7 = Diversity of Activities
- X8 = Diversity of Users

### 4. Conclusion

Based on the results of the analysis that has been done, it can be concluded:

1. *Alun-Alun* Malang visitors are very diverse not only from within the city but also from outside the
city. The city park services scale in Klojen District, at Malang City can reach visitors from outside
the Malang City. *Alun-Alun* Malang has the highest service scale which is 13.5 km, if compared to the average city park services scale in Klojen District which is 6.34 km.

2. Out of a total of respondents, 17% respondents make the first visit to *Alun-Alun* Malang. The highest number of respondent visits to Alun-Alun Malang is 2-3 times the frequency of visits from 33% of respondents. Whereas, the respondents who visited the Alun-Alun Malang about >7 times are only 17% respondents.

3. Multiple linear regression results in Park Service Scale is $Y = -0.750 + 0.228X_1 + 0.200X_2 + 0.547X_4 + 0.154X_5$. It is known that there is an influence between the park service scale and the services quality of *Alun-Alun* Malang Park, including amenities (X1), easy access (X4), and facilities completeness (X5). Based on the regression analysis using the successive intervals method, it is revealed that variables that significantly influence the frequency of parks visits, are amenities (X1), security and safety (X2), parks identity (X3), easy access (X4), facilities completeness (X5), park beautiness (X6), activity diversity (X7), user diversity (X8), with the regression model of $Y = -1.943 + 0.177X_2 + 0.200X_1 + 0.154X_8 + 0.116X_7 + 0.156X_4 + 0.138X_3 + 0.264X_6 + 0.126X_5$.

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