Influence of Access and Space Appearance on Comfort for Users in Alun-Alun Gianyar

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Abstract Green open spaces (GOS) play a crucial role in maintaining ecological balance and improving the quality of life for urban residents. One of the primary typologies of GOS is the city park, functionally represented by Gianyar City Square as a center for sports, recreation, social interaction, and art performances. Following the revitalization program, significant transformations in accessibility and visual aesthetics have occurred, creating an urgent need to assess their impact on visitor comfort. This study aims to analyze the influence of accessibility and spatial appearance variables on user comfort levels in Gianyar City Square. The methodology used was a quantitative approach, involving 100 respondents selected through a specific sampling technique. Primary data were collected through a structured questionnaire and then processed using parametric statistical analysis, including validity tests, reliability tests, and classical assumption tests (normality and heteroscedasticity). Hypotheses were tested through linear regression analysis, supported by F-tests and T-tests. The results indicate that access and spatial appearance variables simultaneously and partially have a positive and significant effect on user comfort. Empirical findings identified that the spatial appearance variable was the most dominant determinant with an influence coefficient of 0.7. This indicates that visual aesthetics and spatial arrangement post-revitalization are key factors in enhancing the spatial experience and psychological comfort of visitors.

Index Terms— **Revitalization, City Park, Accessibility, Spatial Appearance, User Comfort**

I. Introduction

City parks are public open spaces designed to provide various benefits to urban communities [1]. As an integral part of urban infrastructure, city parks serve as recreational areas, places for social interaction, and means of improving environmental quality. The existence of city parks is expected to create a healthy, comfortable, and safe environment for all city residents [2]. As urbanization increases, city parks are becoming increasingly important as a balance to the dense and dynamic urban lifestyle.

City parks are an important component of green infrastructure in urban areas [3]. Green infrastructure is a network of green open spaces designed to provide ecological, social, and economic benefits. The ecological benefits of city parks include providing a healthy ecosystem for living creatures, water absorption, energy use, oxygen supply/city lungs, and others [4]. The social benefits of city parks in green infrastructure are as a place for social interaction, thereby serving as a medium for stress reduction, exercise, and emotional well-being [5]. The economic benefits are that they can directly contribute to the economy through trade and indirectly increase the

exchange value of the land surrounding the park.

Nevertheless, in practical terms, the existence and use of city parks often encounter various issues that affect the comfort and safety of users. These problems include a lack of adequate facilities, an unfriendly park design, and lack of supervision, which has the potential to lead to crimes [6]. In addition, public perceptions of the safety and comfort of city parks are also influenced by factors such as lighting, cleanliness, and crowds. Research by Septiana and Nugroho [7] shows that the lack of supporting facilities (such as toilets and lighting) and poor management reduce user comfort and safety. Furthermore, Dewantari's research discusses user-unfriendly park design and the lack of natural surveillance, which triggers a sense of insecurity among visitors, especially women and children.

Based on research related to user comfort in open spaces, this study focuses on the impact of open spaces on the community located in Alun-alun Gianyar. Alun-alun Gianyar is the result of the revitalization of Lapangan Astina. In relation to this revitalization, this study aims to reveal the user comfort level in Alun-alun Gianyar. The novelty of this study lies in the indicators of access and esthetics, as the area was previously a field that has been transformed into a public square. This study can be used as a reference source regarding the influence of access and appearance of the park-on-park users in Alun-alun Gianyar.

II. LITERATURE REVIEW

A. Public Spaces

Open space is a place that is greatly needed for the sustainability of a city. In principle, a city needs green space to grow ecologically and support human (social) activities. In addition to its ecological and social functions, open space is a place that balances the relationship between humans and nature in urban areas. Over time, the existence of open space has become very important due to rapid urban development and land use change.

Several theories have emerged to defend and develop open spaces for cities. Looking at the typology, according to Roger Trancik in his book Finding Lost Space [10], Trancik puts forward three urban design theories that underlie the formation of open spaces, namely Figure-Ground Theory: Looking at the relationship between building mass (solid) and open space (void); Linkage Theory: Emphasizing connecting lines (roads, pedestrian paths, green belts) that bind urban elements and spaces into a single entity; and Place Theory: Adding a human dimension (culture, history, and society) to physical space. Empty space becomes a "Place" when it has meaning for its users.

On the other hand, in terms of space quality, there is a theory proposed by Stephen Carl [11]. Carl provides a perspective on quality consisting of Comfort, where open spaces provide physical comfort (seating, shade) and psychological comfort (feeling safe); Relaxation is the ability of a space to relieve stress from city routines (natural elements such as plants/water); Passive & Active Engagement, which provides opportunities for people to simply watch others (people watching) or be directly involved in activities (sports, exhibitions) [12]. In addition, Jan Gelh adds the importance of activities contained in open spaces, namely first, Necessary Activities such as going to school, working, or waiting for the bus; second, Optional Activities: leisurely walks, sitting in the sun. These only occur if the quality of the space is excellent. And third; Social Activities related to human interaction.

Furthermore, in providing a broad overview of the use of open spaces, there are theories and diagrams contained in the Project for Public Spaces (PPS) [13]. PPS provides the most iconic evaluation tool for assessing open spaces. This diagram divides the quality of space into four categories: Access & Linkages, Comfort & Image, Uses & Activities, and Sociability.

Fig. 1. Project for Public Spaces (PPS) Diagram [14]

III. METHOD

The methods used in this study were quantitative research methods with a descriptive approach. This quantitative research was conducted by determining the topic to be studied, asking specific and focused questions, collecting measurable data from respondents, analyzing the figures using statistics, and conducting the research objectively and without bias [15]. Data was collected through questionnaires given to respondents based on the indicators of the project for public spaces. The sample was determined using a standard sample size validity approach, which was 100 respondents. Before collecting the main data, the validity and reliability of the instrument were tested on 30 respondents to ensure the quality of the measurements. Once validated and reliable, field data collection was carried out. The sample selection technique used purposive sampling with the criteria of respondents being over 17 years of age and having visited the research location more than 3 times. The variables studied included

park access, space appearance, and user comfort. The collected data was then analyzed descriptively to describe users' perceptions of these three aspects.

IV. RESULT AND DISCUSSION

A. Validity Test

A validity test is used to verify the accuracy of data, whereby the validity of a research instrument depends on the accuracy of each question and indicator to be measured, as greater accuracy in data collection strengthens the validity of the instrument [16][17]. The validity in this study was validated using the distribution of r table values with a sample size of 100 people. The results of the test showed that all questions had a coefficient of correlation greater than the threshold of 0.1966 (Table I). Thus, it can be concluded that all questions met the validity criteria and were suitable for use in further data collection.

TABLE 1
VALIDITY TEST ON THE VARIABLES OF COMFORT, ACCESS, AND APPEARANCE

Variable	Indicator	R count	R table	Results
Comfort (Y1)	Y1.1	0.539	0.1966	Valid (5%)
	Y1.2	0.676	0.1966	Valid (5%)
	Y1.3	0.637	0.1966	Valid (5%)
	Y1.4	0.635	0.1966	Valid (5%)
	Y1.5	0.681	0.1966	Valid (5%)
	Y1.6	0.774	0.1966	Valid (5%)
	Y1.7	0.562	0.1966	Valid (5%)
	Y1.8	0.587	0.1966	Valid (5%)
	Y1.9	0.608	0.1966	Valid (5%)
	Y1.10	0.710	0.1966	Valid (5%)
	Y1.11	0.770	0.1966	Valid (5%)
	Y1.12	0.709	0.1966	Valid (5%)
Access (X1)	X1.1	0.517	0.1966	Valid (5%)
	X1.2	0.555	0.1966	Valid (5%)
	X1.3	0.668	0.1966	Valid (5%)
	X1.4	0.559	0.1966	Valid (5%)
	X1.5	0.725	0.1966	Valid (5%)
	X1.6	0.645	0.1966	Valid (5%)
	X1.7	0.761	0.1966	Valid (5%)
	X1.8	0.646	0.1966	Valid (5%)
Appearence (X2)	X2.1	0.649	0.1966	Valid (5%)
	X2.2	0.776	0.1966	Valid (5%)
	X2.3	0.701	0.1966	Valid (5%)
	X2.4	0.792	0.1966	Valid (5%)
	X2.5	0.791	0.1966	Valid (5%)
	X2.6	0.638	0.1966	Valid (5%)

B. Reliability Test

A reliability test is a test to measure the level of consistency and reliability of a questionnaire in measuring research variables, allowing the questionnaire to be used repeatedly with reliable results [18]. The reliability test results show that the three variables tested, which are comfort (Y1), access (X1), and appearance (X2), have correlation coefficient (R) values above 0.7 and Cronbach Alpha values above 0.6 (Table 2). From these results, it can be concluded that all variables can be categorized as reliable instruments in measuring the variables under study.

TABLE II
RELIABILITY TEST ON THE VARIABLES OF COMFORT, ACCESS, AND APPEARANCE

Variable	R	Cronbach Alpha 0.6	Results
Comfort (Y1)	0.873	0.6	Valid (5%)
Access (X1)	0.777	0.6	Valid (5%)
Appearence (X2)	0.808	0.6	Valid (5%)

C. Classic Assumption Test

The classic assumption test used to examine data distribution is the normality test. The normality test is used to determine whether the data obtained is normally distributed. In Regression Analysis, the normality test is essential. If the results are found to be non-normal, then the parametric statistical results cannot be justified, and the researcher may need to switch to non-parametric statistics [19].

TABLE III
NORMALITY TEST
One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			100
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		3.09306397
Most Extreme Differences	Absolute		.064
	Positive		.064
	Negative		-.045
Test Statistic			.064
Asymp. Sig. (2-tailed)[c]			.200[d]
Monte Carlo Sig. (2-tailed)[e]	Sig.		.394
	99% Confidence Interval	Lower Bound	.382
		Upper Bound	.407

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.
e. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 299883525

Referring to the normality analysis above, the sig. (2-tailed) value is 0.200. In accordance with the normality decision rule, the value 0.200 is greater than 0.05, so the data is normally distributed.

D. Heteroscedasticity Test

The heteroscedasticity test is used to test whether the regression model has differences. Graphical data analysis in Fig. 2 shows irregular point distribution. The data shows unpatterned point distribution between the Y-axes, so the results do not indicate heteroscedasticity [20]. Additional data is used to validate the results through the Glejser test to validate the data. The results of the second technique using the Glejser test are shown in Table 4. Based on additional analysis, the significance value of X1 is 0.761 and X2 is 0.393. Homoscedasticity is indicated if the significance value is below 0.05, so the above data is heteroscedastic [21].
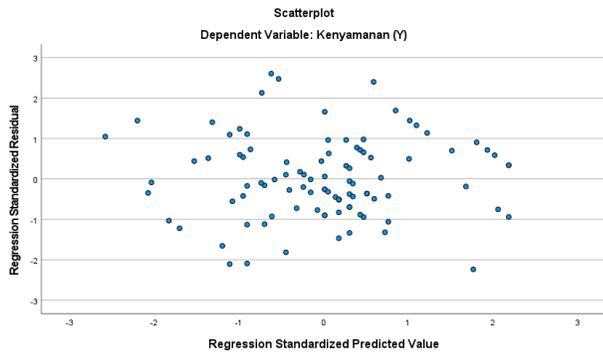
Fig. 2. Heteroscedasticity Test Graphic

TABLE IV
GLEJSTER TEST

Coefficientsᵃ

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	3.110	1.746		1.782	.078
	Access (X1)	.024	.079	.045	.305	.761
	Appearance (X2)	-.062	.072	-.127	-.858	.393

a. Dependent Variable: Abs_Res

E. Multicollinearity Test

This test is one of the outputs in the classical assumption test. This test is used to examine whether the analyzed data finds correlations between independent variables. According to Ghozali, multicollinearity does not occur if the tolerance value is greater than 0.100 and the Vif value is less than 10.00 [20].

TABLE V
MULTICOLLINEARITY TEST
Coefficientsᵃ

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	VIF
1	(Constant)	12.151	2.909		4.177	.000		
	Access (X1)	.589	.132	.367	4.478	.000	.468	2.135
	Appearance(X2)	.774	.121	.527	6.418	.000	.468	2.135

a. Dependent Variable: Comfort (Y)

According to the results (Table 5), the value of X1 has a tolerance of 0.468 and a VIF of 2.135. The value of X2 has a tolerance of 0.468 and a VIF of 2.135. Referring to the multicollinearity standard, the data for X1 and X2 are declared valid.

F. Hypothesis Test

1) Determination Test

The determination test is a data test to show that the variation of the independent variable (X) can explain the dependent variable (Y).

TABLE VI
DETERMINATION TEST

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.833ᵃ	.694	.688	3.125

a. Predictors: (Constant), Appearance (X2), Access (X1)

The model shows that the R Square value is 0.688. The determination test concludes that if R Square is close to 1, then it is stronger (Table 6). Therefore, the values of X1 (Access) and X2 (Appearance) have a strong influence of 68.8% and 31.2% is influenced by other variables outside the regression model.

2) Multiple Linear Regression Test

The multiple linear regression test aims to provide a specific analysis of data trends. The hypothesis is tested to determine whether it is negative or positive, as well as to identify the variables that most influence other variables. The multiple linear regression test equation is:

$$Y = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n + e$$

TABLE VII
MULTIPLE LINEAR REGRESSION TEST

Coefficientsᵃ

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	12.151	2.909		4.177	.000
	Access (X1)	.589	.132	.367	4.478	.000
	Appearance (X2)	.774	.121	.527	6.418	.000

a. Dependent Variable: Comfort (Y)

$$Y = 12.151 + 0.589X_1 + 0.774X_2$$

It is concluded that the value of variable X1 according to the regression results shows a positive regression value with a b value of 0.589. This concludes that if there is an increase in the value of X1 by 1 point, the value of Y will increase by 0.589. Similarly, variable X2 has a positive value of 0.774.

3) F Test (Simultaneous)

The F test can provide an overview of whether the independent variable has a significant effect on the dependent variable. The analysis test uses ANOVA by looking at the F values with the equation df2 = n − k − 1 for rows and df1= k-1. The significance value is 3.939 (according to the F table).

TABLE VIII
F TEST

ANOVAᵃ

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2150.103	2	1075.051	110.100	.000ᵇ
	Residual	947.137	97	9.764		
	Total	3097.240	99			

a. Dependent Variable: Comfort (Y)
b. Predictors: (Constant), Appearance (X2), Access (X1)

Based on the data above, the calculated F value (110.100) is greater than the F table value (3.933) and the sig value (0.000) is less than 0.05. Therefore, it can be concluded that variables X1 and X2 have a simultaneous positive effect on Y. Based on the data above, the hypothesis can be accepted.

G. T Test

TABLE IX
T TEST

Coefficients[a]

Model		B	Std. Error	Beta	t	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
1	(Constant)	12.151	2.909		4.177	.000
	Access (X1)	.589	.132	.367	4.478	.000
	Appearance (X2)	.774	.121	.527	6.418	.000

a. Dependent Variable: Comfort (Y)

Hypothesis

H1 = Accessibility affects user comfort in Alun-Alun Gianyar

H2 = Appearance affects user comfort in Alun-Alun Gianyar

Based on the analysis results, the calculated t-value for X1 is 4.478, and the t-table used as a reference for correlation is 1.985. The t-table is found by looking at the row with the formula of the total data minus 2, and the row position at 5% significance. The results show that access has a positive and significant effect on user comfort.

The second hypothesis is appearance with a t-value of 6.418. It can be concluded that appearance has a positive and very significant effect on user comfort. It can be concluded that both aspects in Alun-Alun Gianyar have a positive effect and appearance is the most significant variable in increasing user comfort in Alun-Alun Gianyar.

V. CONCLUSION

After conducting data testing and analysis, it was found that user access and space appearance factors influence user impressions regarding comfort in Alun-Alun Gianyar. Access factors are viewed in terms of ease of finding space to move, walking comfort, freedom to use the road, and space connectivity. Appearance factors are assessed in terms of space aesthetics, use of materials, shape, and vegetation arrangement. The independent variables in this study had a significant positive effect on the dependent variable, namely user comfort in the park. The most dominant factor in providing user comfort in Alun-Alun Gianyar was the city's appearance. The appearance of Alun-Alun Gianyar provides a comfortable atmosphere and has an architectural form that is iconic in Gianyar Regency.

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