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Community's characteristics and participation in the urban parks' preservation in Makassar, Indonesia

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Abstract. Having a green environment, such as urban park as green open space (GOS), is one way to reduce global warming in urban areas. City development and population growth, however, have led to a decrease in GOS. The research aimed to (1) identify the characteristics and activities of the community utilizing the urban park, (2) examine the type and level of community's participation in the urban park preservation and (3) analyse the relationship between the 'community's characteristics and participation level in the urban park. Employing the purposive sampling method, the researcher chose a city park with various facilities and the high rate of the visit. The respondents were visitors chosen through the accidental sampling method. The characteristics of the community that utilizes urban parks are very heterogeneous from factors: age, gender, education, social status, economic status, attitude/behaviour, and knowledge. Community activities in utilizing and preserving urban parks are very diverse (sports, leisure, and preservation activities such as maintaining the cleanliness of the park). Community participation in utilizing and preserving is included in the medium (quite participating) category. Significant factors with community participation in the preservation are factors of education, knowledge, and attitudes of the community.

1. Introduction

One way to mitigate the impact of global warming is, by keeping the environmental quality to stay green one of them is with the urban park [1-6]. As a result of population growth and urge for urban infrastructure, urban physical development has led to changes in urban structures with increasing land area, while Green Open Space (GOS) land is becoming a "counterweight" to the condition of a municipal ecosystem [2, 7-8]. The development of physical buildings, mostly permanent in shape, resulted in fewer GOS in the cities. It contributes to the increase in city temperatures. Therefore, the role of development and preservation of urban parks for the utilization of ecological role is very important [9-11].

Urban park as an open space that ideally can integrate environment, society, and health in an urban environment with an ecological approach. Urban parks have an ecological role, namely as a guard of urban environmental quality. Associated with the ecological function of urban parks can serve as filters of various pollutant and dust gases, carbon binders, microclimate regulators. Lush and leafy trees, which constantly absorb and process pollutants (carbon dioxide (CO₂), sulfur dioxide (SO₂), ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), and lead (Pb)), Which accounts for 80 percent of city air pollutants, into fresh oxygen that residents are ready to breathe at any time. We recognize the



importance of plants and forests as urban lungs which are expected to help filter and absorb pollutants in the air [2, 9-11].

Makassar city parliament has ratified Local Parliament Regulation (*DPRD*) number 3 of 2013 on GOS in accordance with the act 26 of 2007 on the arrangement of green open space in urban areas at least 30 percent of the city area. Based on the data of Makassar's Park Management Office (MPMO) in 2016, Makassar had 28 parks with variate sizes. Those parks are spread in various districts and managed by the MPMO [7]. The most popular urban parks in Makassar are *Losari* Beach Park, *Karebosi* Park, and *Macan* Park. Most of these parks have been transformed into a public space because it is equipped with various facilities for the community such as a playground for children, sports facilities, rest area, and discussion place.

1.1. Problem formulation

The problem to be studied in this research is formulated as follows:

1. What is the community activity at the urban parks in Makassar;
2. How are the characteristics of people who use the urban parks in Makassar;
3. What is the shape and level of community participation in the preservation of urban parks in Makassar;
4. Is there a correlation between characteristics and community participation in urban parks preservation in Makassar.

1.2. Research objectives

In general, this study aims to: "assess the characteristics and community participation in the utilization and preservation of urban parks in Makassar", while the specific objectives of this study are:

1. Identify community activities in utilizing the urban park in Makassar;
2. Identify the characteristics of people who utilize the urban park in Makassar;
3. To examine the shape and level of community participation in the preservation of urban parks in Makassar;
4. Analysing the relationship between the characteristics of society with the level of community participation in the preservation of urban parks in Makassar.

2. Research methods

2.1. Place and time of research

The study was conducted in Makassar. Site selection is based on the consideration that Makassar is one of the big cities, where the availability of urban parks is needed by the community. This research was conducted for 3 months, from December 2016 to March 2017.

2.2. Determination method of respondents

Determination of sample location of research using purposive sampling method is deliberately choosing an urban park that has facilities such as; seating place, play facilities, sports facilities, and the level of community visits is quite high. Based on these criteria then selected urban parks are: *Macan* Park, *Hasanuddin* Park, *Losari* Beach Park, *Karebosi* Park, *Kakatua* Park, *Maccini* Park, *Emmy Saelan* Park, *Benteng* Park, and *Al-Markaz* Park.

Determination of respondents was using accidental sampling method which is a sample determination technique by chance, that is, people who meet with researchers in the park and often visit and use park facilities. The number of respondents selected is 100 people.

2.3. Data analysis methods

The methods of data analysis are: (1) For the first, second and third purposes, descriptive analysis is used to describe the characteristics, activities, and participation of the people who utilize the urban parks in Makassar. The results of the study focused on providing an overview of the actual situation of the

object under study. This descriptive research method aims to determine the geography description of community participation on the preservation of urban parks as an open space for the community; (2) For the fourth purpose analysing the level of community participation using Chi-Square analysis with scoring technique and continued with Contingency Coefficient Analysis (C).

3. Results and discussion

3.1. Community's characteristics (X)

Characteristics of society by age shows that the respondent's maximum age is 73 years, the minimum age of respondents is 15 years, and the average age of respondents is 43 years. In general, the age of respondents who visit and utilize the urban park in Makassar is productive. The number of male respondents was 59% while the female gender was only slightly different with 41%. The average education level of the respondents is high school. Characteristics of respondents by social status is working as professionals, civil servants (*PNS*) and entrepreneurship (high category) is 49.00%, then the medium category (technical and Administration Personnel) as many as 37.00%, and hawkers, labourers, and pensioners and do not have a job as many as 14.00%. The economic status is measured during the last month. There were 8% categorized as low income, 53% as medium income, and 39% as high income. The income of the respondents is ranging between 4.000.000 IDR to 7.900.000 IDR.

Characteristics of respondents by the level of knowledge of the city park in Makassar for high knowledge category (already applying preservation of the city park) is just 15%, middle knowledge category (already understand about the preservation of the city park but have not done it) is 49%, while low knowledge category (just in the level of knowing) 36%. So, it can be concluded that the level of knowledge of respondents is the middle category, that is more respondents who already know and understand about the preservation of urban park but not applying it. Behaviour is a person's response to activities undertaken in the city park. Behaviour can be positive and can also be negative. Positive behaviour tends to act sympathy, such as; To the park to relax, exercise, maintain and preserve the city park, and so forth. While negative attitudes tend to act antipathy, such as; Hate, does not care, and even contaminate and damage the city park facilities. Characteristics of respondents based on the behaviour of urban parks in Makassar City is for the criteria of positive behaviour (high category) as much as 53% and for criteria of negative behaviour (low category) as many as 47%. So, it can be concluded that the behaviour of respondents who visited the city park in Makassar City is still more in the positive category (high).

3.2. Community's activities

People who visit and take advantage of the urban park in the city of Makassar has done various activities in the urban park. This activity consists of activities in utilizing the urban park and activity activities in the preservation of the urban park.

Activities undertaken by the community in utilizing the urban park in Makassar is described in Table 1.

Table 1. Community activities in utilizing urban parks In Makassar

Utilizing Activity	Number of Respondent	Percentage (%)
Sports	19	19.00
Relax	3	3.00
Play	12	12.00
Sports and relax	41	41.00
Sports and play	21	21.00
Sports, relax and play	11	11.00
Other activities	3	3.00
Amount	100	100.00

The activities of the community in utilizing the urban park in Makassar is the most widely done by the community is to sports while relaxing to enjoy the beauty of the urban park (41%), and the least activities are just relaxing (3%) and other activities (3 %). Other activities are the troops hoisting flag/ *Paskibra* and scouts/ *Pramuka*).

Activities undertaken by the community in the preservation of urban parks in Makassar are described in Table 2.

Table 2. Community's activities in urban park preservation in Makassar

Preservation Activity	Number of Respondents	Percentage (%)
Planting plants	0	0.00
Picking up trash	3	3.00
Throw garbage in its place	15	15.00
Maintain cleanliness	47	47.00
Not damaging the park	20	20.00
Not participating	15	15.00
Amount	100	100.00

Community activities in most urban park preservation are to keep the urban park cleanliness (47%), and that is not done is planting crops. Thus, some people are aware of the importance of preservation of urban parks, although only limited to maintain the cleanliness of the parks.

3.3. Community participation (Y)

Participation is a community activity in preserving the city park in Makassar. Community participation is assessed in the form of participation and the level of participation. The forms of community participation are distinguished from direct participation, indirect participation, and non-participation. The level of community participation in preserving the urban park environment is how the community utilizes, prevents and overcomes the damages of the urban park.

3.3.1. Forms of participation. Direct participation is the involvement of the community in performing certain activities such as planting crops, disposing of garbage in the existing place, picking up garbage, not stepping on the park and guarding the urban park facilities in Makassar. While indirect participation is the involvement of the community in the form of thoughts or suggestions to maintain the sustainability of the urban park in Makassar. Forms of community participation/respondents in urban parks are presented in Table 3.

Table 3. The form of respondent's participation based on score value in Makassar

Forms of Participation	Score Value	Number of Respondents	Percentage (%)
Directly	2	35	35.00
Indirect	1	37	37.00
Not participating	0	28	28.00
Amount		100	100.00

Table 3 shows that the form of participation that visited the urban park in Makassar more participate indirectly (community involvement in the form of thoughts or suggestions to maintain the sustainability of the urban park).

3.3.2. Level of participation. A description of the level of community participation/respondents to the preservation of urban parks is presented in Table 4.

Table 4. Level of community participation and score value in Makassar

Level of Participation	Score Value Number of	Respondents Amount	Percentage (%)
Tackling	3	7	7.00
Prevent	2	33	33.00
Utilizing	1	36	36.00
Not participating	0	25	25.00
Amount		100	100.00

Table 4 shows that generally, the level of participation of respondents who visited the urban park in the city of Makassar is at the level of utilizing facilities and infrastructure such as play facilities and sports only 36 respondents (36.00%). Form and level of participation are presented in Table 5.

Table 5. Community participation by category participation in Makassar

Score of Participation (Form + Level)	Category Participation	Number of Respondents	Percentage (%)
4 -5	High	26	26.00
2 - 3	Medium	47	47.00
0 - 1	Low	27	27.00
Amount		100	100.00

Table 5 shows that community participation in preserving urban parks in Makassar is included in the category of medium participation.

3.4. Analysis of factors related to community participation in preserving the urban parks

The Chi-Square (χ^2) analysis and contingency value of the relationship between the characteristic factor and community participation is the result of all factors between characteristics with community participation in urban park preservation is shown in Table 6 below.

Table 6. Chi-square value count (χ^2) and contingency (c)

Variable	χ^2 Account	Categori	Contingency Value
Age (X_1)	4.17	Non-significant	-
Gender (X_2)	4.75	Non-significant	-
Education (X_3)	11.32	Significant	0.319
Social status (X_4)	6.00	Non-Significant	-
Economic Status (X_5)	4.57	Non-Significant	-
Knowledge (X_6)	16.38	Significant	0.548
Behaviour (X_7)	19.53	Significant	0.709

Chi-square analysis of age factors obtained χ^2 count = 4.17 and χ^2 table = 9.49 at 95% confidence level (the χ^2 count smaller than the χ^2 table), which means there is no significant relationship between age with community participation. Age is not significant because all ages mingle in utilizing urban parks. Chi-square analysis results obtained χ^2 value = 4.7 and χ^2 table = 9.49 (the χ^2 count smaller than the χ^2 table), which means not significant. It is because there is no difference in the number of visitors to the urban park by sex where the number of male and female visitors is almost the same, and there is no difference in the preservation of urban parks in Makassar.

Education is a level of formal education (elementary, junior high school, high school, and college). Chi-square analysis results obtained χ^2 count = 11.32 and χ^2 table = 9.49 (the χ^2 count greater than the χ^2 table) which means significant between the level of education and community participation. Contingency coefficient (C) is 0.319, meaning that the public education variable has a moderate closeness with community participation.

Social status is the position of a person based on the type of work. Chi-square analysis results obtained χ^2 value = 6.40 and χ^2 table = 9.49 (the χ^2 count is smaller than the χ^2 table), which means not significant.

Economic status is the position of a person measured by income level. Chi-square analysis results obtained χ^2 count = 4.57 and χ^2 table = 9.49 (the χ^2 count smaller than the χ^2 table), which means that there is no significant relationship between the economic status of respondents with community participation.

The level of knowledge is knowing, understanding, and applying. Chi-square analysis results obtained by calculating $\chi^2 = 16.38$ and χ^2 table = 9.49. Thus, there is a real (significant) relationship between knowledge and community participation. Contingency coefficient (C) is 0.548, meaning that knowledge has a strong enough closeness with community participation.

Attitude is a person's response to an urban park that is expressed in the form of behaviour. Attitudes can be positive and negative. Chi-square analysis results in table 6 obtained χ^2 value = 19.53 and χ^2 table = 9.49. Thus, there is a significant relationship between the attitudes of respondents with community participation. Contingency coefficient (C) is 0.709 meaning that the attitude variable of the community has a strong closeness with the level of community participation.

4. Conclusions

1. Characteristics of communities who use the urban park in Makassar is very heterogeneous from factors: age, gender, education, social status, economic status, attitude/behaviour, and knowledge.
2. Activities of the community in utilizing and preserving urban parks in Makassar is very diverse. Most activities of urban park utilization are sports and leisure (41,00%), and urban park preservation activity which mostly done is to maintain cleanliness of urban park (47.00%).
3. Community participation in utilizing and preserving urban parks in Makassar including the category of moderate (enough to participate).
4. Educational factors, knowledge, and attitudes of the community, significantly related to community participation in urban park preservation.

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