A STATEGICAL ANALYSIS OF GREEN OPEN SPACE' MANAGEMENT AND THE RELATION TO PUBLIC MENTAL HEALTH' OPPORTUNITIES
(Case Study in Pakujoyo Park, Sukoharjo Regency)

Paksi Danurdara[a], Suryanto[b], Evi Gravitiani[c]
[a] Sebelas Maret University, Surakarta, Indonesia
[b] Sebelas Maret University, Surakarta, Indonesia
[c] Sebelas Maret University, Surakarta, Indonesia

Abstract

The density problems due to population growth in urban areas can affect people's stress level. One of the many ways to reduce stress level of urban people is utilizing the green open space (GOS). Sukoharjo Regency as one of the expansion regions of Surakarta City continues to experience the same problem every year. This density problem underlies the local government to build GO Sin the area, including Pkujoyo Park. This study aim to analyze the usage of Pakujoyo Park as a GOS, related to the opportunity for users to get good mental health when visiting. This study also analyzes the management of Pakujoyo Park connected to the conformity of users' needs. The analysis technique used in this study are multino minal regression analysis and SWOT analysis. Based on the results of the study, it is known that the distance of users' houses to GOS can affect people's desire to visit Pakujoyo Park. The intensity of the visit also affects the opportunity for users to get good mental health when visit Pakujoyo Park. In the other hand, the SWOT analysis shows that the existence of Pakujoyo Park needs to be managed through maximizing the strengths and opportunities that this GOS has.

Keywords: Green Open Space (GOS), Mental Health, GOS Management

1. Introduction

Indonesia is one of the many countries that has high population growth problems. This causes other issues to arise; such as economics, social and cultural issues. Overall, population growth gives positive impact to increase the number of workers. However, population growth also affects the management of urban space. The number of settlements in urban areas is getting denser. Sukoharjo Regency is one of the districts which is currently a division of Surakarta City. Based on the 2017 data from Population and Civil Registration Agency; there are approximately 893,914 people living in Sukoharjo Regency. This number has increased by 22,517 people from the previous year.

The density problem in an urban area has an impact to the pattern of life for surrounding communities. Residents who live in cities with high density have the opportunity to get higher level of stress. Anoraga (2006) explained that a person's stress level caused by two factors, either caused by self-consciousness or by the environment. One of the reason could be because there is

not enough room to move, that triggers the density problem to appear. Therefore, the government needs to provide more open spaces in urban areas to facilitate the public needs.

Green open space (GOS) is an open area in the form of empty land where there are many plants surrounding.GOS is a part of free public space. Indonesia's Law Number 26 of 2007 stated that the provision of GOS is one of the government's mandatory agenda to improve the social welfare through the provision of public facilities. GOS can be the lungs of the city, also can be used for recreation, education, or other social purposes. In this study, city parks are used for the indicator to implement the GOS. The city park is one of the public facilities that can have a positive influence on the surrounding society. Based on Indonesia's Minister of Public Works Regulation Number 05 / PRT / M / 2008, the minimum area of city parks is 144,000 m^2 with an area of 0.2 m^2 per capita. Provision of public facilities is a form of government responsibility in serving the society(Utami & Suryanto, 2013).

Koohsari et al., (2018)explains that people who routinely conduct activities in GOS have better opportunity to get good mental health. In the other hand, Sukoharjo Regency has two large city parks namely Pakujoyo Park and Wijaya Kusuma Park. Each park has an area of 3,941 m2 and 3,791 m2. However, nowadays Pakujoyo Park is more popular than Taman Wijaya Kusuma. This is because Pakujoyo Park is a new city park and has more facilities than Taman Wijaya Kusuma. That's why the enthusiasm from society is bigger to visit Pakujoyo Park rather than Taman Wijaya Kusuma.

This research focuses on providing urban parks as green open space that are ideal for the society. By analyzing the impact of Taman Pakujoyo's existence to the opportunity for society to obtain quality mental health; it will be known that the needs of urban parks are ideal and in accordance with the society needs; through measuring aspects from Strengths, Weaknesses, Opportunities and Threats (SWOT) approach. The final goal of this study is to see the usage of Pakujoyo Park as a GOS, related to the opportunity for someone to get good mental health when visiting. In addition, the SWOT analysis is used as a reference in providing green open space in other regions.

Theoretical Framework

Green open space is a part of the provision of public open space. Based on Indonesia's Minister of Public Works Regulation Number 05/PRT/M/2008, a green open space is an "elongated area / lane and / or clustered area which is open for access; where the plants grow either naturally or intentionally planted". The regulation also explains that a city must have at least 30% green open space from the entire area.In accordance with its function, an open area is categorized into eight types like City Parks, Urban Forests, City Recreation, Sports Activities, Funerals, Agriculture, Green Trails, and yards. This classification was based on Indonesia's Minister of Public Works Regulation No. 05/PRT/M/2008.

Another function that arises from the construction of green open space is it gives impacts on the natural environment. Hasni (2009), explained that there are 8 functions created from the benefits of GOS development. These functions are described as the following:

- Edaphis functions; GOS as an environment for animals and plants.
- Hydro-orological functions; GOS has functions to preserve water and soil.

- Climatological function; in the GOS a microclimate will be created due to the effects of photosynthesis and respiration from plants.
- Protective function; GOS is able to protect the surrounding environment from natural disturbances.
- Hygienic function; pollutants in the air and water can be reduced by green open space.
- Educational function; green open space serves as a source of public education about the natural environment.
- Aesthetic functions; the beauty of the surrounding environment can be created from good GOS.
- Economic Social Functions; people can use GOS as a place to socialize, trade, and other social activities.

The correlations between humans and the environment are difficult to separate, because the environment isa fundamental asset for human life (Raharjo & Gravitiani, 2012). Provision of a GOS is an implementation of human relations with the environment, and this is inseparable from the development problems in each country. In fact, there are main aspects that determine the availability of green open space in a region; that are the demographic and geographical aspects. Demographic aspects are closely related to population. While the geographical aspects are related to the problem of regional availability. The increasing population in urban areas has also increased the demand for urban land. This is a problem, because the availability of open space for the society will decrease. In addition, change in land uses is also a problem that is causing the lack of availability for green open space in urban areas.

The Society Mental Health

Besides being able to trigger social problems, increasing population in urban areas can also affect people's mental health. Mental health is a condition where the psychological elements of neurosis and psychosis can be affected. Someone who has a problem with mental health can potentially suffer from stress, frustration, depression, and other psychiatric disorders (Notosoedirdjo&Latipun, 2017). Population density is one of the reasons that makes someone feels densely, therefore it can affect the mental health.

Population density causes people not to be able to access open space freely. Heryati, (2011)explained that densely populated areas will become more congested. As a result, there will be less space to interact, socialize and act outside of work. This will cause people's quality of life and mental health to be affected. Open space is needed to facilitate outdoor activities for the society, especially in urban areas. As explained by Francis, Wood, Knuiman, & Giles-Corti, (2012), that giving access to urban communities is very important. This is because psychologically, urban communities need space to move freely outside their routines. The existence of GOS is one of the right solution, therefore it is necessary to provide at least an open space for urban communities. Green open space that was developed into a city park can attract more people to spend their time outside of their routine activities. The existence of GOS in the midst of urban communities is very profitable, because people can easily visit these open spaces. Wood, Hooper, Foster, & Bull, (2017), explained that the distance between a house and GOS

also could affect people's interest to visit GOS. The intensity in accessing GOS will also affect the opportunities of society to get good mental health.

To see the mental health opportunities from accessing GOS, we use the following indicators which are from The Warwick-Edinburgh Mental Well-being Scale (WEMWBS). WEMWBS has 14 components of positive statement scale which are the basis to see someone's opportunity to obtain mental health. These indicators are described in the following:

1. *I've been feeling optimistic about the future*
2. *I've been feeling useful*
3. *I've been feeling relaxed*
4. *I've been feeling interested in other people*
5. *I've had energy to spare*
6. *I've been dealing with problems well*
7. *I've been thinking clearly*
8. *I've been feeling good about myself*
9. *I've been feeling close to other people*
10. *I've been feeling confident*
11. *I've been able to make up my own mind about things*
12. *I've been feeling loved*
13. *I've been interested in new things*
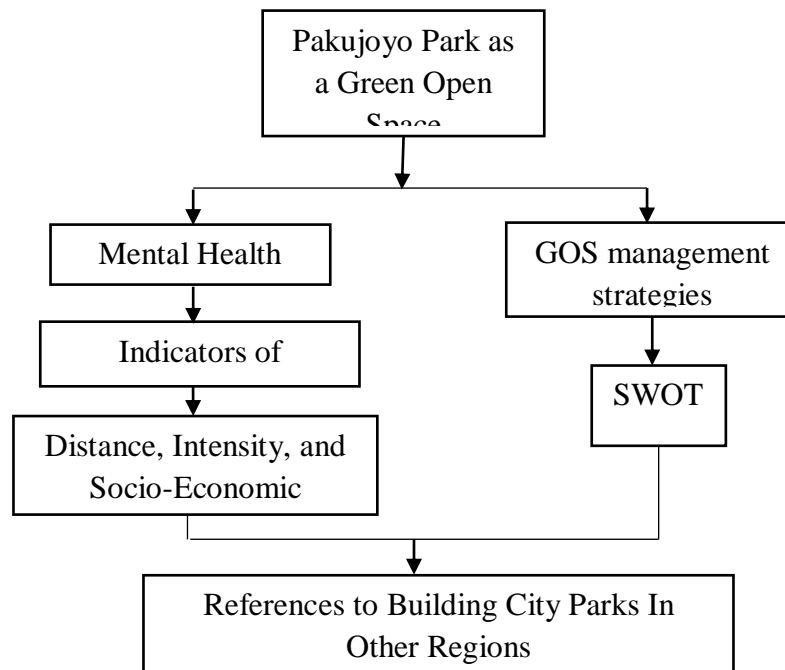14. *I've been feeling cheerful*

The pre-survey was aimed at 20 visitors to find out the level of understanding of the indicator. The pre-survey results changed from the 14 indicators to 8 indicators based on respondents' understanding. This changes described as the following:

1. *I've been feeling relaxed.*
2. *I've been thinking clearly*
3. *I've been feeling get additional energy.*
4. *I've been feeling close to other people.*
5. *I've been dealing with problems well.*
6. *I've been feeling productive.*
7. *I've been feelingmentally refreshed*
8. *I've been feeling get inspire, from outdoor activities.*

Method

This research was conducted in Pakujoyo Park, which is a green open space in the Gayam Village, Sukoharjo Regency, Central Java. The reason for choosing the location of this research is because Sukoharjo is one of the regions of the expansion of Surakarta City, and currently trying to increase the amount of green open space development. This district has only a small amount of GOS, while the need for GOS in the middle of residential areas is very important. Therefore, a strategy analysis is needed to manage open green space to suit the needs and bring a positive impact on the community, especially on mental health.

This research is a type of correlational research. It means that this research was conducted to see the effects of independent variables to the dependent variable. In addition, this research includes the quantitative descriptive analysis. The research instrument used in this study was a questionnaire. Questionnaires become a tool to collect response data from the community, so that relevant conclusions can be obtained. In this case, there are 2 types of questionnaires used, namely the pre-survey questionnaire and research questionnaire

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        ┌─────────────────────┐
        │ Pakujoyo Park as    │
        │ a Green Open        │
        │ Space               │
        └─────────┬───────────┘
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│ Mental Health    │  │ GOS management   │
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│ and Socio-Economic  │       │
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   │ Parks In Other Regions          │
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Figure 2.1: Conceptual framework

Observation techniques were used to analyze the condition of Pakujoyo Park as a research object. While the interview technique was carried out in the pre-survey stage to adjust the WEMWBS indicators and SWOT analysis statements. In addition, interviews can help fill out questionnaires for respondents. The population in this study were all people who visited Pakujoyo Park. Because Pakujoyo Park is a public good, the number of visitors cannot be ascertained. However, based on observations made and the results of interviews with local managers and traders, it is estimated that the number of visitors per day is around 200 people in average. Visitors of Pakujoyo Park come from various regions, ranging from surrounding communities and from Wonogiri District or even from Surakarta City. The sampling technique in this study was incidental sampling. This technique's scheme is to take the respondents we met at the time of the visit, the n used them as the research samples (Lawrence, 2014). The number of samples used in this study were 56 people with the following criteria.

Tabel2.1: Criteria for Research Respondents

Gender	Age (Year)			Distane houses with GOS (Kilometer)		Intensity of visits (monthly)		Total
	16-30	31-45	46-65	< 2km	> 2km	< 4 kali	> 4 kali	
Male	4	11	8	17	6	4	19	23
Female	10	15	8	16	17	13	20	33

Source: Primary data

This research used multinominal logistic regression analysis to find out the opportunity value for society to get good mental health when visiting Pakujoyo Park. This study included some variables such as distance, intensity, and socio-economic those were considered to influence the chances of visitors to get a good mental health. The opportunity for the community to get mental health when visiting Pakujoyo Park is obtained through the assessment of 8 WEMWBS indicators. Out from the 8 indicators, classification was carried out to analyze the level of community opportunity to get mental health when visiting Pakujoyo Park. Likert scale 1-5 was used to measure the level of mental health opportunities

Tabel2.2: Classification of Mental Health Opportunities

Average Score	Categories of WEMWBS	Opportunities to get Mental Health
1 – 1,5	None of the time	The least
1,6 – 2,5	Rarely	A little
2,6 – 3,5	Some of the time	Enough
3,6 – 4,5	Often	Big enough
4,5 – 5	All of the time	Big

Source: Indicators of WEMWBS

In addition to know the opportunities for society's mental health, the Likert scale results will be used as the dependent variable. This dependent variable will be correlated with the independent variables consisting of the distance from the park to the respondent's house, the intensity of the visit, as well as socio-economic aspects (gender, age, marital status, education, employment, and income). Akpinar, Barbosa-Leiker, & Brooks, (2016) explained that socio-economic variables can be included as additional variables to control the distance and intensity variables on the influence of visits in GOS. Later, the equation of the multi-logistic regression model was obtained as the following.

Logit $P(Y = 1) = \alpha + \beta_1 Jr + \beta_2 Ik + \beta_3 Gen + \beta_4 Age + \beta_5 Stat + \beta_6 Pnd + \beta_7 Pkj + \beta_8 Pndp + e_t$

Where :

Logit P : The Society Mental Health. Consists of 5 categories there are; "The least", "A little", "Enough", "Big enough", "Big".
α : *Intercept*
β : *Coefficient Regression*
x : Variable value
Jr : Distance of the respondent's house (Kilometer)
Ik : Intensity of the visit (Weekly)
Gen : Gender (Male / female)
Age : Age (year)
Stat : Marital status (married, unmarried, and divorce)
Pnd : Education (year)
Pkj : Employment (employees / non-employees)
Pndp : Income (monthly in IDR)
e_t : *Error term*

The SWOT analysis in this study was used to describe the strengths, weaknesses, opportunities, and threats that exist in the development of Pakujoyo Park as the implementation of green open space. In collecting SWOT statements, researchers conducted a pre-survey of 20 respondents. The statement was made weighting and ranking in the SWOT analysis.

2. Result
The impact of accessing Pakujoyo Park on the opportunity for society to obtain good mental health
The government requires an area to provide green open space. Based on the regulation, Sukoharjo regency's government built a new GOS to provide open space for the society, which is Pakujoyo Park. Pakujoyo Park is a form of implementation and innovation from GOS. Not only providing GOS, this park can also be used as children's playground and educate them through facilities in the park. In the end, the construction of Pakujoyo Park can apply the concept of a Child-Friendly City.
Multinomial Logistic Regression Analysis

Measurement results from the independent variables (distance, intensity, gender, age, status, education, occupation, and income) to the dependent variable (community opportunity to obtain mental health) was done by looking at the influence between those variables. Based on data processing using the SPSS 16 program, the results shows that the independent variables which gives significant results at the 5% significance level are distance and intensity variables, with 0.036 and 0.001 respectively. While the other variables such as gender, age, status, education, employment, and income, respectively obtained results of 0.493; 0.265; 0.096; 0.122; 0.229; 0.495. The level of significance shown from the regression results explains that the distance and intensity variables (less than 5%) have an influence on the mental health opportunity variable. In the other hand, the rest of the independent variables have no influence to mental health.

Based on the results of the study, the distance of someone's house to Pakujoyo park can influence interest to visit the GOS. The results of this study are in accordance with the study of Koohsari et al., (2018), which concluded that the distance of society houses to GOS will have an impact to someone's interest to spend their leisure time to use or accessing the GOS. The location of GOS which is close to residential areas, will make it easier for them to get open space facilities in the midst of urban crowds.

In addition to distance, the intensity of the society in accessing Pakujoyo Park also increase the opportunity for them to get good mental health. People who often visit the GOS will have a positive impact from outdoor activities. The activity of socializing with other people and playing with family will increase mental satisfaction. We can conclude that when people visit GOS, it will affect the opportunities for them to get good mental health.

The Analysis of Strenghts, Weaknesses, Opportunities, Threats (SWOT)
**Tabel 3.1 : SWOT Matrix**

	Strenghts (S)	*Weaknesses* (W)
INTERNAL	• Complete park venues • Quality of new park venues • Strategic location of GOS • The area of the park is adequate • The number of street vendors around the park • Become the center of the socio-economic activities of the surrounding society	• Lack of garden cleanliness • Lack of lighting during the night • There is no electricity and wifi facilities • There is no security • There is no Musholla facility • Lack of variety of plants
EKSTERNAL		
Opportunities(O)	Strategy : S – O	Strategy : W – O
• Being a pioneer of GOS	- Making Pakujoyo Park as	- There is a government

innovation in Sukoharjo Regency • Providing multiple economic effects • Increase public awareness to better respect the environment • Creating a healthy lifestyle for the people who visit it • Received the Adipura award	landmark of GOS in Sukoharjo Regency - Optimization of planting vegetation variations - Provision of facilities and space for economic development of society around GOS - Providing community support facilities to get health services. - The construction of other GOS with a basic concept of development such as Pakujoyo Park	commitment in making Pakujoyo Park as green open space that is not only for mental health, but also for the economy of the surrounding society. - Increased budget to be allocated for maintenance and additional facilities in Pakujoyo Park - Creating a culture to use public facilities wisely.
Threats(**T**)	Strategy : S – T	Strategy : W – T
• The existence of modern shopping centers as competitors of GOS • Damage to city park venues due to lack of routine management • Limited development budget from the government • Policy for entry tickets	- Increase the institutional role of stakeholders - Society empowerment around Pakujoyo Park - Evaluate the procurement effectiveness of facilities and management	- Innovation improvement and evaluation related to the procurement of facilities in Pakujoyo Park - Providing information to the society about the importance of maintaining the environment and public facilities wisely - Provide information about the utilization of Pakujoyo Park positively in order to provide comfort and safety for visitors

Source: *Primary Data*

Based on the results from internal and external factors which are formulated through weighting and ranking in the SWOT analysis, the results' difference between factors is obtained which concludes where the value of the SWOT analysis is categorized. The score of SWOT analysis is obtained through answers from respondents about the statements that have been provided. The value of the X axis which consists of internal factors is 0.23. While the Y axis which consists of external factors is 0.73. Therefore, the description for the SWOT analysis regardingthe existence of Pakujoyo Park can be explained in the following figure.
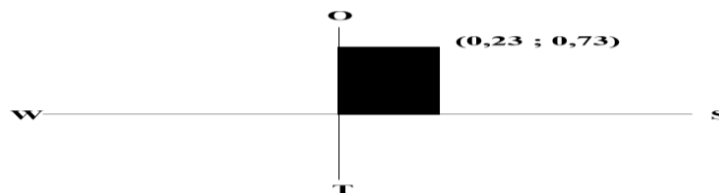
Figure 3.1: Coordinate of SWOT Analysis Results

The results of the analysis show that the presence of Pakujoyo Park is in quadrant I. The strategy for managing development and strengthening Pakujoyo Park is using the S-O strategy. The S-O strategy works to combine the strength aspects with opportunities aspects that Pakujoyo Park has. Therefore, the existence of Pakujoyo Park is in accordance with the community's perception of GOS needs. An explanation of the S-O strategy to strengthen the existence of Pakujoyo Park as a center for community green open spaces, can be explained below:

- The Sukoharjo District Government looks at the community's need for the importance of green open space. Therefore, the complete construction of Pakujoyo Park facilities can become an icon / landmark of GOS in Sukoharjo Regency.
- Optimization of planting vegetation variations can educate public about the diversity of vegetations. This strategy can strengthen the existence of Pakujoyo Park as green open space that carries out ecological or environmental functions.
- The existence of Pakujoyo Park is currently very beneficial for the community, especially in the economic field. People can use Pakujoyo Park for trade activities. The government can open entrepreneurship training by maximizing the potential of the community around the park. This policy will be proof that the existence of a GOS, not only as a place of recreation, but also as a center for economic empowerment of the surrounding community.
- One of the opportunities that can be developed in Pakujoyo Park is the provision of health services in Pakujoyo Park, in the form of health check services. This is because GOS is closely related to human activities.
- The last opportunity is the construction of green open space in other areas using references from facilities provided by Pakujoyo Park. However, this opportunity still has to consider the weaknesses that exist in Pakujoyo Park as an evaluation aspect

3. Discussion

Pakujoyo Park is an alternative place for the surrounding society to do outdoor activities, outside their routines. Based on the results of the study, someone who visited Pakujoyo Park had the opportunity to get good mental health. The distance and intensity of the visit had a significant impact on the opportunity to get good mental health. This city park management strategy needs to be done to adjust the GOS needs of the society using the SWOT analysis. In addition, management is also important to maintain the quality of GOS.

Based on the results of the SWOT analysis, a strategy that can be applied to the sustainability of Pakujoyo Park to suit the needs of the community is S-O. The S-O strategy develops the strengths and opportunities that this green open space has. These strategies include: establishing Pakujoyo Park as an icon or landmark of RTH in Sukoharjo Regency, optimizing vegetation planting, economic development centers, surrounding society health services, and as a pilot project for green space development in other regions.

The limitation of this study is only to know the importance of the existence of green open space, and to see the people's perspective on the needs of green space that is ideal for them. Further

research can be done by developing the GOS concept in Pakujoyo Park to be applied in the construction of green open space in other areas, using Geographic Information System (GIS) techniques.

As a suggestion, the government needs to evaluate the GOS routinely by involving the society as users. Future research is expected to include Geographic Information System (GIS) techniques in planning the construction of GOS in other regions.

References

Akpinar, A., Barbosa-Leiker, C., & Brooks, K. R.2016."Does green space matter? Exploring relationships between green space type and health indicators".*Urban Forestry and Urban Greening*, *20*, 407–418. https://doi.org/10.1016/j.ufug.2016.10.013

Anoraga, P.2006."*Psikologi Kerja"*, Jakarta :PT. Rineka Cipta.

Francis, J., Wood, L. J., Knuiman, M., & Giles-Corti, B.2012. "Quality or quantity? Exploring the relationship between Public Open Space attributes and mental health in Perth, Western Australia".*Social Science and Medicine*, *74*(10), 1570–1577. https://doi.org/10.1016/j.socscimed.2012.01.032

Hasni.2009."Ruang Terbuka Hijau Dalam Rangka Penataan Ruang",*Jurnal Hukum, 4*(2)*,* 39-65.

Heryati.2011."Kampung Kota sebagai Bagian dari Permukiman Kota Studi Kasus : Tipologi Permukiman RW 01 RT 02 Kelurahan Limba B dan RW 04 RT 04 Kel.Biawu Kecamatan Kota Selatan Kota Gorontalo".*INOVASI*, *8*, 102–117.

Koohsari, M. J., Badland, H., Mavoa, S., Villanueva, K., Francis, J., Hooper, P., … Giles-Corti, B.2018."Are public open space attributes associated with walking and depression?".*Cities*, *74*(January 2017), 119–125. https://doi.org/10.1016/j.cities.2017.11.011

Lawrence, Neuman W.2014."*Social Research Methods: Qualitative and Quantitative Approaches*". Pearson New International Edition: USA.

Notosoedirdjo, M., & Latipun.2017."Kesehatan Mental : Konsep dan Penerapan"*,* Malang : UMM Press. Raharjo, M., & Gravitiani, E.2012."The Economic Value of Sangiran Museum, Central Java, Indonesia Application of Travel Cost Method",*International Journal on Social Science Economics and Art*, *2*(2), 39–43. Utami, W. S., & Suryanto, S.2013."Indeks Kepuasan Masyarakat Pada Pelayanan Kantor Kecamatan Di Surakarta, Indonesia".*Jurnal Ekonomi & Studi Pembangunan*, *14*(2), 174–184. http://journal.umy.ac.id/index.php/esp/article/view/1276/1331

Wood, L., Hooper, P., Foster, S., & Bull, F.2017."Public green spaces and positive mental health – investigating the relationship between access, quantity and types of parks and mental wellbeing".*Health and Place*, *48*(November 2016), 63–71. https://doi.org/10.1016/j.healthplace.2017.09.002 Republik Indonesia. 2008. "Undang-Undang Nomor 05/PRT/M/2008 Tentang Pedoman Penyediaan dan Pemanfaatan Ruang Terbuka Hijau Di Kawasan Perkotaan".