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Implementation of the Utilization of Green Open Space as an MSME Area: A Case Study at RTH Bunderan Serayu, Madiun City

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Abstract.

The use of Green Open Space (RTH) as a community economic activity is an important strategy for realizing sustainable urban development. This study analyzes public perception using Bunderan Serayu RTH in Madiun City as a Micro, Small, and Medium Enterprises (MSMEs) area and examines its implications for social, economic, environmental, welfare, and regional spatial planning (RTRW) aspects. Using a mixed method, which combines quantitative descriptive analysis through questionnaires and validity-reliability tests (Pearson Product-Moment and Cronbach's Alpha) with a qualitative approach in the form of field observation and regional spatial policy studies. The study found that the public had a positive perception, with an average score of 2.9–3.2 (medium category), of the use of RTH as an MSME area. Economic activities in parks are expected to increase income, strengthen social interactions, and provide psychological benefits that improve people's welfare. However, some respondents highlighted the potential for environmental quality to decline and the need to implement the RTRW policy to regulate zoning and the productive use of public space. This study emphasizes that using RTH can be optimized if supported by adaptive spatial governance, consistent environmental monitoring, inclusive RTRW policy enforcement, and active community participation. These findings are common as a basis for the development of productive green space policies oriented towards public welfare, ecological sustainability, and urban economic empowerment.

Keywords: RTH, Community Perception, Ecological Sustainability, MSMEs, Welfare, RTRW

1 Introduction

Urban Green Open Spaces (Ruang Terbuka Hijau/RTH) play a strategic role in contemporary urban planning, functioning not only as ecological infrastructure but also as social and economic spaces that contribute to urban sustainability. Traditionally, RTH has been emphasized for its environmental functions, including climate regulation, carbon sequestration, biodiversity support, water infiltration, and improvement of urban microclimates (Forman, 2014). However, in rapidly urbanizing cities—particularly in developing countries—green open spaces are increasingly expected to accommodate social and economic activities alongside their ecological roles.

In recent years, the utilization of RTH for productive economic activities, especially those involving Micro, Small, and Medium Enterprises (MSMEs), has become a common urban phenomenon. Urban parks and green public spaces are often transformed into informal or semi-formal economic nodes where local communities engage in trading, culinary businesses, and service-based activities. On one hand, this practice contributes to local economic circulation, employment opportunities, and community welfare. On the other hand, it raises concerns regarding the potential degradation of ecological functions, spatial disorder, and conflicts with established spatial planning regulations (WCED, 1987).

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The multifunctional use of green open spaces has generated ongoing debates within urban planning and public policy discourse. Proponents argue that integrating economic activities into green spaces enhances social inclusivity, strengthens social interaction, and increases the relevance of public spaces for daily urban life (Putnam, 2000). Conversely, critics highlight the risk that uncontrolled economic utilization may reduce environmental quality, diminish green coverage, and weaken the long-term sustainability of urban ecosystems (Forman, 2014). These contrasting perspectives indicate that the success of productive green space policies is closely linked to how such spaces are perceived and accepted by the community.

Public perception is therefore a critical factor in determining whether the integration of MSME activities within RTH can be sustained without undermining its ecological function. Studies on urban green spaces show that positive public perception tends to emerge when economic activities are well-managed, environmentally sensitive, and aligned with the social function of public spaces (Haq et al., 2021). Conversely, negative perceptions often arise when green spaces are perceived as overcrowded, poorly regulated, or environmentally degraded.

In this context, the City of Madiun has implemented a policy since 2021 that allows limited MSME activities within the Bunderan Serayu Green Open Space. As one of the major public open spaces in Madiun City, Bunderan Serayu RTH has become a pilot area for integrating economic activities into urban green space. While the policy aims to support local economic development and community welfare, it has also generated diverse public responses regarding its environmental, social, and spatial implications.

Despite the growing implementation of productive green space policies, empirical studies examining public perceptions of RTH utilization for MSME activities—particularly in medium-sized cities—remain limited. Most existing research focuses either on the ecological benefits of green spaces or on their social and health impacts, with relatively few studies addressing, from an integrated perspective, community perceptions of economic use within green spaces. This gap is significant, as public perception influences policy acceptance, behavioral compliance, and the long-term sustainability of multifunctional green spaces.

Therefore, this study aims to evaluate public perceptions of the utilization of Bunderan Serayu Green Open Space for MSME activities by examining environmental, economic, social, welfare, and regional spatial planning (RTRW) dimensions. By adopting an integrated analytical framework, this research seeks to contribute to urban planning discourse on how green open spaces can function as productive yet sustainable urban assets.

2. Method

I was conducted review on 10 national and international articles and journals that discuss issues of RTH, urban planning, and community welfare using Google Scholar search and grouped based on five main dimensional aspects: economy, environment, social, welfare, and regional spatial planning (RTRW).

2.1. Literature review

Table 1. Categorization of Articles Based on Research Aspects

No	Author & Year	Article Title	Aspects of Research Studied

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1	(Nguyen et al., 2021)	*Green space quality and health: A systematic review*	Environment, Welfare
2	(Browning et al., 2022)	*Where greenspace matters most: A systematic review of urbanicity, greenspace, and physical health*	Environmental, Social
3	(Rahmawati, 2016)	*Sustainable open space management: Case study of Madiun City*	Environment, Welfare
4	(Haq & Smith, 2021)	*Public perceptions of urban green spaces*	Social, Environmental
5	(Rahmawati & Lestari, 2024)	*Evaluation of elderly-friendly open space and public service buildings in Madiun City*	RTRW, Social
6	(Latinopoulos, 2022)	*Evaluating the importance of urban green spaces*	Environmental, Social, RTRW
7	(Zhang et al., 2024)	*Environmental benefits and policy implications of urban green spaces*	Environment, RTRW
8	(Kolbasov, 1992)	UN Conference on Environment and Development	Environment, Welfare
9	(Habermas, 1989)	*The Structural Transformation of the Public Sphere*	Social
10	WCED (1987)	*Our Common Future*	RTRW, Welfare

Shown the above, it will be categorized into 5 aspects studied (1) The environment provides sustainability, (2) The economy provides added value and welfare, (3) Social creates attachment and harmony, (4) Welfare is the final result of the integration of activities, (5) RTRW directs the function of space to remain organized and sustainable.

2.2. Theoretical Foundations

2.2.1. Environmental Aspects

Green Open Space (RTH) has important ecological functions as urban lungs, carbon sinks, micro temperature regulators, and water catchment areas. In the context of the use of RTH by MSMEs, the environmental aspect is related to how economic activities can run in harmony with ecological sustainability.

According to (Rahmawati, 2016), the sustainability of activities in public spaces depends on public awareness of the value of the RTH ecosystem. Positive public perception arises when economic activities in the park maintain cleanliness, do not damage vegetation, and maintain the beauty of the environment.

Relevant theory: Sustainable Urban Ecology Theory (Forman, 2014) by emphasizing the integration of economic and ecological functions within the urban space.

2.2.2. Economic Aspects

The economic aspect plays a direct role in explaining the real benefits of the use of RTH for the community. RTH can be a microeconomic space, where MSMEs sell local products, culinary, or recreational services.

Research (Zain, 2023) shows that the involvement of MSMEs in RTH increases local economic circulation and strengthens urban economic inclusion. Public perception of RTH as

an MSME area will be positive if the space is considered to increase business opportunities, employment, and people's purchasing power.

Relevant theory: Urban Economic Theory (Alonso, 1964) – Linking economic activities with the efficient use of urban space.

2.2.3. Social Aspects

Socially, RTH functions as a space for interaction, recreation, and communication between residents. The use of RTH by MSMEs strengthens social networks because people not only transact but also interact in an open atmosphere.

According to Handayani (2021), social and economic activities in urban parks increase the sense of belonging and expand social cohesion. Public perception will be favorable if MSME activities in the park maintain social comfort, do not disturb other visitors, and provide added value to the surrounding community.

Relevant theory: Social Capital Theory (Putnam, 2000)– emphasizing the importance of social interaction in building community solidarity.

2.2.4 Welfare Aspects

The welfare aspect relates to the direct benefits felt by the community, including economic, psychological, and recreational benefits.

Research by Hasanah (2022) shows that people who often use RTH for productive activities tend to have higher levels of subjective happiness and well-being. A well-managed RTH for MSMEs not only increases people's income but also provides psychological comfort and collective pride in urban space.

Relevant theory: Subjective Welfare Theory (Diener, 2009)– well-being is improved through positive involvement in social and economic activities.

2.2.5 Aspects of Regional Spatial Planning (RTRW)

The RTRW serves as the legal basis and spatial direction that determines the zoning, functions, and management of the RTH. The integration of RTH in the RTRW allows synchronization between the ecological and economic functions of small communities.

According to Wardani (2021), adaptive spatial planning that aligns with socio-economic needs will increase public acceptance of productive green space policies.

Above are synergistically interconnected: the environment provides sustainability; the economy provides added value and welfare; Social creates attachment and harmony; Welfare is the final result of the integration of activities; RTRW directs the function of space to remain organized and sustainable. Conceptually, public perception of RTH use for MSMEs will be high if the five factors are balanced.

This study used a descriptive quantitative approach. The population is the community that uses the Bunderan Serayu RTH Park, with a Likert-scale questionnaire administered to business actors and visitors. The analysis was performed using descriptive statistics, Pearson validity tests, and Cronbach's Alpha reliability. A $\alpha \geq$ value of 0.60 is considered reliable (Nunnally, 2018). Variables X - Quality of Green Park Space Integration and Y - Level of Community Utilization & Satisfaction are used to understand social phenomena in depth from the community's perspective. The research location is Bunderan Serayu RTH in Madiun City, which has served as a pilot example of using green space for MSME activities since 2021.

3. Result and Discussion

The data were obtained through field observations, in-depth interviews with visitors and MSME actors, as well as literature and regional policy studies related to the use of green open space, from 70 respondents selected using a random sampling method who were in the Bunderan Serayu RTH location. Data analysis was carried out with an interactive model (Matthews, n.d.) through three stages: data reduction, data presentation, and concluding with data using: (1) Descriptive statistics (mean, median, standard deviation, min-max) to see the respondents' perception of each item; (2) Test the validity of each item using Pearson correlation ($\alpha = 0.05$; r-table ≈ 0.227); (3) Reliability test using Cronbach's Alpha; (4) The reliability theory of the instrument shows that the value of $\alpha \geq 0.60$ is considered reliable.

3.1 Variable X Validity Test – Quality of Green Garden Space Integration

$$r_{xy} = \frac{[\, n(\Sigma XY) - (\Sigma X)(\Sigma Y)]}{\sqrt{[\, (n\Sigma X^2 - (\Sigma X)^2)(n\Sigma Y^2 - (\Sigma Y)^2)]}}$$

Information:
r_xy = item-total correlation coefficient
n = number of respondents
X = item score
Y = variable total score

Criterion:
If r count > r table ($\alpha = 0.05$), then the item is declared valid.
The results showed that all items had r count > 0.227 → valid.

Items	r-count	r-table (0.227)	p-value	Information
X1.1	0.574	0.227	0.000	Valid
X1.2	0.410	0.227	0.000	Valid
X2.1	0.590	0.227	0.000	Valid
X2.2	0.675	0.227	0.000	Valid
X3.1	0.618	0.227	0.000	Valid
X3.2	0.687	0.227	0.000	Valid
X4.1	0.618	0.227	0.000	Valid
X4.2	0.518	0.227	0.000	Valid

All statement items on the Green Garden Space Integration Quality variable (X) have a correlation value above the r-table (0.227) and a p-value < 0.05, so that all items are declared valid.

3.2 Variable Y Validity Test – Utilization Level & Community Satisfaction

All items on the Utilization Rate & Community Satisfaction (Y) variable are declared valid, because the r-calculated value is greater than the r-table (0.227) and the significance value is below 0.05.

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3.3 Reliability Test (Cronbach's Alpha)

$$\alpha = \left[\frac{k}{(k-1)}\right] * \left[1 - \left(\frac{\Sigma\sigma_i^2}{\sigma_t^2}\right)\right]$$

Criteria: If α>0.60\alpha > 0.60α>0.60, then the instrument **is reliable**.

Items	r-count	r-table (0.227)	p-value	Information
Y1.1	0.409	0.227	0.000	Valid
Y1.2	0.529	0.227	0.000	Valid
Y2.1	0.459	0.227	0.000	Valid
Y2.2	0.563	0.227	0.000	Valid
Y3.1	0.659	0.227	0.000	Valid
Y3.2	0.701	0.227	0.000	Valid
Y4.1	0.616	0.227	0.000	Valid
Y4.2	0.619	0.227	0.000	Valid

Variable	Value α	Category
X (RTH Integration)	0.727	Reliable
Y (Public Perception)	0.702	Reliable

Variable	Cronbach's Alpha	Criterion
X - Quality of Green Garden Space Integration	0.727	Reliable
Y - Community Utilization and Satisfaction Levels	0.702	Reliable

Based on the reliability test results, both variables had Cronbach's Alpha values above 0.6, indicating that the questionnaire instrument was reliable and consistent in measuring the research variables.

3.4 Descriptive statistical test

$$\bar{X} = \frac{\Sigma X_i}{n}$$

Value Range	Category
1,00 – 1,80	Very Low
1,81 – 2,60	Low
2,61 – 3,40	Medium
3,41 – 4,20	Good
4,21 – 5,00	Very Good

Research Results:

Aspects	Average	Category
Milieu	3,0	medium
Economics	3,2	Medium–Good
Social	3,1	Medium
Welfare	3,0	Medium
RTRW	2,9	Medium

The average score ranged from 2.9 to 3.2, indicating a moderate (quite positive) level of RTH use among MSMEs. These results are visualized as a bar graph and a radar to show the

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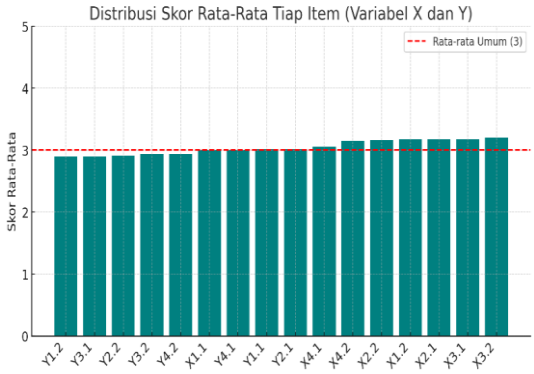
distribution of perceptions across 5 main aspects: (1) Environment. (2) Economics. (3). Social. (4) Welfare. (5). Regional Spatial Planning (RTRW).

It shows that the five dimensions contribute in a relatively balanced way. This indicates that the people of Madiun City have a positive perception of the development of RTH as a multifunctional space — ecological, social, and economic.



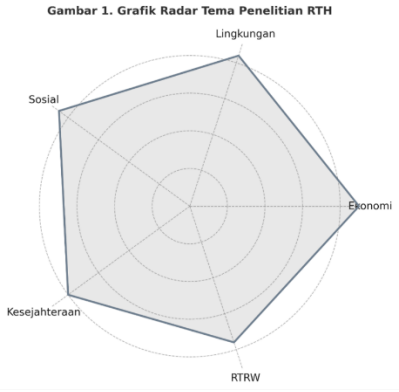


Figure 1. Average Score Distribution Graph and Radar

Based on the validity analysis using Pearson's correlation, all items on both variables showed correlation values above the minimum limit of 0.227, with significance at the 0.05 level. This shows that each questionnaire item is significantly related to the variable's total score, so it is valid for measuring the construct in question.

The results of the reliability test using Cronbach's Alpha showed that the variables Green Park Space Integration Quality (α = 0.727) and Utilization and Community Satisfaction Level (α = 0.702) had values greater than 0.6, indicating good internal consistency among items.

Thus, the research instrument used in the study "Integration of the Bunderan Serayu RTH in Taman Kota Madiun District" was deemed suitable for the next stage because it met the requirements for validity and reliability.

3.5 Provisional Conclusion

Summaries Results

Types of Analysis	Methods Used	Purpose	Key Results
Quantitative Descriptive Analysis	Descriptive statistics (mean, histogram, radar chart)	Describe the level of public perception	Medium score (2.9–3.2)
Validity Test	Pearson Product-Moment Correlation	Assess the validity of question indicators	All items are valid (r-count > 0.227)
Reliability Test	Cronbach's Alpha	Measure internal consistency between items	Variable X = 0.727; Variable Y = 0.702 — reliable
Conceptual Analysis	Five-aspect theoretical study (environmental, economic, social, welfare, RTRW)	Linking quantitative outcomes to planning and socioeconomic theories	Public perception is optimistic about the use of RTH

Descriptive quantitative analysis with the support of validity and reliability tests, as well as the interpretation of environmental socio-economic theories. This approach aims to: (1) assess the validity and reliability of perception instruments ;(2) describe the pattern of public perception of the use of RTH for MSMEs ;(3) relate empirical results to the theories of urban ecology, microeconomics, community social, and regional planning.

3.6 Discussion

The above describes five main dimensions that affect perception. The community opposes the use of Green Open Space (RTH) as an area for Micro, Small, and Medium Enterprises (MSMEs), namely: environmental, economic, social, welfare, and regional spatial planning (RTRW). Each dimension has a different contribution to the formation of the perception of society as a whole.

Aspects	Findings of Research Results (Descriptive Data)	Meaning and Interpretation	Compatibility with Theoretical Studies	Relevant Theory
1. Environment	Average environmental aspect score: **3.0 (medium category).** Respondents assessed that MSME activities in parks generally do not damage the beauty, but cleanliness is not optimal.	The community is well aware of the importance of maintaining the park's ecological function, but it needs oversight of waste and hygiene.	In line with the theory that positive perceptions arise when economic activities are aligned with ecological sustainability.	*Sustainable Urban Ecology Theory* (Forman, 2014); (Rahmawati, 2016); (Hidayat, 2025)
2. Economy	Average economic aspect score: **3.2 (medium-good category).** The community considers that MSMEs in RTH help increase local income and business opportunities.	RTH doubles as a microeconomic space, strengthening economic circulation and citizen independence.	Reinforcing the view that RTH can be used productively without losing its socio-ecological function.	*Urban Economic Theory* (Putra, 2017);(Zain, 2023)
3. Social	Average social aspect score: **3.1 (medium category).** MSME activities increase social interaction and a sense of	People feel comfortable interacting at RTH, but it needs to be arranged so that economic	Consistent with the theory that social interaction strengthens community cohesion and a	*Social Capital Theory* Sutrisno (2017). Smash Bros. (2021)

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	togetherness for visitors.	activities do not cause excessive crowds.	sense of belonging to public spaces.	
4. Welfare	Average welfare score: **3.0 (medium category).** RTH provides recreational benefits and modest economic benefits to the community.	MSME activities in parks contribute to subjective welfare, especially comfort and pride in the city.	According to the theory, well-being improves through socio-economic participation in green public spaces.	*Subjective Well-Being Theory* (Hasanah, 2022); Squirt (2022)
5. RTRW (Regional Spatial Planning)	Average RTRW score: **2.9 (fair category).** Some respondents found the spatial planning policy for MSMEs in the park unclear.	Adaptive spatial planning policies are needed to ensure that park functions and economic activities can coexist harmoniously.	In line with the theory that community participation in spatial planning increases public policy acceptance.	*Collaborative Planning Theory* (Wardani, 2021);(Kurniawan, 2015)

Public perception of using the Bunderan Serayu RTH as an MSME in the Madiun City area tends to be positive. Most respondents assessed that this activity can increase local economic activities, create new jobs, and strengthen social interaction between residents. However, there are concerns about the reduction of ecological functions due to dense trade activities and increasing waste volumes. Socially, the frequency of meetings between residents increased, strengthening social solidarity and fostering a sense of belonging to public spaces. From an economic perspective, this activity promotes growth in residents' incomes. Meanwhile, from the environmental side, the community hopes there will be additional waste management and greening policies to maintain the balance of ecological functions.

3.7 Detailed Interpretation of Research Results

3.7.1 Environmental Aspects

The environmental aspect obtained an average score of 3.0 (medium category). This shows that most respondents have a relatively positive perception of the environmental conditions in the Green Open Space (RTH) of Bunderan Serayu. MSME activities are considered not to interfere with the park's ecological functions, but cleanliness issues still persist. These results align with Sustainable Urban Ecology Theory (Forman, 2014), which emphasizes the balance between economic and ecological activities. It is necessary to increase the community's ecological awareness and improve waste management.

3.7.2 Economic Aspects

The economic aspect received an average score of 3.2 (medium-good). This shows that the public considers RTH to provide tangible economic benefits, such as increased income and job opportunities for MSMEs. RTH also strengthens the local economy's circulation. These

findings support the Urban Economic Theory (Alonso, 1964), which states that efficiently used urban spaces provide high economic value. RTH has the potential to become an inclusive space for microeconomic empowerment.

3.7.3 Social Aspects

The social aspect has an average score of 3.1 (medium category). MSME activities in RTH strengthen social interaction, sense of community, and community involvement. However, it needs to be arranged so that the activity does not cause crowding of visitors. These results support Social Capital Theory (Putnam, 2000), which emphasizes the importance of public spaces in building community solidarity. MSME activities must be regulated to support social interaction without reducing public comfort.

3.7.4 Welfare Aspect

The welfare aspect has an average value of 3.0 (medium category). The use of RTH provides direct benefits, such as additional income, and indirect benefits, such as psychological comfort. These findings align with the Subjective Well-Being Theory (Diener, 2009), which posits that well-being is enhanced through participation in meaningful social and economic activities. RTH serves as a space for collective well-being, increasing people's happiness.

3.7.5 RTRW Aspect

The RTRW aspect received a score of 2.9 (adequate category). The community considers that there are no clear regulations regarding zoning and the legality of MSMEs in parks. This supports Collaborative Planning Theory (Healey, 1997), which emphasizes the importance of community participation in public space planning. Adaptive and participatory policies are needed so that ecological and economic functions can run in balance.

Based on the five aspects analyzed, it can be concluded that public perception of the implementation of the use of RTH for MSMEs is at a moderate level (value of 2.9–3.2) with a positive tendency, where:(1) the economic aspect is the dominant factor that drives public acceptance. (2) RTRW and environmental aspects require more attention to ensure long-term sustainability.

Theoretically, these findings reinforce the view that RTH can serve a dual function as an ecological and a microeconomic space, provided that management is carried out in a planned, collaborative, and sustainable manner.

4. Conclusion

This study concludes that the use of the Bunderan Serayu RTH for MSME activities provides significant economic and social benefits for the community. However, to maintain ecological sustainability, effective spatial oversight, strict environmental regulations, and community participation in maintaining the cleanliness and order of the area are needed. Local governments are expected to develop a productive RTH management model that is oriented towards community welfare without compromising ecological functions.

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