

# Study of Kridosono's Urban Quality Space in Yogyakarta using TUSA

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## Abstract

The importance of public spaces is one of United Nations' Goals. Green Open Space in Kridosono which is aspired by the government is a public open space that can be easily accessed by the public and as main open space contributes as a sports field. Based on other studies related to Kridosono, most of them questioned how to improve the urban space quality of the Kridosono area as a public open space. This study aims to examine the elements that are factors in improving the urban space quality, so that we can know and feel of optimal spatial quality as a Public Open Space. Tools for Urban Space Analysis (TUSA) is a novelty/state of the art/novelty in the discussion. The results are to obtain elements related to improve the urban space quality, to fulfill all Nodal, Spatial and Environmental attributes and values for Hardware & Use-Socio Perception for Software.

**Keywords:** *Kridosono; Open Space; TUSA; Urban Space Quality*

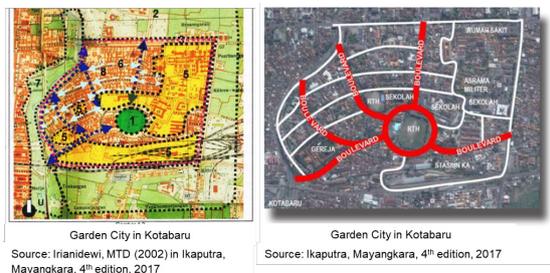
## Introduction

Kridosono is located in Kotabaru Yogyakarta which is the center of the Kotabaru area in the form of an open space created from the confluence of road lanes in the Kotabaru area (Kesuma, 2016). The facilities available at Kridosono are sports stadiums equipped with culinary spots (Wulandari, 2021).

The Yogyakarta City Government will revitalize Kridosono to become a public open space, city park and sports venue equipped with underground parking (JoSS.co.id, 2019).

According to United Nations, 2015, the importance of public spaces is specifically stated in Goal 11.7: "provide universal access to safe, inclusive, green and public spaces particularly for women and children, older persons, and persons with disabilities" (Naya et al., 2023).

Figure 1. Kotabaru and Kridosono time to time  
Source: Author, 2022



Public parks/public open spaces are not found in Kotabaru, because Kridosono as the center has a high fence that can only be used with certain procedures and some buildings have been occupied. On the edge of the field, outside the walls, there are several open spaces that are not optimally utilized (Sekiadi, S.S, 2017). Kridosono has also become part of the revitalization program that will be carried out by the government, which has been discussed in several policies.

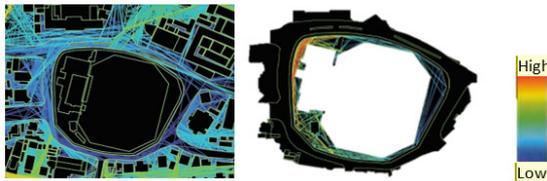
In the Yogyakarta City Regulation No. 2 of 2010 it is stated that it is developed as a *tetenger* or city marker with the image of active and passive education and tourism/recreation activities (pemerintah K. Yogyakarta, 2010) it can be interpreted that Kridosono was developed into

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a center of activity in the Kotabaru area. The existing condition of the spatial quantity of the Kridosono when viewed from the spatial configuration (figure above), where Kridosono is the center of the Kotabaru area.

Figure 2. Quantity simulation of urban space quality (integration value)  
 Source: Author, 2022



The spatial quantity value obtained by simulation analysis is shown in red as the area with the highest integration value and blue with the lowest integration, so it is read that the existing integration is not balanced in the Kridosono area.

Figure 3. Examples of urban space quality degradation  
 Source: Author, 2022



The main problems faced by the City of Yogyakarta are related to the limitations of public space, green open space and land use that is not in accordance with the function of the area (YOGYAKARTA, 2017). The decline in spatial quality can also be seen by the randomness of the activities facilitated in Kridosono, as shown in the figure above, including the degradation of functions, commercial areas, boundaries (Suwanto, 2018) and activity intensity. The question is what elements or criteria that are factors in improving the urban space quality based on the important attributes that shape its performance, which are the domain of the local government, as well as users/communities?

## Literature Review

Public space is one of the spaces in urban

areas that can touch the community, including plazas, pedestrian ways, parks, public roads, riverbanks, bus stops, playgrounds, and so on (Wirasmoyo, 2019). (SharifKazemi & Dezfully, 2021), public areas are the most important part of cities and urban environments. Public space is space that can be accessed by anyone so that public space becomes a space owned by all people without any restrictions time and activity that explains that public space cannot be owned by anyone (Athanassiou, 2017) Shared space, especially the characteristics of the space can affect the interaction of its users (Hantono, Sidabutar, & Hanafiah, 2018). The spatial quality for the regional scale becomes a point of discussion, and becomes a novelty/state of the art in this research. The spatial quality components of the area are HARDWARE and SOFTWARE and ORGWARE (not connected to architecture)(Cho, Heng, & Trvic, 2016). Paasch in (Ratriningsih, Ayu, Natalia, & Zulfa, 2021), there are several factors that can be met to achieve the success of a public space, namely comfort and images, access and linkages, uses and activities and sociability.

The problem in Kotabaru is still attractive with shade, but other roads are less shaded by trees so that the image of the "garden city" is less visible. Kridosono's main open space continues to donate as a sports field but is less developed as an open park and center facility that is appropriate for everyone (Ikaputra, 2017).

Soeroso (2010) mentions that the use of land in Kridosono as a public open space needs to be maintained for the general public because it has benefits such as health value (as a place for sports), aesthetic and social value (as a place for residents to interact). As an area in the center of Yogyakarta City, Kridosono seems disorganized and rundown. Compatibility with a place influenced by accessibility and visual quality (natural environment and design quality) (Dwiputra, Tampubolon, & Kusuma, 2018).

Based on the results of other studies related to Kridosono, most of them questioned how to improve the urban space quality of the Kridosono as an public open space, public park, and facility center in Kotabaru so that it can be enjoyed by the community and as an important contributor to the city's green environment. Green spaces are an important factor in the city marketing and urban renewal

of the metropolises and major cities around the globe, considering the upgrading of the city and improving its competitive position as a place to live and work in (Cilliers, Timmermans, Van den Goorbergh, & Slijkhuis, 2015). According to several recent studies, green spaces offer a wide variety of ecosystem activities and services that are important for human well-being and urban sustainability (Azhar, Hussain, Tukiman, & Nadzri, 2023).

### Value Attributes

Nodal Value has attributes that include accessibility, connectivity and mobility; Spatial Value has attributes including legibility and margins as well as spatial varieties. Legibility is the clarity of an object, whether it is an element of space or the character of space itself. Visual reading through colors, shapes and other elements that can be captured by observers to form identity (Nugroho in (Ratriningsih, Wirasmoyo, & Preambudi, 2021)) while Environmental Value has attributes including environmentally friendly design and user comfort (Cho et al., 2016).

The urban space quality of the area has a Software component, namely Use-Socio Perceptual Value, which is a positive relationship between users and regional space as well as social interaction between users. Such relationships can result from the diversity and intensity of activities, user groups and facilities available in and around urban spaces, seating facilities, levels of interactivity and privacy, as well as character, history and culture embedded in urban spaces. Use-Socio Perceptual Value has attributes that include diversity and frequency of use, social activities and identity (character and ease of description) (Cho et al., 2016).

### Methodology

For the main functions and characteristics of public spaces, a set of eight assessment criteria can be adopted, the scope of which corresponds to the complexity of issues that make up the concept of urban and rural public spaces. They are the following: 1) Functionality; 2) Practicality; 3) Reliability; 4) Durability; 5) Safety of use; 6) Legibility; 7) Aesthetics; 8) Sensitivity. (Micek & Staszewska, 2019).

This research is broadly carried out in three stages, namely the development of the framework and, case study documentation, analysis, followed by continuous refinement of the research framework and instruments, as illustrated in the process diagram. Rationalistic research with quantitative methods, which means that researchers will go into the field to obtain data to be analyzed in the form of an evaluation checklist and numbers/points, guided by the assessments metrics which are the Tools for Urban Analysis (TUSA), for later checking attributes, will be compared to be processed qualitatively to produce directions regarding improving the quality of its space.

The spatial quality of the area has 3 Hardware components, namely Nodal Value, Spatial Value & Environmental Value, and Software components, namely Use & Socio-Perceptual Value.

1. Nodal Value is the ability of space to provide the number of physical nodes and activities to correlate with higher livability of the built environment (Cho et al., 2016).
2. Spatial Value is the morphological value of urban space, evaluative qualities such as legibility, permeability, spatial diversity and adaptability (Cho et al., 2016). This is also in accordance with the building concept in the 2009 Yogyakarta Mayor Regulation which states that the building in the Kridosono block must have transparent walls/materials and with gaps that can show the inner atmosphere, so as to achieve a space that reflects the image as a sports and recreation space. (P. K. Yogyakarta, 2009).
3. Environmental Value is to assess the environmental benefits and human comfort achieved and experienced in urban spaces. The main parameters are green and water features, ecology, and environmentally friendly implementation, design strategies, shade and comfort (Cho et al., 2016).

Stage to be used in this discussion are:

1. First stage: development of case study framework and documentation

The preparatory stage is up to understanding and redrawing the existing area and defining the boundaries of the area under study, covering the existing conditions, and including all kinds of activities that happen there, through

direct surveys, google earth & street view. The method of checking attributes is a mainstay in the implementation of the survey and the initial evaluation.

2. Second stage: Regional Spatial Evaluation and Analysis

Field survey using the Urban Space Framework (USF) assessment metric using Tools for Urban Analysis (TUSA). The results of checking attributes will produce findings that are compared with the Software and Hardware, which will then become the results of the analysis.

3. Third stage: Conclusion

Concluding research results that what factors should be improved for urban space quality.

Figure 4. Hardware & Software components of urban space quality  
 Source: (Cho et al., 2016).

Values:	Attributes:	URBAN SPACE QUALITY	
<b>HARDWARE</b>	<b>NODAL</b>	A: ACCESSIBILITY	1. Pedestrian Access Point
			2. Universal Access
			3. Types & Distributions of Universal Access
			4. Prioritizing the Pedestrians
	B: CONNECTIVITY	5. Movement Patterns	
		6. Node Connectivity	
		7. Sight-lines & way-finding	
	C. MOBILITY	8. Bicycle-friendly Design	
		9. Public Transportation	
		10. Vehicular Access	
		11. Dropoff & Taxi Stands	
	<b>SPATIAL</b>	D. LEGIBILITY & EDGES	12. Spatial Layout
			13. Focal Points of Activities
			14. Visual Landmarks
	E. SPATIAL VARIETY	15. Permeability	
16. Spatial Variety			
<b>ENVIRONMENTAL</b>	F. ENVIRONMENTALLY FRIENDLY DESIGN	17. Spatial Adaptability	
		18. Greenery & Water - Availability & Acces	
		19. Greenery - Form, Pattern & Diversity	
		20. Biodiversity	
	G. USER COMFORT	21. Environmentally Friendly Strategies	
		22. Environmental Integration	
		23. Protection from Weather	
		24. Shade & Sunlight	
		25. Air Control & Optimization	
		26. Noise Control & Optimization	
<b>SOFTWARE</b>	H. Diversity & Intensity of Use	27. Diversity of Activities: Within Urban Space	
		28. Choice of Activities: Within Urban Space	
	I. Social Activities	29. Seating Amenities	
		30. Seating: Condition & Variety	
		31. Interactivity	
		32. Intimacy & Exposure	
	J. Identity (Image & Character)	33. Imageability	
		34. History & Symbolic Value	
		35. Art, Culture & Alternative Culture	
		36. Unique Nature	

## Result and Discussion

### Urban Space Performance & Value

Analyzing the performance of urban spaces in addition to quantitative analysis, descriptive statistical analysis of consistency was carried out for urban spaces for each criterion in the evaluation checklist to investigate the important attributes that shape its performance. The mean score deviation has been calculated for each criterion, based on a predefined hierarchy of criteria.

Consistency analysis establishes a hierarchy of criteria, based on the deviation of the mean score for each criterion, so that the hierarchy distinguishes, among others:

1. Basic/Necessary criteria: most frequently met (fundamentally important for the urban space performance and the most feasible to meet; high priority).
2. Value Add criteria: often met (feasible to meet; high priority).
3. High Value Add criteria: most inconsistently met by all urban spaces of the same type (highest priority due to the highest corrective potentials for the improvement of overall urban space performance).
4. Good to Have criteria: inconsistently met (low feasibility; low priority).
5. Desired criteria: never or rarely met (lowest feasibility; lowest priority).

Figure 5. Hierarchy of Criteria  
 Source: Cho et al., 2016

Average score:	Hierarchy of criteria:
0.90-1.00	BASIC/NECESSARY
0.65-0.90	VALUE ADD
0.35-0.65	HIGH VALUE ADD
0.10-0.35	GOOD TO HAVE
0.00-0.10	DESIRED

The main focus is on “basic” and “high value add” criteria, which are recognized as the most feasible to meet and as having the highest corrective potentials respective to improve the overall urban space performance (Cho et al., 2016).

Figure 6. Hardware's Evaluation & Consistency Analysis Average Score  
Source: Author Analysis, 2022

Values:	Attributes:	URBAN SPACE QUALITY	SCORE	Summary Score	% Score	Hierarchy Criteria
NODAL	A: ACCESSIBILITY	1. Pedestrian Access Point	0.5	16.9	32.7%	HIGH VALUE ADD
			0			DESIRED
		2. Universal Access	0.125			GOOD TO HAVE
			0.125			GOOD TO HAVE
	3. Types & Distributions of Universal Access		0.5			HIGH VALUE ADD
			0.5			HIGH VALUE ADD
			1			BASIC/NECESSARY
	4. Prioritizing the Pedestrians	0.1667	GOOD TO HAVE			
	B: CONNECTIVITY	5. Movement Patterns	0.1667			GOOD TO HAVE
			0.1667			GOOD TO HAVE
		6. Node Connectivity	0.1667			GOOD TO HAVE
	C. MOBILITY	7. Sight-lines & way-finding	0.4			HIGH VALUE ADD
			0.25			GOOD TO HAVE
			0.75			VALUE ADD
		8. Bicycle-friendly Design	0.25			GOOD TO HAVE
			0			DESIRED
		9. Public Transportation	0.1667			GOOD TO HAVE
		0.5	HIGH VALUE ADD			
D. LEGIBILITY & EDGES	10. Vehicular Access	0.5	HIGH VALUE ADD			
		0.75	VALUE ADD			
	11. Dropoff & Taxi Stands	0.3333	GOOD TO HAVE			
		0.1667	GOOD TO HAVE			
		1	BASIC/NECESSARY			
E. SPATIAL VARIETY	12. Spatial Layout	0	DESIRED			
	13. Focal Points of Activities	1	BASIC/NECESSARY			
		0	DESIRED			
	14. Visual Landmarks	1	BASIC/NECESSARY			
	0.1667	GOOD TO HAVE				
E. SPATIAL VARIETY	15. Permeability	0	DESIRED			
		0.1667	GOOD TO HAVE			
	16. Spatial Variety	1	BASIC/NECESSARY			
	0.4	GOOD TO HAVE				
		0.2	GOOD TO HAVE			
			GOOD TO HAVE			

Figure 6 shows a total score for hardware of 16,9 points and has consistency analysis average score of 32,7%. Hierarchy of criteria that must be considered are:

1A: Pedestrian 2 horizontals & 1 vertical point access; 3AB: Types and Distribution of Universal Access; 4A: 2 direct and safe pedestrian access points, well separated from traffic; 6B: facilities for longterm activities; 9B: 2 types of public transportation are available; 10A: Parking facilities are provided, 12A:

Pedestrian networks are clearly differentiated; 13A: 2 legible nodes of different types of activities; 14A: 1 visual landmark; 16A: Space is divided into sub-spaces; 19AB: Greenery - Form, Pattern and Diversity , 20B: Space is linked to a larger ecosystem; 23A: Major pedestrian pathways are covered.

Pedestrian access has long been placed and has the potential to contribute significantly to more sustainable urban space (Zargarian, Hunt, Braithwaite, Bobylev, & Rogers, 2016)

Figure 7. Software's Evaluation & Consistency Analysis Average Score  
Source: Author Analysis, 2022

Values:	Attributes:	URBAN SPACE QUALITY	SCORE	Summary Score	% Score	Hierarchy Criteria
SOFTWARE	H. Diversity & Intensity of Use	27. Diversity of Activities: Within Urban Space	0	4.35	21.75%	DESIRED
			0			DESIRED
		28. Choice of Activities: Within Urban Space	1			BASIC/NECESSARY
			1			BASIC/NECESSARY
	I. Social Activities	29. Seating Amenities	0			DESIRED
			0			DESIRED
		30. Seating: Condition & Variety	0			DESIRED
			0			DESIRED
		31. Interactivity	0			DESIRED
			0			DESIRED
	J. Identity (Image & Character)	32. Intimacy & Exposure	0			DESIRED
			0.25			GOOD TO HAVE
		33. Imageability	0.25			GOOD TO HAVE
			1			BASIC/NECESSARY
		34. History & Symbolic Value	0.2			GOOD TO HAVE
			0.25			GOOD TO HAVE
	J. Identity (Image & Character)	35. Art, Culture & Alternative Culture	0.4			GOOD TO HAVE
36. Unique Nature		0	DESIRED			
HARDWARE (dalam %)			32.68			
SOFTWARE (dalam %)			21.75			
URBAN SPACE VALUE (USV) (dalam %)			27.21			

Figure 7 shows a total score for software of 4,35 points and has consistency analysis average score of 21,8%. Hierarchy of criteria that must be considered are 28AB: Choice of Activities: Around Urban Space access; 34A: Tangible traces of historical/ cultural heritage are available on site. components of identity and desirable visual quality have the greatest impact on attracting users to the city entrance spaces (Javanmardi, Sajjadi, Shabani, & Doaee, 2020).

Social sustainability to be relevant, that is a must refer to the activities or outputs of the

organization and linked to outcomes or social impacts on the environment (Guzmán-Pérez, Pérez-Monteverde, Mendoza-Jiménez, & Román-Cervantes, 2021).

A more integrating public space with an inclusive approach with communities could benefit stakeholders, users and the environment (Carreno & Ma, 2019). Urban Space Value (USV) which represents the overall performance of space shown in percentages, however, such an overall value is basic and serves for quick comparison only. Kridosono's USV shows 27,21%, which is under value or under performance.

Figure 8. Number of criteria met in Consistency Analysis Average Score

Source: Author Analysis, 2022

HARD WARE	BASIC/NECESSARY	6
	VALUE ADD	2
	HIGH VALUE ADD	9
	GOOD TO HAVE	23
	DESIRED	12
SOFT WARE	BASIC/NECESSARY	3
	VALUE ADD	0
	HIGH VALUE ADD	0
	GOOD TO HAVE	5
	DESIRED	12
OVER ALL	BASIC/NECESSARY	9
	VALUE ADD	2
	HIGH VALUE ADD	9
	GOOD TO HAVE	28
	DESIRED	24

Figure 8 shows the number of criteria that met in the consistency analysis, where the scores for "desired" dominated well above the "basic/necessary" and "high value add" scores.

## Conclusion

Summary tables serve as a quick reference to hierarchy of criteria and priority of design actions for the urban spaces. The consistency analysis, with the hierarchy of criteria as the outcome, provides guide the initial process of designing & improving urban quality space by highlighting urban space properties that are critical for the overall performance. In other words, it prompts the designer to focus on "Basic" and "High Value Add" criteria first, rather than on "Desired" criteria.

Kridosono as public space has a lot of Desired and Good to Have criteria, it means that Kridosono is really need of effort to be

considered as good quality public space, as supporting in the urban space.

The result of the study shows in Kridosono, that perhaps increasing only the "Basic/Necessary" and "High Value Add" criteria alone are not necessarily optimal for improving the spatial quality of the area, because many other criteria must be met. Urban Space Quality will be relatively optimal if it optimizes also several "Value Added" and "Good to Have" criteria.

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