
EVALUATION OF PUBLIC OPENSOURCE PERFORMANCE THROUGH THE ENVIRONMENTAL PERCEPTION AND BEHAVIOR SETTING IN MANADO

■ Abstract:

In many cases, public open spaces in the cities have been designed and modified in very short-term goals, under the consideration of local situation. The style of public open space design has evolved in recent years to promote a more environmentally -friendly method of enjoying our outdoor property. As an enjoyable place in the cities, open space design should begin with an understanding of the future use of the property, and the proper design will be unique to a specific site and should be based on a careful review process. Objectives of the research is to develop a method of design review for outdoor space, by using Post Occupancy Evaluation (POE) method, which has been mostly applied in a single building or simple setting only. POE is a process of evaluation concerning the effectiveness of spatial design creation and its fixtures after the construction and operational function. The evaluation took place in some public open space in Manado which had most population in the cities. Research focused on 3 elements of space performances: technical, functional and behavioral aspects. The result shows that, technically, design performance of space could successfully bring pleasant for the visitor. Although its functions are very limited, the quality of environment is poor because of the thermal comfort and cleanliness problems.

■ Keywords:

public open space, design review, space performance

■ INTRODUCTION

Urbanization process in Manado city is significantly running fast over last two decades, but public open spaces provision for community activities is still served by the open space heritage as well as Sparta Tikala, Taman Kesatuan Bangsa, Sporting facilities in Sario and Klabat Stadium. As a waterfront city with 20 km long coastal lines, sloping landscape natural scenery and plenty of small rivers flow into the sea, Manado has great opportunity to develop outdoor space as public places at some strategic areas for providing the need of outdoor

activities. As an enjoyable place in the cities, open space design should begin with an understanding of the future use of the property, and the proper design will be unique to a specific site and should be based on a careful review process. In case of Manado, urban changed occurred significantly in very short term. Some international events were held in the city and in the coming years as a World Tourism City in 2010 revitalization of green infrastructures are presumed to be more activated. But the presences of public open spaces do not indicate significantly neither qualitative nor quantitative differences in

change. The government attentively focused on former open space available in the city like TKB, Sparta Tikala and seaside area. Meanwhile green infrastructure at the housing areas has just been the complementary objects, either in planning and provision or in management. Objective of the study is to conduct a design review of some public open space available as a framework in which to evaluate the accessibility and usability of each space for the public, in order to promote environmental quality. Preiser (1988) stated that space performance could be identified by 3 elements; they are technical, function and behavior aspects. Research tried to evaluate space performance of public open space in Manado, which emphasized on those 3 aspects. Technically, spatial design review focused on dimension of space in order to know adequacy ratio of space, sanitation and fixtures through environmental perception of the visitors. Functionally, evaluation was conducted by examine spatial usability and accessibility, and kinds of activities expected from users perspective. Behavioral aspects concern about observation of behavior setting occurs in sites, orientation ability, users' interaction with the whole elements available in place, and user's satisfactory in using the place.

METHODS

Space performance in architecture, indoor or outdoor, determined by several things. In case of outdoors, it could be designed by provision supporting elements like trees, sculpture, pond, or benches. All these elements should be well interpreted by individual senses. Exploration about human perception against space performance examines how far the combination elements enable to stimulate the positive feelings of human being. Method used in this research is development of Post Occupancy Evaluation (POE) whereas the application of POE is frequently used for evaluation the effectiveness of design interior in single buildings (Zimring C M, and Reizenstein J E, 1980). POE for outdoor facilities and other built environments could be ensured to promote physical environment more human and could improve urban environment quality of life in the future. POE is defined as a systematic process for evaluation of built environments from user's perspectives. It is used to identify ways to

improve quality of environment, to raise comfort and productivity of users, and to reduce design and maintenance cost. In this study, POE was conducted in 3 aspects of spatial performances: physics, functions and behavior to explore user-centered design guidelines for successful design of similar objects. Phases of POE to evaluate spatial performance are:

1. Observations of the place to identify who, where, when and, possibly, how users spend their time;
2. Survey determination and administration to users of the place for quantitative (statistical) measurement of the environment; (questionnaires)
3. Interviews of users regarding their experiences with the place; this helps to qualify where and how people spend their time in certain places or corners and not others;
4. Behavioral and Preference Mapping of the place, possibly at different scales, to delineate those areas that receive the most and least amount of use, as well as to quantify and qualify the reasons for the use;
5. Photographic analysis of how people use the space, as well as key measurements that demonstrate how people are either engaged or not connected to the environment.

Baker (1968) defined the basic unit for behavior mappings are behavior setting which are comprised of suitable combination between actions and its place/milieu. Meanwhile Ittelson marked, in general, behavior mappings follows 5 steps of procedures:

1. Basic sketch of setting area
2. Description and diagrams of behavior setting
3. Duration of observation.
4. Systematic procedures
5. Notation/coding

300 respondents from different age groups were participated in the research for answering the questionnaires, followed by interviews and observed behavior setting to explore the proper need of open space users. Three types of urban outdoor spaces in Manado were observed. First type is Urban Plaza in city central Taman Kesatuan Bangsa (TKB) and Sparta Tikala, Secondly is waterfront areas (Bahu Mall and Megamall seaside area, and Neighborhood open space in Ketang Baru and Bantik.

LOCATION OF RESEARCH OBJECTS

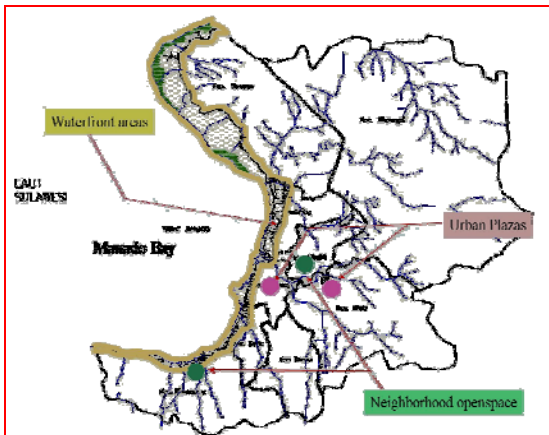


Figure 1. Map of Manado City

- RESULTS AND DISCUSSION
- SUMMARY DESCRIPTION
- URBAN PLAZA / CENTRAL SQUARE (TKB AND SPARTA TIKALA)

TKB is an old square plaza on the Central Business District area in Manado. Surrounded by commercial building, this square has historical background and become an important place because it has been designed since early period of urban growth. It has been removed (renewed) from times to times according to urban redevelopment process. During office hours, this square is intensively occupied by users for passing through from one side to another. Most of the visitors use the square as a pedestrian way to reach the local transportation. Some others used as a resting area to take a break after doing their shopping around the site. For the last few years, local authority has built an open theatre in the square for making this square more attractive. On the evening hours, the place become so quiet because all the stores adjacent were closed, and no activities surround. In 2007

local authority made a renovation on the TKB as a center of open air art and cultural performance for public leisure.



Figure 2: TKB and its surroundings, and Sparta Tikala Civic Square in Manado

Sparta Tikala is a formal open space, a civic space with lawn court and trees, created in front of local government official buildings. It has jogging track and benches insides. There are various decorative elements and functions on the site. People use the park for playing or doing some exercises, social gathering, ceremony, or other special events. Sometimes they use for exhibition and promotion affairs. During the day, this place is relatively quiet. On the north and south sides, outside the park, there are pedestrian ways with seats under big trees that formed comfortable space for shading. Although the park has lower density of usage, the existence of place gives particular impression for inhabitants.

Waterfront Areas

Another kind of open space in the city is coastal zones that exist along 20 km of Manado coastal lines. One of the most successful design for public open space is Bahu Mall recreation center. People of Manado enjoy much having meals in many occasions, particularly during recreation time. This social phenomenon leads the authority to provide many cafeterias in the recreation center like Bahu Mall and Mega Mas seaside area. Conception of the reclamation area

in coastal zones is multifunction area; consist of recreation, commercial and leisure. Morning hours, people do some exercises regularly, and during the day, commercial and cafeteria are predominant the whole area. Teenagers occupied some interesting spot area after school hours, talking with friends or playing. They enjoy the beautiful scenery of the sun goes down to the sea, and it is the best moment in the city. Sunday morning and holidays, the places are more crowded because some people from the region come to visit the area.



Figure 3: Bahu Mall and Mega Mall seaside area

Resemble Bahu Mall, Mega Mall area is relatively new development and still going under construction in some parts. The main activities in this area are commerce, sporting, public entertainment and baystreet cafe for enjoying beautiful scenery of sunset. Some parts of reclamation area (16%) belongs to the local government of Manado and proposed to be allocated for urban greenery system.

■ Community Open space

Two objects chosen as neighborhood open space in Manado are Ketang Baru field in Kampung Ternate and Bantik field in Malalayang district. At Ketang Baru, a community open space lies on the center of high density district in

Manado It plays important role for social gathering. It has only 3654 squaremeters wide. People use the field mainly for sporting facility particularly playing football. Sometimes they used for exhibition, social gathering and promotion affairs, or ceremony religious on the celebration day. There are pedestrian ways around; outside the short fences enclosed the field. Ketang Baru field has only one access from neighborhood street.



Figure 4: Ketang Baru and Bantik Field

At Malalayang districts, a small public open space 2378 m² lies on the north side of main corridor Trans Sulawesi. It is the only open space in the middle of housing settlement area in the south part of Manado. Covering by grass court, people use it for playing in the afternoon or just walking and passing through. Sometimes they use for special occasion like musical shows or cultural events. Maintenance of this space is managed by local authority; they create some decorative garden as a borderline with Trans Sulawesi. This kind of community open space served more than 50 000 habitants in the neighborhood.

■ OBSERVATION APPRAISAL OF PARTICIPANTS

Urban Community in Manado generally uses the open space available for leisure and entertainment or doing some exercises in the morning. For particular groups, especially

teenagers, the need of public space is important for social activities or special occasion like playing games and friendship gathering. For new couple, the existence of public open space is necessary for doing some sport or playing with children and other family. Obviously, the importance of open space is to refresh urban air quality, however it has to be taking into account its social aspect for accommodate the needs of expression and education for urban community.

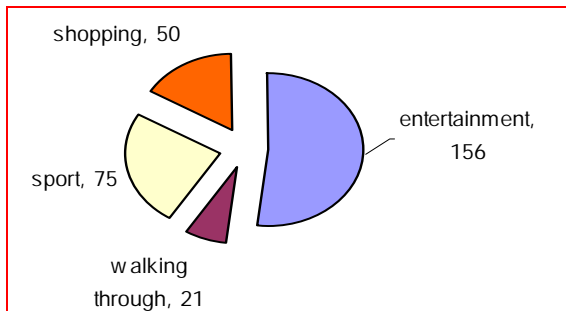


Figure 5: People come to public open space in Manado for discovering and entertainment

Most of the respondents stated that they enjoyed much the ambience of urban air quality, and they felt inconvenient being in the objects because of heats of microclimate and the rubbish. Although there are some trees for shading, they do not function well to reduce temperature. Local authority has provided some trash containers in each corner, but trash and wastepaper are scattered around.

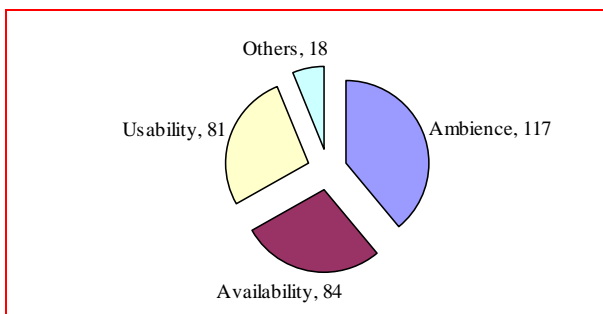


Figure 6: Personal interest being on public open space in Manado

Urban Plaza / central square (TKB and Sparta Tikala)

Urban plaza is an urban form that draws people together for passive enjoyment. (Jackson JB, 1985). Lynch K (1981) suggested that the plaza is intended as an activity focus, at the heart of some intensive urban area. Typically, it will be paved enclosed by high density structures and surrounded by streets, or in contact with them.

Observation of two plazas indicates that the most intensively area used are seating and stage performance available on the sites. On TKB, linear seating was occupied in the afternoon hours. There are not enough plants or canopy for shading that makes the place become very hot during the day. Children under 12 years old likes to play on the stage in groups after school. The density of fixtures stays inattentively in TKB and space is very limited and narrow. Since 2007, local government has eliminated the small café and food vendors. Fences are demolished, substituted by change of level around the edges. Replacement of theatre has totally change orientation of the space. Although two fountains were added in the square, that could not help to reduce temperature of microclimate during the day. Meanwhile, at Sparta Tikala, some attractive focal elements like statues and decorative plants bring special interest which encourages people to stop by, stay a little longer for enjoying the atmosphere. Although these two plazas were provided by some trash containers, the place was littering by food wrappers and soft drink cans in the open areas.

Table 1: Existing Condition of urban plazas

Situation	TKB (1)	TIKALA (2)
Spatial Shapes	Square 74 x 33 m	Trapezium 105 x 93 m
Access	2 entrance gates on east and west sides	Main entrance at the east and west sides.
Border lines	Fences and trottoir around and shopping arena in north and Westside	Streets around with high traffic density
Dimension of space	2442 m ²	9765 m ²
Materials used	concrete floor with decorative garden	Grass court in the middle, surrounding by pedestrian /light concrete and decorative garden
Height	50 cm from street level	10 - 20 cm from street level
Fixtures	Benches, public toilet, open theatre, sculptures, fountain, decorative garden	Benches, stage, trash container, sculptures, series of flag posts, decorative garden

Waterfront Areas

Apparently urban waterfronts, whether natural or artificial, are now essential ingredients in forming a community image, valuable stages for architectural display and great places for public recreation (Grady Clay, 1998). Manado has successfully built reclamation areas as parts of urban waterfront development to improve environmental quality of seaside area. Major uses of new spaces are commercial and public entertainment, meanwhile people adores some outdoor space for recreation, doing some exercises in the morning, and playing area as public amenity.

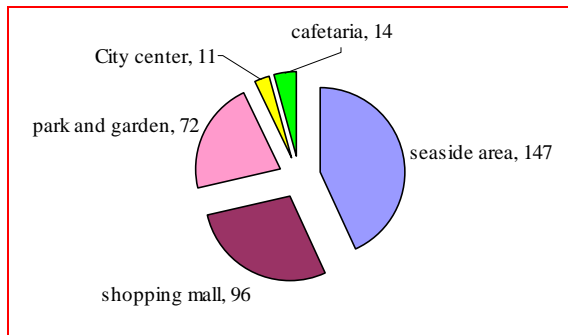


Figure 7: Place prefer to spend the leisure

Seaside area has a special value of serial vision in the city. Design setting in this area for public domain does not need kinds of fixtures except benches faced to the sea. Attractiveness of the sites is panorama of the sea which could interest people to join into the place. In bahu mall, the construction of promenade along the shore could increase the environmental quality and social function of the place. Meanwhile path and sidewalk in Mega mal were not specially designed for walkers; it was just covering by hard surface for the wheels, which makes the place become hot during the day. Some buildings and parking lots are still under construction in certain place on the site. During the weekend, mega mal is very crowded in the morning. People used the road and parking lots for jogging or doing some sport.

Community Open space

Urbanization process, especially population growth and construction development do not proportionally balance with public space provision for accommodate the community activities. Divided into 9 districts official,

Manado city has only 2 official public open spaces representing communal space as neighborhood space, they are Singkil and Malalayang. Both are very limited in use also in size. This situation is consequently lead the neighbors, mainly the children, to use other kind of public space like streets and pedestrian way to play and doing some pleasant things on the dangerous area. Even though the usage and dimension are very limited, people are interested to visit and expected some pleasurable things from the object. Doing fun games, talking with neighbors, sitting and watching the kids play are setting of activities in the object observed. Occasionally, they used for social gathering, religious ceremony, musical concert, or special events.

Tabel.2. Physical condition of two neighborhood space in Bantik Malalayang dan Ketang Baru

Situation	BANTIK	KETANG BARU
Spatial Shapes	Square 58 x 41 m	Square 58 x 63 m
Access	2 entrance gates on south and east sides	2 entrance at north and south sides.
Border lines	Fences and trotoir at south side	Bollard and Streets around with medium traffic density
Dimension of space	2378 m2	3654 m2
Materials used	grass court with decorative garden	Grass court
Height	30 cm from street level	10 - 20 cm from street level

According to the adequacy of outdoor facility, respondents of neighborhood area felt the open space in Manado are insufficient in quality and quantity to meet the public need.

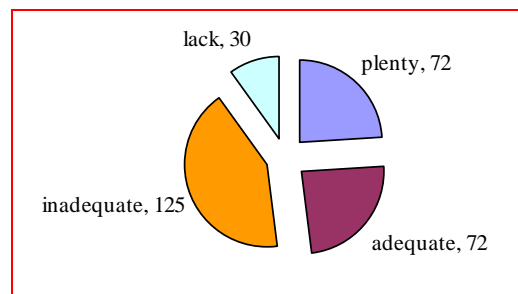


Figure 8: Adequacy of public open space in Manado

CONCLUSION AND RECOMENDATION

This paper analyses the results of an investigation in Manado city, North Sulawesi, into local citizens aspirations for different types of urban open space related to the social functions. The result will serve in the improvement of urban design decision for making renovation of some public space design which will contribute urban greenery system planning in Manado city.

In case of Manado, limitation of number and various activities are caused by spatial condition which could not represent the real need of users. Some activities are taken in wrong places like playing on the parking area or on the street. Some elements of public open spaces are properly unused and inattentive while some other are over capacity, like pedestrian and paving for doing exercises. Public open space is publicly accessible open space which includes streets, civic spaces and parks. Well-designed and managed public space is an integral part of the character, economic attractiveness and uniqueness of a place. The quality of public space plays a major role in the economic, social and environmental sustainability of our cities. According to UU no 27/2007, Indonesia regulation on spatial planning, 30 % of urban land use area should be reserved for urban greenery system. Thus will consequently lead to planning the open space not only as a complementary object, but included in the main system in planning and management of urban land area.

DESIGN RECOMMENDATION

Brief description of design and/or amenity changes recommended to improve the quality of settings as a place for people to use and enjoy in Manado open space are:

- ✚ Quantitatively, urban open space, mainly neighborhood space, should be provided and well distributed in each cluster of human settlement in appropriate size needed and suitable density of population.
- ✚ One focus in one place could avoid visual complexity in urban plaza. Sculptures should be well scaled.
- ✚ Food vendors are supporting elements in public realm, and they should be

accommodated under the certain conditions.

- ✚ Jogging trail should be served in many circumstances, and should be design separately with vehicles.
- ✚ Since the microclimate is very hot, it should be more vegetation and canopy for shading the area (Syafriny R and Sangkertadi, 1999)
- ✚ Night lighting is important element should be provided in each public places.

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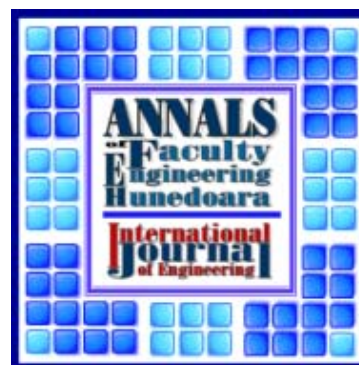
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