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Pedestrian Space Characteristics Analysis on Kyai Tapa-KH. Hasyim Ashari Street Corridor, West Jakarta

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Abstract–The city of Jakarta shows special characteristics in social, economic and cultural structures; a characteristic of urban life that gives much influence to its physical form. The development of the city is being experiencing with the problem of environmental degradation due to unbalanced provision of urban infrastructure and facilities against the heterogeneity of urban needs and activities. The services provided by municipal government are more often unable to keep up with the increasing demands of society's needs. Urban spatial and specific facilities that have been built to expect community activities in accordance with the facilities built. This paper aims to analysis the public perception of using pedestrian and public space area. The characteristics of user's activities in the region as an object of the research and the problem of pedestrian path as part of a public space related to behavior of community activity were investigated. Descriptive analysis of the phenomenon occurred, seen, and interrelations was analyzed. Combination of descriptive survey and analytical survey method of a phenomenon were used. Built environment as product and work in form of space, volume, structure, ornament; needed as a message representing the norms and values of society, perceptions and aspirations, including developing their motivations and expectations explicitly or implicitly are among the variable used in analysis. The result shows that the city life activities require pedestrian space adapted to the aspirations of its people, as an effort to humanize pedestrians into the pedestrian area planning as a spatial dimension in urban area physical development. In relation to the phenomenon occurred to the existence of pedestrian areas in the case of study area, it need to see a specific problem to be able to determine the concept of planning development-design of pedestrian areas in accordance with the physical conditions, perceptions and aspirations of the community in relation to urban living activities

Keyword: pedestrian spaces, public perceptions, spatial characteristics.

Introduction

Pedestrians are a part of every roadway environment, and attention should be paid to their presence in rural as well as urban areas. Pedestrians are the lifeblood of our urban areas, especially in the downtown and other retail areas" (AASHTO, 2004). Nowadays urban mobility sustainability plays a central role in transport policies worldwide. The central role of this sustainability is walkability, which means the easiness of freely moving within an urban context, a freedom that must be ensured to increasingly wider portions of the population in accordance with the principles of Universal Design and Design for All. From this point of view pedestrian infrastructure quality is very important, as it must be imagined, designed, and built to ensure the mobility of every individual user. Its task is more important when it is part of more complex modal displacements: in fact, the lack of quality and accessibility of pedestrian pathways from home or work locations to the first available transport means, de facto inhibits the entire moving of a substantial portion of the population, thus leading to the exclusion of these citizens from economic, social, and cultural progress. Therefore, it is necessary to reconsider the pedestrian as the main actor of the urban scenario. To do this, however, it is necessary to know how the pedestrian moves, and how the pedestrian infrastructure characteristics and the flow in which they are moving affect such behavior.

According to Fruin (1979), the main purpose of the development of pedestrian facilities are security and safety, and improvement of the physical picture system for enhanced comfort, safety, pleasure, continuity, comprehensiveness, and appeal.

Pedestrian safety measures improve walking environments and contribute to urban renewal, local economic growth, social cohesion, improved air quality and reduction in the harmful effects of traffic noise.

They also have supplementary benefits for other road users, such as motorists and cyclists (Job, 2007; Dokmeci *et al.*, 2007). Implementation of safety measures requires commitment and informed decision-making by government, industry, nongovernmental organizations and international organizations (World Health Organization /WHO, 2013 Pedestrian risk is increased when roadway design and land-use planning fail to plan for and provide facilities such as sidewalks, or adequate consideration of pedestrian access at intersections (Zegeer and Bushell, 2012.). Infrastructure facilities and traffic control mechanisms separated from pedestrians and motor vehicles enabling pedestrians to cross roads safely are important mechanisms to ensure pedestrian safety, complementing vehicle speed and road system management.

The existing pedestrian areas of existence are designed separately and become heavily dependent on street requirements as a means of circulation and vehicles as part of transportation system. Vehicles become dominant as a means of communication, because the distance between the functions of the city becomes longer due to the progressive expansion of the city. The lack of planning about pedestrian needs can be obtained from the city's detailed plans in which the pedestrian facilities are less likely to be included. The function of pedestrians in process of modernization of the city to be displaced by obsession of transportation problems that are considered more efficient vehicles. Psychological characteristics of psychological preference are needed to understand the desires of pedestrians when they do traffic activities. Psychological studies show that pedestrians prefer to avoid physical contact with other pedestrians, and they will usually choose a wider private space. The desire of pedestrians to avoid physical contact shows the need for longitudinal longitudinal distance for pedestrians to be at least 60-90 cm in order to obtain comfortable movement (Fruin, 1979).

The pedestrian zone should be an integral part of the concept of circulation in the planning and design of city as a whole and integrated to keep up with the increasing demands of society's needs. Land-use planning and roadway design should accommodate the specific needs of pedestrians not only to improve their safety, but also to increase pedestrian access to local services including shops, schools, hospitals, farms, neighbours, public transportation stops and social meetings (Chakravarthy *et al.*, 2010). Worldwide, pedestrian needs are increasingly recognized in land-use, public space and transport planning, with an increasing number of countries making substantial investments in pedestrian safety in recent years. While some countries, such as China and India, are beginning to increase their efforts to address pedestrian safety, others such as the Netherlands and Denmark have already invested in pedestrian safety and walking for a relatively long time (Mooren *et al.*., 2013). Many strategy plans are implemented in an integrated manner, the effect of these are to create healthy, efficient and sustainable communities to make sure people to choose to walk in safety manner. There are eight strategic principles guiding this framework – increased inclusive mobility, well designed and managed spaces and places for people, improved integration of networks, supportive land-use and spatial planning, reduced road danger, less crime and fear of crime, more supportive authorities and a culture of walking. To develop and implemention of these measures require planning and policy reforms from vehicle-dependent to a multi-modal and inclusive roadway design, land-use and public space planning approach (Rabl and de Nazelle, 2012).

Most studies consider two different conditions, some of them are based on the behavior of the isolated pedestrian, so a pedestrian moving alone on a pedestrian infrastructure without interfering with other pedestrians. Thier behavior is, therefore, exclusively tied to his psycho-physical conditions and personal choices (motive of moving, environmental conditions, etc.). Others consider that pedestrians in groups, defining an average behavior that depends on the composition and number of groups and the pedestrian flow. Very few studies consider the behavior of the single pedestrian within a flow. Research conducted by Murrau *et al.*, (2014) was to investigate pedestrian infrastructure characteristics, pedestrian characteristics, and pedestrian behavior along the path, distinguishing between isolated pedestrians, single pedestrians, and groups, and to observe how the presence of other users leads to variations in individual behavior. Sisiopiku and Akin (2003) found a limited number of studies on pedestrian perceptions and attitudes towards facilities for pedestrians. Increasing urban air pollution stimulates the attention of walking as a green transport mode. Many research studies found that social and physical environmental factors correlate with walking behaviours of the people (Billie *et al.*, 2003; Saelens *et al.*, 2003; Sallis *et al.*, 2004). Planning pedestrian environments requires assumptions about how pedestrians will respond to characteristics of the environment as they choose their routes (Zacharias, 2001).

The definition of pedestrian areas

As an inescapable part of our everyday life world, walking is an embodied practice with specific lived qualities. It is also a mode of "experiencing place" and "the city". It is a multifaceted activity and a temporal

practice, which has animpact on design; as such urban walking has yet to be fully understood and engaged with. (Wunderrich, 2008). Pedestrian areas are referred to the passages which are exclusively available to pedestrians and motor vehicles are only allowed to access for essential services. The passages can be streets, markets, malls, squares, parks or open space of a residential complex. (Moeini, 2011). Pedestrian areas are paths with the highest social role; in these areas the pedestrians have full control of the space. They are tools for collective actions, particularly in relation to urban economics, environmental quality, and social health (Pakzad, 2005). One of the important elements in urban design is the pedestrian path **(**Sirvani 1985).

A good pedestrian path is clarity, convenient and accessible and provides a sense of security for its users. Paths that meet these criteria mean successfully creating a human space. Jacobs (1995) suggests that a path or path that successfully meets the design criteria is as follows: (1) the path is accessible and easy to find; (2) safe and comfortable physically; (3) participative; (4) memories; and (5) representative. Perception can be interpreted as a direct observation associated with a particular meaning (Figure 1). Processes that underlyning the perception originated from the information contained on the environment. Information received will be selected based on the orientation of value dimiki and personal experience. Existing deficiencies in the information to be furnished by individual, both through the imagination, mind and reason to obtain a meaningful wholeness and roundness (Rapoport, 1987).

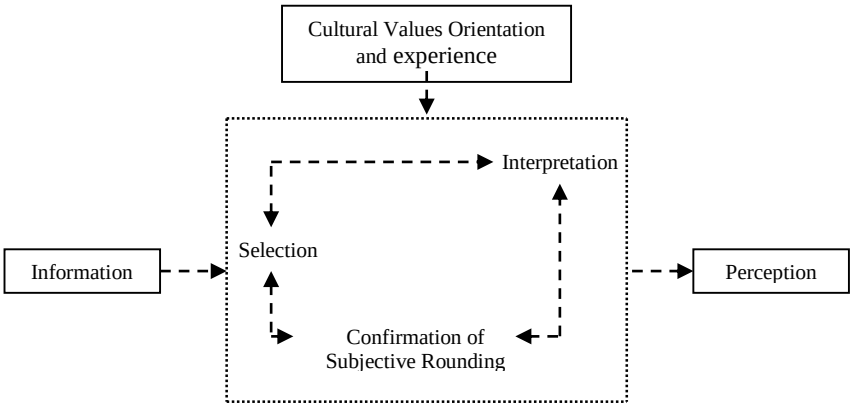

Figure 1 : Perception Process Diagram (Uniaty 1992)

Psychology in environmental architecture.

The environmental assessment in architecture includes more than just a function, on the issues that can be measured; such as the circulation flow and ease of attainment between activities, so one can easily switch from one function to another function (Figure 2). However, the range is on psychological behavior of the wearer, how he understood the shape of building, the need for social interaction needs, cultural differences and lifestyles, the significance and symbolism of the architecture and environment. The environmental assessment also includes aesthetic behavior.

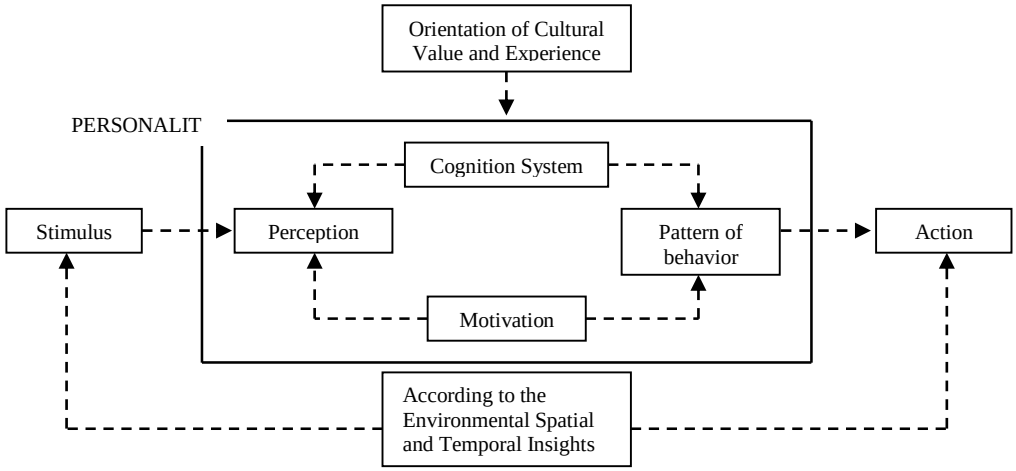

Figure 2. Human interaction with the environment diagram (Uniaty 1992)

The attractiveness of a region consisting of a mixture activity shows the flow of pedestrians to travel at specific times, though not sufficient condition pedestrian path from the various requirement.
All human actions in life are directly or indirectly associated with sociological, anthropological, psychological and social psychological elements. Architecture as a form of human intervention measures on the environment, has a relationship with the four. (Rapopport, 1987).. Architectural space is a manifestation of existensional space, indicating a psychological concept developed schemata humans interact with their environment. Creating existensional space means integrating a certain life forms into the physical environment.

Relationship of perception and human behavior to the city environment

In human interaction with the environment occurs a psychological process, which involves motivation, human needs both individually and socially. Heterogeneity people shape perception and behavior varies demanding approach with consideration of the relationship between man and his environment. Consideration of the relationship between man and his environment is as follows:i.The connection to the optic, which is the human relationship with what it sees as it moves (walking) regularly, is a serial vision, in which the left-hand element is a series of stories. Impact scenery through which an existing view and emerging view, which can be utilized into the manipulation of a situation that we expect, ii. Place relationship. This happens in a position where we participate in the environment and our body's reaction to the environment is the adaptation to the environment, iii. Relationship to satisfaction. This is related to the provision of space facilities for the urban community with the level of enjoyment and satisfaction of each that can be optimally fulfilled through a socio-spatial approach.

Materials and Methods

Research Location

The study area was at Kiai Tapa from Grogol Road Corridor Area up to Jl. KH. Hasyim Ashari - Roxy, West Jakarta (Figure 2). This location was selected as an object of case studies, which is an area of rapid physical development. Appropriation is a mixture of residential land, stores, trade, higher education, hospitals, bus terminals inside and outside the city, and other functions, making the pull factors and driving forces followup activities that continue to grow and expand, causing the function space- Public spaces and pedestrian paths are displaced, leaving their existence neglected.

Figure 3: Kiai Tapa - Grogol Street Corridor Area up to Jl. KH. Hasyim Ashari - Roxy, West Jakarta (https://www.google.co.id)

Research methods

This research used a descriptive analysis to show the phenomenon, to see and to seek reciprocal relationships. It was a combination of descriptive survey method with an analytic survey method on a phenomenon. The case study is presented as an object of analysis in order to better explain (explanatory) the phenomena found and the influence of variables. Information and data collected is presented in the form of tables and then made the narration. This is necessary of an effort to express the numbers consideration in relevant to the phenomenon and relationship between one variable with other variables. A visual recording device is used to get an overview of the object. Questionnaires were used as a tool to obtain data and information about research object. Images and maps, as a guide in conducting on-site research. Main variables used in this research are 1) spatial; including; aesthetics, expressive nature, organization, potential

and space, 2) temporal; include time of activities undertaken by pedestrian lane users, and 3) motion, i.e; behavior of pedestrian lane user activity. Stratified random sampling was applied for selection of the study area and respondent. The respondents consist of different types of groups with different activities. Random sample selection was carried out by determining the population group consisting of pedestrian, street vendors and land owner/property/shop. These three are groups are related to pedestrian activities. Elements pedestrian are kind of pedestrian, walking destination and type of work walkers. It is to look at the correlation between groups in the similarities or differences.

Data collection techniques, requirements and analysis

The techniques and requirements of primary data collection were conducted with structured interviews and limited observations. Structured interviews were conducted directly in the field to capture public perceptions and obtain empirical data in accordance with research objectives. In the following way;

1. **Perception Research**

To examine and analyze a person's perception using a structured questionnaire with material taken from psychological elements, namely;

(i) Ordinal type with Semantic Differential Scale; measure the direction, quality and intensity of usage that a person uses and is a procedure for analyzing perceptions and human nature quantitatively. Respondents gave their opinions on several adjectives whose variables were arranged on two opposite poles using a scale of 1-5. Scale 5 is best suits the design of the desired space, scale 1 is the least appropriate to the desired design space. From this, it was obtained a profile of respondents' perceptions about various adjectives

(ii) Nominal type—a structured interview to ensure information and data on issues relating to perceptions and attitudes qualitatively.

2. Behavioral research

This was conducted by means of limited-involved observation, i.e (i). Behavior tracking: Pedestrian activity is observed and recorded at the study site. This observation is done with the respondent randomly and at the time of activity to be determined (on working hours and outside working hours), ie at 06.00 until 22.00 WIB, during the period / time / day of work and holiday; which is a time sample or can represent the average use of time. (ii). Behavioral observation is done by giving notation on the map of the research location, the user is at a particular point of interest, what is done at the time of observation and counted as the unit number, so that it can be seen in the location where most visitors or users at a time. (2). The secondary data consist of general data; physical data of research object area and related literature.

Objects based on observer's perception (Semantic Deferential Scale on perceptual objects determined by physical condition and interview and analysis of data and information related to the summary of analysis results 1 (Time and Activity, Results Questionnaire Retrieved from Processing Results) were carried out. Explained by the table as the analysis of activity time, it shows the attractiveness and the tendency of maximum utilization to show tendency of movement and behavior in the area of research object. The questionnaire to show the aspiration of pedestrian user in the area of research object was also conducted. Specifically, the location of study is identified as the object of perception in its functional activity.

Results and Discussion

Environmental quality and regional image

The activities show a komplementatif nature and contradictory to each other. These symptoms indicate the presence of a complexity of the activity that life's characterizes of the region. The greatest level of complexity on the Kiai Tapa Street is located on both sides and under a flyover; utilized by street vendors, market growth without a plan, and bus terminals. The bus station is a major support of the activity objective, is the transfer of transportation's modes from walking to public transportation, while on the street KH. Hashim Ashari, in the area of pedestrian corridors in front of shops on both sides of the street are used by street vendors, parking lot and display merchandise of existing stores. The photographs below (Figure 4) are research documents showing the characteristics of activities in pedestrian area of the study site as a result of surveys and observations made:

The pedestrian pathway is used for parking space lot

The walking pathway is used as street vendor while people use the vehicle traffic lane for walk

The pedestrian track is far from the comfort and safety of walking

Utilization of tent stalls on the pedestrian track

Street Vendors and illegal buildings along the pedestrian path

Motorcycle parking spaces utilized the curb under a flyover

Figure 5. The complexity condition of the Kiai Tapa Street Corridor Area up to KH. Hasyim Ashari in West Jakarta

The following is analysis of the results of data processing grouping of respondents objects, namely: groups of pedestrians, groups of street vendors, and groups of shopkeepers/enterprises arranged in the Table 1. The data were collected on each of 40 respondents on weekdays.

Groups of pedestrian responders

The results obtained randomly from the research location at Jalan Kiai Tapa amounted to 40 respondents. It shows that 17,50% of respondents are employee indicating the presence of many workplace locations; 47,50% of respondents are students showing their correlation with two college activities located on the road; 27.50% of entrepreneurs because along the way there are places of business and trading activities, both formal and informal, and 7,50 % is not working.

Table 1. Composition of Pedestrian Respondents

No.	Types of Work	Total	Percentage
1	Employee	7	17,50
2	Entrepreneur	11	27,50
3	Student	19	47,50
4	Not working	3	7,50
	Total	40	100,00

Table 2. Respondents Objective Analysis : Variations of Transportation Facilities Used

No.	Means	Total	Percentage
1	Private Vihacle	5	12,50
2	Public Transport	17	42,50
3	Walking Foot	18	45,00
	Total	40	100,00

Seeing the composition of public transport means of respondents and on foot approaching the same number (Table 2), where the public transport is a transitional mode of transportation. From walking to public transport for further destinations show that pedestrian way conditions are less convenient. Evidence can be shown through the photographs attached previously. The condition of the pedestrian track clearly shows

that it is not carefully planned, neither the facilities nor the standards. The rules that support the pedestrian path function are not well implemented.

Traffic frequency

Table 3.Frequency Variation Visits

No.	Frequency	Total	%
1	Every Day	15	37,50
2	Once a week	2	5,00
3	Twice a week	7	17,50
4	Once a month	7	17,50
5	Uncertain	9	22,50
	Total	40	100,00

Source: Data analysis, 2016

Frequency of visits every day to the area and pedestrian way shows that the highest percentage of users are walking to work or school / studying in the area / location of research.

Interference to respondents

Table 4 shows the analysis of disturbance against respondents based on calculation of respondents number who experience disturbance when using pedestrian way in the study location. The highest percentage was in the disturbance of weather and hawkers (100%), which showed that all respondents feel discomfort due to weather and street vendors. This is due to the lack of shade for pedestrians, and the use of pedestrian paths by street vendors. Whereas 95% of respondents stated that security runs into disruptions, meaning that pedestrian way facilities are not safe, because they are not built and planned properly. From the physical observation the pedestrian track conditions do not meet the safety standards, either the width of the path, the selection of materials, or the uneven path track security. Street vendor's activity also causes pedestrians to use motorized lanes, because the pedestrian lane is closed or disconnected due to the activity.

Table 4. Disturbance Against Respondents

No.	Type of Disorder	Total	% Of all respondents
1	Noice	33	82,50
2	Weather	40	100,00
3	Lighting	21	52,50
4	Street vendors	40	100,00
5	Line width	32	80,00
6	Smell/Garbage	21	52,50
7	Completeness Road	35	87,50
8	Safety Walk	38	95,00
9	Prostitution / Crime Disorder	3	7,50

Space activities and spatial impression absorption value

Understanding the object study condition through the visual process of perception is an attempt to obtain the characteristics of spatial values, spatial meaning expressed by semantic scale descriptively. Factors of analysis include aesthetics **(A)** : elements of color, proportion, scale, rhythm and continuity through the physical elements of the pedestrian path. Expressive nature **(E)** : appearance physical environment visually perceived psychologically, for example, is the beauty, cleanliness. Organization **(O**) : is the embodiment of setting spatial patterns, either with structuring or without an effective and efficient arrangement. Potential **(P)**: Embodiment capacity and carrying capacity as well as intensity associated with spatial functions. Space **(S)**: visual appearance properties associated with the expressive quality and functional in a three-dimensional scale.

Each factor has a descriptive phrase. Measurement of the visual impression given weight within the range of values of 1 to 5, so there are 5 levels of absorption. The more absorption value, the higher the perceptual accuracy. 1 is considered the lowest, and 5 is considered the highest. From these measurements indicated

that an object that has a low dominance, means tend to have characters that are not potential characters. Conversely, high-value dominance, giving an indication of the region with a potential character.

The rating range is as follows: Semantic description
Visual impression not harmonious 1 --- 2 --- 3 --- 4 --- 5 visual harmonious impression

With these measurements indicated that an object in the region that have a predominance of low value, meaning the characters tend to have huge potential. Conversely, high-value dominance, giving an indication of the region with a potential character.

Table 5 below is the results of respondents' inputs, showing their perceptions of the physical area/space pedestrian on the object of research by suggesting the value of spatial impression on Kyai Tapa (1) KH. Hasyim Ashari (2) Street

Table 5 : Analysis of Meanings of Space Activities and Spatial impression Absorption Value

Visual Object	SemanticDescriptionArea		Factor Analysis					Location	
			A	E	O	P	S	I	II
Atmosphere	unsatisfactory	satisfy		x				2,73	4,19
Material Color	dull	exciting	x					2,77	2, 44
Material Quality	bad	good	x					1,86	2,81
Lighting	dark	light		x				3,08	4,12
Layout Street furniture	confusing and disturbing	clear and good			x			2,18	2,89
Shade trees	deficient	sufficient	x					1,86	1,29
Line width	narrow	width				x	x	1,86	3,27
Environmental cleanliness	Dirty	clean		x				2,18	2,81
Completeness of facilities	deficient	sufficient			x			1,74	1,95
Safety	not safe	safe		x				3.31	3,02
Comfort	uncomfortable	Comfortable		x				1,98	2,86

The emergence of new unplanned activities in study area (I and II: Kiai Tapa and Hasyim Ashari Street) is a new activity from the existing activity point, increasing the volume of activities. For example, street vendors, parking, illegal stalls; Form of sequential visual activity. Interwoven activities describe the quality of spaces that are specifically seen in the use of pedestrian areas, ie quality indicators, namely; characteristic of space usage, behavior pattern of user society, physical characteristic of location, circulation and service (Tabel 5)

In general, the absorptive value of the spatial impression on the research area indicates a link between the semantic value of the area and the attraction of activity centers. From the assessment results should be considered improving the quality of pedestrian spaces in the research area, regarding the completeness of facilities, and increased comfort for pedestrians.

Respondents composition street vendors

The number of street vendors in the study area was 341, consisting of various types; *Warung Tenda*- a under tent shop, Barrow-a truck vendor, *Gelaran*- a spreading good on the street, *Asongan/Pikulan*- a burden on shoulder vendor

Table 6. Numbers and Types of Vendors on Street Facilities/Pedestrian (Kaki Lima)

No.	Vendor Types	Total	%
1	Warung Tent	69	20,23
2	Barrow	229	67,16
3	Gelaran	25	7.33
4	Asongan/Pikulan	18	5,28
	Total	341	100

Table 7. Merchant Amount of Space Analysis

No.	Spacious Room	Total	%
1	>10 m2	311	91,2
2	>20 m2	12	3,51
3	20 – 45 m2	0	0
4	Not settled	18	5,27
	Total	341	100

Table 8. Allocation time of the activities

No.	Time allocated	Total	%
1	>5 hours	0	0
2	5 – 8 hours	255	74,7
3	>8 hours	62	18.18
4	uncertain	24	7,03
	Total	341	100

Table 9. Numbers of Buyers Per Day

No.	Number of buyers	Total	%
1	>20 people	0	0
2	20 – 70 people	54	15,83
3	>70 people	287	84,16
	Total	341	100

Conditions selling place were inadequate and improvised cause poor physical condition and rundown, but because a lot of buyers who come to make the vendors remain in that location (Table 6-9)

Shop / Business Owners / Offices

Various types of merchandise (18 types) are an attraction for pedestrians and motorists to shop at these locations. But the lack of adequate parking so many cars parked on the pedestrian path, merchandise held in the pedestrian path, with the physical condition and the wide pedestrian path that is not according to standards cause problems for pedestrians (Table 10-12)

Table 10. Composition of Respondent Shop / Business Owners On Kyai Tapa and KH. Hasyim Ashari Street (75% of the total number of shop owners / businesses available)

No.	Type of Merchandise	Total	Percentage
1	Watches	2	1,19
2	Electronic	11	6,55
3	Stationery / Printing	6	3,57
4	Car Service/Tools	11	6,55
5	Office / Hotel	62	36,90
6	Furniture	39	23,21
7	Pawnshops	2	1,19
8	Clinic	3	1,79
9	Massage	3	1,79
10	Bank	12	7,14
11	Glass/Frame	3	1,79
12	Minimarket	3	1,79
13	Perfume	2	1,19
14	Police Station	2	1,19
15	Hospital	1	0,60
16	Campus	2	1,19
17	Fuel/Gas Station	1	0,60
18	Car Showroom	3	1,79
	Total	168	100

Table 11. Number of Visitors Analysis

No.	Number of buyers	Total	Percentage
1	10 – 20 people/day	3	1,79
2	20 – 50 people/day	26	15,47
3	50 – 70 people/day	48	28,57
4	70 – 100 people/day	28	16,66
5	>100 people/day	66	39,28
	Total	168	100

Table 12. Problem Analysis of Physical and Non-Physical Against Business Activity

No.	Physical /Non-Physical Problems	Total	Percentage
1	Width of Pedestrian Ways	168	29,06
2	Street Vendors	112	19,37
3	Parking	143	24,74
4	Local Regulations	155	26,81
	Total	578	100

Pedestrian flow as a characteristic of activity behavior in pedestrian spaces

The attractiveness of a region consisting mixture of activities shows the flow of pedestrians to travel at specific times, though not sufficient condition pedestrian path from the various requirement. The movement of pedestrians on the Kyai Tapa Streetlocation shows that the largest flow occurs on weekdays in the morning and on Saturdays and Sundays in the afternoons and evenings (Tabel 13 and 14). This shows the characteristics of pedestrian activity in the research area; on weekdays indicated by the flow of pedestrians heading for places to work in the morning and the time after working hours, and the campus as well as the terminal. On Saturday afternoon and evening pedestrian flow also increased, showing pedestrian activity at the end of the week

Table 13. Highest Intensity of Pedestrian Movement Flow. Location ; Kyai Tapa Street

Day / Time	Week-day	Friday	Saturday	Sunday
06 – 07	3668	2889	2216	1760
07 – 08	3552	2212	1235	2256
08 – 09	2870	1850	3950	3930
09 – 10	2990	1200	3416	4448
10 – 11	1220	1550	1850	2120
11 – 12	1650	2100	2450	2490
12 – 13	1160	1830	2980	3469
13 – 14	998	2300	3400	3652
14 – 15	1250	2900	3860	4407
15 – 16	1860	1788	4602	4987
16 – 17	2106	1650	5120	5381
17 – 18	3160	3400	5250	5456
18 – 19	3420	3254	4980	5108
19 – 20	2210	2980	4760	4762
20 – 21	799	940	1695	2549
21 – 22	310	270	660	590
Amount	33223	33113	52424	57365
Avg/Hour	2076,44	2069,56	3276,5	3585,31

Tabel 14. Highest Intensity of Pedestrian Movement Flow. Location; KH. Hasyim Ashari Street

Day	Week-day	Friday	Saturday	Sunday
Time				
06 – 07	2266	1872	1889	1446
07 – 08	3865	2234	3446	3355
08 – 09	4458	1226	1149	3655
09 – 10	3367	1998	1449	982
10 – 11	3322	3008	1887	2267
11 – 12	4558	2268	3896	4468
12 – 13	2547	887	3345	2868
13 – 14	4442	1077	1228	1211
14 – 15	1489	2298	1554	2998
15 – 16	3356	1211	3366	2114
16 – 17	2311	3224	3246	2118
17 – 18	3114	1332	4422	4655
18 – 19	4533	1778	5502	4332
19 – 20	2268	2232	3422	3885
20 – 21	1123	1002	2210	2997
21 – 22	668	1807	1044	1134
Amount	47687	29454	43055	44485
Avg/Hour	2980,44	1840,87	2690,94	2780,31

Different types of street vendors indicate the location is spreading irregularly. The tendency of misuse of the pedestrian area causes problems for pedestrians. Walking comfort has not been achieved with inconvenience due to weather, hot weather, no shade plants, standard extent and inadequate material selection. The physical condition of pedestrian pathway at the site of this study shows specific characteristics, in which the attraction and driving factors of human activity form the behavior that affects the environment.

Conclusions

Public perception of pedestrian area used by vendors and public space shows the characteristics of user activity on the location of the study. The result shows the location has an important role in:

i. Social attractiveness and potential economic activity with campus buildings, housing, hospitals, terminals require development of the pedestrian area and pathways.
ii. The arrangement of the location of street vendors needs should be provided on a separate site with pedestrian paths, but should has good access to pedestrian and merchant interests.
iii. The position of the research object has accessibility from various directions but its existence has not been supported by adequate pedestrian infrastructure and facilities
iv. The existence of pedestrian spaces should not be separated from the urban transportation system that requires the convenience of safe and comfortable modification
v. Planning, maintenance and management of pedestrian spaces need to be improved in quality and quantity related to technical standards and standards of eligibility and feasibility.
vi. Implementation of legislation for pedestrians in the research area

Suggestion

i. Rearrangement of land use pattern in the research area should be able to increase pedestrian development activity, in the form of pedestrian area and path that meet the technical standard and pedestrian comfort.
ii. Should consider the continuity of circulation and the achievement of easy accessibility for pedestrians to perform their activities.
iii. Need establishment of well-planned activity centers for shelter of street vendors and community economic activities
iv. Need a green area and green ways to improve the quality of the region's microclimate and aesthetic enhancement
v. Need a concept of pedestrianization at the site of continuous research and establish a linkage system for enhancing the image of the region

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