

## *Pedestrian Behaviour in Urban Space at Pontianak City Case Study in Diponegoro Street*

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**Abstract:** *A successful urban space is used space, and most urban space use is movement. The main purpose this study is to study pedestrian movement in small urban spaces, in order to provoke a sense of people-place awareness for architects and urban designers during the designing. The understanding of pedestrian and environment relationships will lead the designers to create a better urban place where social life --contacting between people-- can be stimulated. Meanwhile the developing new city has its own problems. People are living without street life and amenities. A claim for an absence of social life in urban space, in fact, stems from a lack of understanding of the dialectical nature of social and space relationship. Although the analysis of people's behavior in relation to their built environments is a major concern in the field of urban design, environment-behavior research is not considered sufficiently during most architects' design process. This research consists of two parts: a literature review of related work and a proposed method for studying pedestrian behavior and environment relationships. Urbanists and architects had written about the need for more understanding about people and place relationships, focussing on the study of pedestrian movement behaviors in relation to spatial organization of urban space. The core issues of investigation is pedestrian movement, there are environmental influence on pedestrian interaction and social activity, the effects of spatial characteristic of a built environment on pedestrian movement, and methods of observation and empirical works in a field of physical environment and pedestrian behavior.*

**Keywords:** *pedestrian movement, pedestrian behaviour, urban space, environment*

Diponegoro street until the junction Tanjungpura is one of street in the city of Pontianak that has a lot of activity from morning till night. This street is one lane through the area connecting Tanjungpura (Big Market), so that this region has a significant role in the development of economic activities.

Known as the trade area to be the main factors why the area is growing quite rapidly. With more and more customers/users of space, the higher the level of activity involved, this can be seen from the increasing number of indicators of

economic activity, such as the distribution, outlets, restaurants, internet cafes, food stalls on the roadside and others.

Utilization of road space as a place selling the stalls caused some congestion points on the road of Diponegoro. In addition, congestion is also caused by vehicles parking activity for the user Hotel Santika. Apart from being a place to sell, sidewalks or road shoulders are sometimes used as a parking space for vehicles. Of activities is quite representative in the show about street life, hence why the author chose this area as an object of observation.

The purpose of this study is to identify the various activities that occur (street life) and the behavior of road users along Jalan Diponegoro Street until T-junction area Tanjungpura. While the purpose of this study are recognize and understand three-dimensional character of the city, recognize and understand the elements forming/filling/user of space, and recognize and understand the forms of urban space and the changes that occur. In order to analyze life in Jalan Diponegoro, necessary theoretical foundations. Some theories/understanding that we take is the theory of land, buildings, roads and signage.

Determination of regulatory policy areas the local city government about building the intensity is related to several aspects of physical shape of a building, which includes specific aspects of altitude (height), demarcation lines (setback line), and the vast dimensions of the building (floor area), and the coverage area who woke up (building coverage) (Hamid Shirvani, 1985). Not only that, the consideration of other aspects can be developed more widely, in accordance with the policies and existing design concepts in each city. *Building Coverage Ratio* (BCR) is Percentage figures based on comparisons between the entire ground floor area of buildings with controlled area in accordance with the city's plan not only that, the consideration of other aspects can be developed more widely, in accordance with the policies and existing design concepts in each city. KDB is necessary to limit the closed area of the building, including paving, rebates,

terrace, etc., so that the remaining land as open space was still able to absorb/drain rain water into the ground.

The relationship between the factors of the building height and density affect the policy part of determining the value of KDB (in units of percent). Floor Area Ratio (FAR) is floor area ratio of buildings with an area of land or the lot where the building is located (Time Saver Standards for Residential Development). FAR describe a relationship of the size of the existing buildings on a land area, also can be used to describe the thickness or mass volume (bulk) of a building. Outbreaks can describe the mass of the building, but not able to determine the architectural character of a building. Outbreaks can describe the mathematical relationship between the area of land, building floor area and height of buildings. In concept, the demarcation line regulation is to ensure there is sufficient distance between the public space into private space. Big determining factor is the distance GSB building location and hierarchy of roads is planned. GSB size is determined based on safety considerations, health, comfort, and harmony with its surroundings buildings.

Some of the requirements of good roads by Allan B. Jacobs (1993), 1) Places for people to walk with some leisure is pleasures that can be felt when walking pedestrians are now able to come face to face with other pedestrians, and feel the experience of space (with a view of the environment directly from the close), with a sense of safety and walk comfortably; 2) Physical Comfort is is among others the warmth and sunshine during the cold weather (except in the cities in Alaska), the coolness during hot weather, and protection from the wind; 3) Definition, a good road is to have a definition, the boundaries that form the edge of the road and separated from fasade buildings. The road is defined in two ways: vertical (corresponding to the height of the building, walls, or trees), and horizontal (associated with length and distance between the functions/activities in the street); 4) Qualities that engage the eyes, a good road provides an interesting physical characteristics to be seen. This can be achieved partly by varying building fasade,

marker/sign of interest but still oriented, trees and the lights on at night; 5) Transparency, Good quality roads where transparency and semi-public areas of public/private (such as buildings) meeting. This can be realized for example with the doors and windows of buildings made of glass, or the provision of a transition zone between the road to the door of the building (the reverse zone display window or shelf space); 6) Complementarity, On good roads, the buildings line is not the same but mutual respect. This can be seen from the height of the building and fasadenya; 7) Maintenance, Physical care one way is also a good road conditions, the maintenance of trees, buildings, and street elements; 8) Quality of Construction and Design, associated with the Workmanship, materials and the way how people use the materials in the design.

Signage is an architectural visual communications media as part of the city information system for the public interest that can create a certain quality in a city. Serves to strengthen and clarify the position and offers of goods and services (Handayani, 1992). Rubenstein (1992) defines the signage as part of the overall city graphic design that conveys an important message to the function, safety and security in public spaces. Signage is not only intended for pedestrians, but must take into account the varying modes of circulation. Rubenstein (1992) provides four functions in the city signage. In addition to providing a place of identity, signage can act to improve or regulate traffic flow, providing identity for commercial facilities and to provide direction or location information for an activity. Haris and Dinnes (1998) added that an important function in addition to the signage as well as the identity of place and direction information, also provides ease of achieving the goals and warnings.

Zelinka and Brennan (2001) to ensure that a city must provide signage to avoid people become lost; provide information to the direction of their destination and places to be avoided. Information on the signage should be able to help users find the way to their needs (Yasin, 1998). A good way to communicate is through maps, driving directions, signs and other visual information. Signage is a mass

communication media which is intended for communication through the mass media, so that the message is communicated to the public. Communication usually occurs in one direction and the communicant is heterogeneous mass communication so the message is actually transmitted to communicative (Puspaningtyas, 2001).

Diponegoro roads is a function of secondary collector street with a few problems that need attention. A few things that need is in the form of restrictions on direct access road to the road, setting vehicles slow or stop, parking restrictions and parking provision together and pedestrian peyediaan. Based on the function of the way it has, the speed of the plan should at least 20 km/h with a minimum width of the road 7 m.

## **METHOD**

The importance of research methodology for an impact on the success of a research study. The methodology used in this study were post-positivistic, rationalistic paradigm that is based on quantitative (deductive) which aims to prove the theory. Grand Theory, which is used in this study is the theory of image formation, where the image corridor Diponegoro Street formed as a component of identity, structure, and meaning. In this study expressed a hypothesis that will be verifiable and carried to the grand theory of meaning based on use. The data in the study obtained through field surveys, sampling, questionnaires, and analysis using statistics. Methods used in excavation data is a method of observation that/ observation is a data collection method to collect research data through observation using the five senses. Observations documentation their maps, drawings, and photographs. By observing that there is a support activity along the street corridor it will get support by type of activity characteristic of the activities carried out. Sampling in qualitative research is a sample selected in accordance with the characteristics of the population to be observed. In this study the object to be observed is the support activity located along Diponegoro Street corridors are divided in two periods of morning and afternoon-evening-night. To facilitate the

observation of each character support activity that can be taken a few samples representing the character.

## **RESULTS**

From the results of observations made by two times (Friday, 15:30 to 16:30 and Saturday 18:30 to 19:30), the results obtained is that of land use along the road segment to the Diponegoro street until the junction Tanjungpura road, generally in density by commercial buildings. In addition to commercial buildings, along the road there is also residential, hotels, shopping centers, health facilities and educational facilities. This commercial building can be divided into two classes of trade, namely: 1) Trade services, examples of the types of trade in services contained along this road is a car service, internet cafe, photocopy, computer rental, travel, rental VCD, telecom shops and laundry services, and 2) Trade goods, examples of the types of trade goods along the road there is a trade of food and drink, clothing, shoes, electronics, stationery, CDs and computers. Segment along Jalan Diponegoro until T-junction area have Tanjungpura Santika hotel that has a high enough intensity. Health facilities is Tanjungpura pharmacies and doctors. While existing educational facilities are the Institute.



**Figure 1. Some commercial function and activities in corridor Diponegoro**

Which includes a road user is anyone, either individually, in pairs, or groups, both driving and on foot, using the road or functions in the road corridor, including

those who only just passed. Apparently there was another event in this way, the Santika hotel that has a clock-hour high intensity which sometimes causes a few problems along the road. Various functions and activities that occur in the function and outside functions need each other so that the interaction between road users.

**Characteristics Building.** Based on field observation of the building characteristics can be distinguished by its function, namely shop, education, restaurant, shopping centre and hotel. Along Jalan Diponegoro, there are various shops such as: pharmacy, photocopied, shoe store, *gift shop*, cafe/telecom shops, *distribution outlets* (distribution), workshops, etc. Building trade/commercial lot located at opposite times/river where the truth of this region in the watershed, which made the building mass to the bottom composite, which can actually endanger the occupants inside. The high density of houses can be seen in the picture besides, where almost no distance between one house next to the house, so impressed slums (*slum*). Often the stores do not pay attention GSB, so they built directly on the shoulder of the road without leaving the pavement for pedestrians in addition to the *facade* a few shops made makeshift buildings without regard to aesthetics alone - my eyes just thinking about function alone. However, there are some shops that its *facade* designed to make users may come into his store, the store is usually associated with the sale of goods such as: *distribution*, mini market, *gift shop*, etc. Apart from the building façade treatment is generally stores, with signage for the store being easily known and unknown types of stores, each stores trying to show own character, so when we are in Jalan Diponegoro will see the façade that makes the game more exciting atmosphere. Building height ranges between 1 - 2 floor, adjusting the height of housing also ranges between 1 - 2 floor, because the general stores that used to be home later changed allotment. Educational buildings in the observations are entered STMIK and several courses. Most of the restaurant building *facade* is not attractive and aesthetic design, impressive even improvise in accordance with its function as a restaurant, a building height of only 1 floor and use KDB above 90%, while the concluding part

of the building (roof) use regular tile which is covered by the *billboard*. But there are also some of his restaurants are designed striking *facade* and still not get her image as a restaurant. In addition the front of the restaurant are covered by the park so that its existence is not clearly visible.

**Characteristics Infrastructures.** Diponegoro roads - Tanjungpura junction is a function of secondary collector roads with a width of  $\pm 12$  m and widened to the north. Based on observation, there is no median path, there is no clear boundary between the road to the shoulder of the road, pedestrian path and the demarcation line of the building. These roads are toll roads that are crowded. Types of vehicles through the roads are four-wheeled vehicles, types of buses, cars either public or private transportation as well as motorcycles, personal and public. Not infrequently, and pedicab riders using this road. Some common problems faced by these road corridors are traffic jams, pedestrian path that is not available, use the road parking and lack the main road.

## DISCUSSION

Trading activity: the sale and distribution of goods and their interactions. Commercial functions that arise because of the pressure is the economy, whether it's because the building owners need to conduct these functions, as well as from the demand/market potential. As a result of commercial functions, comes the trading activities of goods and services. This activity can occur in a purely commercial functions, such as car and motorcycle *dealers*, and may also occur in a mixed function, such as where *Photocopy* documents or grocery store. In a mixed function, mixed with commercial functions function housing, because the shop owner and his family lived right behind their shops, or the owner and his family occupy only part of the house while the other part leased out as a boardinghouse. This happens because the economy needs. Trading activity is rampant economic needs arising from other vendors. They mushroomed since the economic crisis in Indonesia in 1997. The people who drop employment, or not laid off but really need more funds other than salary, set up stalls five feet. Other causes of rampant



street vendors is the ease of build rather than build their own store. Capital required approximately five million dollars to shop tent, relatively lower than that founded the store itself the capital of which can reach tens or hundreds of million rupiah. The difference with a mixture of shops and functions (shops and residential), booth tent can any moment without having to move through a long process and cost. Every day, every month and every year, street hawkers in Diponegoro road also does not pay a penny to anyone. For traders with a cart without tents and hawkers would be even less necessary expenses. In addition to buying and selling activities, other activities that arise as a result of trading activity is the activity distribution of goods. This happens because the owner of the store, shop, or restaurant received goods from elsewhere, or send goods to another place. For example gallons of water that had been ordered from a store at Diponegoro street market. How can be transported by open truck, in this case is the road users and vehicle drivers. Another way to a gurney propelled by a person, in this case people pushing carts serve as pedestrians.

The potential market in Diponegoro street and surrounding areas include several campuses and thus means many students who are potential buyers. They reside in Diponegoro street, around Diponegoro street, or away from Diponegoro street. Another is the potential of the shop (such as a electronic shop and *travel*), families residing in Diponegoro street and surrounding areas, as well as lodging at Diponegoro street and surrounding areas. Office employees, members of a family, and those boarding (whether he was a student, office worker, or construction workers), as well as the potential buyer. Office employees and tenants who have lodging private vehicles are sometimes parked on the road, which was allowed. This helped enliven the atmosphere of the street.

With the variety of activities and needs, transportation instruments used were varied. Visible means of transportation on this road include public transport minibuses, buses Damri, motorcycles & personal cars, bicycles, and rickshaws. This trading activity (the sale and distribution of goods), helped enliven

Diponegoro street. With the market potential, infrastructure, and adequate transportation facilities to support (except for damage at several points on the pavement), this activity can occur from morning till night. Activities of households and household activity interactions in the functions of a house that did not survive because of the need for a strategic location in the middle of the city and the ability to accommodate the needs of households that arise as a consequence of living in the middle of town. Several heads of households who are able or capable enough to make the soil as a function of residential houses, and thus the activity that occurs there is a purely domestic activity. Ibu-ibu/pembantu household in the morning looking out to buy household items at the store or the nearest market. The children were seen leaving the house with her school uniform each age range from elementary school age children through high school. Some students came out of his boarding house in a hurry. Among them are using public transportation, some use private vehicles.

Who use public transportation will lay off public transport near the house, while the use of private cars took the vehicle from the garage. Similarly, some family heads and their wives who also worked in the office. Early in the morning they are neat and the car ready in the garage. Hours they come home from work vary, there is before six o'clock, and there is after. They work, of course, to meet the needs of their lives and their families.

Unfortunately at Diponegoro street there is no park/playground is suitable for children. After school or at night they appear still playing on the sidewalk while their parents take care of the shop. Unlike the children who live at home with a yard large enough, they can play in the house, protected from vehicles moving around. These children are also road users who participated liven roads. How much better if one day planned and well designed a play area for children Apart from those mentioned above, there are other activities in Diponegoro street included in road user behavior. These activities include: singing songs (performed by buskers on the streets and shops), begging for money or food (which is done by a beggar),

scavenging garbage and waste materials (done by scavengers), riding horses, cars, or motor through Diponegoro street but did not have any interest in this road (just passed), ride public transportation, and the last to cross the road (by foot).

The activities of the above may occur because the offender does not have a job, low educational level, did not have enough capital/skills to open his own shop, and others. However, these activities contributed to enliven the atmosphere at the Diponegoro street, and perhaps the real culprit is the owner of Diponegoro street. Generally, housing in the corridor Diponegoro street old house belonging, of the form - the form of existing homes we can analyze as follows: 1) KDB by 40%, KDB low because the settlement is located north of Pontianak, which serves as the water absorption regions; 2) Outbreaks of 0.6 as well as the KDB, such outbreaks are also functioning; 3) Building height of approximately 16 m; 4) Line Building (GSB) ranged from 5 to 6 m from the road, so noise from the highway first absorbed in *the buffer area* so the residents can feel comfortable even if no traffic in front of his house; 5) *Facade* of the building is dominated by the openings (windows), so that the air inside the house can always be replaced by fresh air (*fresh water*) and also so that the sun can warm the temperature inside the house; 6) Roof tiles made of concrete, and the pyramid-shaped roof with a slope angle of more than 45° so that rain water quickly down to the ground and also prevents leakage in the roof of the house; 7) Green Open Space (RTH) realized in the form of the front yard was wide and covered by various types of trees, intended for the residents always get enough oxygen every day; 8) The orientation of the building leading to the northeast, is intended to house - the house was right on the edge of Diponegoro street can enjoy the view Kapuas River valley and the mountain range located in the northeast Pontianak.

## CONCLUSION AND SUGGESTION

### Conclusion

Diponegoro street until Tanjungpura segment - which now has functions and activities vary. Activities that have made this road look is always busy from

morning till night, especially on Saturday and Sunday. The principal activities are too varied, both in terms of age and level of economic/income. Residents who live right on the edge of this road rarely hold joint activities and rarely met. Which enliven the street just citizens residing in the vicinity, such as in Tanjungpura street, or in the alleyways besides Diponegoro street.

Diponegoro street, very dense above activities. Can be said Diponegoro street never sleeps. Various modes through these streets, including public transport, buses, private cars of wheels 4 and wheels 2. Diponegoro street morning lined street leading to their respective activities as well as during the day and evening intensive it back by those who return from their respective activities. At night, streets filled with those who purchase dinner. In certain events like the weekend, the road is a road connecting Setiabudi to tourist areas and the surrounding valley, and offers a variety of snacks that are sought so as to create a different atmosphere at the end of the week.

### **Suggestion**

Various functions in such a way Diponegoro educational function, settlement, services, entertainment is a movement on the road bike with a variety of Diponegoro transportation. Although it has experienced widening roads, traffic jams can not be reduced. One of the keys to solving this problem is the adherence to regulations and the provision of space for pedestrians.

Physical features available on Jalan Diponegoro can not provide a clear orientation this is caused by a lack of street furniture provided; state of pedestrian ways that are not comfortable because there is no continuity and the use of space by pedestrian ways stall traders, street vendors, parked vehicles; lack of soft landscaping, there is only one side of the road course, and even then did not have continuity, and many types of signage along Jalan Diponegoro, but the location was not right place.

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