Study of accessibility in Kampung Melayu Terminal east Jakarta

FI Prahaditya, AG Prawata, W Wizaka

Architecture Department, Faculty of Engineering, Bina Nusantara University, Jakarta, Indonesia, 11480

Corresponding author: wwizaka@binus.ac.id

Abstract. This paper describes how accessibility problem in the Kampung Melayu Terminal. problems in the form of lack of security and convenience for users of public transportation. Using a walkability approach that refers to the safe and security component and cones again to the crossing safety variable. Crossing safety problems are mostly encountered at several points on the site. The solution to this problem is to use a non-level crossing facility in the form of a Public Crossing Bridge (JPO) and underpass. Users and vehicles have separate zones / each has their zoning. Because, by having good circulation and mobilization, minimizing the movement of accidents between users and vehicles, JPO and underpass can streamline the area by being able to support other needs such as the provision of purchase tickets, waiting areas and others. Traffic, Users are protected from hot and rainy weather and Integrates indirect public transportation.

Keywords: walkability, crossing safety, pedestrian crossing facilities

1. Introduction

DKI Jakarta is the capital of the Republic of Indonesia which has a fairly rapid economic turn around. The people of DKI Jakarta are classified as having very dense activities in carrying out their daily routines. To support its productivity and activities, the people of DKI Jakarta can use private vehicles and modes of public transportation both MRT, LRT, Transjakarta buses, microbus and so on. To use public transportation, we can visit the station, bus stop and terminal.According to Salwa B. Gustina (2016) Based on the results of the analysis it was revealed that there were 4 main factors representing public transportation facilities expected by the community. for comfort factors, namely having facilities such as air conditioning, benches and good supporting media. For safety factors, there are special access lanes for user achievement, good bus stops and special spaces. operational factors, namely friendly and informative officers. Finally, the fast factor is the diverse and easy payment alternatives [1]. According to (Triatno Yudo Harjoko, Syono Dikun, Joko Adianto) the Kampung Melayu terminal itself has several common problems such as unorganized zoning areas, street vendors selling at certain times, several site barriers which prevent public transportation users from entering / leaving the site , The number of public transportation that piled up or "ngetem", Ojeks who parked / waited for passengers in any area and pedestrians who do not have a special lane. [2] The author conducted a survey at the Kampung Melayu Terminal site, Jatinegara, East Jakarta to observe the problem.
The author focuses on the walkability approach to solving these problems. According to the Global Walkability Index (GWI) [3], a brief understanding of walkability is a way for users to walk with a sense of security and comfort from the point of departure to the point of destination. Walkability has a broad scope and has several components and has variables in each of its components. Walkability cones on the safe and security component, then cones on the crossing safety variable which is one of the solutions to the focus of the problem.

Kampung Melayu Terminal has several problems such as lack of user security such as achieving difficult access, mixed zoning between users, public transportation, street vendors and others. has no separate path for users. Then, the lack of comfort such as lack of supporting facilities such as waiting areas, toilets and others. Then, areas that tend to be slums, lack of green land for water catchment and so on.

Consideration of the choice of the Crossing Safety variable as a study because of the survey results in the form of many problem points associated with the Crossing Safety variable at the Kampung Melayu Terminal site. Then, the conclusion of several interviews conducted was the lack of comfort and security aspects in Kampung Melayu Terminal. Then, According to (Winoto Hadi) the aspect of "safe service for passengers" has a low value [4].

2. Methodology
2.1. The method of study
In preparing research, the authors use qualitative methods to solve problems. Data collection is done by observing certain areas / points, documentation, observing directly at the research location and describing it freely from the research findings.
In this study primary data obtained directly by the author by making observations / observations related to circulation from the three sides of the site. Namely the north, east and west sides. It aims to find out where the point of concern for public transport users who want to reach / exit the Kampung Melayu Terminal.
In this study, the authors obtained secondary data from books, literature studies, journals related to the problem and scope of the study.
2.2. The case study
In this study the authors took data from several users in Kampung Melayu Terminal, located in Otto Iskandardinata street, Bali Mester, Jatinegara, East Jakarta, 13310.

3. Result and Discussion
3.1. Analysis of the Use of Pedestrian Crossing Types

The west-east sides and vice versa (Points A and B) use non-level crossings, the following considerations, According to the formula of "Perencanaan Teknis Fasilitas Pejalan Kaki Kementerian PUPR 02/SE/M/2018" about use of pedestrian crossing [5]. Kampung Melayu Terminal uses indirect crossings in accordance with the data calculated by the non-level crossing formula. The north - south side and vice versa (Point C) uses uneven crossing because there are a lot of circulation of Transjakarta buses, public transportation, private vehicles so that the use of crossing is very disruptive to traffic flow and prone to accidents.

3.2. Literature Study The Pedestrian Bridge
The following table is the conclusion of the The Pedestrian Bridge

![Figure 2. Crossing Safety Problem Area](image_url)
Table 1. Conclusion of the Pedestrian Bridge

| Pedestrian Bridge | Ramp | Lift | Escalator | Roof | Bicycle Users | Aesthetics | Structure & Material | Dimension Width (m) | Others |
|-------------------|------|------|-----------|------|---------------|------------|---------------------|---------------------|--------|
| JPO at Kampung Melayu Terminal | ✔️  | ✔️  | ✔️        | ✔️  | ✔️            | ✔️         | ✔️                  | 7.5m                 |        |
| JPO at Penang Bridge | ✔️  | ✔️  | ✔️        | ✔️  | ✔️            | ✔️         | ✔️                  | 9.0m                 |        |
| JPO at Kuala Lumpur | ✔️  | ✔️  | ✔️        | ✔️  | ✔️            | ✔️         | ✔️                  | 10.5m                |        |

Conclusion of Pedestrian Bridge Literature Study

The analysis and discussion that can be concluded is that Pedestrian Bridge has advantages and disadvantages in each of the sample projects that have been discussed. Any application of the concept must take into consideration the site conditions. Here are some explanations related to some aspects that want to be applied in the Kampung Melayu Terminal Pedestrian Bridge from the literature study that has been discussed:

The following concludes the criteria for specifications for good JPO in the context of the Kampung Melayu Terminal:

A. **Roof**: JPO applies a roof to protect the heat from the sun and rain, in different context with JPO without a roof to see views such as buildings or others around it. Around the site there is also no view aspect that can be utilized.

B. **Ramp**: Ramp is needed to facilitate access for persons with disabilities. However, the ramp has a disadvantage, namely that it requires a fairly long area. So, must adjust to the site area. If area allows, use ramps at a slope (7%). However, if not, do not be forced to apply it because it cannot be used ideally as in the literature study. Can use other alternatives such as elevators.

C. **Lift**: JPO applies lift to make it easier for users to use JPO and users are not tired to get to certain points.

D. **Escalator**: JPO uses escalator to make it easier for users to use JPO and users are not tired to get to certain points.

E. **Bicycle Users**: JPOs do not accommodate cyclists to cross them, because they take up a lot of space and disturb users. The JPO design must consider the material to be used.

F. **Lighting**: applied to the spots that are needed to illuminate at night.
G. Environment: Take advantage of circulating air inlets and outlets for energy savings, take advantage of incoming sunlight

H. Ergonomics / Dimensions: Clearance. Height of JPO: 5.1 meters, Minimum bridge path width: 1.5 meters, Length of bridge path: adjusted to the design process, Length of steps: at least 1.5 meters, Height of stairs: 15-20cm, Width of steps: 26-30cm

3.3. Use of Crossing Facilities

The west-east side and vice versa (Points A and B) use a non-level crossing, namely the pedestrian bridge. Here are a few points of consideration:

- Some of the advantages of non-level crossings are reduced pedestrian and vehicle conflicts, increased traffic flow, protected from hot and rainy weather. Based on literature study, Pedestrian Bridge Jl. Palmerah Utara and Pedestrian Bridge on Jl Gatot Subroto. Adjusting to the situation outside the site has a high intensity of vehicles and inside the site there are roads for public transportation. Therefore, the excess indirect crossings is very positive effect on the circulation of users and vehicles.
- If you continue to use zebra crossing / pelican crossing in a dense area. Refer to the literature study. There are cases that cause fatalities. So it is not recommended to use it

The north-south side and vice versa (Point C) uses Underpasses. Here are a few points of consideration:

- Responding to problems on the site that is the flyover road (Jl. Jend. Basuki Rachmat) so it is not possible to use Pedestrian Bridge. In accordance with the Pedestrian Bridge Corridor CSW study literature. Pedestrian Bridge certainly requires a lot of stairs to reach the level of height of the flyover, therefore it can be concluded that the user must have a low interest to use it.
- Based on Pedestrian Bridge Pasaraya literature study. The use of the design cannot be applied because of the Transjakarta bus stops which tend to cover access from the north - south direction and vice versa. Seeing the context of the site which is classified as not broad, laying the Transjakarta bus stop has few alternatives.

The inside of the site (Point D) uses a level crossing if needed, namely Pelican crossing / zebra cross on the site. Has the disadvantage of increasing vehicle traffic.

From the sample study literature Pelican Crossing Jl. M.H. Thamrin, Pelican Crossing Ambassador, Jalan Ahmad Yani, Surabaya. Said that there are still a lot of bad vehicle behavior
resulting in accidents between users and vehicles that take casualties. Crossing facilities can also contribute to connecting one point to another in the area because sites are complex and difficult to reach certain points.

4. Concluding Remarks
Kampung Melayu Terminal has problems related to crossing safety. The crossing facility is a solution for all points of crossing safety problems encountered by the author when surveying both on site and outside the site. That is, the crossing facilities are not on the same level as the main crossing facilities with JPO and underpasses with certain specifications. Then the level crossing facility becomes a supporting crossing facility in the form of zebracross / pelican crossing.

In the context of problems in Kampung Melayu Terminal. JPO and underpass can support activities more efficiently and well compared to the level crossing facilities namely pelican crossing and zebracross. Here are some of the advantages of JPO and underpass:

- Users and vehicles have separate zoning / have their respective zoning. So, both have good circulation and mobilization.
- Minimize the occurrence of accidents between users and vehicles
- JPO and underpass can make the area efficient by supporting other needs such as ticket purchasing facilities, waiting areas and so on.
- Users are protected from hot and rainy weather.
- Integrating public transportation indirectly

For the west side and east side to go to the site using the JPO while the north side to go to the site using the underpass. Then, the site uses a level crossing in the form of zebracross / pelican crossing adjusted to the design process.

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