



Space Configuration, Building Circulation, and Safety in Transjakarta Bus Shelter Tarakan

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ABSTRACT

Jakarta is known for its congested traffic. Public transportations and infrastructures, such as Mass Rapid Transit (MRT), Light Rapid Transit (LRT), and Transjakarta, have been made to overcome it. Transjakarta is one of the most important infrastructures that supports the city of Jakarta. A good Transjakarta bus shelter should be comfortable and safe, supports circulation (paths for exit and entrance) and provides space for people who wait for their buses. Transjakarta Bus Shelter Tarakan, located in Central Jakarta, is this case study's object. It is a narrow bus shelter with very limited space. During peak hours, this bus shelter is extremely packed with passengers. It caused a lot of problems in terms of space configuration, circulation, and safety. There is a lot that can be learned from this bus shelters, which hopefully will be taken into consideration for future bus shelters.

INTRODUCTION

Jakarta is known for its congested traffic. Public transportations and infrastructures, such as Mass Rapid Transit (MRT), Light Rapid Transit (LRT), and Transjakarta, have been made to overcome it. Transjakarta is one of the most important infrastructures that supports the city. There are two types of Transjakarta bus shelters, namely Bus rapid Transit (BRT), and Non-Bus Rapid Transit (Non-BRT). BRT bus shelters have high platforms and dedicated lanes separated from regular roads, whereas non-BRT bus shelters operate on regular roads. From this point on, this article is going to focus on the BRT shelters. A good Transjakarta BRT bus shelter should be comfortable and safe, supports circulation (paths for exit and entrance) and provides space for people who wait for their buses. Yet, some of the Transjakarta Bus Shelters still fail to meet those requirements. Transjakarta Bus Shelter Tarakan, located in Central Jakarta, is this case study's object. It is a narrow, rectangular cuboid shaped bus shelter with very limited space. During peak hours (7-9 AM and 5-7 PM), this bus shelter is extremely crowded. Passengers from multiple directions concentrate and accumulate here.

The bus shelter serves only two bus routes, namely 10H (Tanjung Priok-Bundaran Senayan) and route 8 (Lebak Bulus-Pasar Baru). Bundaran Senayan is a major activity area with high traffic volumes, contributing to significant passenger demand. Both routes also stop at the Juanda Bus Shelter, which is also another source of high passenger demand. Given the high demands, a bus shelter with capacity that can accommodate high number of passengers is important. The reason of this study is to address the problems in Transjakarta Bus Shelters that are commonly found. Hopefully we can learn from them, so that they can be taken into consideration before making new Transjakarta bus shelters. It is important to recognize the problems before they arise, and this study aims so that bus shelters, or public transportation systems in general can be improved.

LITERATURE REVIEW

Transjakarta is a public transportation system made to overcome traffic congestion issues in Jakarta. Transjakarta started operating on January 15th, 2004 (Aprilia, 2023). A BRT Transjakarta Bus platform's height is 110 cm from the road surface (Sahara & Ferdiansyah, 2023). The safety and service of a Transjakarta Bus Shelters has a huge impact on users' comfort. However, there are so many complaints from users, for example delayed bus arrival, uncomfortable bus shelters, and passenger queue that keeps getting longer (Aprilia, 2023).

An ideal built environment is an environment where the users interests and the designers interests coincide (Emo et al., 2016). Users will react to a bus stop and its surrounding negatively if the environment provide them with negative meanings. A good design needs effort, and a transit system that is designed poorly will prevent passengers from using it (Corazza & Favaretto, 2019). Some of the key factors determining how comfortable a bus shelter feel is how long people wait for their bus, how crowded it is, and how easy it is to enter and exit the building.

According to Yuh Yao et al. (2018), the first phase of a circulation system is its entrance. Paths, entries and exits are part of circulation. The design of a public transportation station depends on how the furnitures (for example, seats and ticketing machines) are arranged (Yuh Yao et al., 2018). It is crucial that furniture placement does not interrupt the flow and circulation of people that are using the building. Building circulation is also a very important and critical factor that can impact hugely on users' comfort. The circulation of a building refers to how building users can move through the spaces in the building, and an efficient circulation is one where users can walk and reach their destination in a building easily (Fu et al., 2021). In a public transportation facility, if the density of users exceeds 4 users per square metre, the circulation at the door decrease (Seriani et al., 2019).

It was reported as a result of a survey by Arhin et al., that the minimum acceptable wait time for buses was 1 minute and the maximum wait time is 20 minutes. This data was collected from 3388 bus patrons and 71 bus stops (Arhin et al., 2019). When a bus takes too long to arrive, passengers accumulate in the bus shelter, making it very cramped. People's bodies are squeezed onto each other and the smell of sweat and body heat radiates in all directions, making the room atmosphere heavy and the temperature rise above the comfortable range. On top of that, tropical climate also exacerbates this problem (Antojado, 2025).

Another problem arises, a problem regarding privacy and personal space. When a room is filled way past its capacity, privacy is basically absent (Antojado, 2025). A human that is being approached by a stranger at an excessively close distance would feel uncomfortable and intruded (Welsch et al., 2019). Violation of personal space is common in public settings, especially in the crowded ones like Transjakarta bus shelters. In public space, personal space might turn ambiguous and be shared with others, and people might be annoyed for not having their own space (Cho & Kim, 2017).

According to Sethulakshmi & Mohan (2024), so many bus shelters don't have the proper facilities, such as waiting area, good access, and basic amenities. Bad design can make users and staffs feel unsafe, which is why safety, comfort, and punctuality should be prioritized by Transjakarta to avoid unwanted chaos (Sethulakshmi & Mohan, 2024). Crowded areas are prone to pickpocketing. On top of that, bus shelters located in heavy traffic areas can risk harming pedestrians and passengers. Regular bus shelters are often linked with increased traffic risks or accidents (Phillips et al., 2021), because pedestrian and potential passengers are concentrated there and risking themselves getting hit by vehicles that come too close to the curb. Because of this, most Transjakarta bus shelters can only be accessed using a pedestrian bridge.

In a research by Shamim et al., it was concluded that about 85% of the pedestrians agreed that crossing a street using a pedestrian bridge is safer than using a zebra cross, and about 70% of them were satisfied by pedestrian bridge's reliability (Shamim et al., 2020). A study conducted in Tabriz city also shown that 85% of participants feel safe when crossing the street using a bridge (Saadati et al., 2020). Crossing bridges are generally considered safer than a zebra cross, even though it might take longer time.

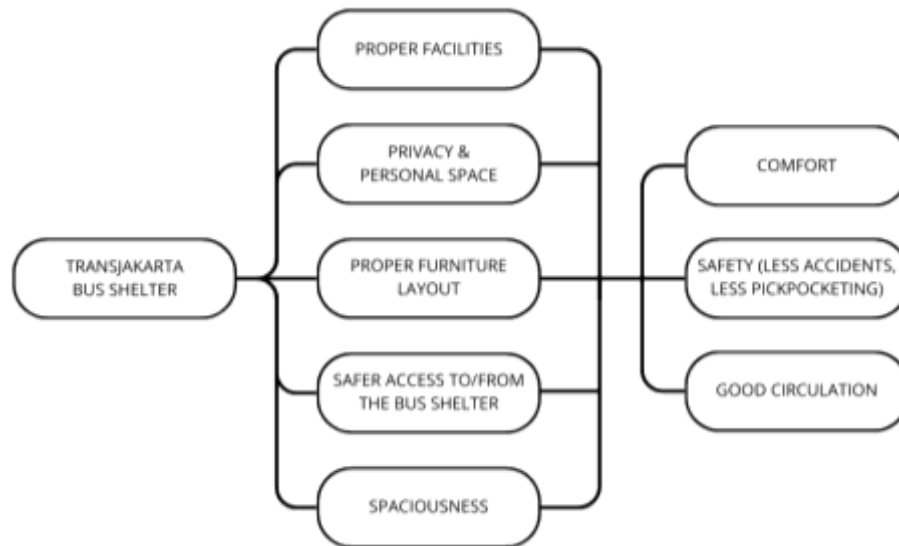


Figure 1. Conceptual Framework

METHODOLOGY

The method used to collect the data for this research is qualitative data analysis. A qualitative research is a type of research that is very wide in nature and keeps changing as time changes (Smith & Sparkes, 2020). A qualitative research is based on how humans understands and perceives real life occurrences that they've experienced themselves, and analyzes them from multifaceted perspectives of different knowledge fields (Cropley, 2022).

Types of Data

The data that is collected in this research is as follows:

1. Building case study.
2. Literature study.

Research Tools

The tools used to conduct this research are as follows:

1. Phone camera.
2. Notes.
3. Laptop.
4. An e-money card.

Research Time Period and Location

The time period for this research started from 5 PM and ended at 6.30 PM, on January 22nd, 2026. The location of this research is at the Transjakarta Bus Shelter Tarakan, Central Jakarta.

RESEARCH RESULT

Here are some of the photos taken at Transjakarta Bus Shelter Tarakan, starting from 5 PM. The path of exit and entrance of this bus shelter is the same, as shown in Figure 2.



Figure 2. Bus Shelter Entrance & Exit

Near the tap in/out area, the entrance narrows due to a staff room. It narrows down to approximately 1 meter of width, as shown in Figure 3.



Figure 3. Bus Shelter Entrance

Inside of the bus shelter, it's visible how packed the bus shelter was. The queues were very long and there were several rows of them, as shown in Figure 4.



Figure 4. The Queue

After 30 minutes of waiting for the bus to arrive, many people decided to walk out of the bus shelter and choose another transportation alternatives. When this picture was taken, the bus was still very packed (as shown in Figure 5).



Figure 5. Bus Shelter Seen from Outside

As it was getting late, more people started to walk out of the bus shelter and opted for other transportation alternatives. The photo beneath was taken on 6.20 PM, as shown in Figure 6.



Figure 6. Bus Shelter Seen from Outside

DISCUSSION

Based on the documentations, there are some problems that can be addressed in the Transjakarta Bus Shelter Tarakan that caused discomfort to users. Those problems are as follows:

1. Extremely inadequate space

As stated previously, this bus shelter can only accommodate up to three rows of queues due to its narrow size. It causes passengers to not be able to even walk to reach their destination properly. It also disrupts the entry/exit flows.

2. Very bad circulation

Passengers not being able to reach their destination properly because there are other passengers or furnitures in their way. There is also congestion happening in the entrance/exit gate because there is only 1 meter width provided, which is not enough for good entry/exit flow. The staff room is the culprit, since it takes up a lot of space.

3. High passenger demands for such a small bus shelter

Since the route 10H and 8 are from place with high activities and traffic, they will come with a huge load of passengers. By the time a bus stops at Tarakan Bus Shelter, oftentimes it doesn't even have any more space left for a new passenger to get in. Passengers have no choice other than to wait for the next buses.

4. Cramped space causes passenger's personal space to be ambiguous

Since everyone is packed together in this small room, there is basically no personal space.

5. Cramped space in the bus shelter increases the risk of crime

The crime being violations of personal spaces, sexual harrassments, and pickpocketing.

6. Unlike typical Transjakarta bus shelters, access to this shelter relies solely on a zebra crossing, without a pedestrian bridge or pelican crossing. Considering its location near the center of a road intersection, this access configuration might be potential safety hazards for pedestrians and potential passengers.
7. Wait time exceeds the amount that can be tolerated by passengers. Passengers have to stand for more than 30 minutes, often more than 1 hour. There is only one seat provided in the bus. This, of course, impacts very heavily on passengers' comfort and health.

CONCLUSIONS AND RECOMMENDATIONS

This study evaluated the spatial configuration and accessibility of Transjakarta Bus Shelter Tarakan in relation to passenger circulation, safety, and comfort. The results showed that narrow layout, limited seating, and significantly constrained access contribute to overcrowding, personal space violations, and disruption of circulation. On top of that, the absence of pedestrian bridge or pelican crossing increases safety risks for pedestrians and users. These conditions indicate that there's a mismatch between passenger demand and the spatial capacity of the bus shelter. It is recommended that future improvements address spatial widening, clearer circulation paths, better room arrangement, and safer access for pedestrians. Capacity of the bus shelter should align with passenger demands.

ADVANCED RESEARCH

Each study has limitations; therefore, I hope future researchers of this case will find more ways to improve bus shelters without disrupting the traffic nearby.

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