Bus terminal planning with the TOD approach for Jakarta, case study Kampung Rambutan bus terminal

Y Krisantinus1*, U Siahaan2 and S Simatupang3

1Department of Architecture, Faculty of Engineering, Universitas Kristen Indonesia, Jakarta, Indonesia
2Magister Program of Architecture, Postgraduate Program, of Universitas Kristen Indonesia
3Department of Architecture, Faculty of Engineering, Universitas Kristen Indonesia, Jakarta, Indonesia

*yosiakris21@gmail.com

Abstract. Travel convenience needs to be supported by the existence of cheap, fast and comfortable public transportation. Jakarta as a Metropolitan City pays close attention to this and plans to improve all existing bus terminals and make them well and planned connected to all existing transportation networks. The transportation network integration system with community facility centers is known as “Transit Oriented Development” or TOD. One of the bus terminals included in this program is the Kampung Rambutan Bus Terminal, which is deemed unsuitable for use. The irregularity of the flow of passengers, the flow of private vehicles gives the impression of chaos and slum in this bus terminal. The position of this bus terminal is considered very strategic and important, because this bus terminal is a transit for passengers near and far. In principle, the TOD approach is a technique of connecting the transportation mode from the station or terminal to the surrounding buildings or areas. For example, commercial areas, offices and residences, are also connected via outdoor and indoor pedestrian paths that are open to the public and direct through to stations or terminals available in the area. Smooth travel and good network connectivity, this will also support the terminal environment maintenance issues. These two approach topics will be the theme of the new Kampung Rambutan bus terminal design.

1. Introduction

With the TOD approach and environmental care, the new bus terminal design emphasizes connectivity and sustainable development, in addition to serving the loading and unloading of passengers and goods at the right place and within the planned time. In terms of sustainable development, this means that the planning of this bus terminal will pay attention to the problem of ease in building maintenance, pay attention to designs that can be accounted for as an energy-efficient building complex and use of resources, environmentally friendly water.
The bus terminal is a support for the smooth operation of land public transportation. It serves the stop and departure of bus vehicles, bus terminals and plays a role in controlling traffic, movement inside to outside the terminal. The bus terminal must also provide facilities for prospective public transport passengers and also all people at the bus terminal. Concerning the arrangement and procedures for terminal planning, design and management has been regulated in the Decree of the Minister of Transportation Number: 31 of 1995 concerning Road Transportation Terminals.

The planning approach with TOD and sustainable development must pay attention to the aspects defined in it, especially in relation to Jakarta in the context of Smart City. Sustainable development itself is a process with the principle of "meeting the needs of the present without sacrificing the needs of future generations" [1]. Thus, the construction of this bus terminal must pay attention to aspects of use and use that can last a long time, are quite extensive and can be maintained for at least the next 100 years.

The TOD approach in principle connects transportation means from the station or terminal with the buildings or areas around it, such as commercial areas, offices and residential areas. The TOD system also connects public transport stop points and the destinations of their trips. Connectivity also occurs through outdoor and indoor pedestrian paths which are open to the public and direct through to stations or terminals available in the area. There are several reasons why the writer needs to put forward this idea:

- There is congestion at the inbound point, resulting from a transport vehicle that drops off the passenger not in the designated passenger arrival point.
- Transit facilities that are not comfortable for passengers.
- There is no drop-off area for passengers or goods delivery.
- Less convenient pedestrian facilities.
- Circulation of bus vehicle flow is less orderly.
- Many online-based transportations increase, drop off, or wait for passengers to be fired.
- Less guaranteed security facilities for passengers

The objectives of this research are:

- It should be a good and effective design solution for Kampung Rambutan Bus Terminal
- Simplify and maximize connectivity between existing transportation intermoda.
- The application of TOD design in the design of redesain Terminal Kampung Rambutan.
- Make the design of Kampung Rambutan Terminal as a large terminal with good integrity.
- Designing terminal buildings with spatial arrangement and circulation system as supporting smooth and easy movement of passengers and terminal vehicles.

2. Research methods

The research process used in the design of the Kampung Rambutan Bud Terminal based on sustainable development and the Transit Oriented Development Approach was carried out with a research method that was quantitative-correlative analysis, namely looking for and determining the correlation between the research variables. This method is a descriptive description of the current phenomena accompanied by theoretical support from the literature that is used quantitatively. Through the descriptive method, the technique of collecting, processing or analyzing and presenting the available data sets is carried out. Qualitative or correlative data analysis was carried out through several stages of surveying the site location and its objects to obtain data related to the design object.
3. Results and discussion

3.1. Emphasis on Concepts and Themes
The basic concept of planning used in the Redesign of Kampung Rambutan Bus Terminal has three aspects:
- Terminal Design Standards.
- Transit Oriented Development design concept principles.
- Intermoda Conetivitas Practice.
- Sustainable Development Approach

Here is a further explanation of three aspects that reinforce the basic concept of Redesigning Kampung Rambutan Bus Terminal:

3.2. Terminal design standards
The study used as the main handle or basic foothold in the design of Kampung Rambutan bus terminal is the Decree of the Minister of Transportation No. 31 of 1995 on Road Transport Terminal and Regulation of the Minister of Transportation of the Republic of Indonesia Number: 132 Year 2015 on the implementation of Road Transport Passenger Terminal. With this standard can know how many dimensions are required in the function of space and facilities in the design of this terminal.

3.3. Transit oriented development design concept principles
To clarify the application of the concept with the principle of Transit Oriented Development on the design of Kampung Rambutan Terminal, can be seen in figure 1.

![Figure 1. The concept of applying TOD principles. Source: Author, 2020](image)

3.4. Intermode connectivity practice
In the concept of normalizing intermodal connectivity is applied with the arrival area and departure area placed at the same level while all human or passenger movement activities are placed at different levels,
thus optimizing the movement of public transportation as well as barrier-free passengers. For easier understanding, here's a schematic explanation of this concept in figure 2.

![Figure 2. Intermoda practice concept. Source: Author, 2020](image)

### 3.5. Application of concept in design

![Figure 3. Concept implementation. Source: Author, 2020](image)
4. Conclusion
From the concept of planning and design that has been described, it is necessary to understand what things should be applied or applied to this project. So that this project can be the answer to the specific problems that exist in the terminal, and can maximize the passenger transportation service of Kampung Rambutan Terminal.

References
[1] The Brundtland Report of the United Nations, 1987