Satisfaction level of intermodal public transport passengers at Duri Station, Jakarta Indonesia

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Abstract. Public transportation is part of the urban transportation system in creating an integrated city to serve the needs of the population. Intermodal facilities function to connect passengers to the transportation network, and also strive for a comfortable, safe, and efficient movement of passengers between various modes of transportation. The quality of the public transportation service system is closely related to passenger satisfaction through service quality assessment. The train station (commuter line) serves and becomes a place to come and go for passengers who live and aim to various parts of the Jabodetabek metropolitan area, besides that it also accommodates mode-shift activities between rail and road transportation service networks. Duri Station in West Jakarta was chosen as a case study because to get to and leave Puri Station, the passengers need another mode. The purpose of this study was to determine the level of intermodal transportation services at Duri Station. The indicators used are reliability, comfort and safety. The method used in this research is descriptive quantitative analysis method using a Likert Scale to measure the opinions or perceptions of passengers on the level of intermodal transportation services at Duri Station. The number of respondents is determined using the Slovin formula, from the calculation results there are 100 respondents, while the survey of respondents was conducted using Google Forms. The results of this study indicate that the level of reliability of intermodal transportation from the types of modes available, waiting time, information on stop locations, and transportation rates is declared good by passengers. The level of comfort is considered poor by passengers due to the unavailability of waiting places for advanced public transport and a roof that is shaded from the heat or rain and the safety level of passengers when changing modes of transportation is considered good by passengers.

1. Introduction

Public transportation is an important component in the overall process of managing the urban transportation system [1], which is considered as a development that can improve and enhance the share of the city and is a concept of urban planning to create an integrated city and create efficient public facilities for the community [2]. Public transportation has many modes such as trains, trans Jakarta, microbus, metromini and other city transportation [3], this increasing population density will have an influence on the ability of transportation to serve the needs of community because there is a relationship between the locations of human activities [4]. The quality of the transportation service system also has a close relationship to passenger satisfaction which can be seen whether the quality of service provided has been well achieved [5]. The level of intermodal transport services at the station
certainly needs the existence of intermodal transport services that are integrated between one mode with other [6]. The role of the station is very important because the station is a meeting point between the rail transportation service network and road transportation [7]. Duri station is trains station serving the Jabodetabek area as well as airport rail link trains. Then the Duri Station flows current and need transfer of train passengers to other modes or it can be said to go and leave Duri Station the use train services requires another mode. So the needs for public transportation is an important issue. The purpose of this study was to determine the level of intermodal transportation services and identify passenger availability and preferences for intermodal transportation at Duri Station

Figure 1. Duri Station map.

2. Research methods

The research method that will be used in this research is descriptive quantitative method in which the method is used to describe and summarize certain conditions of various research variables in this study. In addition this method can also be used to present fact, conditions and variables related to research descriptively [5].

The analysis technique used in this study is a Likert Scale analysis that functions to measure the opinions and perceptions of a person of group of people [6]. In this study the Likert Scale is used to measure the perceptions of advanced public transport users towards the level of intermodal transport service at Duri Station, with a Likert Scale assessment interval is 1-5.
| Variable   | Indicator                                                                 | Data Types |
|------------|---------------------------------------------------------------------------|------------|
| Safety     | Safety and security for passengers when changing vehicles                 | Primer     |
|            | the safety of carries goods from the station gate to the next stop        | Primer     |
|            | Availability of public transport waiting areas                          | Primer     |
| Amenities  | The convenience of walking from the station gate to the location where the next transport stop | Primer     |
|            | Types of advanced modes of transportation to or from the station         | Primer     |
|            | Travel time to get to the station from home                            | Primer     |
| Reliability| Time for passengers to get public transportation                         | Primer     |
|            | Ease of getting information about the location of public transportation  | Primer     |
|            | Conformity of public transport rates with services provided             | Primer     |

Identification of passenger availability and preferences for intermodal transportation at Duri Station is done by analyzing the availability of intermodal transportation at Duri Station, as well as passenger preferences for intermodal transportation services at Duri Station. The level of transportation services for passengers is identified by analyzing intermodal transportation services provided to passengers through a questionnaire survey.

3. Results and discussion

Based on the results of the analysis there are passenger preferences for the level of intermodal transport services at Duri Station and the identification of continued public transport at Duri Station.

3.1. Safety analysis

The security and safety of passengers when changing public transportation is considered important as well as the security of carrying goods from the gate to the next public transportation stop. According to the passenger preference for safety when carrying goods at Duri Station based on the results of processing using a Likert scale it is known that security and safety are expressed well with a percentage of 64.8%.

3.2. Amenities analysis

Passenger comfort is an important aspect in the process of changing public transportation. The intended comfort is the comfort of passengers while waiting for public transportation, based on research results the availability of public transport waiting areas is considered to be poor with a percentage according to the Likert Scale of 59.8% due to the unavailability of seats and shelter from heat or rain so that it is considered less comfortable by passengers. Besides walking comfort when heading to a public transport stop is considered good by passengers with a percentage of 65.4% walking comfort expressed good because the distance from the station exit to the stop is close and easy to reach.

3.3. Reliability analysis

Types of public transportation modes to and from Duri Station have various types of public transportation including microbus or angkot, bajaj, busway, and online transportation. Types of public transportation modes are used to find out how often commuter line users use public transportation to go to or leave Duri Station. Based on the results of research using the most public transportation is online transportation with a percentage of 47%. The time to reach Duri Station based on the results of
the study was 30 minutes. Based on the results of the analysis of waiting times to wait for public transportation at Duri Station, the waiting time for passengers to get public transportation modes at Duri Station is 10 minutes. The ease of obtaining information on the location of public transportation at Duri Station is considered good with a percentage of 68.4%. The suitability of the cost of public transportation with the services provided with a percentage of 69.4% with the meaning of the suitability of the cost of the service is appropriate.

Table 2. Level of intermodal transport services at Stasiun Duri.

| No | Level of Intermodal Transport Services                                           | Respondent Assessment Results |
|----|----------------------------------------------------------------------------------|------------------------------|
| 1  | The safety of carries goods from the station gate to the next stop                | 64.8% (Good)                 |
| 2  | Availability of public transport waiting areas                                   | 59.8% (Not Good)             |
| 3  | The convenience of walking from the station gate to the location where the next transport stop | 65.4% (Good)                 |
| 4  | Ease of getting information about the location of public transportation           | 68.4% (Good)                 |
| 5  | Conformity of public transport rates with services provided                      | 69.4% (Good)                 |
| 6  | Types of advanced modes of transportation to or from the station                  | 47% Online transportations   |
| 7  | Travel time to get to the station from home                                      | >30 minutes                  |
| 8  | Time for passengers to get public transportation                                 | 10 minutes                   |

Table 2 shows that the level of intermodal transportation service according to the preferences of the passengers towards the majority of intermodal transportation is stated to be good. Except for the convenience of waiting areas for public transportation continued because there are no adequate seats and shelter.

3.4. Analysis of intermodal transportation availability

A good intermodal transportation integration will facilitate the public in using public transportation [8]. If managed properly, there will be increasing public interest in the use of public transportation. In structuring the mode integration at Duri Station, it is necessary to involve all modes of transportation including online transportation.

Duri Station has a variety of intermodal transportation which serves the following modes of integration:

3.4.1. Mikrolet M 41 Grogol via Jembatan Besi. The type of vehicle in the form of a transport car with a capacity of 8-10 people with the route Grogol - Jalan Prof. Dr Latumenten – Jelambar – Jembatan Besi – Duri – Stasiun Duri – Tanah Sereal – Tambora – Asemka – Jembatan Lima – Glodok – Kota. M41 Microbuses have a cost of Rp 4000-7000 with operating hours of 05.00-21.00. The estimated waiting time for M 41 Microlet 10-15 minutes. In the results of the analysis of the use of Microlet M41 by users at the Duri Station was considered low with a percentage of 7% because users prefer to use online transportation as preferred transportation.

3.4.2. Bajaj. Three-wheeled vehicle type, this transport has a capacity of 2-3 people. Bajaj is very easy to find at Duri Station. Bajaj stop is also located in front of the Duri Station area. So it is easily obtained by passengers. In the results of the analysis of the use of steel by users at the Duri Station was considered low because passengers prefer to use online transportation as the transportation chosen by the passenger.
3.4.3. Busway. The busway stop that is close to Duri Station is Halte Busway Jembatan Besi, which is located on Jalan Prof. Dr. Latumeneten, West Jakarta. Jembatan Besi Busway Stop is approximately 1 km from Duri Station. In the results of an analysis of the use of busway by users at Duri Station, it is considered to be low with a percentage of 4%, so to reach Duri Station after getting off the busway, passengers must continue their journey using a microlet or online transportation.

3.4.4. Online transportation. This vehicle is very easily found by passengers when exiting the Duri Station, online transportation is a selection of transportation that is often used by people to change vehicles. Because it is easy to get it and the costs given are affordable by passengers. In the results of the analysis of the use of online transportation by passengers at Duri Station, it is rated highly with a percentage of 47% usage due to easy use and can be traveled in various directions as desired by the passenger.

3.5. Analysis of the integration of busway stops with Duri Stations
Good integration between transportation modes will make it easier for people to use public transportation. If it is managed properly, it will increase public interest in using public transportation [6]. The integration of intermodal transportation at Duri Station is served by public transportation in the form of mikrolet, bajaj and busway. Mikrolet M41 by route from Grogol – Jalan Prof. Dr. Latumeneten – Jelambar – Jembatan Besi – Duri – Stasiun Duri – Tanah Sereal – Tambora – Asemka – Jembatan Lima – Glodok – Kota. However, there are also public transportations that are not fully integrated with one another. One of them is Duri Station which has not been integrated directly with the Transjakarta Corridor 9 Cililitan-Pluit bus stop, which is located at Jembatan Besi Latumeneten street, Grogol, West Jakarta.

The existence of Duri Station is earlier than the Transjakarta bus stop corridor 9 or the busway stop. With this condition, ideally the mode of transportation should be integrated, but the problem is that the area around Duri Station is crowded with settlements and trade services. however, under these conditions the existence of Duri Station, which is located not far from a public road that is often crossed by other public transportation. The integration between the busway stops and the temporary Duri Station can be reached due to the existence of other supporting modes such as mikrolet, bajaj and online transportation.

4. Conclusion
Based on the results of the analysis, the identification of passenger availability and preferences for intermodal transportation at Duri Station. The availability of public transportation at Duri Station is available such as microbus or angkot, bajaj, busway and online transportation. Identification of the Level of Transportation Services for passengers with intermodal transportation services will be good if it meets the expectations of passengers consisting of 3 variables and 9 indicators. There are variables that are in line with the expectations of passengers related to public transport services at Duri Station, which are the safety and security of passengers when carrying goods from the station door. Going to the location of public transportation stops is generally considered good by public transport users. unfavorable by passengers because of the unavailability of seats and shelter from the heat or rain. However, for the convenience of walking to the location of the public transportation stop, it is considered good by the passengers, because the distance of the station exit that is close to the place of public transportation stops is continued. The reliability of the types of modes of transportation from or to the Duri Station that is widely used by users is to change vehicles and online transportation. The waiting time for public transportation as a whole is rated good by passengers with an estimated time of 10 minutes. The ease of obtaining information on the location of public transport as a whole is considered good by passengers, and the suitability of the fees paid for the transportation services provided is considered good.
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