

Analysis of BRT Infrastructure in Jakarta Province on Women's Perspective

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Abstract

Quality of service in the business world is very important so that all consumer needs are met. Likewise with the world of land transportation which is always developing both in its type, size, and methods used in providing services. The Neat Transit Bus which operates in DKI Jakarta is one of the modes of mass transportation provided by the DKI Jakarta government to support the service needs of DKI Jakarta residents. Good transportation services will bring up a high level of customer satisfaction. The purpose of this study is to determine the dominant factors that influence the parameters of BRT passenger satisfaction in DKI Jakarta, to know the level of female consumer satisfaction with the quality of BRT services in DKI Jakarta. The research method used in this study is the CSI (Customer Satisfaction Index) by distributing questionnaires to respondents. From the research, the level of satisfaction of female customers in using the BRT public transportation facilities in the DKI Jakarta provincial government was 66%. Customer satisfaction criteria are in the Satisfied category.

Keywords: Customer Satisfaction, Transportation, Women's Perspective, BRT Infrastructure

1. Introduction

1.1 Scope

The Special Capital Region of Jakarta is the most populous province in Indonesia which reached more than 15.68 thousand inhabitants / km² in 2017 [1]. The fast population makes the traffic in DKI Jakarta more congested, this is caused by city infrastructure in the form of uneven road sections with an increase in vehicle volume.

A first and foremost Bus Rapid Transit (BRT) service in Southeast Asia that is realized in the Transjakarta BRT in DKI Jakarta can be understood as a form of social engineering in reducing vertical gaps that are increasingly getting access to transportation services. Some passengers, such as Ririn, complained about the lack of a Transjakarta BRT bus fleet specifically for women, because when hours leave or return from work often occur over capacity, making it uncomfortable because they have to jostle with male passengers. This certainly reduces the comfort of bus passengers, especially to female passengers [2].



Figure1. Transjakarta as a Bus Rapid Transit service that operates in Jakarta

Source: Harian Nasional, 2016

Service standard components include at least the legal basis, requirements, systems, mechanisms and procedures, the time period for completion, costs / tariffs, service products, facilities, infrastructure, and / or facilities, implementing competencies, internal supervision, handling complaints, suggestions, and input, number of

implementers, service guarantees that provide certainty of services carried out in accordance with service standards, guarantee security and service safety in the form of a commitment to provide a sense of security, free from danger, and the risk of doubt and evaluation of the performance of implementers[3].

In the continued operation of BRT in DKI Jakarta Province, Transjakarta user facilities are an influential factor in the sustainability of BRT itself. The main problem from the background stated above is identifying the optimal factors of facilities in the Transjakarta BRT bus infrastructure in serving and facilitating TransJakarta BRT bus users, especially women. As well as for the long-term operation of Transjakarta for the long term, it is possible that the community, especially women, always use Transjakarta public transportation.

Formulation of the problem:

- a. What are the factors that influence the satisfaction of BRT infrastructure services in DKI Jakarta Province for women?
- b. How to manage the handling of satisfaction factors that have been found?

Research purposes

- a. Analyze and assess the level of performance of BRT infrastructure service facilities in DKI Jakarta Province in the eyes of women.
- b. Explore the factors that influence BRT services in DKI Jakarta Province.

2. Literature Review

2.1 Transjakarta BRT Infrastructure

a. Halte Bus

A bus stop is a mass transit vehicle (BRT) stop that functions to process ticket withdrawals and / or raise passengers. The shelter must have several supporting facilities available in the shelter as a support in the administration of BRT infrastructure such as toilets, seating, lighting, air ventilation, room temperature regulation accessibility, manual ticket clerk and security officer.

b. Ticket and Fares

Sistem tiket pada halte Transjakarta sejak 2013 menggunakan kartu elektronik (e-ticketing), sebagai pengganti uang tunai. Pelanggan hanya melakukan transaksi tiket dengan cara Tap In di Barrier Gate saat masuk ke dalam halte. Tarif Transjakarta pada pukul 05.00 - 07.00 WIB sebesar Rp2.000, sedangkan pada pukul 07.00 - 23.00 WIB sebesar Rp3.500. Tarif Transjakarta/Transjabodetabek untuk seluruh koridor adalah Rp3.500. Pada operasional malam hari (Amari) pukul 23.00 - 05.00 tarif Transjakarta tetap Rp3.500 [4].

c. Pedestrian Crossing People

pedestrian crossing is a bridge that is only intended for pedestrian traffic that crosses the highway or the railroad road [5].

d. Accessibility

Building accessibility to the BRT bus is an important element to provide comfort for a passenger to the shelter. In some countries accessibility becomes a priority in the development of the BRT system..

e. Information Systems

Information system components include: service information boards, travel ticket costs, maps or route travel networks, operating time for BRT services, bus vehicle arrival information, information access signs in shelters, instructions or procedures for using public transport, integration of BRT modes with modes Others include facilities at the shelter.

f. BRT Special Lane

The width of the special lane bus vehicle is at least the same as the standard traffic lane width of 3.5m or in the range of 3-4 m. The narrower the lane used will reduce the speed of the bus except when equipped with steering wheels.

g. Bus fleet facilities

the bus vehicle used to carry out mass public transport must have basic facilities attached to the bus including the vehicle's identity, driver's ID, room temperature control facilities, handrail facilities for standing passengers.

2.2 The Concept of Gender Transportation

All this time, transportation is considered gender neutral because transportation services or infrastructure are considered to be beneficial for all people, both men and women equally. However, surveys and statistical evidence show that the use of transportation between men and women is often gender blind or gender biased[6].

Men and women have different needs for transportation services and usually interventions in transportation do not answer women's needs. There are 4 (four) factors that influence differences between women and men in the use of transportation, namely: a) social and economic factors, b) physical differences, c) power and vulnerability, and c) psychological [7].

a. Social and Economic Factors

The division of gender roles also influences the patterns of economic activity of women and men. The level of women's economic activity varies greatly, depending on the conditions of the household. Women who have pre-school children have a lower level of economic activity. Differences in gender roles also lead to differences in travel patterns.

b. Physical difference

Physically biologically men and women are different. Women on average are smaller and shorter compared to men. These physical differences actually have important implications for designing vehicles and transportation facilities but are generally underestimated.

c. Power and vulnerability

Women, children, elderly people, and people with physical limitations are more prone to accidents, harassment, sexual violence and crime in the public sphere than men. The phenomenon of violence in the public sphere, including on public transportation, affects the pattern of women's travel.

d. Psychological

Women seem to prefer public transportation and believe that public transportation makes it easier for them to travel. Conversely, men prefer private cars because they think that by using private cars they can gain freedom in space and time. Men also regard private cars as a symbol of masculinity and represent their identity. Conversely, women see the car more functionally.

2. Methodology

At this stage of the study to analyze the problems revealed in the background of the research then formulated into a question sentence that reflects the relationship between the two variables. From the literature study and literature review then linked to secondary data collection conducted by researchers in order to obtain variables that affect customer satisfaction of BRT service users in DKI Jakarta Province in the perspective of women. The researcher distributes the first questionnaire, namely the initial expert validation of the questionnaire addressed to the experts or experts with the aim of providing responses and validating the independent variables and questions that have been prepared by the authors based on the results of the literature review. Then the researchers conducted a pilot survey and distributed questionnaires to respondents with a minimum of 30 respondents. Fourth Stage Questionnaire (Final Expert Validation), Is a questionnaire aimed at experts to provide final validation of the variables and questions that have been found in research for later analysis. The following is the flow of research conducted by the author:

- a. The author begins to conduct research. In this stage, it will take place in early April 2019. The researcher determines the object of research is BRT in DKI Jakarta Province.
- b. The author identifies the problem.
- c. The author makes the formulation of the problem regarding the object of research so that research becomes centralized. In this step the author makes and compiles a research instrument in the form of questions that have been previously formulated about the causes, the dominant causes of the problem to relieve the authors doing research.
- d. The author conducted a literature study to understand previous research information relating to what will be studied, factors that have been studied, the results and constraints found in the study and the authors conducted primary and secondary data collection.
- e. The author processes and analyzes data from the questionnaire results using the Customer Satisfaction Index (CSI) and Importance - Performance Analysis (IPA) methods.
- f. After the analysis is complete, the authors make conclusions.
- g. Research complete.

3.1 Scale of Measurement

Measuring scale as a guideline for customers to assess the level of service quality performance, using a Likert scale with a value of 1-5, Likert measurement scale is a number that is given where the numbers contain a level understanding, Likert scale used allows researchers to sort respondents from the level lowest to the highest level according to certain attributes.

Table 1. Scale of Interest Measurement

| No | Scoring scale | Information |
|----|---------------|------------------|
| 1 | STP | Very unimportant |
| 2 | TP | Not important |
| 3 | CP | Quite important |
| 4 | P | Urgent |
| 5 | SP | Very important |

Sumber : Data in research, 2019

3.2 Data Collection

Here are two forms of data used in this study, namely:

1. Primary data, i.e. data obtained directly based on the results of surveys and interviews with respondents who are being studied and can also be called raw data because it has not been processed.
2. Secondary data, is data or information obtained from literature studies, such as books, journals, papers, previous studies, and can also be called processed data that aims to obtain initial findings of research variables.

3.3 Data analysis method CSI (Customer Satisfaction Index)

CSI is a method of measuring customer satisfaction that is widely used, usually used to compare the level of satisfaction of two / more products, as well as see the development of the level of customer satisfaction with a product from time to time (time series). The CSI (Customer Satisfaction Index) method is calculated using the following formula:

Table 2. How to calculate (CSI)

| Responden No | Importance (I) | Satisfaction (P) | Skor (S) |
|--------------|--------------------|--------------------|-----------------|
| | Skala Likert 1 - 5 | Skala Likert 1 - 5 | (S) = (I) X (P) |
| Skor Total | Total (I) = (Y) | - | Total (S) = (T) |

Source: Data in research, 2019

$$CSI = \frac{T}{(5 \times Y)} \times 100\%$$

Information :

T = Total Value Of CSI

5 = Maximum Value on Measurement Scale

Y = Total Value Of Interest Column

Table 3. Skor Value (CSI)

| No. | Value (CSI) (%) | Information (CSI) |
|-----|-----------------|-------------------|
| 1 | 81% – 100% | Very satisfied |
| 2 | 66% – 80.99% | satisfied |
| 3 | 51% – 65.99% | Quite satisfied |
| 4 | 35% – 50.99% | less satisfied |
| 5 | 0 – 34.99% | Not satisfied |

Sumber : Olahan Peneliti , 2019

3.4 Importance – Performance Analysis (IPA)

Importance - performance analysis is used to determine the level of concordance between the level of importance and the level of performance quality of the attributes examined through comparison of performance scores with importance scores. The customer satisfaction index formula used is :

Formula :

$$TKI = \frac{X_1}{Y_1} \times 100\%$$

Keterangan :

TKI = Conformity Level

X₁ = Performance Rating Score

Y₁ = Interest Rating Score

Then the average of all attributes of importance (Y) and performance (X) is calculated which is the limit in the Cartesian diagram, using the formula:

$$X = \frac{\sum X1}{k} \quad Y = \frac{\sum Y1}{k}$$

Information:

- X = average score of the level of product performance across all factors or attributes
- Y = average level of importance of all attributes that affect customer satisfaction
- K = the many attributes that can affect customer satisfaction

3.5 Cartesian diagram

The core use of the Cartesian Diagram is to find out at what point or area the customer is satisfied and at what point or area is the customer not satisfied or disappointed with the BRT service.

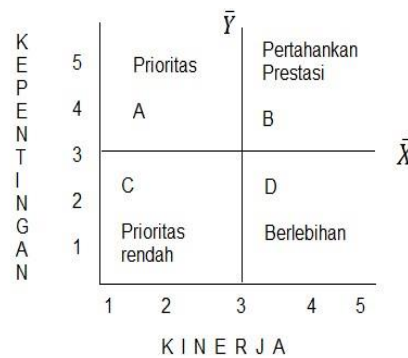


Fig 2. Cartesian diagram
 Sumber : Affifudin , 2013

4. Results dan Discussion

4.1. Results of CSI (Customer Satisfaction Index)

Based on the recapitulation results of calculations from respondents that have been done. The average value for the level of importance and level of performance or satisfaction on each attribute is used to calculate the Customer Satisfaction Index (CSI). The level of satisfaction of women users in using the BRT public transportation facilities in the DKI Jakarta provincial government is 66%. The user satisfaction criteria are in the Satisfied category.

| Important (I) | Satisfaction (P) | Score (I x P) |
|-----------------------------|--------------------|-----------------|
| 211.05 | 164.82 | 695.66 |
| Customer Satisfaction Index | | 66 % |

The level of customer satisfaction and performance in using BRT infrastructure services in all DKI Jakarta sectors such as West Jakarta and Depok sectors gets the highest satisfaction value in using BRT transportation, with a score point of 77%. The East Jakarta, Bekasi and Bogor sectors with a 71% level of authority were then followed by North Jakarta and Tangerang with 70% satisfaction levels and Central Jakarta and South Jakarta totaling 68%. The category is still in the satisfied category.

4.2. Importance– Performance Analysis (IPA)

After the calculation is obtained the average value of conformity is at 78.46% so that it can be concluded as a whole that these attributes are included in the "in accordance" category. If the value of the suitability level is close to 100% and is above the average, it can be said that the suitability level is good, and if the suitability level > 100% means the quality of service provided has exceeded what is considered important by the user or the service is very satisfying.

4.3. Analisa Diagram Kartesius

Average score of performance level (X) and importance (Y) :

$$X = \frac{\sum X1}{k} = \frac{211}{50} = 4.22$$

$$Y = \frac{\sum Y1}{k} = \frac{165}{50} = 3.3$$

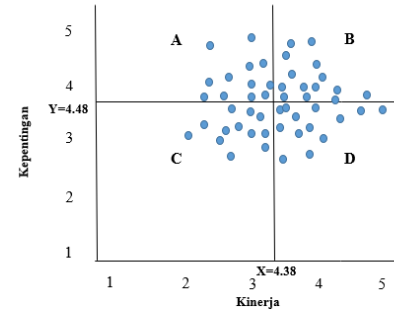


Fig 3. Cartesian Diagram Results

5. Discussion

Based on the results of the analysis and discussion that has been done, the following conclusions can be obtained:

1. The level of satisfaction of female customers in using BRT public transportation facilities in DKI Jakarta Province is 66%. Based on the CSI Bhote Index table (1996) it is still within the satisfied criteria. From the results of the analysis of research data obtained an average level of suitability of all variables can be said that the performance of female customer satisfaction at BRT in Jakarta is Good Enough, where the lowest average suitability level of all variables is 44.07%, namely the cleanliness of JPO.
2. Having revealed the factors that influence the satisfaction of BRT infrastructure services, there are several variables to be improved in calculating the level of conformity with the interests of customers in order to improve infrastructure services in the BRT. The following are efforts that can be made to improve BRT infrastructure services:

Table 5. Improvement Efforts

| Variabel | Efforts that need to be done |
|--|--|
| The safety of the flight users' bridge is monitored by the CCTV well | Total investment or partnership program is calculated for procurement and installation of goods. |
| bridges fly people clean and maintained | Transjakarta has coordinated with related agencies to take care of JPO. |
| Provision of landfills on bridges of people flight is easy to reach | Provision of waste bins and their placement needs to be reviewed and placed in strategic places. |
| Provision of priority seats for the elderly, pregnant women and people with disabilities | The Transjakarta party tries to get passengers to get their priority places by giving officers on every bus who are swift in serving and directing passengers to give |
| There is a special waiting room for women, pregnant women and the elderly at bus stops | Redesigns for separate mobility between male and female passengers must be made. |
| Enough illumination at bus stops & Bus stops have information on lost goods. | Transjakarta plans to innovate in serving BRT passengers. Services such as information centers are replaced by officers who are on standby at stops as "information centers" |
| Landfills at bus stops are strategically placed | Need to be held if the station / terminal is possible to be given these facilities. |
| There are automatic doors that open when the bus arrives and goes | Need to classify the types of bus stops and bus stop designs. |
| First aid kit inside the bus shelter | The BRT in Jakarta needs to innovate in educating BRT users in using BRT and its facilities through school schools or offices and others. |
| Bus stops have access to the bus feeder | Seeing the state of land in each region. |

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Biographies

Ali Sunandar graduated Master of Engineering (M.T.) from University of Indonesia. Currently, He is a researcher at Center for Sustainable Infrastructure Development University of Indonesia. He lecturer in executive class civil engineering University of Mercubuana. Furthermore, he worked in PT. Jababeka Infrastruktur for Infrastructure Macro division. He is active in various organizations such as Masyarakat Infrastruktur Indonesia (MII), Masyarakat Transportasi Indonesia (MTI), and the team secretariat of Indonesia Economic Forum (IEF). The desire and concern for the development sustainable of economic and social infrastructure in Indonesia became his main interest, mainly to the improvement of the institutional approach and innovation funding in the intermediate level Indonesian government bureaucracy. With the approach of the bureaucratic harmonization and innovation funding the intermediate level, Indonesia will accelerate infrastructure development.

Aprillia Ainundyasari is a woman born in Semarang, Central Java and a student from the University of Mercubuana. Aprillia is a female quality engineering staff in a precast concrete company from 2014 until now. Aprillia is also a member of “Teman Hijrahku Klaten” community.