

PASSENGER SOCIO ECONOMIC APPROACH AND SERVICE QUALITY OF PUBLIC TRANSPORT IN DETERMINING BUS FARE

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Abstract

Determining the amount of public transport fares often creates a conflict of interest between public transport operators and users. Usually the problem will arise if the community has Ability To Pay (ATP) and Willingness To Pay (WTP) lower than the amount of public transportation tariffs set by the Government. Especially for those who are captive users including community groups who rely on public transportation and have no other choice alternatives.

This study focuses on the ideal tariff which willing and able to be paid by the user. ATP analysis based on socio economic characteristics user such as family income, total transportation cost, and total budget allocation for transport. WTP can be determine from user perception of service quality provide by the operator.

Data was collected by questioner. The respondent were the passenger of AKAP economic bus with air conditioner facility, route Yogyakarta-Surabaya which represent by PO. Mira.

It was found that the current tariff (Rp 38.000,00) already meet the limits set by the Government, between Rp 30,000.00 - Rp 48,000.00. The current tariff was also lower than ATP (Rp 42.600,00) and higher than WTP (Rp 35.600,00). That is, the current conditions of service, users are able and willing to pay the applicable rates. Based on the BOK (vehicle operational cost), ATP, and WTP, it was found that the ideal tariff should be between Rp 34.200,00 – Rp 35.600,00.

Keywords : ability to pay, willingness to pay, tariff

Presenting Author's biography

Ika Setyaningsih. (S.T. - Bachelor degree from Universitas Muhammadiyah Surakarta; M.T.- Master of Engineering from Institute Technology of Bandung, Indonesia) is the lecturer of Civil Engineering Department, Universitas Muhammadiyah Surakarta. Her work and research activities in Traffic System and Management, Pulic Transport and its environmental issues.



1 General

Transportation is the movement of people and or goods from one place to another place. The process can be done by using means of transportation in the form vehicles or no vehicles. The purposes of transportation according to Warpani (1990) :

1. realize the implementation of a saved transportation service, secure, fast, current, orderly, and comfortable,
2. cost-efficient and affordable by the community,
3. support equitable growth and stability,
4. encourage and support national development,
5. and strengthen relations among nations.

Yogyakarta and Surabaya are the two major cities in Indonesia. Both have huge potential trip generation and trip attraction. Dynamic activity people make economies of both cities to develop properly. Movement of people and goods requires the existence of facilities and infrastructure. However, not all people can travel using private vehicle. Public transportation that mainly serves inter-city inter-provincial movement are still necessary for people who do not have a private vehicle.

Determining the amount of public transport fares often creates a conflict of interest between public transport operators and users. Usually the problem will arise if the community has Ability To Pay (ATP) and Willingness To Pay (WTP) lower than the amount of public transportation tariffs set by the Government. Especially for those who are captive users including community groups who rely on public transportation and have no other choice alternatives.

In formulating the public transport fares, the Government should pay attention to vehicle operating costs and also must consider purchasing power of users. Purchasing power capability is based on user perceptions of willingness (willingness to pay) and the ability to rationally the proportion of budget allocation for transportation (ability to pay).

Objectives to be achieved in this study were:

- a. Determining the Ability To Pay (ATP) and the Willingness To Pay (WTP) users economics AC bus, route of Yogyakarta - Surabaya,
- b. Determining the ideal tariff that accommodate the interests of users and operators.

2 Restriction on Problems

- a. Respondents were bus passengers of PO. Mira, which departs from Terminal Giwangan Yogyakarta to Surabaya.
- b. Type of bus was economic class-bus with AC facility.
- c. Existing tariff for full trip from Yogyakarta to Surabaya was Rp 38.000,00.
- d. Tariff limits set by the Government were Rp 30.000,00 as the lower limits and Rp 48.000,00 as the upper tariff limits.
- e. Pricing list for calculating vehicle operational costs based on price conditions in 2010.

3 Research Advantages

Benefits of the research will be addressed to:

- a. Central Government through the Directorate General of Land Transportation within establish public transport fares should consider affordability of public purchasing power so it needs to be a guideline or standard (standard operation procedure) which applies uniform national and should be used as reference (guidelines) official.
- b. Operators of public transportation in an effort to maintain the viability of his efforts.
- c. Users of public transport are expected to know affordability of the purchasing power of tariff.
- d. Stakeholders or parties concerned in order to perform checks and balances.

4 Literature Study

4.1 Tariff

According Muchtarudin Siregar (1990), tariff public transport is a cost that must be paid by users public transport over the facilities in accordance with the price received released by the operator who provide public transport services.

4.2 Tariff Determination

According to Tamin (1999:134) when ATP and WTP parameters are reviewed, then the aspect of the user who serve as subjects in determining the value of tariffs imposed by the principle:

- a. ATP is a function of ability to pay, so that the tariffs imposed must not exceed the ATP values of target groups. Government intervention in the form of subsidies, then it takes on a condition in which the tariff applies more of ATP in order to get the maximum tariff equal to the value of ATP.
- b. WTP is a function of the level of public transport services, so that when the value of WTP is below the ATP, it is still possible to secure an increase in the tariff with improved public transport services.

Government will realize how many users will receive benefit and how many users cannot afford the transportation services, when the new tariff policy is determined.

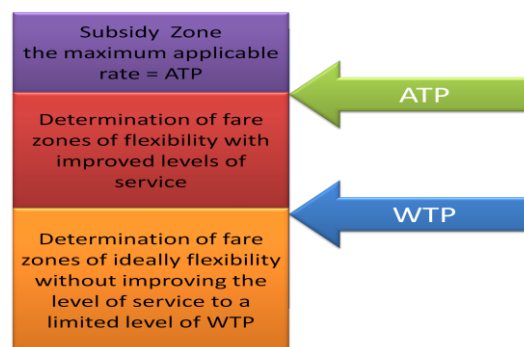


Fig. 1 Illustration of flexibility of determining tariff based on ATP-WTP

4.3 Ability To Pay (ATP)

Ability to pay is a person's ability to pay for services received on its income. The approach used in the analysis of ATP is based on the allocation of the costs used to transport and travel intensity users.

4.4 Willingness To Pay

Willingness to pay is the willingness of users to issue a reward for services obtained or the average amount of rupiahs that people willing to spend as payment of one unit of transportation service public those enjoyed it.

5 Reseach Method

5.1 Data Collection Method

- a. Data was collected through interviews based on questionnaires with a sample of bus passengers in Terminal Giwangan.
- b. To solve the weaknesses in data collection, the questionnaire was designed in an attractive format, the questions posed clear and concise, the length of time interview about 15 minutes
- c. Questionnaires have been through the reliability test and validity before the actual data collection.
- d. Surveyor is equipped with a badge so that respondents are expected to cooperate in filling the questionnaire.

e. Secondary data such as the BOK is obtained by asking directly to PO.Mira.

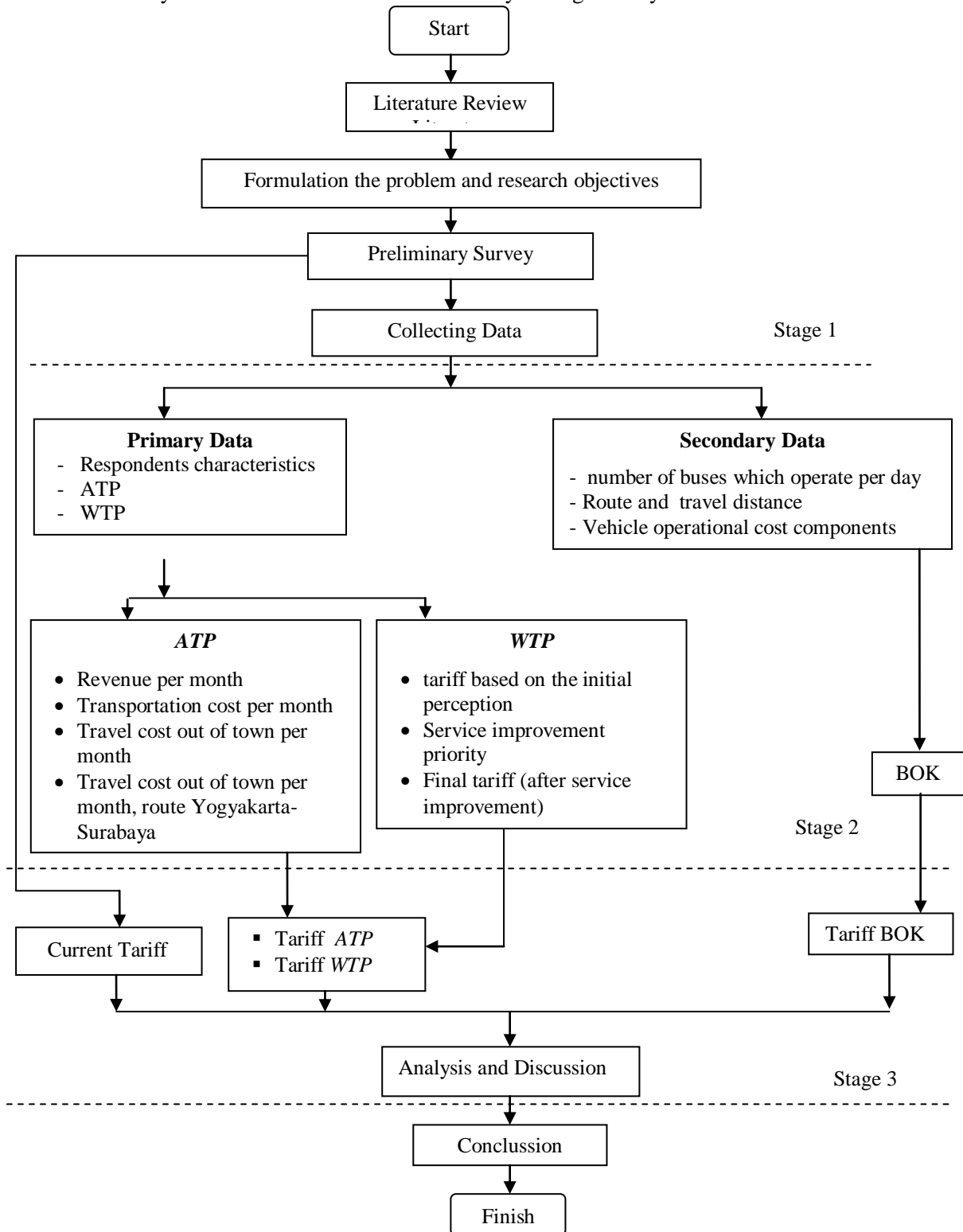


Fig.2 Research Flow Chart

5.2 Research Design

The questionnaire was designed to investigate the characteristics of the respondent / passenger bus AC Yogyakarta, Surabaya economy by asking the frequency of the AC bus Jakarta-Yogyakarta economic, gender, age, education, occupation, frequency of travel, and purpose of the trip.

The factors used to determine the ATP can be seen in the table below (Table 1) :

Tab. 1 Variables of respondents ATP

ATP _{user}	Total Revenue per passenger per month
	Percentage of transportation cost per month
	Percentage of reosentase biaya transportasi luar kota
	Percentage of transport cost (Yogyakarta- Surabaya)
	Travel Frequency

The approach used in the analysis of WTP based on the perception of passengers on the bus fare.

Tab. 2 Variabel WTP Responden

WTP _{user}	Tariff passenger initial perception
	Priority of service quality improvements
	Tariff after service improvements

Passengers are given a question about how much tariffs in accordance with current conditions. Users are required to choose one option which is considered the highest priority improvement of service, such as the following:

Tab. 3 Alternative service improvement priorities

Option	Variable of service quality
A	Convenience in obtaining the service
B	Punctuality of service
C	Responsibility
D	Courtesy and hospitality in providing the service
E	Variation service model

6 Analysis and Discussion

6.1 Description of Object Research

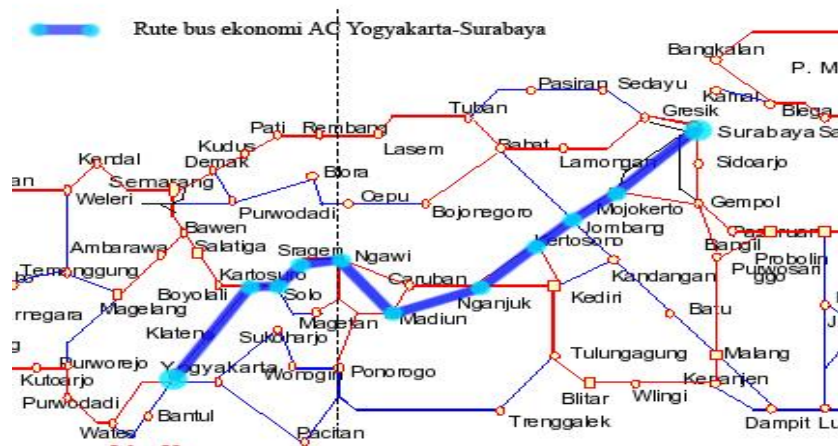


Fig.3 Travel route from Yogyakarta to Surabaya

Yogyakarta-Surabaya route is served by several otobus companies which competing against each other. It is marked by the existence of innovations in service, for example, the presence of economic air-conditioned buses. Consumers are also getting benefit from this condition. They were getting pampered because of 24-hour trip serve with a gap of departure between 8-20 minutes. In one bus fleet has a capacity of 54 seats with a variety of economic services AC, fixed seating 2-3 and low-cost (Rp 38.000,00). The route followed, namely: Yogyakarta-Solo-Klaten Giwangan-Sragen-Ngawi-Madiun-Nganjuk-Jombang-Mojokerto-Surabaya with a total distance of 344 km.

6.2 Respondents Characteristic

Gender	Respondents	Percentage
Male	64	58.18%
Female	46	41.82%
Total	110	100%

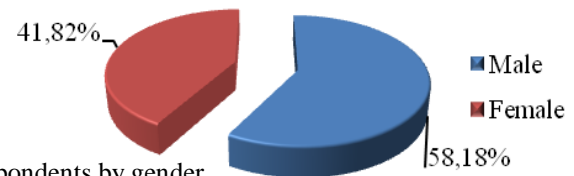


Fig. 4 Characteristics of respondents by gender

Age (year)	Respondents	Percentage
< 21	11	10.00%
21-30	26	23.64%
31-40	46	41.82%
≥ 41	27	24.55%
Total	110	100%

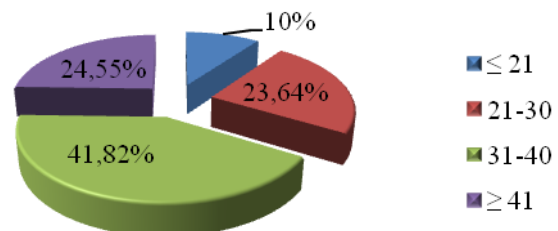


Fig. 5 Characteristics of respondents by age

Level of education	Respondents	Percentage
≤ Highschool	65	59.09%
Diploma 1/2/3	36	32.73%
Bachelor degree	8	7.27%
Postgraduate	1	0.91%
Total	110	100%

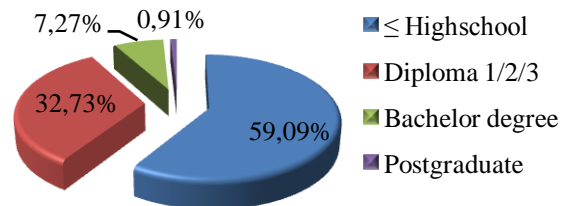


Fig.6 Characteristics of respondents by level of education

Figure 4 presents the characteristic respondents by gender. It can be shown that about 58,18% respondent were male. Majority of respondents were between 30 years to 40 years. Base on Figure 5 it is known that user whose age under 21 year only 10%, which is the minority group. The highest percentage of last education degree respondents (about 60%) were up to high school level. In contrast, respondents who have a final education postgraduate (master and doctoral degree) only 0.91%.

Trip Frequency	Respondents	Percentage
1-4 times per year	18	16.36%
9-12 times per year	14	12.73%
3-4 times per month	29	26.36%
5-8 times per month	17	15.45%
1-2 times per month	29	26.36%
5-6 times per month	3	2.73%
Total	110	100%

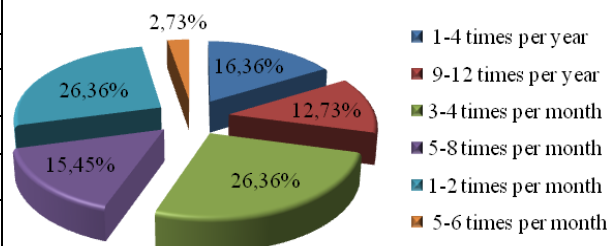


Fig.7 Characteristics of respondents by trip frequency (Yogyakarta-Surabaya)

Occupation	Respondents	Percentage
Civil servants	12	10.91%
Lecturer/Teacher	9	8.18%
Retired	11	10.00%
Professional	1	0.91%
Unemploment	9	8.18%
Private employee	29	26.36%
Bussinessman	15	13.64%
Student	13	11.82%
Army/Cop	7	6.36%
Other	4	3.64%
Total	110	100%

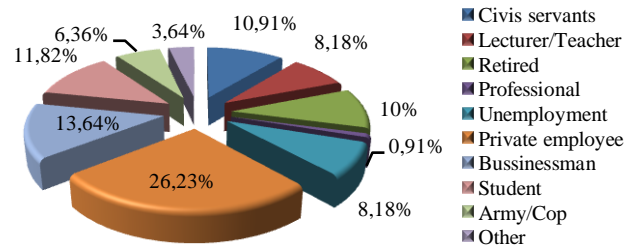


Fig. 8 Characteristics of respondents by occupation

Purpose of trip	Respondents	Percentage
Work	35	31.82%
Business	19	17.27%
Education	13	11.82%
Family	31	28.18%
Vacaiont	11	10.00%
Other	1	0.91%
Total	110	100%

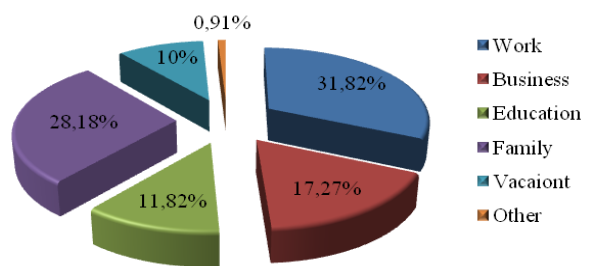


Fig. 9 Characteristics of respondents by purpose of trip

From the 110 respondents known that the frequency of trips for the purpose of Yogyakarta, Surabaya who voted often (3-4 times per month) and quite often (1-2 times per month) have the same amount, which is 29 respondents or 26.36%. Meanwhile, the respondents who travel very frequently (5-6 times per month) amounted to only 3 respondents or 2.73%.

Based on job type (Figure 8), the bus passengers of economic-class with AC facilityy dominated by private employee are 26.36% or 29 respondents. While the respondents who have occupation as a student reach 11.82% or 13 respondents. Only 1 respondent who works as a professional (doctor or notaries).

Most users of public transport economics AC Yogyakarta to Surabaya have a purpose of official travel / work with the highest percentage is 31.82% or 35 respondents. Followed by the second largest amount with the intention of the family affair which is 28.18% or 31 respondents.

6.3 Analysis of Ability To Pay

Total revenue per month (Rp)	Respondents	Percentage
≤ 999.000	31	28.18%
1.000.000 – 1.999.000	50	45.45%
2.000.000 – 2.999.000	22	20.00%
3.000.000 – 3.999.000	6	5.45%
4.000.000 – 4.999.000	1	0.91%
≥ 5.000.000	0	0.00%
Total	110	100%

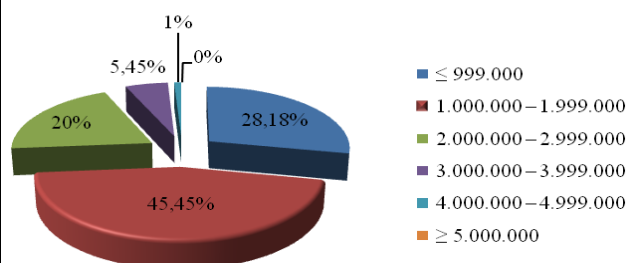


Fig. 10 Characteristics of respondents by revenue per month

The income of 64 male respondents (58.18%) and 46 female respondents (41.82%) can be seen in Figure 10. Level of income respondents per month varied greatly. Majority of respondents have revenue per month among Rp 1.000.000,00- Rp 2.999.000,00. And no respondent had incomes more

than 5 million rupiahs. ATP of bus AC-economic Yogyakarta-Surabaya which has the highest frequency range between Rp 31.800,00- Rp 42.600,00 with the up to 24.55%.

6.4 Analysis of Willingness To Pay

Tab. 1 Priority of service quality improvements

Answer	Variable of service quality	Respondent	Percentage
A	Convenience in obtaining the service	12	10.91%
B	Punctuality of service	33	30.00%
C	Responsibility	39	35.45%
D	Courtesy and hospitality in providing the service	22	20.00%
E	Variation service model	4	3.64%
Total		110	100%

Most respondents (35.45%) require the highest priority for improvement of service is responsibility. The responsibility mentioned is the responsibility of the driver. Users require driver drive well, safety and obey the traffic regulations.

Additional money would be paid after the repair the service	Respondents	Percentage
Rp 5.000,00	76	69.09%
Rp 10.000,00	26	23.64%
Rp 15.000,00	3	2.73%
Rp 20.000,00	1	0.91%
Rp 25.000,00	4	3.64%
Total	110	100%

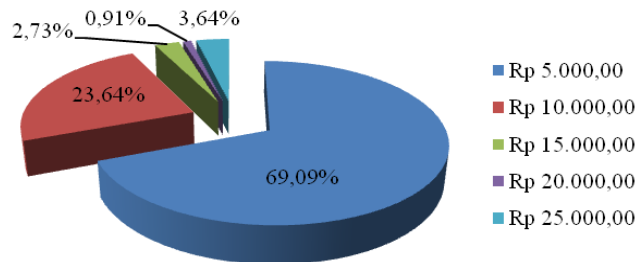


Fig. 11 Additional money would be paid by user after service improvements

The largest percentage is respondents willing to pay a 69.09% increase in tariff amounted to Rp 5000.00, if the operator made improvements in accordance with the desired service and 24% respondents is Rp 10.000,00. From the calculation of recent perception tariff (WTP), the highest percentage (52.73%) of respondents have WTP between Rp 39.700 – Rp 44.600,00.

6.3 Tariff

Tab.2 Recapitulation of tariff base on BOK, Government and current condition

Current Tariff/passenger		Tariff base on BOK/passenger				Tariff set by Government/passenger			
Tariff (Rp)	Tariff /km (Rp)	LF= 59,5%		LF = 70%		Upper limit		Lower limit	
		Tariff (Rp)	Tariff/km (Rp)	Tariff (Rp)	Tariff/km (Rp)	Tariff (Rp)	Tariff/km (Rp)	Tariff (Rp)	Tariff/km (Rp)
38.000,00	110,465	34.200,00	99,29	29.100,00	84,39	48.000,00	139,00	30.000,00	86,00

Table 2 and Figure 12 shown that current tariff (Rp 38.000,00) was among the limits set by the Government (Rp 30.000,00 – Rp 48.000,00). This means the PO. Mira already comply with the applicable tariff. The current tariff rates were among the limits set by the Government. PO. Mira already comply with the applicable tariff. By setting tariff Rp 38,000.00 PO. Mira has also benefited because with the load factor of 59.5% tariff should be Rp 34200.00. Tariff base on load factor 70% (Rp 29.100,00) cannot be applied by operator because it less than the lower limit rate set by the Government.

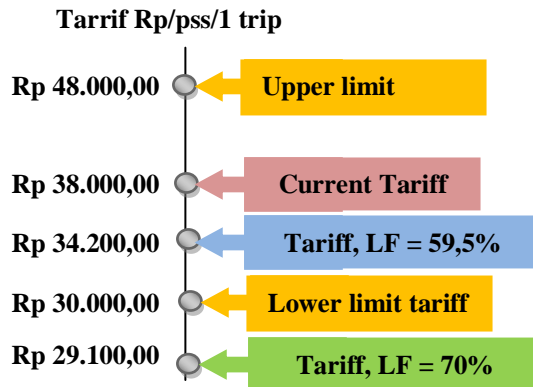


Fig. 12 Positioning tariff base on BOK, Government and current condition

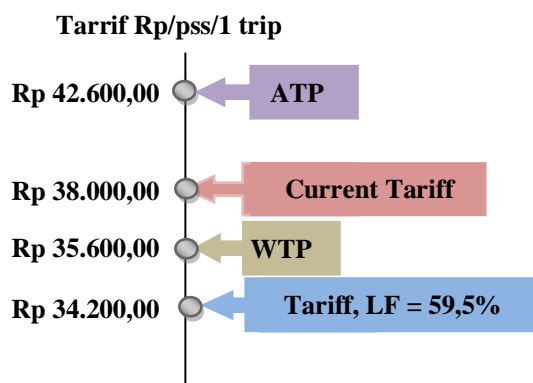


Fig. 13 Positioning ATP and WTP

The condition of ATP and WTP in existing service quality can be shown at Figure 13. It can be seen that ATP is greater than WTP. This occurs when users have a relatively high income but the utility of these services is relatively low, the user on the condition is called choice riders. This indicates that operator that the operator should be able to provide more services than current conditions.

The first alternative, ideal tariff can be set between Rp 35.600,00 – Rp 42.600,00. From the user side, they able and willing to pay the tariff. For the operators, the range is above the ideal tariff base on BOK with the LF = 59.5%. So, the current tariff is fulfill this condition. However, this region is a zone of discretion the determination of the tariff and service improvements

If the operator does not provide improvements service then the ideal rate between Rp 34200.00 – Rp 35.600,00. This is the ideal tariff zone flexibility without improving service to the limit level of WTP.

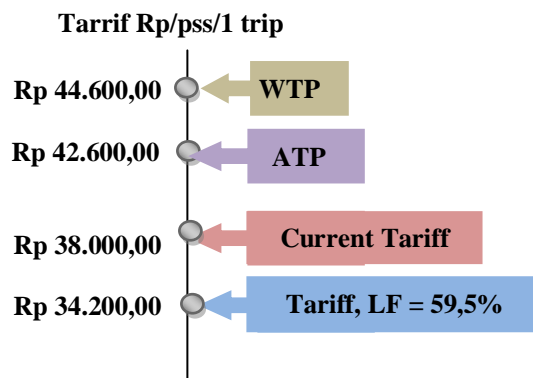


Fig. 14 Positioning ATP and WTP after service quality improves

Figure 14 presents the position of ATP and WTP after the respondents demanded a repair service. It can be shown that WTP is higher than ATP. This condition is the opposite of the initial conditions. This may occur for users who have a relatively low income but the utility of transport services is very high, so that the user wishes to pay for these services are relatively more influenced by the utility. In this condition the user is called captive riders. This means that operators have to make improvements and user agree with the alternatives improvements. Users are also willing to provide reasonable prices with the service quality improvement.

However, ATP is still greater than the current tariff so that the user is still able to pay the existing tariffs. This could occur if the operator does not make service improvements also raised tariffs, because with the load factor = 59.5% tariff that can be offered by the operator was Rp 34.200,00.

Ideal tariff can be set up with the ATP value (Rp 42.600,00). The current tariff (Rp 38.000,00) can be set as ideal tariff, because it is higher than tariff base on BOK (LF=59,5%) and also lower than user ATP.

7 Conclusions

To conclude, the current tariff Rp 38.000,00 can be called as an ideal tariffs that accommodate the interests of users and operators both in initial conditions and conditions after the repair service.

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