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Analysis of Travel Fare Based on Vehicle Operating Costs (VOC) Muara Teweh - Banjarmasin Route

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ABSTRACT

Public passenger transportation on the Muara Teweh-Banjarmasin route is essential and highly needed by the public. Currently, fares are still determined by the operator, as no government-set rates have been set. The results of the analysis obtained the VOC, Tariff, ATP and WTP values for each corridor on the Trans Banjarbakula Bus. The research aims to analyze the analysis of travel transportation fares based on the Vehicle Operational Costs (VOC) for the Muara Teweh - Banjarmasin route. The research location was conducted on a travel transportation route from Muara Teweh City (Central Kalimantan Province) to Banjarmasin City (South Kalimantan Province). The results of the analysis and calculations that have been carried out, it can be concluded that the tariff based on the vehicle operating costs (BOK) for travel transportation of the Innova type car on the Muara Teweh-Banjarmasin route is IDR 280,014/pnp. In the calculation of vehicle operating costs (BOK), if the number of fleets is greater, the value of the resulting vehicle operating costs (BOK) tariff will be smaller, whereas if the number of fleets is small, the resulting vehicle operating costs (BOK) tariff will be greater.

Keywords: *Transportation rates, Travel, VOC, Muara Teweh – Banjarmasi*

INTRODUCTION

Transportation in Indonesia is currently experiencing rapid development, driven by the annual population growth, leading to increased travel (Hendra, 2013). Travel transportation is the transportation of passengers using vehicles, operated through a rental or payment system. The primary role of travel transportation is to serve the mobility needs of the community (Defry, 2022).

The interprovincial shuttle service (AJAP) from Muara Teweh to Banjarmasin is a form of mass transportation that plays a crucial role in the movement of people and goods between the two provinces of Central Kalimantan and South Kalimantan. Muara Teweh is the capital of North Barito Regency, Central Kalimantan Province, and plays a significant role in supplying people to Banjarmasin. Banjarmasin is the capital of South Kalimantan Province.

As the provincial capital and one of the largest cities in Indonesia, Banjarmasin boasts a wide range of facilities, including education, business, healthcare, tourism, entertainment, and an airport. It serves as a hub for Central Kalimantan residents, including those in Muara Teweh and the surrounding area, for their travel patterns. This includes mining company employees who regularly take leave from work and then transit in Banjarmasin to other cities throughout Indonesia. The distance between Muara Teweh and Banjarmasin is

approximately 450 km, with a travel time of approximately 10 hours by land.

Population growth and urban development will also increase the mobility of people and goods. Consequently, this situation must be balanced with the provision of adequate transportation facilities and infrastructure to facilitate the flow of goods and services, as well as to facilitate the achievement of inter-provincial goals, thus supporting the city's growth and development (Yuniarti, 2009). Travel services that provide inter-provincial pick-up and drop-off services, such as the Innova, are the most popular mode of transportation due to their affordability, daily availability, and reliable passenger service. The advantage of this mode of transportation is that passengers can be picked up and dropped off from their homes and vice versa, unlike other public transportation options, such as buses, which cannot pick up passengers from their homes. This advantage of this mode of transportation is that the people of Muara Teweh prefer to use Innova public transportation (Nugroho & Purwaningsih, 2015).

Public passenger transportation vehicles on the Muara Teweh-Banjarmasin route are crucial for supporting activities and mobility and are highly needed by the community today. Therefore, appropriate tariffs/fees are needed for both service providers (operators) and users. The current tariff for travel transportation on the Muara Teweh-Banjarmasin route is determined by the travel company operator. The current fare set by the travel operator for a single trip is IDR 350,000. Research is needed to calculate the operational costs of the vehicle through an analysis of the total costs incurred by the travel service provider in providing public passenger transportation services. Besides that, it is also necessary to conduct an ATP and WTP analysis of passengers to determine the level of ability and willingness of the community to pay public transportation fares for passengers as users of travel transportation services on the Muara Teweh – Banjarmasin route.

Nadir (2024), analyzed one of the public transportations in South Kalimantan, namely the Trans Banjarbakula Bus which consists of 4 corridors with different routes. The data collection method carried out in the study was through several ways, including the revealed preference method and the literature study method. The data obtained was then analyzed for Vehicle Operational Costs (VOC) with calculations using the Pacific Consultant International (PCI) method to determine the number of fares on public transportation. The results of the analysis obtained the VOC, Tariff, ATP and WTP values for each corridor on the Trans Banjarbakula Bus. The research aims to analyze the analysis of travel transportation fares based on the Vehicle Operational Costs (VOC) for the Muara Teweh - Banjarmasin route.

MATERIALS & METHODS

The research location was on a travel transportation route from Muara Teweh City (Central Kalimantan Province) to Banjarmasin City (South Kalimantan Province). The research location map for this thesis is presented in Figure 1 below.

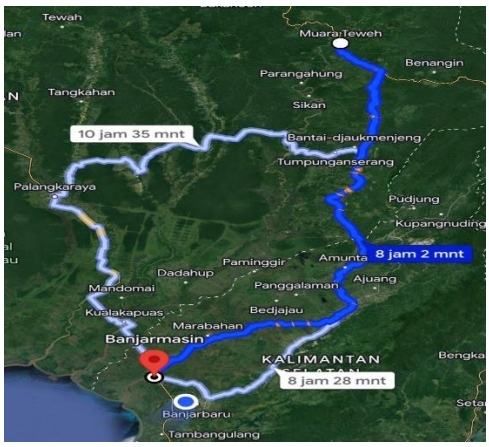

Figure 1. Research Location Map (Google Earth, 2024)

The data collection method used in this study was Random Sampling. This method is a non-comprehensive data collection method, meaning that only a portion of the population is sampled, including those that meet certain requirements or considerations. These requirements include: Travel agencies must

have complete documents/permits for each operation.

Primary data is obtained through field surveys, questionnaires, and interviews with travel agency owners, drivers, and passengers. This primary data was obtained through the following data collection techniques:

1. Observation, which involves direct observation of objects in the field.
2. Interviews, which involve interviews with the parties involved in the research. In this case, these include relevant agency officials, transportation operators, drivers, and passengers.

Secondary data supports the field survey data. The data sources for this secondary data survey were obtained from published government documents obtained from relevant agencies such as the Muara Teweh City Transportation Agency and the South Kalimantan Provincial Transportation Agency. In addition, secondary data was also obtained from travel agencies that provide passenger transportation services.

Data Analysis

Vehicle Operating Cost (VOC) Analysis

Data obtained from questionnaires and interviews were then entered into conventional equations, namely the vehicle operating cost approach, adopted from the Decree of the Director General of Land Transportation Number 687/AJ2006/DRJD/2002 concerning the Technical Implementation of Public Passenger Transportation in Urban Areas on Fixed and Regular Routes.

Steps taken in data analysis:

1. Processing data obtained from field surveys.
2. From the vehicle operating cost (VOC) data, both from field surveys and data from relevant agencies, the calculation was carried out per vehicle-kilometer to obtain the basic cost per vehicle-kilometer.
3. Calculating the total basic cost per vehicle per day by multiplying the VOC per kilometer.
4. The total basic cost was divided by the minimum representative daily passenger number to obtain the basic fare in rupiah per passenger.
5. Determining the base fare is the result of multiplying the base fare by the distance (kilometers) and the daily average (with an additional 10% for the business owner or transport operator's profit).
6. Determining the upper and lower fares based on the base cost and calculating the load factor relative to the base cost. The general rule of thumb is that the ideal fare is at a load factor of 70% of the base cost calculated in the BOK calculation.
7. From the analysis above, a fare amount must be collected per passenger per trip.

RESULT

CV.Terus Jaya and CV.Afniza are interprovincial transportation providers offering door-to-door pick-up and drop-off services. Passengers are also safely transported to their destinations.

Table 1. Number of Fleets in Operation

Company name	Route	Fleet Size
CV. Terus Jaya	Muara Teweh - Banjarmasin	10
CV. Afniza	Muara Teweh - Banjarmasin	4

Distance and Travel Time

The distance traveled for each passenger pick-up and drop-off trip from Muara Teweh to Banjarmasin or vice versa is approximately 450 km, with an average travel time of approximately 10 hours.

Vehicle Speed

Based on calculations from the data obtained, the average speed for a travel trip from Muara Teweh to Banjarmasin is 45 km/hour. Distance (S) is 450 km divided by Travel Time (t) of 10 hours. Speed = 450/10 = 45 km/hour.

Vehicle Operating Costs

The operational cost summary (BOK) consists of fixed and variable cost components.

Table 2. Summary of Fixed Cost Components for Travel Transportation from Muara Teweh to Banjarmasin

No	Fixed Cost Components	CV. Terus Jaya	CV. Afniza
1	Depreciation Cost	Rp.427,35/ Km	Rp.341,35/ Km
2	Vehicle Registration Fee	Rp. 28,49	Rp. 24,93
3	Insurance Cost	Rp.7,12	-
4	Route Permit Fee	Rp.3,56	Rp.3,56
5	Management Cost	Rp.73,72	Rp.148,86
	Total Fixed Costs	**Rp. 540,24**	**Rp. 518,70**

Table 3. Summary of Variable Cost Components for Travel Transportation on the Muara Teweh – Banjarmasin Route.

No	Variable Cost Components	CV. Terus Jaya (Rp/Kend-km)	CV. Afniza (Rp/Kend-km)
1	Driver Salary Cost	Rp.888,89	Rp.555,56
2	Fuel Cost	Rp.1.000	Rp.1.000
3	Tire Wear Cost	Rp.25,64	Rp. 7,83
4	Minor Service Cost	Rp. 88	Rp. 53
5	Major Service Cost	Rp. 55,5	Rp. 48
6	Overhaul Cost	Rp. 14,4	RP. 16,6
	Total Variable Costs	**Rp.2072,43**	**Rp.1680,99**

Table 4. Summary of Vehicle Operational Costs (BOK) for Travel Transportation on the Muara Teweh – Banjarmasin Route

No	Cost Description	CV. Terus Jaya	CV. Afniza
1	Fixed Costs	Rp. 540,24	Rp.518,70
2	Variable Costs	Rp. 2072,43	Rp.1680,99
Total		**Rp2.612,67**	**Rp. 2.199,69**

Table 5. Position of Basic Fare, Upper and Lower Fare, Upper Limit Fare Per Passenger Based on BOK at Various Load Factor Levels

Load Factor	CV. Terus Jaya	CV. Afniza	Upper Limit	Lower Limit
100%	195950	164977	195950	164977
90%	217697	183286	217697	183286
80%	244872	206166	244872	206166
70%	**280014**	**235753**	**280014**	**235753**
60%	326642	275010	326642	275010
50%	391901	329954	391901	329954
40%	489745	412332	489745	412332
30%	652703	549531	652703	549531
20%	980799	825766	980799	825766
10%	1961598	1651532	1961598	1651532

Determining Tariffs Based on Variations in Fleet Number, the increasing number of fleets affects the value of vehicle operational costs (BOK) and the planned tariff. If the fleet in operation increases, the value of vehicle operational costs (BOK) becomes smaller, and if the fleet in operation decreases, the value of vehicle operational costs (BOK) becomes greater. So the resulting plan rate is that if the fleet increases, the plan rate will become smaller, whereas if the fleet becomes smaller, the value of the plan rate will increase.

The analysis shows that CV. Terus Jaya and CV. Afniza are interregional transportation providers serving the Muara Teweh–

Banjarmasin route using a door-to-door system. The distance covered is approximately 450 km with an average travel time of 10 hours, resulting in a vehicle operating speed of 45 km/h. This value is within the range of operational speeds for intercity and interprovincial transportation considered reasonable and efficient, as stated by Warpani (1990) and Tamin et al. (1999), who stated that operational speed significantly impacts cost efficiency and passenger comfort.

The Vehicle Operating Cost (VOC) components for both companies consist of fixed and variable costs. The results show that CV. Terus Jaya's total VOC (Rp2,612.67/vehicle-km) is higher than CV. Afniza's (Rp2,199.69/vehicle-km). This difference is primarily due to higher variable costs, particularly driver costs and vehicle maintenance. This finding aligns with research by Sriastuti (2015) and Ibrahim & Nur (2024), which states that variable costs are the dominant component in the BOK structure and are heavily influenced by the wage system and the technical condition of the fleet.

Yuniarti (2009) and Zuraida (2017), who also studied transportation fares on routes in South Kalimantan, found that the BOK values obtained in this study were relatively comparable, especially on long-distance routes with varying road conditions. This suggests that regional characteristics, distance traveled, and vehicle wear are important factors in determining the BOK amount, as also emphasized by Wahyu (2007) and Priyono (2010).

Analysis of fares based on load factor variations shows that the lower the passenger load factor, the higher the fare charged per passenger to cover the BOK. At a 100% load factor, CV Terus Jaya's base fare is Rp195,950 and CV Afniza's Rp164,977, but increases dramatically when the load factor decreases to 10%. This pattern is consistent with the findings of Ginting (2013), Haqqi (2020), and Yusuf et al. (2022), who concluded that load factor is a key variable in determining BOK-based fares.

The effect of fleet size on BOK and fares indicates that the larger the fleet, the lower the operating cost per vehicle due to more efficient distribution of fixed costs. Conversely, a limited fleet size leads to an increase in BOK per vehicle, which in turn leads to higher fares. This finding aligns with the concept of economies of scale in transportation proposed by Warpani (1990) and is supported by research Sri (2021).

Using the Willingness to Pay (WTP) used in several previous studies, such as Tamin et al. (1999) and Ginting (2013), BOK-based fare determination in this study provides a rational lower and upper limit for operators. However, without considering passenger WTP, there is a potential mismatch between operationally feasible fares and passengers' ability or willingness to pay, as noted by Leksono (2025) and Haqqi (2020).

Overall, the results of this study confirm that setting intercity and interprovincial fares on the Muara Teweh–Banjarmasin route must comprehensively consider the BOK components, load factor, and number of operating fleets. This conclusion is consistent with various previous studies, including Yuniarti (2009), Ibrahim & Nur (2024), and Yusuf *et al*. (2022), which emphasize that sustainable fares are those that cover operational costs, provide a reasonable profit for operators, and remain within passengers' ability and willingness to pay.

CONCLUSION

It can be concluded that the tariff based on the vehicle operating costs (BOK) for travel transportation of the Innova type car on the Muara Teweh-Banjarmasin route is IDR 280,014/pnp. In the calculation of vehicle operating costs (BOK), if the number of fleets is greater, the value of the resulting vehicle operating costs (BOK) tariff will be smaller, whereas if the number of fleets is small, the resulting vehicle operating costs (BOK) tariff will be greater.

Declaration by Authors
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