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Analysis of Fix Price Travel Transport Based on Vehicle Operational Costs (Case Study: Travel Route of Palangka Raya – Tamiang Layang)

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Abstract

Transportation become an important role in a variety of human needs that are quite diverse, such as economic needs, education, health, and others. This study calculated the Operating Costs of Travel Vehicles on the Palangka Raya - Tamiang Layang City route, using the 2002 Directorate General of Land Transportation method. The method is in the form of an interview survey, analyzing Vehicle Operating Cost data from travel transport service providers with the Palangka Raya- Tamiang Layang City route, namely CV. Putra Borneo Travel, CV. New Star Travel, and CV. Trans Kalimantan Travel. This study aims to determine the Operating Cost of Travel Vehicles on the Palangka Raya - Tamiang Layang route to find out how much the basic rate set is financially feasible for service providers. The findings from the value analysis of the Operating Cost of Travel Vehicles on the Palangka Raya- Tamiang Layang route reveal that CV. Putra Borneo Travel incurred IDR 4,934.61, CV. Trans Kalimantan Travel incurred IDR 4,253.21, and CV. Bintang Baru Travel incurred IDR 4,733.95. The basic passenger rate set is financially feasible for service providers by, CV. Putra Borneo Travel at IDR 295,056/pnp, CV. Trans Kalimantan Travel at IDR 254,324/ pnp, CV. Bintang Baru Travel at IDR 283,071/ pnp. The rates issued by the three travel transportation service providers are IDR 230,000/ pnp.

Keywords: *Transportation, Vehicle Operating Costs, Basic Rates.*

1. Introduction

Transportation is an important aspect in the economy of a region or country (Al Abror et al., 2019; Dewi, 2021), and serving the community (ELISABETH et al., 2023). In the transportation field, runninf activities can be seen from the existence of good public transportation (Miro, 2004). Transportation is the activity of moving goods (cargo) and passengers from one place to another (Abbas, 2000). Moreover, transportation is also defined as the effort of moving from one location to another using certain tools (Baig et al., 2022; Cserdi et al., 2021; Li et al., 2023; Miller et al., 2016). Thus, transportation has several dimensions, such as location (origin and destination), tools (technology), and certain needs (Miro, 2004). Transportation plays an important role in various human needs which are quite diverse, such as economic needs, education, health, etc. (Miro, 1997). Nowdays, several routes provided by travel service providers are found to reach people destination, one oft hem is the Palangka Raya -Tamiang Layang route.

Travel is a provider of inter-city and inter-provincial transportation services run by private companies (Vikasari, 2018). Travel service providers aim to help people who need transportation in the certain areas or regions they want to go to (Rijalul Haqqi, Horas. SM Marpaung, 2017). Currently, travel, especially in Palangka Raya City, already provides quite a lot of inter-city routes, such as the Palangka Raya - Tamiang Layang inter-city route. There are several travel routes on the Palangka Raya-Tamiang Layang route, namely Trans Kalimantan Travel, Bintang Baru Travel, and Bintang Borneo travel. In order to increase travel development, fix price or cost must be able to cover all vehicle operational costs (BOK) (Reliana et al., nd) and be affordable for the public. Therefore, it is necessary to know how much operational costs are incurred by travel service providers. It is expected that the results of this research can be a source of information regarding the operational costs of travel vehicles on the Palangka Raya - Tamiang Layang route, and it can be used as material for evaluating the suitability of tariffs (Gemilang et al., nd).

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2. Research Methods and Materials

At this stage, the data collection method utilized Vehicle Operational Cost data (Dan et al., nd) including fixed costs and variable costs (Yendri et al., 2021), and the number of passengers (Wulandari et al., 2016). This data as a whole was used to calculate the total daily number of passengers using survey and interview methods. The method used in collecting data was through interviewing service providers regarding operational costs incurred (Bolla et al., 2019). Field survey condition of the route taken regarding several things was distance traveled (Warokka et al., nd) time taken, travel costs, fuel used, literature study, studying articles, and books for reference material related to the object studied (Perdana et al., 2023). The subject analysis consisted of several travel, namely, CV. Trans Kalimantan Travel, CV. New Star Travel, and CV. Putra Borneo Travel. The data variables required were oil costs, car prices, car types, and so on.

3. Results and Discussion

3.1. Calculation of BOK CV. Putra Borneo Travel

The data obtained are as follows:

a. Vehicle information data

1) Type of vehicle = Toyota Kijang Innova
2) Passenger capacity = 7 people

b. Vehicle production

1) Kilometers traveled/rit = 293 km
2) Frequency/day = 1 rite/day
3) Kilometers traveled/day = 293 km
4) Passengers/rigged = 7 passengers
5) Passengers/day = 7 passengers/day
6) Operating days/month = 12 days/month
7) Kilometers traveled/month = 12 x 293 = 3516 km
8) Passengers/month = 12 x 7 pnp/day = 84 pnp/month
9) Kilometers traveled/year = 12 x 3516 km = 42,192 km
10) Passengers/year = 12 x 84 pnp/month = 1,008 pnp/year

Calculations using the method of the Directorate General of Land Transportation Number SK.687/AJ.206/DRJD/2002 (Indonesia, 2002), the components of Vehicle Operational Costs calculated are as follows.

a. Direct cost

1) Capital Interest Costs

Type of vehicle used by Cv. Putra Borneo is a Toyota Kijang Innova G 2014. The price of the vehicle used is IDR 156.000.000,00.

Vehicle price (second) = IDR 156.000.000,00
Residual value = 20% of the vehicle price
Depreciation period = 5 years
Payback period (n) = 3 years
Kend-km/year = 42.192 km

Capital interest costs/year =

$$Capital\ Interest = \frac{\left(\frac{3+1}{2}\right) \times IDR\ 156.000.000{,}00 \times 20\%}{5} = \text{IDR } 12.480{,}000.00/\text{year}$$

$$Capital\ Interest/vehicle = -km = \frac{Capital\ Cost/year}{vehicle-km/year} = \frac{IDR\ 12.480.000{,}00}{42.192} = \text{IDR } 295.79/\text{ vehicle-km}$$

2) Depreciation Expenses (Depreciation)

The steps for calculating depreciation costs are as follows:

Initial price of vehicle = IDR 156.000.000,00
Economic life (n) = 5 years
Residual value = 20% x vehicle price
= 20% x IDR 156.000.000,00-
= IDR 31.200.000,-

Vehicle depreciation $= \frac{\text{IDR } 156.000.000{,}00 - (20\% \text{ x } IDR\ 156.000.000)}{42.192} =$ IDR 591,581/km

3) Driver Cost

The average income of a driver in one day (1 rit) is IDR 360.000,00

Driver = IDR 360.000,00/rit
Driver ratio (driver) = 1
Driver's income/year = IDR 360.000.00 x 12 x 12 months x 1 = IDR 51.840.000
Kend-km/year = 42.192 km

Income/vehicle-km $= \frac{\text{Driver income/year}}{\text{Vehicle/dya}} = \frac{\text{IDR } 51.840.000}{42.192}$ = IDR 1,228.67/ vehicle-km

4) Fuel Oil (BBM) Costs

Fuel consumption/vehicle/rit = 25 liters
Vehicle-km/rit production = 293 km
Type of fuel used = Pertalite
Price of fuel (Pertalite) per liter = IDR 10.000/liter (Survey July 2023)
Fuel cost.vehicle/rit = Fuel usage/day x fuel price
= 25 liters of fuel x IDR 10.000
= IDR 250.000.00

Fuel costs/vehicle $= \frac{\text{Fuel cost of vehicle/day}}{\text{vehicle-km/day}}$

$= \frac{\text{IDR } 250.000}{293}$

= IDR 853.24/vehicle-km

5) Tire usage costs

Number of tires per car = 4 pieces
Tire durability = 33.672 km
Tire price per piece = IDR 820.000,00,-

Tire cost/km $= \frac{\text{Tire Usage x Tire price/piece}}{\text{tire durability km}}$

$= \frac{4 \text{ x IDR } 820.000{,}00}{33.672}$

= IDR 97.4/ vehicle-km

6) Small service

Price of engine oil = IDR 450,000.00

Small service costs/ vehicle -km $= \frac{\text{IDR } 450.000{,}00}{5000 \text{ km}}$ = IDR 90.0/ vehicle -km

7) Great service

Major servicing every = 40/000 km
Engine oil = IDR 450.000,00
Axle oil = IDR 225.000,00
Transmission oil = IDR 200.000,00

Spark Plug = IDR 60.000,00
Air filter and oil filter = IDR 340.000,00

Major service/vehicle -km = $\frac{450.000+225.000+200.000+340.000+60.000}{40.000\ km}$ = $\frac{\text{IDR } 1.275.000}{40.000\ km}$ = IDR 31,88/ vehicle -km

8) Brake lining cost

Brake lining service/replacement is carried out every 40.000 km

Brake lining price = IDR 250.000,00

Service cost/brake lining replacement = $\frac{\text{IDR } 250.000,00}{40.000}$ = 6.25/ vehicle -km

9) Clutch lining cost

Service/replace clutch lining every 52,000 km

Price of clutch lining spare parts = IDR 900,000.00

Biaya servis/penggantian kampas kopling = $\frac{\text{IDR } 900.000,00}{52.000}$ = IDR 17.31/ vehicle -km

10) Car wash costs

$$\text{Car wash cost} = \frac{\text{Car wash cost/month}}{\text{km/month}}$$

In one month, the number of working days or number of car trips is 12 working days.

Car wash cost = IDR 50,000.00
Vehicle production -km/month = 12 x 293 km = 3516 km

Car wash cost = $\frac{50.000 \text{ x } 12}{3516}$ = IDR 170,65/ vehicle -km

11) Vehicle licence *(STNK)* fees

Frequency of route permits /year = 1 time
Vehicle production -km/year = 42.192 km

The route permit fee per year is IDR 4.000.000,00

Route permit fee/vehicle – km = $\frac{\text{IDR } 4.000.000}{42.192}$ = IDR 94.80/ vehicle -km

12) Vehicle licence *(STNK)* fees

Vehicle license/year = IDR 3.000.000,00
Vehicle production -km/year = 42.192 km
STNK *a* = tax fee/vehicle-km = $\frac{\text{IDR } 3.000.000,00}{42.192}$ = IDR 71.10/ vehicle -km

13) Insurance fee

Insurance costs are paid once every month.

Insurance cost/month = IDR 30.000,00
Vehicle production -km/year = 42.192 km
Insurance costs/year = IDR 360.000,00

Insurance costs/vehicle-km = $\frac{\text{IDR } 360.000,00}{42.192}$ = IDR 8,532/ vehicle -km

14) KIR Test Fees

KIR frequency = 2 times/year
Vehicle production/year = 42.192 km
Cost each time KIR = IDR 250.000.00
KIR fee/year = IDR 500.000.00

KIR cost/vehicle-km $= \frac{\text{IDR } 500.000,00}{42.192} = \text{IDR } 11,85/\text{ vehicle -km}$

b. Indirect Costs

1) Employee costs

Number of employees = 3 people
Salary/month = IDR 1,700,000.00
Vehicle production-km/year = 42,192 km

Employee cost/year $= \frac{\text{IDR } 1.700.000,00 \text{ x } 12 \text{ month}}{42.192} = \text{IDR } 483,50/\text{vehicle -km}$

2) Cost management

Office rent/year = IDR 18.000.000,00
Electricity/month = IDR 200.000,00
Telephone (Credit & Data Package)/month = IDR 200.000,00
Office fees = IDR 300.000,00
Total electricity, water, and telephone costs = IDR 700.000
Management costs/vehicle-km $= \frac{\text{IDR } 18.000.000,00+\text{IDR } 700.000,00}{42.192}$
$= \frac{\text{IDR } 18.700.000,00}{42.192}$
= IDR 443.21/vehicle-km

3.2. Recapitulation of Vehicle Operational Costs

The total BOK cost is calculated by adding up all components consisting of direct costs and indirect costs (Dan et al., nd). The calculation of operational costs for travel vehicles for the Palangka Raya-Tamiang Layang route can be seen in the table 1.

Table 1BOK CV. Putra Borneo Travel

Recapitulation of Vehicle Operational Costs	
1. Direct Costs	Total
a. Depreciation Costs	IDR 591,581
b. Capital Interest Costs	IDR 295.79
c. Driver Costs	IDR 1,228.67
d. Fuel costs	IDR 853.24
e. Tire usage costs	IDR 97.4
f. Minor Services	IDR 90
g. Great Service	IDR 31.88
h. Brake lining cost	IDR 6.25
i. Clutch lining cost	IDR 17.31
j. Car wash costs	IDR 170.65
k. Route permit fees	IDR 94.8
l. *STNK* renewal fees	IDR 71.1
m. Insurance fee	IDR 8,532
n. KIR fees	IDR 11.85
Amount	IDR 3,569.05
2. Indirect Costs	
a. Employee costs	IDR 483.5
b. Cost management	IDR 443.21
Total Cost	**IDR4,495.76**

Table 2. BOK CV. Trans Kalimantan Travel

Recapitulation of Vehicle Operational Costs		
1. Direct Costs		Total
	a. Cost of depreciation	IDR 653,015
	b. Capital Interest Costs	IDR 0
	c. Driver Fees	IDR 1.092,15
	d. Fuel costs	IDR 819,11
	e. Tire usage costs	IDR 95,73
	f. Minor Services	IDR 85
	g. Great Service	IDR 28,63
	h. Brake lining cost	IDR 8,75
	i . Clutch lining cost	IDR 25
	j. Car wash costs	IDR 162,52
	k. Route permit fees	IDR 56,88
	l. *STNK* renewal fees	IDR 63,61
	m. Insurance fee	IDR 6,65
	n. KIR fees	IDR 7,11
Amount		IDR 3.104,16
2. Indirect Costs		
	a. Employee costs	IDR 281,57
	b. Cost management	IDR 222,55
Total Cost		**IDR 3.608,28**

Table 3. BOK CV. New Star Travel

Recapitulation of Vehicle Operational Costs		
1. Direct Costs		Total
	a. Cost of depreciation	IDR 652,256
	b. Capital Interest Costs	IDR 0
	c. Driver Fees	IDR 1.194,54
	d. Fuel costs	IDR 819,11
	e. Tire usage costs	IDR 91,67
	f. Minor Services	IDR 41,5
	g. Great Service	IDR 28,38
	h. Brake lining cost	IDR 8,88
	i . Clutch lining cost	IDR 25
	j. Car wash costs	IDR 170,65
	k. Route permit fees	IDR 54,174
	l. *STNK* renewal fees	IDR 63,14
	m. Insurance fee	IDR 6,501
	n. KIR fees	IDR 6,772
	Amount	IDR 3.162,59
2. Indirect Costs		
	a. Employee costs	IDR 268,16
	b. Cost management	IDR 313,94
Total Cost		IDR 3.744,69

3.3. Vehicle Operating Cost Graph

Graph of the results of calculating vehicle operating costs from the three service provider company.

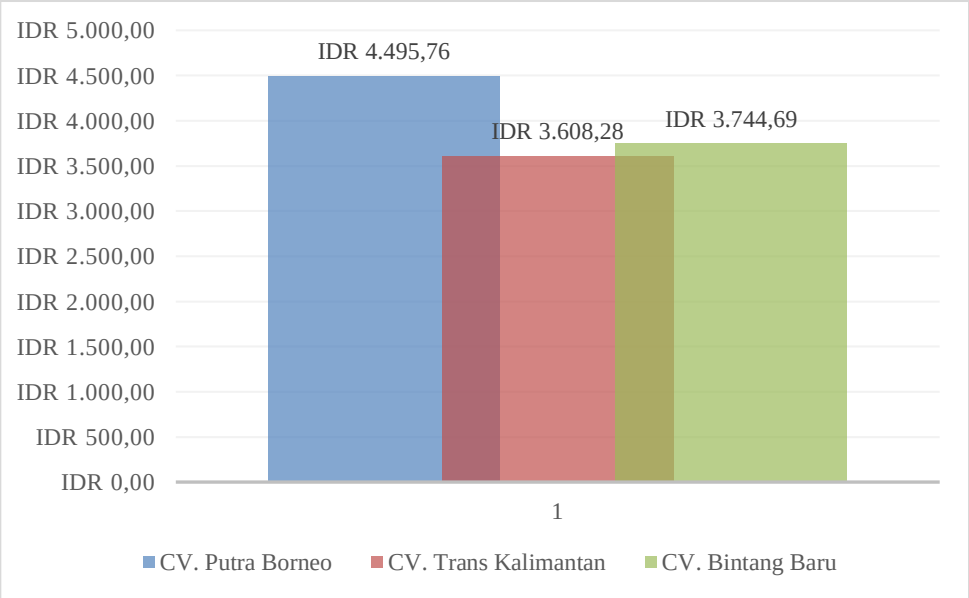

Figure 1BOK Graphics

4. Conclusion

Based on the results of the research discussed above, it can be concluded that the operational costs of travel vehicles on the Palangka Raya - Tamiang Layang route on CV. Putra Borneo Travel with a Toyota Innova G 2014 is IDR 4.495,76/vehicle-km, for CV. Trans Kalimantan Travel with the Toyota Innova G 2018 is IDR 3.608,28/vehicle -km, and on CV. Bintang Baru Travel with the Toyota Innova G 2019 is IDR 3.744,69/vehicle-km. The basic passenger fare determined is financially feasible for service providers on CV. Putra Borneo Travel of IDR 268.82/pnp, for CV. Trans Kalimantan Travel IDR of 215.76/ pnp, and on CV. Bintang Baru Travel IDR of 223.917/pnp. Costs issued by transportation service companies to CV. Putra Borneo Travel of IDR 230.000/passenger, CV. Trans Kalimantan Travel of IDR 230.000/passenger, and CV. Bintang Baru Travel of IDR 230.000 /passenger.

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