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Benefit Analysis on Speed, Distance, Time, and Fare of *Becak Motor* as Main Paratransit in Gorontalo Province, Indonesia

Anton Kaharu

Faculty of Engineering, Universitas Negeri Gorontalo
E-mail: antonkaharu@hotmail.com

Abstract

Becak Bermotor (Bentor) is one of the popular paratransit transportation modes in Gorontalo Province, Indonesia. In addition to having an aesthetic value, the load ability and the coverage of the bentor that can be door to door are also the advantages of this mode of transport. However, bentor is often linked to disarrangement due to the inexistence of formal policy from the local government to accommodate this type of transport. Thus, this study aims to find out the characteristics and benefit analysis of the bentor as a paratransit based on speed, distance, time, and fare.
This study employed survey methods in the city of Gorontalo, Gorontalo Province. Based on the characteristics of the population, the proportional sampling method was used by selecting 66 bentor as the samples in the survey of the travel distance, travel time, and travel fare variables. The descriptive quantitative analysis was utilized to obtain the correlation between speed, distance, time, and fare of the bentor.
Based on the modeling, there is a correlation between variables, the distance and travel time (X in km and Y1 in minute) following the tendency of the further the distance, the longer the travel time and resulting in a linear equation of Y1=4.4653+1.1666X (R2=0.6166) in the condition that the bentor has full passengers and Y1=1.6332+2.0376X (R2=0.4535) in a condition where bentor has no passenger. Inroads with the inclination between 20% – 35%, the correlation between distance and travel has a linear equation of Y1=1.4094+1.8585X (R2=0.9417) and Y1=1.0082+1.6707X (R2=0.9853). The correlation between the distance and fare (X in Km and Y2 in rupiah) follows the tendency of the longer the distance, the higher the fare and has the linear equation of Y2=1291.98+145.92X (R2=0.5628) and Y2=846.62+196.66X (R2=0.7702).

Keywords: *Speed, distance, time, fare, transportation mode, paratransit, bentor.*

1. Introduction

Becak Bermotor (motored becak, and throughout this article referred to as Bentor) is a paratransit and a door to door transportation that is popular in Gorontalo. In addition to having an aesthetic value, the load capacity, and coverage of the bentor have made this public transport its popularity [1]. On the other hand, bentor is also a growing concern due to its rapid growth rate and is identic with chaos [2]. These are also due to the inexistence of formal policy from the local government on this bentor to accommodate this type of transport [3]. In general, it seems that the existence of this bentor is about not only the transportation technique, but also other factors such as social, economic, and cultural problems [4] [5]. This type of transport is a local innovation that modifies traditional becak to be powered with motor. The utilization of engine/motor in this vehicle is expected to increase mobility (coverage and load ability) of the vehicle [6].

The growth of bentor in Gorontalo province has shown a significant increase over the years, especially in the city of Gorontalo. Currently, the bentor can be found in other regions, including North Sulawesi, Central Sulawesi, and South Sulawesi [7]

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Based on the modeling, there is a correlation between variables, the distance and travel time (X in km and Y1 in minute) following the tendency of the further the distance, the longer the travel time and resulting in a linear equation of Y1=4.4653+1.1666X (R2=0.6166) in the condition that the bentor has full passengers and Y1=1.6332+2.0376X (R2=0.4535) in a condition where bentor has no passenger. Inroads with the inclination between 20% – 35%, the correlation between distance and travel has a linear equation of Y1=1.4094+1.8585X (R2=0.9417) and Y1=1.0082+1.6707X (R2=0.9853). The correlation between the distance and fare (X in Km and Y2 in rupiah) follows the tendency of the longer the distance, the higher the fare and has the linear equation of Y2=1291.98+145.92X (R2=0.5628) and Y2=846.62+196.66X (R2=0.7702).

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[8]. Data show that bentor, specifically in Gorontalo, had started to appear in around 1997 [9][10]. At that time, the number of bentor is limited, as Gorontalo economy was just starting to grow. In time, the number of bentor is growing and has become 'unique public transport in Gorontalo. Bentor reaches its highest growth around 2004 – 2010. The number significantly increases from 7,500 to 18,000 units [9]. From here, the number has been growing uncontrollably and caused another public transport mode, namely bendi and other formal transport modes within the city, to disappear. Presently, the provincial government is yet to have data on the exact number of Bentor in Gorontalo. It is predicted that in 2018, there are about 30 – 50 thousand units of bentor in Gorontalo, and from that number, it is predicted that 15 – 20,000 units will be operated in this city [11].

In general, the main problem in managing the bentor as transport in Gorontalo Province is the legal aspect. As stipulated within the Act No. 2 of 2009 on Traffic and Road Transport, bentor is not public transport [12] [13]. Another problem is that the more bentor operates in Gorontalo city, especially in the main roads, the segregation between the fast lane and slow lane does not exist. The traffic jam and environment, irrational tariff, bad operational management, and the role of bentor within public transport are yet maximized [14] [15]. Considering the available network system and development of number of vehicles operating in Gorontalo city, it is time to design efficient road space utilization. Regarding this, a study on the characteristic of this bentor as input in managing the operation of vehicles on the road; thus, public interest in utilization of vehicle service is needed.

2. Characteristics, Services, and Operation of the Transport Mode

The characteristic of transport mode within the transportation system is an important aspect that needs to be considered by academics and road practitioners. Characteristic itself means certain unique characteristics. For instance, there are two characteristics of public transports, technical characteristics (transportation engineer) and social-economic. The technical perspective relates to the performance, which includes capacity, speed, distance, travel time, and fare. Further, within this technical category is the vehicle operation and service system which are related to the service frequency, operation time, coverage, load ability, passenger's destination, and utilized operation system. Meanwhile, from the socio-economic perspective, the characteristics are related to the driver, passenger, and owner of the vehicle. These are in forms of socio-economic data of the bentor itself.

Public transport, which serves the community, is categorized into two categories. The first category is the type of non-motored vehicle as traditional public transports, which is yet to have clear regulations. Traditional public transports included in this category are bendi, non-motored becak, cow-carriage, horse-carriage, and bicycle. Second is the type of motored vehicle where its existence is growing to increase its service to the community. Public vehicles categorized into this second category are city bus, taxi, minibus, pick-up, goods transport, and bentor (motored-becak) [16].

In traveling, travelers should decide which mode of transport that suits them. Selecting means of transport is not a random thing and influenced by many determining factors, which attributed to the offered transport mode, such as speed, comfort, likeability, fare, dependability, travel distance, age of the travelers, socioeconomic status of the travelers, and travel goals [17] [18]. These factors can be independent or confounding factors. Oftentimes the desired public transports do not meet the expectation; thus, travelers should accept the available means of transport [19].

The task of the public transport management is to arrange the needs of the user with the available transport means available together with all the service attributes, effectively and efficiently within the reasonable cost to become one of the economic, socio-cultural, political, and defense-security motor [20] [21].

3. Bentor as paratransit

Bentor is one of the most effective means of transport for long-distance travel and to link the residential area with other public transport routes and vice versa. This is a three-wheel transportation mode as a modification of the traditional tri-cycle becak. It can take up to 2-3 passengers. Hence, bentor can be defined as a motored-becak provided for general transportation, where passengers should pay some money as the payment for the service rendered. This definition is a modification of the becak and ojek definition. Both are non-formal public transports with the paratransit system [5]. Bentor has no fixed schedule, so that it can be utilized based on the needs of the travelers. Therefore, the fare is based on the rendered service and the willingness of the traveler.

3.1. Travel distance and time

Bentor is one of the most effective means of transport for long-distance travel and to link the residential area with other public transport routes and vice versa. This is a three-wheel transportation mode as a modification of the traditional tri-cycle becak. It can take up to 2-3 passengers. Hence, bentor can be defined as a motored-becak provided for general transportation, where passengers should pay some money as the payment for the service rendered. This definition is a modification of the becak and ojek definition. Both are non-formal public transports with the paratransit system [5]. Bentor has no fixed schedule, so that it can be utilized based on the needs of the travelers. Therefore, the fare is based on the rendered service and the willingness of the traveler.

3.2. Travel distance and travel speed

According to Jacub (1992) the performance of a non-motored vehicle cannot be determined by engineering; however the degree of velocity and slowness will be constant when it goes through a track [7]. In reverse, a motor-powered vehicle, the speed is expected to meet the experiment; yet, it depends on the need and condition of the road as well as the traffic [22] [23]. The speed of a non-motored vehicle (e.g., becak) is highly dependent on several factors. For instance, the inclination of the road (i), level of traffic performance (p), travel distance (d), the carried load (m), physical condition of the driver, and other factors. Thus, the velocity function can be described as follows: $V = f(i, p, d, m, h,)$. The ability of the driver itself is different from one travel to another. Theoretically, a too-long distance will slow the driver, and the speed will be lowered.

3.3. Travel time and speed

The non-motored and motored vehicles will have different travel times, where the motored vehicles will travel faster in a shorter time than the non-motored vehicles [24] [25]. Nevertheless, the travel time and speed are also influenced by the road performance, the behavior of the drivers, the pause time within the travel, thus the total time needed to reach a destination can take more time than estimated. The basic concept of the correlation of travel time and speed is proposed by Homburger as cited in Jacub (1992) [7], is presented in Figure 3, where the travel time is stated in hour/km, and speed is shown in km/hour. The more the travel time needed, the slower the speed

3.4. Travel fare

Based on the coverage ability, travel speed, travel time, and service toward the passenger have made it difficult to determine the travel fare for motored and non-motored vehicles. The travel fare per kilometer for this non-formal transport mode, both motored and non-motored is yet calculated in detail. Therefore, there is no standard fare for such transportation mode. However, there is a minimum fare which is different from one driver to another.

It is different from the formal public transport (e.g. taxi), where speed, comfort, are the result of engineering manufacture. Thus, the comfort and speed are far better than the non-motored vehicles; hence, the fare is higher. The minimum fare for first kilometer is determined, regardless of the traveling distance that is less than one kilometer; the fare will be that of one kilometer. This fare calculation is based on the vehicle depreciation, the maintenance cost, the expenditure for the operator, and the fuel cost.

4. Method

The purpose of this study is to find out the operation model of motored-becak motor (bentor) in the city Gorontalo using the speed, distance, time, and fare analysis. The research site was suited to the observation site and the technical data observation in the field, which focused on places where the bentor waited for its passengers, taking into consideration the road sections where the bentor operated. The data collection method was a direct observation towards the bentor, which operated in several road sections in Gorontalo city with a total of 132 samples. These bentors were bentors with full passengers (four including the driver) and 66 samples with no passengers. The sampling method was based on the hypothesis about the average speed of the bentor which was 30 km/hour with at least 70% of the samples, taken with the reliability level of 99%, hence the minimum samples to be observed was:

$$n \geq \frac{p.q}{\sigma_e^2} = \frac{(0{,}5)^2.(0{,}5)}{\left[\frac{0{,}7-0{,}5}{2{,}58}\right]^2} = 42$$

, where :

n = number of minimum samples
p =percentage of the hypothesis (Ho) stated in chance of = 0.5
q = z-0,5. If the reliability level is 99 % then z=2.58

$$\sigma_e^2 = \frac{Ha - Ho}{z} = \frac{70\% - 50\%}{2{,}58}$$

The collected data were the characteristics of speed, distance, time, and fare of the travel, which consisted of:

a. Trip length from the original point to the destination measured used odometer of the observer's motorcycle, where during the trip, the observer's vehicle observed the object from behind, with the distance level accuracy up to 100 meters.
b. Travel time spent to cruise that distance, was read using a digital watch, and the accuracy was measured in second.
c. The fare was the payment given by the passenger to the driver of the bentor.
d. The highest speed produced by the object during the travel could be measured using the speedometer of the observer's vehicle.
e. The road inclination was measured by applying the waterpass.

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The data processing and analysis were statistical approach with several supporting software (Excel and SPSS), which comprised:

a. Descriptive statistical analysis, the minimum score, maximum, mean, deviation standard, frequency, histogram, and graphic.
b. Inferential statistical analysis, statistical test (hypothesis), simple correlation, simple linear regression and estimation curve, with the significance level of 1% and 5%.

The results of the study on the speed, travel time, and fare are the functions of X and, variation of one of the random variable as the value of other variables that can be calculated using regression analysis [26]. The two events that often correlate are said to have correlation. This correlation analysis is aimed at finding out the extent of correlation between X and Y. Hence, the regression analysis is carried out the extent of quantitative influence of the change X against Y, estimates the value of Y if the value of X is known. The extent of correlation between X and Y is seen from the correlation coefficient (r), the value of r will be between -1<r<1. The r-value is determined using the following formula:

$$r_{xy} = \frac{n\left(\sum XY\right)-\left(\sum X\right)\left(\sum Y\right)}{\sqrt{n\left(\sum X^2\right)-\left(\sum X\right)^2} - \sqrt{n\left(\sum Y^2\right)-\left(\sum Y\right)^2}}$$

The diagram data will produce two types of regression forms: linear and non-linear regression. Linear regression forms a straight line, whereas non-linear regression will form a curve line. The models are presented in the following formulas:

a. Linear model, with the general equation of: $Y = a + bx$
b. Non-linear models consist of:
   1) Logarithmic model, with the formula of: $Y = a + \ln x$
   2) Exponent model, with the general equation of: $Y = ab^x$ y
   3) Geometric model, with the general formula of: $Y = ax^b$ y

In which, a = the constant of regression, b, c, d = regression coefficient, and x= independent variable.

The association value has interpretative significance; showing the proportion of total quadrant deviation of the independent variable, which associated with the regression formula [27] [28]. It is also called determinant coefficient (R2). When R2 = 0, it shows that the independent variable is an insignificant predictor, whereas R2 = 1, indicating that the independent variable is the perfect predictor. This determinant coefficient (R2) has interval from 0 to 1 (0 ≤ R2≤1). The larger the R2 (almost 1), the better the regression model. The closer the value to zero, the more unable the independent variable to describe the variability of the dependent variable. The formula for the R2is:

$$R^2 = \frac{\sum (Y^* - \bar{Y})^2 / k}{\sum (Y - Y^*)^2 / k} = \frac{numberofsquare_{regression}}{numberofsquare_{\text{total}}}$$

where:
Y = observation value;
Y* = the value of Y estimated using the regression model;
$\bar{Y}$ = the average observation value; and
k = number of independent variables

5. Result and discussion

The travel distance and the travel time of the bentor will produce the average speed, both in full passengers (4 passengers) and in no passengers. The relative frequency of the average speed of the bentor is portrayed in the following histograms with normal curve in Figure 1 below.

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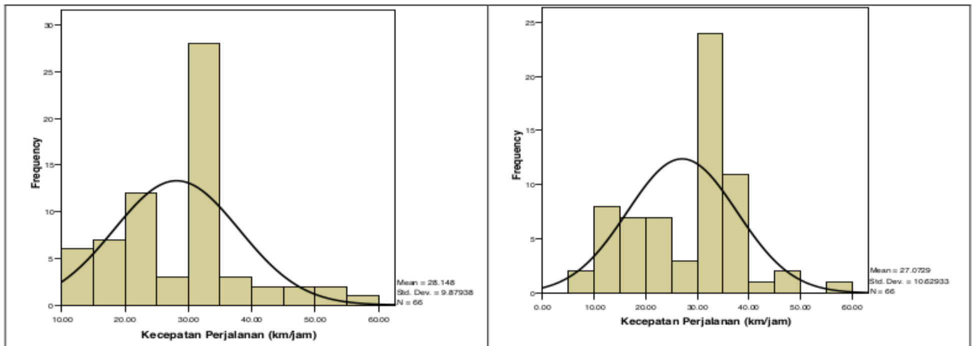


a. Bentor with full passenger condition | b. No Passenger Condition

Figure 4: Relative Frequency and Normal Curve of the Average Speed of the Bentor.

Based on figure 1 (a and b), the histogram generally implies that bentor has similar tendency, where the bar is below the normal curve; hence, it can be concluded that these data have normal distribution. The result of analysis from both graphics above is presented in Table 1 below.

Table 1: The Result of Average Speed Frequency Distribution of the Bentor

No	Bentor with Full Passenger			Bentor with No Passenger		
	Travel speed (km/hour)	Frequency	%	Travel speed (km/hour)	Frequency	%
1	5 - 10	0	0	5 - 10	2	3.03
2	10 - 15	6	9.09	10 - 15	8	12.12
3	15 - 20	7	10.61	15 - 20	7	10.61
4	20 - 25	12	18.18	20 - 25	7	10.61
5	25 - 30	3	4.55	25 - 30	3	4.55
6	30 - 35	28	42.42	30 - 35	24	36.36
7	35 - 40	3	4.55	35 - 40	11	16.67
8	40 - 45	2	3.03	40 - 45	1	1.52
9	45 - 50	2	3.03	45 - 50	2	3.03
10	50 - 55	2	3.03	50 - 55	0	0.00
11	55 - 60	1	1.52	55 - 60	1	1.52
Total		66	100	Total	66	100

Statistically, the result of the calculation of the frequency of those variables is presented in Table 2 and 3 below.

Table 2: Statistical Result of Time, Distance, Speed, and Fare

Variable		Speed	Time	Distance	Fare
N	Valid	66	66	66	66
	Missing	0	0	0	0
Mean		28.1480	12.5765	6.0289	2111.1106
Std. Error Mean		1.21607	1.08280	.61722	122.63475
Std. Deviation		9.87938	8.79671	5.01431	996.28942
Minimum		12.00	2.50	1.00	1000.00

Maximum	60.00	33.00	17.00	5000.00

Table 3: Statistical Result of the Time, Distance, and Speed Variables

Variable		Speed	Time	Distance
N	Valid	66	66	66
	Missing	0	0	0
Mean		27.0729	9.7606	4.5364
Std. Error Mean		1.30838	.97952	.58434
Std. Deviation		10.62933	7.95767	4.74720
Minimum		6.86	1.00	.80
Maximum		60.00	31.00	17.00

5.1 Analysis of Correlation Among Time, Distance, Speed, and Travel Fare.

The result of the analysis of correlation coefficient among Distance, Speed, Time and Fare of the travel is presented in Table 4 and 5.

Table 4: Correlation Coefficient Time, Distance, Speed, and Fare

		Time	Distance	Speed	Fare
Time	Pearson Correlation	1	.916	.040	.788
	Sig. (2-tailed)	.	.000	.751	.000
	N	66	66	66	66
Distance	Pearson Correlation	.916	1	.372	.740
	Sig. (2-tailed)	.000	.	.002	.000
	N	66	66	66	66
Speed	Pearson Correlation	.040	.372	1	.061
	Sig. (2-tailed)	.751	.002	.	.626
	N	66	66	66	66
Fare	Pearson Correlation	.788	.740	.061	1
	Sig. (2-tailed)	.000	.000	.626	.
	N	66	66	66	66

Table 5: Correlation Coefficient Time, distance, and Speed

		Time	Distance	Speed
Time	Pearson Correlation	1	.945	.095
	Sig. (2-tailed)	.	.000	.447
	N	66	66	66
Distance	Pearson Correlation	.945	1	.354
	Sig. (2-tailed)	.000	.	.004
	N	66	66	66
Speed	Pearson Correlation	.095	.354	1
	Sig. (2-tailed)	.447	.004	.
	N	66	66	66

Based on the above table 4 and 5, the variables that have a significant correlation coefficient are time and distance by 0.916 (91.6%) and 0.945 (94.5%), respectively. The correlation between time and travel fare is 0.788 (78.8%), with the average significance number is less than the required significance level, $0.0001 < \alpha = 0.01$. Meanwhile, distance and speed show a low correlation with each condition of the bentor, with the correlation value of 0.372 (37.2%) and 0.354 (35.4%), respectively and the significance level is less than α = 0.01 by 0.002 and 0.004. Further, it is evident from the tables above that there is no significant correlation between time and speed, and between fare and speed, both in the conditions of bentor with full passengers and no passengers.

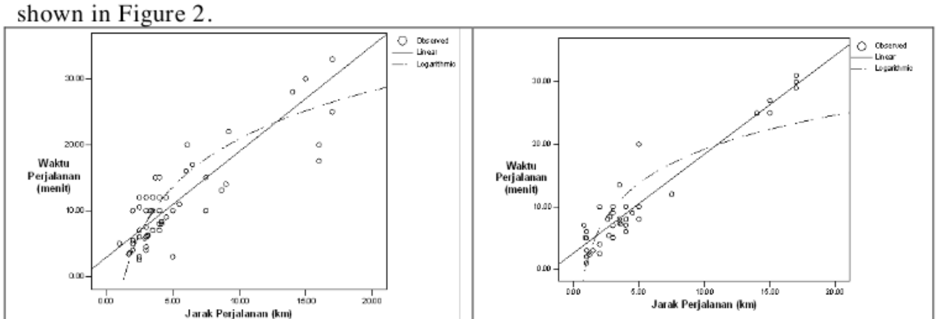
5.2 The Analysis of Correlation between Distance and Time

The correlation between distance and travel time variables is made based on the hypothesis that travel time (Y) is highly influenced by the distance of the travel (X). It implies that the increase in distance will be followed by the increase in traveling time. In this case, the travel time is a dependent variable whereas the distance is an independent variable. Based on the data analysis, it is obtained that both models (linear and algorithmic) can be used to describe the regression between time variable (Y) and distance variable (X); thus, the model as presented in Table 6 is obtained.

Table 6: Linear and Non-Linear Model of the Distance and Travel Time Correlation.

Regression equation	Model	R	R2	Sig. F	Sig. t	Level of Sig.
Full Passenger						
$Y = 2{,}8850 + 1{,}6075X$	Linier	0.9163	0,8396	0,0000	0,0000	0,01
					0,0000	0,01
$Y = -3{,}332 + 10{,}5149\ln(X)$	Logarithmic	0,8762	0,7678	0,0000	0,0078	0,01
					0,0000	0,01
No Passenger						
$Y = 2{,}5768 + 1{,}5836X$	Linier	0,9447	0,8925	0,0000	0,0000	0,01
					0,0000	0,01
$Y = 1{,}0316 + 7{,}8870\ln(X)$	Logarithmic	0,8634	0,7456	0,0000	0,2068	0,01
					0,0000	0,01

Based on R2 and the significance level, the linear model is the most suitable model to describe the correlation between the distance (X) and time (Y). Each increase in distance by 1 km will result in the additional of 1.61 minute in the condition of bentor with full passengers and 1.58 minute in bentor with no passengers. The estimation curve between the distance variable and the time is shown in Figure 2.



a. Bentor with Full Passengers | b. Bentor with No Passengers

Figure 5: The Result of Estimation Curve for Correlation between Distance and Time Variable in Conditions where Bentor is Full with Passengers and Bentor with No Passengers

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Based on Figure 2 above, the diagram for the bentor for both conditions reveals that the increase in distance will increase in the travel time.

5.3 The Analysis of Correlation between Distance and Speed

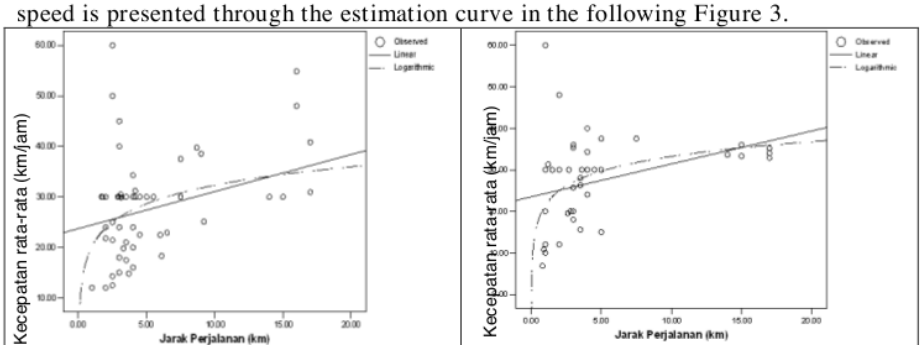
If it is assumed that the distance will influence travel speed, thus, the further the distance, the faster the transport mode that will be selected to cover the distance [29] [30]. The distance (km) is treated as independent variable, whereas speed (km/hour) is the dependent one. From the analysis above, it indicates that there is a tendency for the model to be approached using linear and non-linear models. The result of the modeling is given in Table 7 below.

Table 7: Linear and Non-Linear Models of the Correlation between Distance and Speed.

Regression Model	Model	R	R2	Sig. F	Sig. t	Level of Sig.
Full Passenger						
$Y = 23{,}7264 + 0{,}7334X$	Linear	0.3722	0,1386	0,0021	0,0000	0,01
					0,0021	0,01
$Y = 20{,}1772 + 5{,}2680 \ln(X)$	Logarithmic	0,3909	0,1529	0,0012	0,0000	0,01
					0,0012	0,01
No Passenger						
$Y = 23{,}4799 + 0{,}7921X$	Linear	0,3537	0,1251	0,0036	0,0000	0,01
					0,0036	0,01
$Y = 21{,}4024 + 5{,}1235(X)$	Logarithmic	0,4199	0,1763	0,0004	0,0000	0,01
					0,0004	0,01

Source: Result of Analysis

Based on the R2 and the significance level, the logarithmic model is most suitable to describe the correlation between distance (X) and speed (Y). If the distance covered is added by 1 km, then the speed will be constant both in the full passenger condition and no passenger condition. Speed will increase when the distance is added by 1 km. The regression result between distance variable and speed is presented through the estimation curve in the following Figure 3.



a. Bentor with full Passengers | b. Bentor with no Passengers

Figure 6: Curve of Correlation between Distance and Average Speed Variables in Bentor with Full Passengers and No Passengers.

It is clear from the above figure that the diagram for the bentor in both conditions signifies that the increase in distance will be followed by the increase in travel speed.

5.4 Analysis of Correlation between Time and Travel Fare

The short amount of time needed to arrive in the destination is one of the indicators for the level of service provided by the means of transport used by the user. Travel time is related to speed as speed is the function of time. Therefore, the higher the speed of travel of a transportation mode, the more it will be preferred by the users. For this reason, the speed of travel will be followed by the travel fare that should be paid. The result of the regression correlation between time and travel cost resulted in regression equation and the statistical criteria is shown in Table 8.

Table 8: Linear and Non-Linear Model of the Correlation between Time and Travel Fare

Regression Equation	Model	R	R2	Sig. F	Sig. t	Level of Sig.
Full Passenger						
$Y = 989.22 + 89,21X$	Linearr	0.7876	0.6204	0,0000	0,0000	0,01
					0,0000	0,01
$Y = -297,80 + 1042,63\ln(X)$	Logarithmic am	0.7021	0.4930	0,0000	0,3523	0,01
					0,0000	0,01

The value of R2 and its significance level shows that the most suitable model to describe the correlation between time and fare variables of the bentor transportation mode is the linear model. The result is not against the previous assumption that travel fare will be highly influenced by the traveling time. The estimation curve of the correlation between travel fare and the travel speed is portrayed in Figure 7.

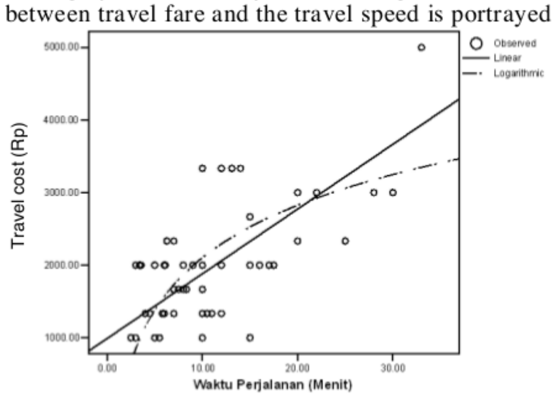


Figure 7. Curve of the Correlation between Time and Travel Fare

The table above shows that the diagram of the bentor, where addition of travel time will be followed by the addition of the travel cost.

5.4 Analysis of Correlation between Distance and Travel Fare

Within the hypothesis, it is assumed that the travel fare will be influenced by distance, where each increase of traveling distance will make the travel cost higher. The result of the correlation between distance (X) and travel cost (Y) produces the regression equation and the statistical criteria used as presented in Table 9.

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Table 9. Linear and Non- Linear Regression Model on the Correlation between Distance and Travel Fare.

Regression Equation	Model	R	R2	Sig. F	Sig. t	Level of Sig.
$Y = 1224{,}18 + 147{,}11X$	Linear	0.7502	0.5482	0,0000	0,0000	0,01
					0,0000	0,01
$Y = 679{,}59 + 948{,}10\ln(X)$	Logarithmic	0.7261	0.4866	0,0000	0,0015	0,01
					0,0000	0,01

From the SPSS data processing, it is obtained that both models (linear and non-linear) can use regression between the distance variable (X) and the fare variable (Y). The R2 and its significance indicate that linear model is more suitable to describe the correlation between distance (X) and fare (Y). This implies that the equation model is not in contrast with the hypothesis proposed, where each increase of distance will incur higher fare cost. Thus, if the distance increase by one km, then the fare will increase by IDR. 147,11,-. Therefore the fare for each passenger is IDR. 1371,29,-.

The bentor transportation mode will always show linear cost increase, regardless of the distance. The minimum fare set for less than one km is set by the driver of the bentor by IDR. 1000,- per person. Therefore, the regression equation model for the distance above one km is a linear regression model of $Y = 1224{,}1813 + 147{,}1138X$ with the correlation of R=0.7502. The increase of fare is calculated beyond one km shows the increase of fare by IDR. 147.11/km/passenger. In detail, the correlation between distance and the travel fare is reflected in the estimated curve presented in Figure 8.

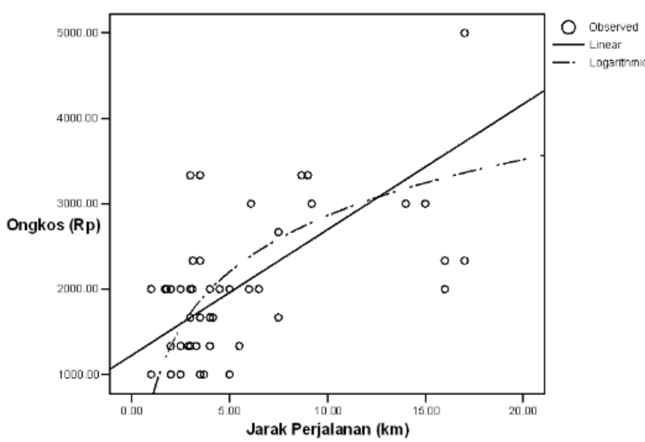

Figure 8. Estimation Curve of Correlation between Distance Variable and the Travel Fare

Based on the linear equation model presented in Table 9 and the estimation curve in Figure 8, the previous hypothesis is correct where it states that the increase in traveling distance will be followed by the increase in travel fare.

6. Conclusion

The correlation between distance and traveling time follows the tendency of the further the distance, the longer the traveling time in both bentor with passengers and bentor with no passengers. The degree of the velocity of the bentor is not influenced by the distance, the travel fare, or the traveling time, but rather by level of local traffic performance. Based on the time, average fare of bentor per minute per passenger is divided by the total traveling time; hence the average fare is IDR. 167.81 per minute. The correlation between distance and fare shows that it follows a tendency where the longer the distance, the higher the fare. Based on the total distance that the bentor traveled divided by number of total fare per passenger, the average bentor fare per km is IDR 350.170,-/km. The land inclination also plays an important role on the traveling time and distance. The results are 67.7% in full passenger condition and 54.2% in no passenger condition. Meanwhile, the influence of inclination toward the travel fare is 51.7%. The table further shows that the inclination insignificantly influences the velocity/speed of the bentor. The correlation between the inclination of the street with time and distance shows that the increase in road inclination will also be followed by the increase in traveling time and distance linearly. In addition, the travel fare shows that each increase in inclination will be followed by the increase in fare linearly.

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Authors

Anton Kaharu, Anton Kaharu is senior lecturer at Faculty of Engineering, Universitas Negeri Gorontalo, Indonesia.

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