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ANALYSIS AND SELECTION FOR MOTORCYCLE BECAK AND MICROLET COMMUTERLINE FOR TRAVEL WORK OF BIRINGKANAYA TAMALANREA TO MAKASSAR CITY

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ABSTRACT

The existence of necessity in work activities will cause a trip which can produce the movement of people, in which it requires alternative modes of transportation. The purpose of this research is to analyze the influence of travel cost, income, ownership of modes and gender to the selection of modes in motorcycle becak and Microlet Commuter line as transportation of modes for work in the district from Biringkanaya to Tamalanrea. This research used questionnaire in which 100 samples for people in six villages in the district from Biringkanaya. Technique used to take sample in the research is purposive proportional random sampling. This research also uses Binary Logistic Regression technique with dichotomous dependent variable, 1 for motorcycle becak and for Microlet Commuterline. Estimation technique by using Binary Logistic Regression conducted to determine the effect of independent variables on the probability of commuters to use motorcycle becak and for Microlet Commuterline. The result of this research shows that the choosing of modes motorcycle becak and for Microlet Commuterline work by people in district of North Biringkanaya is dominated by motorcycle becak users, in which there are 60 respondents, and there are only 40 respondents for Microlet Commuterline. The choosing of motorcycle becak and Microlet Commuterline in district of North Biringkanaya is caused by factor of travel cost, income, ownership of modes and gender influence positive and significance.

Keywords: motorcycle becak, modes, trip to work, binary logistic regression.

INTRODUCTION

Transportation is an attempt to transfer or movement of people and goods from origin to destination locations for specific purposes by using certain modes of transport (Fidel, 1997). Transportation is the lifeblood of everyday life and one of the basic needs of society. Almost every person requires transport to meet their needs such as the need for work, school, recreation, and social interaction. This is because every movement made by society can not be met in one place so that people have to go to a different place to be able to meet their needs by using the means of transportation. The need for these activities ultimately leads one to choose the mode that is used.

Selector public transportation of passengers, there are two groups of actors movement or travel, namely: 1). Choice group is a group that has the option of doing mobility and have access to a private vehicle. 2). Captive group is a group that depends on public transportation to mobility. Users captive (captive users) public vehicles are defined as people who leave home (origin) do not have or do not use private vehicles or have no other choice except public service vehicles (Riyanto, 2002).

Biringkanaya is one of the Districts in the city of Makassar, which has the highest population density after the District Tamalanrea amounted to 11 128 people / km^2. As the District which has the highest density and also as a buffer for the District of Makassar have transportation problems. This problem is caused because of the great need for transportation because they have to serve the movement of commuters or commuters to travel to work. Along with the many needs of the transportation by commuters, it takes an integrated public transport modes, the mass as well as to reduce congestion. However, the reality is becoming increasingly difficult requirements are met by the provider of transportation services for the growing number of commuters, while the facilities provided by the providers of transport services is still limited. Consequently also, commuters tend to choose private vehicles which have an impact on a relatively high level of congestion in the district. Biringkanaya.

Biringkanaya sub-districts are districts that have the highest number of people in the city of Makassar as many as 332 040 people in 2012. Almost 76.5% or a total of 253 963 people is a productive population. With a population of reproductive age who have worked are residents who move to work. When you see the work location of the productive age population, most of the location is outside the District Biringkanaya or interpreted as commuters who have to work outside the District Biringkanaya. As for the movement of commuters who do work, unwittingly has raised demand for modes of transport used.

Thus, to determine the mode of transport used by commuters to work it needs to be a related study" Analysis of Electoral motorcycle rickshaw and for Microlet

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Commuterline To Travel To Work From Biringkanaya Tamalanrea In Makassar" The selection mode of transport is determined by several factors which the tendency commuters in the traveling work . By identifying and analyzing the factors in the choice of transport modes, will be known the factors that most influence in selecting modes of transport for work trips by residents in the district Biringkanaya Makassar.

THEORETICAL FRAMEWORK FOR THINKING AND HYPOTHESES FORMULATION

Transportation is an attempt to transfer or movement of people and goods from origin to destination locations for specific purposes by using certain modes of transport (Fidel, 1997). Transportation has a very important role in the stages of development of a region. If the transport has been met, then the region can develop due to the availability of means of supporting activities.

Issues that will be examined; namely the travel expenses, income, ownership modes and gender of the modal choice of motorcycle rickshaws and for Microlet Commuterline for a working trip to the city of Makassar. Thus, the theoretical framework in this study can be described as follows:
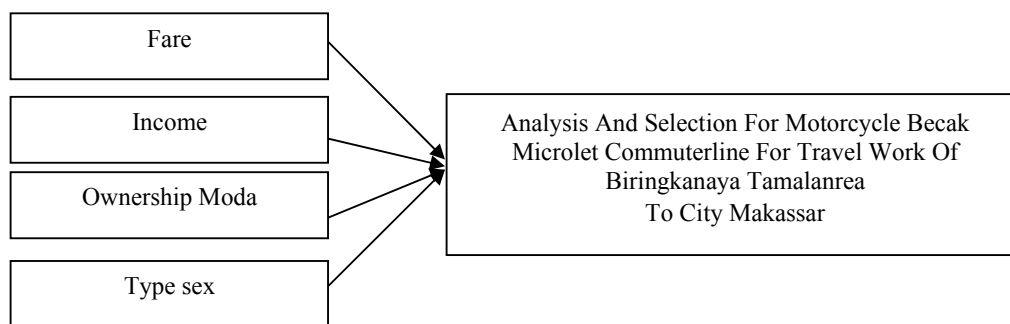

Figure-1. Theoretical framework.

The hypothesis is a temporary answer to a research problem that truth must be tested empirically. This hypothesis can be formulated as follows:

a) The cost of the trip is thought to have a positive influence on the election of Motorcycle Becak And Microlet Commuterline

b) Revenue is thought to have a positive influence on the election of Motorcycle Becak And Microlet Commuterline

c) Ownership mode of thought to have a positive influence on the election of Motorcycle Becak And Microlet Commuterline

d) Gender alleged to have positive influence on the election of Motorcycle Becak And Microlet Commuterline

RESEARCH

Variables research

The dependent variables were used in this study is the modal choice as measured by using a scale dummy. Worth 1 when someone uses a motorcycle from the house to the place of work, value 0 when someone uses the Microlet Commuter line. Meanwhile, the independent variable, namely the travel expenses incurred by comparing the motorcycle rickshaw and for Microlet Commuterline per day. Income respondents in the proxy based on the level of spending during the se - month.

Ownership is measured using a dummy mode, i.e. 0 and 1 does not have a vehicle having a vehicle. Gender measured using a dummy, which is 0 for women and one for men.

Population, sample and how to determine sample

According to Algifari (2003), the population is a collection of all the members of the object studied. The population of this research is resident in the district Biringkanaya productive age (15-64 years) in Makassar city who use the motorcycle rickshaw and for Microlet Commuterline. Furthermore, of all the existing population are not all going to be made respondents in the study, this is because of the limitations of research in terms of time, cost and effort if all the respondents to the study population. Therefore, it is necessary to take a sample that can still be credible and able to represent the population of the way of sampling must be done carefully. This sampling using purposive proportional random sampling, which is taking a subject or a sample in each region with equal or proportional to the number of subjects or samples in each region with their specific goals. Sample required as many as 100 samples. In choosing a sample or respondents in this study based on respondents who use

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the motorcycle rickshaw and for Microlet Commuterline with the purpose of sub-district trip to Makassar city that has aged 15-64.

Types and sources of data

The data used in this study are primary data and secondary data. The primary data sourced from commuters who use the motorcycle rickshaw and for Microlet Commuterline to Makassar city with tools questionnaire that has been prepared in advance. Meanwhile, secondary data obtained from other sources associated with this study of literature, journals, publications, reports and other supporting resources.

Analysis method

The analysis technique used is by using logit (binary logistic regression). Data processing method using a logit aims to analyze how far the model that is used to predict the correct category (group) of a number of individuals. Logit models used in non - metric variables or categorical. Logit model equations in this study are:

$$Li = In(\frac{Pi}{1-Pi}) = \beta o + \beta 1C + \beta 2I + \beta 3Mo + \beta 4G + Ui$$

L_1 = Usage Mode of Transportation, the dependent variable is to use the motorcycle rickshaw and for Microlet Commuterline.

$(\frac{Pi}{1-Pi}$ = Odds Ratio of motorcycle use or KRL

Commuterline.

β_0 = Permanent
β_{1234} = the estimated coefficients
C   = Travel costs, which shows the amount of costs incurred during traveling.
I   = Revenue, which shows the amount of expenditures respondents during se - moon.
Mo   = Ownership Mode, which indicates whether there is a vehicle owned by the respondent (using dummy, worth 0 if it does not have a vehicle and has a value of 1 if the vehicle).
G   = Gender, which shows the use of which is measured in dummy mode (l = male, 0 = female)
u_i = Level error (maximum limit of 5 % error rate)

There are several ways that can be used in testing the model fit, among others:

Likelihood -2log statistics are used to determine if the independent variable is added into the model did significantly improve the model fit. When a decline in the value of the second block -2log likelihood compared to the

first block, it can be concluded that both the regression model for the better. Nagelkerke's R Square is a modification of the coefficient Cox and Snell 's R Square to ensure that its value varies from zero (0) to one (1). Nagelkerke's R Square value can be interpreted as the value of R2 in the multiple regression, where the variability of the dependent variable that can be explained by the independent variables. The closer the figure, the better the results.

Assessment model fit can be done by Hosmer and Lemeshow test, using the hypothesis. If the value of Hosmer and Lemeshow Test is equal to or less than 0.05, the null hypothesis is rejected. That is, there is a significant difference between the predicted classification by classification were observed , so that the Goodness of Fit model is not good because the model can not predict the value of his observations. However, if the value of Hosmer and Lemeshow test statistic is greater than 0.05 then Ho is accepted, meaning that the model is able to predict the value of his observations. To determine the statistical justification for each of the variables tested is to base on Wald - value ratio (X2 - Wald). If the probability is less than the value of α = 0.05, then the observed independent variables significantly influence the dependent variable. Statistical hypothesis (Ho) is rejected if the p - value < or = 5 %.

RESULTS AND DISCUSSIONS

Data analysis

The technique used in this study is the Binary Logistic Regression, using the binomial dependent variable (1 = if using a motorcycle rickshaw r and 0 = if using Microlet Commuterline). Processing of the data used in this study using SPSS version 21. This study uses the factors to be observed and the previously described hypothesis of these factors, among others, the selection of modes that will be affected by the cost of travel (C), income (I), ownership modes (Mo) and gender (G).

A total of 100 respondents were selected to represent the modal choice to do a work trip to the city of Makassar. To prove the hypothesis used binary logistic regression models and will obtain the best results (best fit). Criterion models can best be seen from the statistical justification. Justification statistics obtained from the level of significance of the percentage of correct his prediction. Significance level based on the value wald-ratio to the level of α = 5% (maximum error rate) is considered the best. While the models used to assess the suitability of percentage of correct prediction, the greater the percentage value, it is considered the better provision model chosen. Results of testing this model can be seen in Table-1.

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Table-1. Binary logistic regression test results.

Variabel	Coefisien (p)		Wald-ratio	Sis (p-value)
c		**18.843**	**12,419**	**0,000**
I		17,172	7,596	0,006
Mo		4,683	13,662	0,000
G		3,334	12,022	0,001
Constant		-41,552	12,013	0,001
Chi-square Hosmer and Lemeshow			8.807	0.359
Test				
-2 Log likelihood			Block 0	Block 1
			134.602	45.458
Cox and Snell R Square				0.590
Nagelkerke's R Square				0.759

Chi-square (Hosmer and Lemeshow test) was used to assess the feasibility of a regression model. From the results of tests performed chi-square values obtained for 8807 with a significance level of 0359. If the significance level is greater than 0.05, then Ho is accepted, which means there is no difference between the predicted classification by classification were observed. Therefore, the regression model can be used for further analysis.

To test the overall regression model for the better, then the views of -2Log Likelihood value at the beginning of the block and the second block, the event of impairment -2Log Likelihood in the second block, it was concluded that both these regression models for the better. (Ghozali, 2011). In Table-1, note that the statistical value -2Log Likelihood at the start (Block 0: Beginning Block) worth 134 602 and decrease the likelihood -2Log value (Block 1) to 45 458. It can be concluded that the regression model for the better.

Value Nagelkerke's Square used to look at the variability of the dependent variable that can be explained by the variability of the independent variable. In the above table values obtained Nagelkerke's R Square of 0759, or 75.9 percent, which means the variability of the dependent variable can be explained by the independent variable of 75.9 percent.

Interpretation of results

This study uses the factors to be observed and the previously described hypothesis of these factors, among others, modal choice (Li) which will be influenced by the cost of travel (C), income (I), ownership modes (Mo) and gender (G). The hypothetical results of this study will answer, which is to analyze the factors that affect the modal choice of motorcycle rickshaws and for Microlet Commuterline to Makassar City

In Table-1 showed that the four independent variables were tested using logistic regression techniques, the obtained results of four independent variables are significant and affect the modal choice (Li).

The variable cost of travel by wald statistic value-ratio of 12.419 and the coefficient value of (+) 18.843 and the value of significance at α = 5% level (p-value = 0.000). It is clear that the variable cost of a trip positive and significant impact. The coefficient sign (+) to the value of 18.843 indicates conformity with the results of the study hypothesis. This result explains that the greater the travel expenses incurred by the respondents, the greater the modal choice of motorcycle rickshaws, and vice versa.

Variable income statistics wald-value ratio and the coefficient of 7.596 (+) 17.172 and the value of significance at the level of α = 5% (p-value = 0.006). It is clear that the income variable positive and significant impact. The sign (+) to the value of 17.172 indicates conformity with the results of the study hypothesis.

Ownership variable modes with statistical value wald-ratio 13.662 and coefficient values (+) 4.683 and the value of significance at the level of α = 5% (p-value = 0.000). It is clear those ownership variable modes of positive and significant impact. The coefficient sign (+) to the value of 4.683 indicates that the availability of modes allow someone will use motorcycles to make the journey.

Gender variable with value-ratio 12.022 wald statistic and the coefficient value of (+) 3.334 and the value of significance at the level of α = 5% (p-value = 0.000). It is clear that gender variable positive and significant impact.

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CONCLUSIONS AND SUGGESTIONS

Conclusion

Variable travel costs (C), income (I), ownership modes (Mo) and gender (G) positive and significant impact tehadap modal choice of motorcycle rickshaws and for Microlet Commuterline in District Biringkanaya.

Suggestion

a) On Microlet Commuterline. sebaiknya level of service such as comfort and safety can be addressed and that no timetable should schedule so that no delays occur.

b) Subsequent research, analysis is needed of other factors such as travel time, trip distance, level of service.

c) Alternative options not only motorcycle rickshaw and for Microlet Commuterline alone, but may also be other kinds of vehicles such as cars, buses and public transportation.

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