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2nd ICETD 2013

27, 28, 29 August 2013, Bandar Lampung, Indonesia

PROCEEDINGS

In Cooperations With :

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Hosted by :
Faculty of Engineering and Faculty of Computer Science,
Bandar Lampung University (UBL), Indonesia

2nd ICETD 2013

The Second International Conference On Engineering And Technology Development

28 -30 January 2013
Bandar Lampung University (UBL)
Lampung, Indonesia

PROCEEDINGS

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Jl. Zainal Abidin Pagar Alam No.89 Labuhan Ratu, Bandar Lampung, Indonesia
Phone: +62 721 36 666 25, Fax: +62 721 701 467
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PREFACE

The Activities of the International Conference is in line and very appropriate with the vision and mission of Bandar Lampung University (UBL) to promote training and education as well as research in these areas.

On behalf of the Second International Conference on Engineering and Technology Development (2nd ICETD 2013) organizing committee, we are very pleased with the very good response especially from the keynote speaker and from the participans. It is noteworthy to point out that about 80 technical papers were received for this conference.

The participants of the conference come from many well known universities, among others : University Kebangsaan Malaysia – Malaysia, APTIKOM – Indonesia, Institut Teknologi sepuluh November – Indonesia, Surya Institute – Indonesia, International Islamic University – Malaysia, STMIK Mitra Lampung – lampung, Bandung Institut of Technology – Bandung, Lecture of The Malahayati University, B2TP – BPPT Researcher – lampung, Starch Technology Center – Lampung, Universitas Islam Indonesia – Indonesia, Politeknik Negeri Malang – Malang,University of Kitakyushu – Japan, Gadjah Mada University – Indonesia, Universitas Malahayati – Lampung, Lampung University – lampung, Starch Technology Center – Lampung, Universitas Riau – Riau, Hasanuddin University – Indonesia, Diponegoro University – Indonesia, King Abdulaziz University – Saudi Arabia, Parahyangan Catholic University – Indonesia , National Taiwan University– Taiwan, Surakarta Christian University – Indonesia, Sugijapranata Catholic University – Indonesia, Semarang University – Indonesia, University of Brawijaya – Indonesia, PPKIA Tarakanita Rahmawati – Indonesia, Kyushu University, Fukuoka – Japan, Science and Technology Beijing – China, Institut Teknologi Sepuluh Nopember – Surabaya, Researcher of Starch Technology Center, Universitas Muhammadiyah Metro – Metro, National University of Malaysia – Malaysia.

I would like to express my deepest gratitude to the International Advisory Board members, sponsor and also to all keynote speakers and all participants. I am also gratefull to all organizing committee and all of the reviewers who contribute to the high standard of the conference. Also I would like to express my deepest gratitude to the Rector of Bandar Lampung University (UBL) who give us endless support to these activities, so that the conference can be administrated on time

Bandar Lampung, 29 August 2013-08-26

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COMPARATIVE ANALYSIS OF LOAD FACTOR METHOD STATIC AND DYNAMIC METHOD (CASE STUDY AKDP BUS ROUTE RAJABASA - BAKAUHENI)

Ir. A. Ikhsan Karim, MT., Ahmad Zulkily
Master of Civil Engineering, Graduate School, University of Bandar Lampung, Jl. Zaenal Abidin Pagar Alam 26 Bandar Lampung, 35142, Indonesia

Abstract-*Along with the increasing mobility of the population, then the users are demanding the availability of inter-city transportation are eligible smoothness, comfort and safety. It is also worth noting that the operator provides services angkutan.Operator certainly will not be able to serve well if not achieving the target of economic benefits. This is closely connected with the passenger load factor on a given route. To get a load factor (load factor) are known methods of static and dynamic methods. Each of these methods have shortcomings and kelebihannya.Trayek Rajabasa - Bakauheni AKDP bus served an important tool in making the transportation of passengers from Sumatra towards Java. So for performance that will be investigated how the operator is indicated by factors muatnya.Penelitian intends to see bus load factors, by comparing the static method with dynamic survey methods on the route that serve transportation between cities in the province that connects the city of Bandar Lampung in the South Lampung is also the gateway to the island Jawa.Dari analysis and calculations obtained by the method of static load factor LF values obtained Sunday morning at 45.33%, while the evening LF obtained a value of 24.44%. LF Monday morning at 39.11%, while the LF night obtained a value of 35.11%. From the analysis and calculation of Dynamic Methods for directions Rajabasa - Bakauheni obtained Load Factor on Sunday morning at 57.09%, while the evening LF obtained a value of 31.70%. LF Monday morning at 55.98%, while the LF night obtained a value of 46.98%. For directions Bakauheni - Rajabasa obtained Load Factor on Sunday morning at 63.31%, while the evening LF obtained a value of 36.35%. LF Monday morning at 61.50%, while the LF night obtained a value of 53.95%. Regression analysis of the results obtained equations that represent relationships Static and Dynamic Load Factor direction Rajabasa - Bakauheni is: y = -3.859 + 3.955 x x2 - 0.422, the value of coefficient of determination, R^2 = 0,972. As for the direction of Bakauheni - Rajabasa equation: y = -4.677 + 4.585 x x2 - .479, with a value of R^2 = 0.988*
Keywords: *Bus AKDP, Survey Static, Dynamic Survey (Survey on the bus)*

INTRODUCTION

In the human history of the development of the city we can see that people are always eager to travel from one place to another in order to obtain the required purposes. In this case the people need of a means of transport is called transportation mode.

The need for transportion from time to time increased due to the increasing number of activities that require the services trnsportasi thus so does the intensity of inter-city traffic movement.

Performance of the public transport services can be viewed from an operation effectiveness and efficiency of public transport. Effective assessment criteria are usually given to efficient transport modes, while the criteria given to passengers aspects. In terms of effectiveness can be seen with the indicator of accessibility (ease of users to achieve these vehicles), density (number of vehicles or the length of the route), average travel speed - average frequency and headway. In terms of efficiency seen from indicators of affordability, feasibility, utility, operating rate, load factor (passenger load factor) and the age of the vehicle.

Along with the increasing mobility of the population, then the users are demanding the availability of inter-city transportation are eligible smoothness, comfort and safety. It is also worth noting that the operators provide transport services.
Operator certainly will not be able to serve well if not achieving the target of economic benefits. This is closely connected with the passenger load factor on a given route.

Operator certainly will not be able to serve well if not achieving the target of economic benefits. This is closely connected with the passenger load factor on a given route.

Route Rajabasa - Bakauheni intercity bus served an important tool in making the transportation of passengers from Sumatra towards Java. So for performance that will be investigated how the operator is indicated by muatnya factors.

LITERATURE REVIEW

1. Transportation systems

Transportation system consisting of transit cargo (freight) and transportation management to manage (Salim, 1993: 8).

a. Freight transportation
   The system used to transport goods by using certain conveyances called modes of transportation. In the use of transportation consists of 3 (three) modes that can be used, namely:
   1. Transportation through the land (rail, bus, truck, ferry, etc.);
   2. Transportation through the water (sea ship, boat, etc.);
   3. Transportation by air (plane).

b. Management of transportation system consists of 2 (two) categories, namely:

1. Marketing and Sales Management Freight;
2. Marketing Management is responsible for the operation and exploitation in the field of transport, and as part of the company's attempt to seek subscriptions for the progress of the company as much as possible.
3. Traffic and Transport Management.
   Freight traffic management is responsible for managing the provision of transport services that

transport cargo, conveyance, and the costs of operating a vehicle (Salim,1993: 8).

2. Definition of Traffic and Transportation

Traffic is passing activity or movement of vehicles, people, or animals on the streets (Warpani, 1990). Problems encountered in perlalulintasan is a balance between the capacity of the road network with the number of vehicles and people passing by using the road. If the capacity of the road network is almost saturated, let alone exceeded, then there is a traffic jam. Transport (transport) are the activities of the movement of people and goods from one place (origin) to another (destination) by means of (vehicle) (Warpani, 1990)

2. Definition of Public Transport

Public transport passengers are transit passengers carried on a lease or pay (Ahmad Munawar, 2001). Transportation generally divided into three categories play, namely the Inter-City Transport, Urban Transport and Rural Transport.

Inter-city transport is divided into two, namely Transport Inter City Inter Province (AKAP), the public transportation service between cities that transcend provincial administrative boundaries, and the Inter-City Transport in the province (Descending), the public transportation service between cities in the administrative area of the province . Mass public transport in cities in Indonesia are generally serviced by buses and small buses, while large buses serve only public transportation in major cities; remaining, large buses serve intercity transportation between provinces. Of the 10 metropolitan areas only 7 cities that use large capacity vehicle (big bus and medium bus), while the remainder is dominated by small-capacity vehicles.

It is estimated by 2020 there will be 15 cities in Indonesia with a population of over 1,000,000 inhabitants. In addition, a change in society's values and behaviors that improve mobility, which in turn requires transportation service with a level of safety, security, speed, smoothness, and greater comfort, greater variety, and larger capacity.

The essence of the forecast city of more than one soul we can manage transportation. Population growth in the region / province will take effect on the amount of the required transportation services (trade, agriculture, industry).As a means of transportation and infrastructure to meet the needs of transport services should be coupled with the development of programs to meet those needs.

Urban areas with a population of one million or more already should have a public passenger transport service or mass transportation. Urban management needs to improve efficiency in the use of urban infrastructure that relies on the existence of public transport mobility. They are people who have no choice but to use public transport. Operation of the mass transit system is one way to accommodate the interests of the mobility of the population, especially in urban areas or cities with a population over one million.

The existence of public transport, especially the nature of mass, mean reduction in the number of vehicles passing on the road. It is very important pertaining to traffic control. The need for increased transport infrastructure development without coupled loads resulted planned arterial

and collector roads become increasingly accommodated. Because of its mass, then the passenger should have similarities in many ways the origin, destination, track, and time. The similarities in turn raises a question of balance between supply and demand.

Public transport services will run properly if it can create a balance between supply and demand. An effort is difficult (perhaps even less likely) the criterion is met if the demand during busy or peak periods. The uncertainty caused by the movement patterns of uneven population over time, such as during peak hours of high demand, and when the off peak hours of low demand. In this connection it should government intervene with the aim, among others:

a. Ensure a safe operating system for the benefit of the user community transport services, freight management officers, and businessmen freight services;
b. Directed that the environment is not too bothered by transport activities;
c. Assist the development of national and regional development and to improve the transportation service;
d. Ensure equitable distribution of transport services so that there is no injured party;
e. Control the operation of transport services

Service Type Public Transportation Road Transportation of people with common road vehicle is done by using a bus or passenger car. Transport of persons served by public transportation:

1. Fixed routes and regular; transport service that is performed in a route network with a regular fixed schedule or not scheduled for the transportation service by public transport and in certain fixed routes, carried out in the route network
2. Non fix routes; transporting people with no public transport in the route consists of:
    a. Transportation by taxi.
    b. Transport by way of lease.
    c. Transport for tourist purposes.

For the transportation service by public transport in fixed routes and regular, set in route network. Route network include:

a. Route inter-city inter-provincial routes, through which more than one region of the Province, has the characteristics of services as follows:
    1) Have a fixed schedule.
    2) The service is fast.
    3) Served by public bus car.
    4) Availability at type A passenger terminal, in the early departure.
    5) Infrastructure of the courses comply with the class.

b. Route between cities in the province through the inter-regional routes, Level II in the territory of the Province, held by an unlikely candidate for the following services:
    1) Have a fixed schedule.
    2) The service is fast and / or slow.
    3) Car serviced by public bus.
    4) Availability of terminal type B at least, at the beginning of departure, transit and destination terminals
    5) Of the road infrastructure to comply with the class.

c. City routes is entirely within one municipality Regional Level II or routes in Jakarta Capital Region Otority.

Network of public services in urban roads stretch are classified into four kinds, namely:

1. direct route

Route directly held by the characteristics of service as follows:

a. Have a fixed schedule.
b. Serve the transportation between regions that are mass regularly and directly.
c. Served by public bus.
d. Fast service.
e. Short distances.
f. Through the places assigned only to raise and lower the passenger

2..The main routes

The main route was organized with the characteristics of service as follows:

a. Have a fixed schedule.
b. Serve the transportation between major regions, between regions and supporting the main characteristics of the shuttle to travel regularly to the nature of mass transportation.
c. Car serviced by public bus.
d. The service is fast and / or slow.
e. Short distances.
f. Through the places that have been established to raise and lower the passenger.

3. route branch

Route branch was organized with the characteristics of service as follows:

a. Have a fixed schedule.
b. Serve inter-regional transit advocates, supporters and the area between residential areas.
c. Served by public bus car.
d. The service is fast and / or slow.
e. Short distances.
f. Through the places that have been established to raise and lower the passenger.Trayek ranting

4. Route sub branch was organized with the following characteristics:

a. Serving transport in residential areas.
b. Served by public bus car and / or public transportation.
c. Slow service.
d. Short distances.

5. Rural stretch that stretch, all located in one area of The District, held by the characteristics of the following services:

a. Have a fixed schedule and / or non-scheduled.
b. Slow service.
c. Dilayanioleh public bus car and / or public transportation.
d. The availability of the passenger terminal at least type C, in early pemberngkatan and destination terminals.
e. Of the road infrastructure to comply with the class.

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6. Stretch across national borders that stretch through the state border, has the characteristics of services as follows:

a. Have a fixed time tables.
b. Fast service.
c. Served by public car.
d. The availability of the passenger terminal type A, at the beginning of departure, transit and destination terminals.
e. Of the road infrastructure to comply with the class.

RESEARCH METHODOLOGY

1. Data Collection

Data will be collected at the place where the survey was conducted. Data - the data consists of:

• Primary Data

data obtained directly by observing and recording in the field as well as interviews with the - certain parties to be able to support the accuracy of the results of this analysis.

• Secondary Data

This data is obtained indirectly through the document. For example, data obtained from the Organda and DLLAJ associated with this analysis.

2. Data Analysis

Further primary data and secondary data that have been obtained will be analyzed by comparing the data from static and dynamic survey using a formula - the formula contained in the literature until the obtained values - values or parameters are defined as presented in tabular form. Value - the value or parameter is included in the conclusions of this research by comparing with the existing standard.

DATA AND ANALYSIS

1. Average number of Trips Per day

Based on data obtained from the Department of Transportation Lampung Province, in 1 (one) day average passenger transport needs can be catered for 21.14 trips during the day (at 8:00 a.m. to 18:00) and 7.9 trips at night, ie between the hours of 18:00 up to 08:00.

For the average trips per day for 24 hours is equal to 8.43 rit. This calculation can be seen in Table 1.

Table 1. Average number of Rit Per day

HARI	JUMLAH RIT	
	Pagi (8.30 - 18.00)	Malam (18.30 - 08.00)
Senin	20	9
Selasa	20	7
Rabu	20	6
Kamis	20	7
Jumat	24	6
Sabtu	20	7
Minggu	24	9
Rata-rata	21,14	7,29
Jumlah	28,43	

From the data obtained, Sunday and Monday had the highest number of trips, so the Sunday and Monday were sampled to analyze the load factor.

2. Load Factor Analysis

Passenger load factor shows comfort in traveling. Here is the definition of load factor load factor, if we conduct a review of public transport between cities. In a study of public transport between cities where passenger numbers are fixed along the route, then the definition of load factor is the number of passengers carried in one rit divided by payload capacity.

3. Statics Survey Method

Static survey conducted within the terminal, in order to obtain performance data transport bus that includes the amount of vehicles that operate in a single day. Data were successfully obtained a police bus number, bus name, type of service (AC / Economics), time of departure and number of passengers carried when leaving from the terminal, either from Rajabasa terminal, or from a terminal Bakauheni.

CONCLUSION

Obtained from the analysis and calculation methods of static load factor with values obtained LF Sunday morning at 45.33%, while the evening LF obtained a value of 24.44%. LF Monday morning at 39.11%, while the LF night obtained a value of 35.11%.

From the analysis and calculation of Dynamic Methods for directions Rajabasa - Bakauheni obtained Load Factor on Sunday morning at 57.09%, while the evening LF obtained a value of 31.70%. LF Monday morning at 55.98%, while the LF night obtained a value of 46.98%.

For directions Bakauheni - Rajabasa obtained Load Factor on Sunday morning at 63.31%, while the evening LF obtained a value of 36.35%. LF Monday morning at 61.50%, while the LF night obtained a value of 53.95%.

Dynamic Load Factor remained above the value of Static Load Factor. This is due to the static method can not be calculated passengers up or down beyond the point of showing the results pengamatan.serta Load Factor value is always higher in the morning which is above the value of Load Factor night.

Regression analysis of the results obtained from the equation that represents the relationship Static and Dynamic Load Factor direction Rajabasa - Bakauheni is: y = -3.859 + 3.955 x x2 - 0.422, the value of coefficient of determination, R^2 = 0,972. As for the direction of Bakauheni - Rajabasa equation: y = -4.677 + 4.585 x x2 - .479, with a value of R^2 = 0.988

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