

# Analysis of Vehicle Volume Projection and Manager Revenue from the Existence of Balikpapan Samarinda Toll Road Infrastructure Development

Revy Fadly Robby Rachmadi<sup>1</sup>, Rian Hilmawan<sup>2</sup>✉

<sup>1</sup>Universitas Mulawarman, Samarinda, Indonesia.

<sup>2</sup>Universitas Mulawarman, Samarinda, Indonesia.

✉Corresponding author: rian.hilmawan@feb.unmul.ac.id

## Abstract

This study aims to determine the volume of vehicles (based on their groups) and the receipt of managers from the existence of the Balikpapan Samarinda Toll Road infrastructure development, then project and analyze the volume of vehicles and the receipt of managers (according to their groups) within the next one year that cross the Balikpapan Samarinda Toll Road. This study uses secondary data obtained from the Balikpapan Samarinda Toll Road manager, namely PT. Jasa Marga Balikpapan Samarinda. The method used to project is Forecasting with Autoregressive (AR) and Moving Average (MA) regression models and processed using Eviews 12 software. The results of this study show that the volume of vehicles and the receipt of managers (based on their groups) that cross the Balikpapan Samarinda Toll Road after its operation shows fluctuating results with group I dominating with the highest volume of vehicles among groups II-V. Then, the results of the projection of vehicle volume (based on the group) in the next one year show an increasing trend with an average increase in percentage of each group, namely Group I of 50% or 42,078 units, Group II of 64% or 5,465 units, Group III of 51% or 1,478 units, Group IV of 81% or 229 units, Group V of 78% or 763 units. Meanwhile, the projected results of managerial revenues also show an increasing trend from January to December 2023 with an average increase in percentage of 39% and an amount in rupiah of IDR 3,096,815,146.00. For a complete explanation, you can read more.

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## 1. Introduction

The economic development of a region/city requires sufficient and adequate transportation services (Sani, 2013). Without transportation as a means of support, it is not possible to achieve satisfactory results in the efforts of a country's economic development. The need for transportation services or also called transportation is a derivative need (derived demand) as a result of economic, social, and other activities (Siburian & Giovanni, 2016). Transportation has an important role in economic development, because it is related to the distribution of goods, services, and labor, and is the core of economic movements in cities. The activity of transportation is moving goods (commodity of goods) and passengers from one place (origin or port of call) to other places (part of destination). The availability of transportation services is positively correlated with economic activities and development in society.

Toll road infrastructure in a region or region can be a benchmark for development progress both macro and micro. Toll roads can also make it easier for a country or region to meet an advanced and dynamic civilization. If the community can easily mobilize, then the economy will easily develop.

East Kalimantan, which is one of the Kalimantan Island Economic Corridor areas, participates in realizing these ideals in the form of improving the transportation system. The construction of the Balikpapan - Samarinda Toll Road is a form of embodiment of the Master Plan (MP3EI). Therefore, the presence of the Balikpapan - Samarinda Toll Road is felt to be able to support the economic activities of the people of East Kalimantan in particular and the government's development program in general.

Connectivity for the delivery of people or goods to Balikpapan from Samarinda or other areas such as Bontang, Tenggarong and other cities, must go through the Soekarno-Hatta road with a distance of 108.6 km and a travel time of 2.5 hours if it is smooth and 3 hours if it is congested. The route, which is dominated by winding roads, makes the risk of travel very high. This makes transportation costs high as well. However, with the existence of this toll road, of course, it will cut the distance and travel time and minimize travel risks, so it will become a stimulant point for economic activities (Neswari, 2012). Of course, through the toll road will be charged quite high. However, if divided by the number of people/goods transported, it is very efficient.

The purpose of this study is to find out the Analysis of Vehicle Volume Projection and Manager Revenue from the Existence of Balikpapan Samarinda Toll Road Infrastructure Development.

## 2. Method

### 2.1. Research Approach

This research is a descriptive quantitative research, which is a research method where it is used to research a certain population or sample, data collection using research instruments, statistical data analysis, determined to test hypotheses that have been applied. The data used in this review is secondary data in the form of vehicle volume data (based on group) and manager receipts from January 2021 to December 2022.

### 2.2. Data Collection Methods

The data collection technique in this study is to conduct a document study, namely submitting a request for data in the form of a document (soft file sent to the researcher).

### 2.3. Analysis Tools

The analysis tools used in this study are descriptive analysis to find out how much vehicle volume (based on group) and manager acceptance, as well as forecasting analysis with the Autoregressive Moving Average (ARMA) regression model processed using Eviews 12.

### 3. Results and Discussion

**Table 1. Average Daily Volume of Vehicles on the Balikpapan Samarinda Toll Road January to December 2021-2022 (Units)**

Moon	Year						Golongan
		I	II	III	IV	V	
January	2021	3099	291	114	9	16	
February		2383	246	113	10	13	
Maret		3063	208	94	2	10	
April		3192	200	85	1	14	
From		3413	161	75	1	7	
June		3664	213	83	1	11	
July		1920	176	78	6	13	
Agustus		3434	274	107	11	20	
September		5856	469	166	23	46	
October		3382	231	81	10	28	
November		3672	137	75	5	10	
December		4672	257	114	11	21	
January	2022	6546	493	182	21	54	
February		5367	555	213	19	51	
Maret		6128	559	201	18	54	
April		5743	627	245	20	70	
From		9016	504	170	18	58	
June		7616	726	222	25	71	
July		7989	676	240	20	94	
Agustus		6890	798	255	25	124	
September		6891	849	270	24	87	
October		6464	872	293	29	103	
November		6839	868	273	23	96	
December		7956	948	303	30	110	

Source : Jasa Marga Balikpapan-Samarinda

**Table 1. Average Daily Manager Receipts from January to December 2021**

Moon	Year	Revenue ( million rupiah)
January	2021	293.809.774
February		208.755.968
Maret		277.656.4488
April		275.722.035
From		291.354.255
June		310.832.657
July		182.174.990
Agustus		242.644.316
September		472.535.774
October		332.799.210
November		310.786.123
December		398.473.343
January	2022	607.428.480
February		516.597.275
Maret		579.454.800
April		558.224.775
From		813.068.330
June		720.988.300
July		750.876.845
Agustus		673.699.460
September		676.113.855
October		646.142.055
November		674.282.245
December		778.184.485

Source: Jasa Marga Balikpapan-Samarinda

The results of the research for the formulation of this first problem use descriptive data analysis techniques by calculating the mean, variance, and standard deviation. Based on the research that has been carried out, it can be known that the volume of vehicles crossing the Balikpapan - Samarinda Toll Road is 1,270,717 units. The results of the study used descriptive data analysis techniques by calculating mean, variance, and standard deviation. In addition, the volume of vehicles on the Balikpapan - Samarinda Toll Road shows a fluctuating nature from January to December 2021 in all vehicle classes. Based on the manager's revenue table, it can be seen that the manager's revenue, namely Jasa Marga Balikpapan-Samarinda, from January to December 2021 has increased or decreased or is called fluctuating.

The results of the research for the formulation of the second problem based on the results of forecasting research on the average daily volume of vehicles on the Balikpapan-Samarinda Toll Road using the AR and MA methods with the help of Eviews 12 showed an increase.

The results of the research for the formulation of the third problem are based on the results of forecasting research on the Balikpapan-Samarinda Toll Road Management Receipts using the AR and MA methods with the help of Eviews 12 showing an increase. Due to the limitations of researchers in obtaining data from PT Jasa Marga Balikpapan Samarinda and the Balikpapan Samarinda Toll Road which is also newly operational, the acceptance of this manager cannot be based on groups but all groups are sorted by month. Researchers from the beginning wanted to accept managers based on groups in order to know which groups contributed the most in terms of manager receipts from groups I to V. But when conducting the research, I also talked with Mr. Ison as the Operational Manager of the Balikpapan Samarinda Toll Road who said that Groups II - V each contributed more to the revenue of managers than group I. The average daily volume of vehicles is still dominated by group I.

#### 4. Conclusion

Based on the results of the research and discussion that has been carried out in the previous chapter, the conclusions obtained in this study can be drawn as follows: The average Daily Vehicle Volume of Group I - V after its operation which crosses the Balikpapan Samarinda Toll Road is dominated by group I, namely private cars and also Pick Up. The average daily vehicle volume of Groups I - V that cross the Balikpapan Samarinda Toll Road after being predicted to show an increasing trend in the next year with an average increase in percentage of each group is Group I of 34% or 3,506 units, Group II of 21% or 458 units, Group III of 60% or 123 units, Group IV of 73% or 20 units, Group V is 73% or 64 units. The average Daily Management Revenue of Group I - V of the Balikpapan Samarinda Toll Road after being predicted to show an increasing trend in the next year with an average increase in percentage is 11% and an amount in rupiah of Rp 258,118,345.

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