

Analysis Study Proportion for Need of Labour Component on Road Development Project in Indonesia

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Research Paper

Analysis Study Proportion for Need of Labour Component on Road Development Project in Indonesia

R. Arifuddin¹, A. F. C. Putri², and I. R. Rahim³

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ABSTRACT

Infrastructure development in Indonesia continues to develop very rapidly, this development has an effect on increasing the needs of elements related to infrastructure development, one of which is manpower, need to be careful planning in the use of the number of workers according to the needs of construction activities. The research aims to model the relationship between the volume of work and the needs of workers, builders, and the number of mandors on road construction projects. The data processing on this study uses the help of Microsoft Excel programs and SPSS version 22. Data analysis techniques use simple and multiple linear regression analyses, normality tests, and correlation tests. The result of a simple regression analysis shows the influence of the number of workers, the number of foreman, and the number of successive builders of the volume of work is 15.25%, 16.31%, and 16.4%. And the results of multiple regression analysis show every improvement of the variable number of workers, the number of handyman and the number of Foreman will be followed by increased volume of work on the road construction project. Result of the results from this research can be used related government to be able to predict the number of construction workers needed to build a number of KM road.

1. Introduction

Infrastructure development in Indonesia continues to develop very rapidly, this development has an effect on increasing the needs of elements related to infrastructure development, one of which is Labor (Tamin, 2005). Manpower is one of the most decisive aspects of success in implementing the project, which is required to work efficiently, i.e. it can work effectively according to the number of working hours and can produce the volume of work in accordance with the job description.

Discussing the problem of human resources, this is closely related to the matter of the assessment and quantity. The problem of a limited number of workers can occur due to the execution time performed simultaneously.

For example, in a span of 2 specific time simultaneously there are two or more jobs that require skilled workers with the same skills. The contractor can increase the amount of labor but what happens is the addition of costs to the wages of workers. This is, of course, not desirable by the project owner, so there needs to be careful planning in the use of the number of workers according to the needs of construction activities.

From the background of the problem, it is necessary that a study capable of providing an overview of the influence of the proportion of labor on a construction project, which can be used as one component to predict the calculation of the right proportion for road construction, this is what the

¹ Lecturer, Department of Civil Engineering, Hasanuddin University, Makassar, r_arifuddin@yahoo.com

² Graduate Student, Department of Civil Engineering, Hasanuddin University, Makassar, aimifajirah@yahoo.ac.id

³ Lecturer, Department of Environmental Engineering, Hasanuddin University, Makassar, irwanrr@unhas.ac.id
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author took the research with the title of "STUDY of PROPORTION ANALYSIS FOR the NEED of LABOR COMPONENT ON ROAD DEVELOPMENT PROJECT IN INDONESIA".

2. Review of The Library

2.1 Construction projects

Project activity can be interpreted as a temporary activity that lasts for a limited period of time, with the allocation of certain resources and intended to produce products or deliverables whose quality criteria have been outlined clearly, (the Faith of Suharto, 1999).

Construction projects have unique characteristics that are not repeated in other projects. This is due to conditions affecting the process of a construction project differently from each other. For example, natural conditions such as geographical location, rain, earthquake and soil condition are factors that also affect the uniqueness of construction project (Wulfram, 2004).

2.2 Road Construction

According to UU No. 38 tahun 2004 on road defining roads is a land transportation infrastructure covering all parts of the road, including complementary buildings and equipment for traffic, which is on the ground level, above ground, below ground and/or water, as well as on the surface of the water, except railway, truck Road, and Cable road.

2.3 Labor

According to Suharto (1995) that to organize the project, one of the resources that became the deciding factor of success is labor. Estimate the amount of manpower required, that is by convert the scope of the project from the number of hours-people to a number of jobs. Theoretically, the average need for a workforce can be calculated from the total work scope of the project expressed in hours-person or month-person (man-month) divided by the period of implementation.

3. Research Methods

In the project data analyzed is the road development project in Indonesia, where the work items consist of public works, drainage work, earthwork, grain pavement, asphalt work, and structural works. So it can be said that the data of road building projects used in this research is a similar project data name from the similarity of the work item.

Research conducted in Makassar City, South Sulawesi by analyzing Contract Documents of 10 road construction projects from the Ministry of Public Housing and people's housing to obtain a proportion of the number of workers in road construction projects.

Based on the library studies that have been done before variables are tied and the free variables used in this research can be seen in the following table

Variabel terikat	Variabel bebas	Symbol
Volume pekerjaan (Y)	Jumlah Pekerja	X1
	Jumlah Tukang	X2
	Jumlah Mandor	X3

Table 1. Variable Research

Here are the stages in the study:

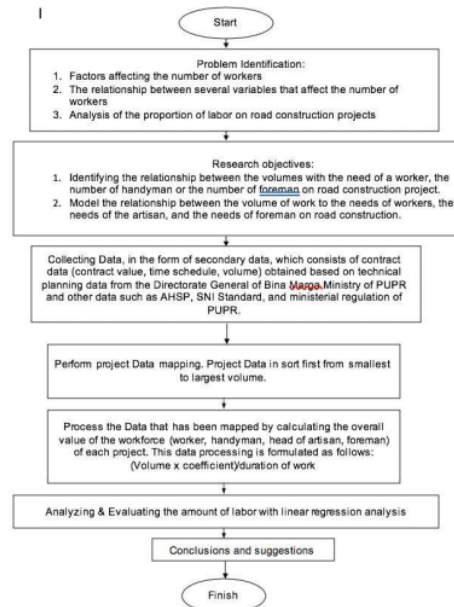


Fig 1. Research flows

4. Results and Discussion

4.1 Research Data

Data collection is done by analyzing the number of workers in the implementation of the road construction projects in particular on the number of field workers, the data on this road project obtained from the Directorate General of the PUPR Ministry. Data collection is conducted by analyzing several documents including,

No	Data needs	Source
1.	Budget plan	Project Report Document
2.	Job Volume	Project Report Document
2.	List of wage price analysis	Project Report Document
3.	Job Unit Price Analysis	Project Report Document
4.	Project Contract Value	Document contracts
5.	Implementation method	Project Report Document

Table 2. Data and Sourcing needs

The variable regression coefficient of the amount of 0.00502728 foreman (X3) means that when the number of mandors is increased by 1 unit, the volume of work has also increased by 0.00502728 units. Coefficient of positive value means there is a direct connection between the number of workers and the volume of work. This indicates that any increase in the number of workers, will be followed by increased volume of work.

5. Conclusions and suggestions

5.1 Conclusions

Based on the results of data analysis and the discussion obtained the following conclusions:

1. Results of analysis with simple regression analysis on each road construction project, resulting in the value of R square that can explain the influence of the number of workers, the number of the worker or the amount of foreman to the volume Where:

- The influence of the number of workers to work volume 15.25%
- Influence of the number of handyman to the volume of work 16.31%
- Influence of the number of mandors on the volume of work 16.4%

2. Analysis results with multiple regression analysis where,

$$Y = \text{Job Volume}$$

$$X1 = \text{number of workers}$$

$$X2 = \text{number of handyman}$$

$$X3 = \text{number of mandors}$$

Produced the following mathematical models,

$$Y = 0.002747414 X1 + 0.03168928 X2 + 0.00502728 X3$$

From the mathematical models above can be concluded that, if the number of workers, the number of the artisan, and the number of the mandor is increased by 1 unit, then the volume of work will also increase the amount of the coefficient owned by each variable based on the result of the above modelling.

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