

Analysis of Project Manager Involvement in Project Implementation Planning Viewed from the Field of Knowledge Project Management Body of Knowledge (PMBOK)

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ABSTRACT. Incorrect planning is the main reason for project failure, whereas good planning can increase the likelihood of project success. For that, we have to identify the involvement of the project manager in construction planning through the intensity of his efforts in Project Management Body of Knowledge areas. This research activity was carried out by distributing questionnaires to project managers in contractor companies with construction experience from 1997 to 2003, tabulated with SPSS version 11 software with results in the form of correlation analysis, inter-correlation, factor analysis, regression, model and validation. The conclusion of this study is that the variable of project manager involvement in construction planning in Project Management Body Of Knowledge areas has a major contribution to project cost performance such as Project Scope Planning, Cost Estimating, and Source Selection, In the other hand it's also has a major contribution in project time performance such as project execution plans and activity duration estimating, and the correlation variable of project manager involvement in construction planning in PMBOK areas is Linear Regression.

Keywords: *Project Manager, Project Management Body of Knowledge areas, Linear Regression.*

1. INTRODUCTION

Organization and management in the construction stage play an important role in achieving quality in construction [Loc. cit. ASCE,"Quality in the Constructed Project, p.98]. The Project Manager is responsible for the planning process of all stages of the project. He and his group will be assisted during the construction phase including the planning stage {Austen, A.D., Neale R.H. Maulana A.," Memanajemen Proyek Konstruksi", NV.IPPM,1991, hal.48].

The ability to plan is very important for management success. A project plan is a guideline that directs from the start to achieving the final result of a project. Effective project planning requires more specialized skills than just documenting schedules and costs. The required capabilities are communication and information processing skills to determine the resource requirements and administrative support required. Effective planning also requires the ability to negotiate the necessary resources [Kerzner, H., Project Management," A System Approach to Planning, Scheduling, and Controlling", Jphn

Wiley&Sons, 6th edition, 1998, p.173].

Effective planning includes the project manager responsible for planning and management of the project planning process [Laufer, A.,"Essential of Project Planning", Journal of Management & engineering, ASCE, Vol. 6 No. 2, 1990, p.174]. Central to all activities that a project manager must be able to carry out is project planning. By arranging specific and practical planning and measurement of project progress should be provided by him. Without the application of this planning, the bad things that will happen will not be able to take corrective action. This in turn will complicate the project implementation conditions.

Based on the aforementioned problems, there is a relationship between the involvement of the project manager in the project implementation planning and the project performance which is linked by a measurable parameter. Thus it can be formulated that, "to find out the involvement of the project manager in the project implementation planning effort, which in this case is seen from the Project Management Body of Knowledge

(PMBOK) knowledge areas on project performance, it is necessary to examine the involvement of the project manager, to measure the relationship and influence on performance project".

2. METHODS

The method used in this research is descriptive-analytical, that is, from each project sample that was followed by the project manager

during the 1997-2003 monetary crisis, as the resource person for the project sample. With this method, the research is carried out quantitatively and qualitatively and it is hoped that accurate data will be obtained about how much involvement of the project manager is in the project implementation when viewed from the PMBOK knowledge area and its influences.

The mathematical model used;

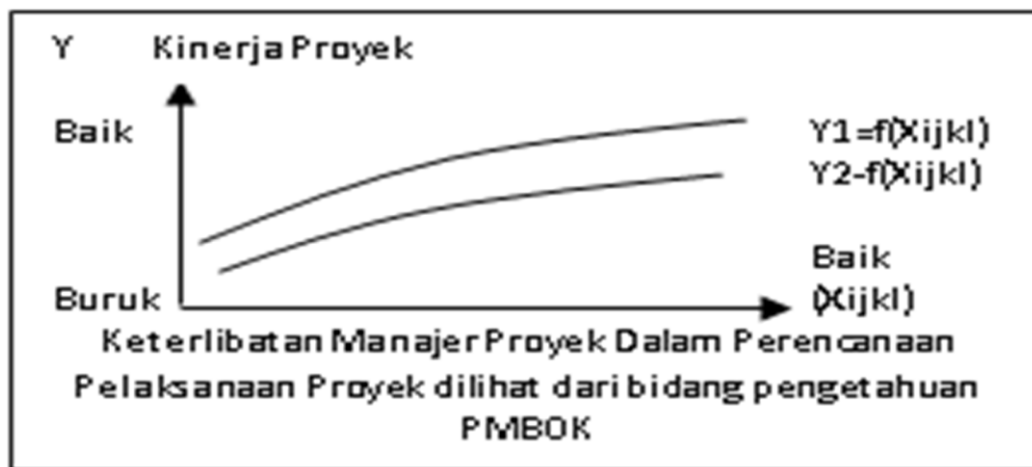


FIGURE 1. the mathematical model of the relationship between project implementation from point of view of PMBOK knowledge area.

From the mathematical model, the project performance (Y) consists of; (Y1) for project cost performance and (Y2) for project time performance, it is expected to increase or increase in line with the increasing involvement of the project manager in project implementation planning in PMBOK knowledge area (X), and mathematically it can be written as the following equation: $Y = f(X_{ijkl})$, where, (1) Y = Project performance (in terms of cost and time), (2) X = Project manager involvement in project implementation planning seen from PMBOK knowledge area, (3) i = Variable type, (4) X_{ij} = Individual I (type of independent variable i) from sample j, (5) i = Type of project planning variable in PMBOK knowledge area, (6) j = Project sample from respondent (Project Manager), (7) i, k = Type the i variable which is related to the k, (8) j, l = the j sample project which is related to the l.

From the mathematical model, the following will describe the types of independent and dependent variables from the involvement of the project manager in the project implementation planning seen from the PMBOK knowledge area

with reference to PMBOK from the 2000 edition of the Project Management Institute (PMI), namely;

TABLE 1. Independent Variable Of Knowledge Area Project Integration Management

Knowledge Area	No. Variable	Scale
Project Development	(X1)	1-5
Project Execution Plan	(X2)	1-5
Integrated Change Control	(X3)	1-5

TABLE 2. Independent Variable Of Knowledge Area Project Scope Management

Knowledge Area	No. Variable	Scale
Initiation	(X4)	1-5
Scope Planning	(X5)	1-5
Scope Definition	(X6)	1-5
Scope Verification	(X7)	1-5
Scope Change Control	(X8)	1-5

TABLE 3. Independent Variable Of Knowledge Area Project Time Management

Knowledge Area	No. Variable	Scale
Activity Definition	(X9)	1-5
Activity Sequencing	(X10)	1-5
Activity Duration Estimating	(X11)	1-5

Schedule Development	(X12)	1-5
Schedule Control	(X13)	1-5

TABLE 4. Independent Variable Of Knowledge Area
Project Cost Management

Knowledge Area	No. Variable	Scale
Resource Planning	(X14)	1-5
Cost Estimating	(X15)	1-5
Cost Budgeting	(X16)	1-5
Cost Control	(X17)	1-5

TABLE 5. Independent Variable Of Knowledge Area
Project Quality Management

Knowledge Area	No. Variable	Scale
Quality Planning	(X18)	1-5
Quality Assurance	(X19)	1-5
Quality Control	(X20)	1-5

TABLE 6. Independent Variable Of Knowledge Area
Project Human Resource Management

Knowledge Area	No. Variable	Scale
Organizational Planning	(X21)	1-5
Staff Acquisition	(X22)	1-5
Team Development	(X23)	1-5

TABLE 7. Independent Variable Of Knowledge Area
Project Communication Management

Knowledge Area	No. Variable	Scale
Communication Planning	(X24)	1-5
Information Distribution	(X25)	1-5
Performance Reporting	(X26)	1-5
Administrative Closure	(X27)	1-5

TABLE 8. Independent Variable Of Knowledge Area
Project Risk Management

Knowledge Area	No. Variable	Scale
Risk Management Planning	(X28)	1-5
Risk Identification	(X29)	1-5
Qualitative Risk Analysis	(X30)	1-5
Quantitative Risk Analysis	(X31)	1-5
Risk Response Planning	(X32)	1-5
Risk Monitoring & Control	(X33)	1-5

TABLE 9. Independent Variable Of Knowledge Area
Project Procurement Management

Knowledge Area	No. Variable	Scale
Procurement Planning	(X34)	1-5
Solicitation Planning	(X35)	1-5
Solicitation	(X36)	1-5
Source Selection	(X37)	1-5
Contract Administration	(X38)	1-5
Contract Close Out	(X39)	1-5

TABLE 10. Dependent Variable Of Description Of Measurement Scale

Scale	%	Description
1	80 - 100	Manajer Proyek Selalu terlibat dalam elemen Knowledge Area
2	60 - 80	Manajer Proyek Sering terlibat dalam elemen Knowledge Area
3	40 - 60	Manajer Proyek Cukup terlibat dalam elemen Knowledge Area
4	20 - 40	Manajer Proyek Jarang terlibat dalam elemen Knowledge Area
5	0 - 20	Manajer Proyek Tidak Pernah terlibat dalam elemen Knowledge Area

Analysis of research data is to use regression analysis. Regression analysis is a statistical technique that uses a model of the relationship between the independent variable (variable X) and the dependent variable (variable Y).

The stages of data analysis with the help of the SPSS (Statistical Program for Social Science) program package version 11 can be described as follows;

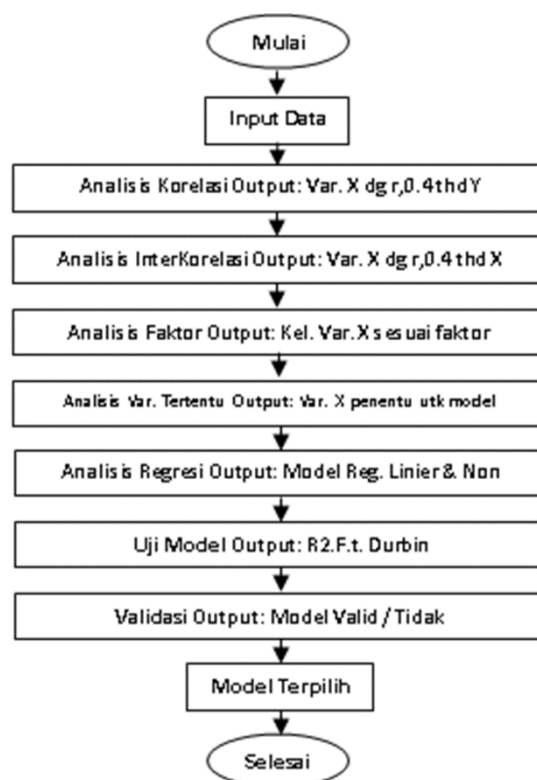


FIGURE 1. Flow Chart Analisis Statistik dengan program SPSS [Nazir, M., "Metode Penelitian", Ghalia Indonesia, 1998. Hal.433]

After obtaining a regression model, the next step is to describe and describe the variables that most influence project cost performance and project time performance. The description is in the form of determining variables from the results of research data analysis which are the output of statistical processes with the help of the SPSS version 11 program package.

3. RESULT AND DISCUSSION

Input data obtained from distributing questionnaires and interviews aimed at 18 respondents with 28 sample projects, where the project classification is divided according to; type, owner, contract type, duration, initial value of the contract.

All data from interviews with questionnaires that have been filled in by respondents regarding the involvement of the project manager in project implementation from the point of view of PMBOK knowledge areas of project performance, namely cost performance and project time performance, which consists of 1 dependent variable for each process and 39 independent variables. The data is then used for further analysis. Of the 28 samples used for input analysis with the help of SPSS

version 11, 25 samples were used for regression analysis and 3 samples for validation testing.

The purpose of statistical analysis is to test the proposed hypothesis. The hypothesis is "The involvement of the project manager in project implementation from the point of view of Project Management Body of Knowledge will affect the increase in project performance". As the dependent variable, namely the cost and time performance of the project or it can be referred to as project performance with the independent variable, namely the involvement of the project manager in the project implementation planning seen from the PMBOK field of knowledge, in the statistical analysis process in this study, (2) the first statistical processing was carried out with (1) the dependent variable is the project cost performance and the second is (1) the dependent variable is the project time performance using the same 39 independent variables regarding the involvement of the project manager in project implementation planning seen from the PMBOK knowledge area.

3.1 Analysis for project cost performance

In accordance with the Flowchart of Statistical Analysis with the SPSS program, correlation and inter correlation analysis is carried out and the

Pearson "r" correlation value is obtained between the independent variables and the inter correlation matrix, then a factor analysis is carried out using the varimax rotation method, then a certain variable is analyzed with the output in the form of an inter correlation coefficient. r "between the determining variables, then multiple regression analysis was carried out and obtained $Y = -0.059 + 0.445X5 + 0.445X15 + 0.136X37$ for linear regression, and obtained $Y = 0.022 * X50.472 * X150.472 * X370.094$ for non- linear regression, then a model test is performed and the adjusted R2 value of the regression model is 0.988 with the coefficient of determination test, F test multiple regression model, multiple regression model T test, autocorrelation test (Durbin Watson - Test), then determine the model and select a non-linear model, then perform a validation test which states that the selected model meets the predetermined validation criteria

3.2 Analysis for project time performance

In accordance with the Flowchart of Statistical Analysis with the SPSS program, correlation and inter correlation analysis is carried out and the Pearson "r" correlation value is obtained between the independent variables and the inter correlation matrix, then a factor analysis is carried out using the varimax rotation method, then a certain variable analysis is carried out with the output in the form of an inter correlation coefficient " r "between the determining variables, then multiple regression analysis was carried out and obtained $Y = 0.136 + 0.502X2 + 0.465X11$ for linear regression, and obtained $Y = 0.0404 * X20.436 * X110.540$ for non-linear regression, and then tested the model and the adjusted R2 value of the regression model is 0.963 by testing the coefficient of determination test, multiple regression model F test, multiple regression model T test, autocorrelation test (Durbin Watson - Test), then determining the model and selecting a non-linear model, then A validation test is conducted which states that the selected model has met the predetermined validation criteria right.

4. CONCLUSIONS

This study wants to prove quantitatively from the hypothesis that the increased involvement of project managers from the point of view of PMBOK knowledge areas in project implementation will improve project performance (cost performance and time performance). Data were collected and analyzed to finally get a multiple regression model that has been done to

prove and support this hypothesis.

From the results of the research conducted, the conclusions obtained are as follows:

- (1) there is a positive correlation between the variables of the project manager's involvement in project implementation from point of view of PMBOK knowledge areas with project cost performance with an adjusted R2 value of 0.988, with a non-linear regression model. : $Y = 0.022 * X50.472 * X150.472 * X370.094$, which indicates that the increased involvement of project managers in project implementation from point of view of PMBOK knowledge areas will lead to an increase in project cost performance;
- (2) Variables of project manager involvement in Project implementation from point of view of PMBOK knowledge areas which is positively correlated with project cost performance, are: (a) development of project planning in accordance with the scope of work (X5) which is included in the field of project scope management knowledge with a contribution of 44.46%, (b) The estimated cost of providing the resource (X15) is included in the field of project cost;
- (3) management knowledge with a contribution of 44.46%, (c) the selection of potential sellers (X37) which is included in project procurement management with a contribution of 9.88%;
- (4) There is also a positive correlation between the variable project manager involvement in Project implementation from point of view of PMBOK knowledge areas with project time performance with an adjusted R2 value of 0.963, with a non-linear regression model: $Y = 0.0404 * X20.436 * X110.540$ which indicates that the increased involvement of project managers in project implementation from point of view of PMBOK knowledge areas will lead to an increase in project time performance;
- (5) The variables of project manager involvement in project implementation from point of view of PMBOK knowledge areas are positively correlated with project time performance, are: (a) Plan for implementing project activities (X2) which belongs to the field of project integration management knowledge with contribution of 41.99%, (b) Estimated duration of implementation of each project activity (X11) which is included in the field of project time management knowledge with a

contribution of 54.31%.

From the evaluation of the results of the research carried out, there are several suggestions that can be put forward, such as:

- (1) Since the involvement of the project manager in the project implementation from point of view of PMBOK has an effect on cost and time performance, the contractor needs to pay attention to the involvement of the project manager in implementation project in accordance with the scope of work, estimated costs and provision of resources, the selection of potential sellers as well as the planning of project activities and the estimated duration of each project activity;
- (2) From the results of obtaining project overview data, the input variables included in the field of knowledge PMBOK - PMI 2000 edition which includes project administration management and contract documents and safety management to identify the involvement of project managers in project implementation, so it does not rule out the addition of optional research variables in accordance with the development of project management;
- (3) In the field of knowledge PMBOK which in this study refers to PMBOK from PMI

(Project Management Institute) 2000 edition, which will always be updated every 4 years, using the PMBOK variable as a simple tool to evaluate project manager involvement In project implementation, it must also be updated along with the changes in PMBOK from PMI (Project Management Institute);

- (4) Because the models obtained are based on a relatively small number of samples, it is necessary to conduct research using a larger sample to improve;
- (5) In this study, the involvement of the project manager in project implementation from point of view of knowledge areas of PMBOK - PMI 2000 edition with 9 knowledge areas which are translated into 39 typical research variables for the implementation of construction projects in general, but there is still the possibility of the involvement of the project manager in project implementation in more detail from the significant research variables on the improvement of the cost and time performance of the project, for example from the results of free questions regarding factors that have not been included in the research variables that affect project performance, namely:

TABLE 11. Project Implementation From Point Of View Of Knowledge Areas Of Pmbok - Pmi 2000

No	Factors that have not been included in research variables that affect project performance	Number of Respondent	Number of sample Projects	Weighted (%)
1	Manajemen administrasi proyek dan dok. kontrak	3	7	30.4
2	Safety Management	2	4	17.4
3	Cash flow planning, project scheduling	1	2	8.6
4	Pendapatan proyek dan bunga bank, biaya tak langsung	1	2	8.6
5	Liquiditas proyek	1	2	8.6
6	Manajemen sumber daya; Punish & reward	1	1	4.4
7	Perubahan design yang memperlambat proyek	1	1	4.4
8	Value Engineering	1	1	4.4
9	Kondisi lingkungan, kondisi site, resiko kenaikan harga	1	1	4.4
10	Social problem	1	1	4.4
11	Pengendalian gambar design dari klien	1	1	4.4
	Jumlah	14	23	100

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After all the data is collected, then analyze the data statistically using the assistance of the SPSS (Statistical Program for Social Science) program version 11, which is a package of statistical data

analysis computer application programs.

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