Contractor Project Organization Problems on the Implementation of Building Construction at Lhokseumawe City

Hanif
Department of Civil Engineering, Politeknik Negeri Lhokseumawe, Aceh Indonesia
E-mail: hanifts@pnl.ac.id

Abstract. The efforts to improve manpower quality are the efforts that are done by the contractor to improve its work quality. Improving the manpower quality principally influences of internal and external factors. The objective of this study is to answer the internal factors that influence project team performance quality in organization structure of contractor project at building construction implementation and to determine the variables that are needed to improve contractor enterprise quality. This research used a building construction project which have done in 2017 at Lhokseumawe city, collecting by disseminating Likert questionnaire. Respondents were chosen from contractor elements, those were project managers and field supervisors. This research used descriptive and inferential analysis. The results showed that the overlapping of job descriptions among division in project organization project, the ability to put workers in project, the ability of adaptation in any changes, the tools and machines condition that is used, and the time realization that appropriates to project schedule that is done, are the dominant sub aspects influenced project performance optimization. The influence of organization aspect, workers aspect, physical environment aspect, tools and technology that are used in project aspect, and team performance quality in contractor project organization aspect towards project performance optimization aspect was 69.6%.

1. Introduction
The contractor is a company that works in the field of construction services. Construction services can be defined as the consulting services of construction planning. While construction work is the whole or part of a series of planning activities, implementation and supervision. As a construction services company, the quality of human resources in the contracting company is one aspect that is essential for survival. Improving the quality of labor largely influenced by two factors: internal and external factors. By knowing the internal factors and external factors that affect efforts to improve the quality of the company workforce is gradually and continuously to be done in accordance with the priority scale enterprise development, so that the organization's mission and objectives can be achieved as expected.

The contractor project organization, the problems that arise are as follows:
1. Internal factors affecting the quality of manpower in the company's contractors.
2. Efforts need to be done about the organizational structure of contractors that are not obvious in the employment field.

The purpose of this research is to answer the problem of internal factors that affect the quality of project team performance in project organization structure contractor in building construction, and determine what variables are needed to improve the quality of the contractor company.

Subjects in this study is the implementation of building management which put emphasis on the use of contractor’s organizational structure, being the research object is the placement of human resources, as well as equipment and technology used in the completion of building work. The population used in this study is limited population, namely the use of population data sources clearly has its limits so it can be calculated quantitatively the amount. The population in this study were 8 of the building which was built in the town of Lhokseumawe in 2017. The sample building was chosen based on the following criteria:
1. The project is being implemented.
2. The project surveyed a total contract value of IDR 600 million up to IDR 10 billion

2. Materials and Methods

2.1 Basic Theory of Management
Project management consists of the organizational structure and information systems. Organizations established by top management (top management) and also determined the relationship between project team members and project manager. One of the frequently used structures is the organizational structure that is functional, in which organizational structures are grouped according to area-specific functions. Definition of management according to Husen (2009), is an art of leading an organization that consists of the activities of planning, organizing, implementation and control of resources are limited in achieving business goals and objectives of effective and efficient. The goal is to get a technical method or the best for the resource-limited resources can be obtained maximum results in terms of accuracy, speed, efficiency and safety are comprehensive.

2.2 Basic Theory of Organization
The organization is a group of people who work together to achieve a particular goal, while the organizational structure is the framework of relations between persons or organizational units which each have a duty, responsibility and a certain authority. The organizational structure should indicate the units of organization and clear lines of authority so that the boundaries of tasks, authority and responsibilities of each person of the organization. Thus hope there is clarity of direction and coordination to achieve company goals. According to Kenneth and Gary. (1992), organizational structure is the formulation of the role and relationship roles, the allocation of activity in order to validate the distribution of power among the administrative positions as well as formal communication networks in order to achieve an efficient division of labor and the effectiveness of coordination of the activities of its members.

2.3 Project Organization Hierarchy
According to Husen (2009), organizational hierarchy or organizing project analysis table (OAT), which rise starting from the top level as the project manager until the end of the or executor. Hierarchy is structured with the aim of facilitating such internal and allocation of human resources in accordance with the responsibilities in the organization of the project. The success of the project implementation usually supported by the organization with the composition of the work program, which targets and objectives well ordered.
2.4 Factors Influence Project Organization

Factors that influence the organization's projects include:
1. The size of the volume and scope of work.
2. The size of the project.
3. The level of complexity of the project.
4. The timing of the available.
5. The use of technology.
6. Location of the project.

2.5 Understanding Work Breakdown Structure (WBS)

According to Mingus (2006), to obtain a more complete picture of existing neighbor work on a project, we divide the total number of jobs to be unit-units that can be managed. Different companies have different terms for the various units, but the hierarchy, regardless of the names on every level, always called the Work Breakdown Structure (WBS). The purpose of WBS is to organize the project into various levels of concise reporting. In naming scheme levels, the top names are considered as level one, which was as level two, and a three as level three. In this organization, its lowest level called the "detail work," and everything else is called "summary task."

2.6 Develop Table Analysis in Project Organization

One of the main purposes of the construction management plan is to develop an instrument that can be used to control the performance of a job. In order for goals to be achieved the following criteria need to be met include:
1. Prepare all the elements and the stages of the project through the WBS.
2. Preparing of all related parties and participating in the project.
3. Provide benchmarks to localize the responsible way.

The next step is to determine the perpetrator to carry out the work packages or called by Organization Analysis Table (OAT) or also called the Organization Breakdown Structure (OBS), which is an organization chart showing the distribution of the parties responsible for or a job at the level particular.

2.7 Relationship/integration between WBS and OBS

The relationship between WBS and OBS will show the person in charge of each job or in the sense that a work or group work is carried out with specific expertise, this integration also serves to plan and project control.

2.8 Project Team

According to the Nurick and Thamhain (1999), mentions that a team is very important, especially in a project-oriented work environment which consists of multidisciplinary activities between the very complex and requires the incorporation of multiple specializations is also support from some groups.

2.9 Method

2.9.1 Statistical Analysis

In general, statistics is a scientific method of collecting, clarifying, summarizing, and analyzing data to support making a valid and useful conclusion that can be a basis for a decision that makes sense, analyses it as follows:
1. Descriptive analysis, ie analysis to illustrate, describe, and describe statistical data frequency standard deviation, median, mode and the proportion will be used in this analysis to describe the trend of contractors in Lhokseumawe in the use of construction project organization structure.
2. Inferential analysis was analyzed using sample data to estimate an unknown population parameter. Th3 Inferential analysis used was Cronbach alpha with the software SPSS 16 to
analyze the differences in project organization is a contractor with another contractor project organization.

3. Regression analysis, the analysis used to show the relationship the dependent variable with two or more independent variables. This produces an equation that connects a dependent variable with independent variables of more than one (Steel & Torrie, 1989).

2.9.2 Questioners Reliability Testing
According to Arikunto (2002), Testing reliability conducted to determine the extent of measuring devices used can be trusted or relied upon. Reliability is one important clue about the quality of a study. Reliability indicates the accuracy of measuring instruments. An obvious question easily understood and detailed.

One method used is by using c-alpha, for the test carried out 4 stages of testing, as follows:

1. Determine variants number at items with the formula:

\[ Si = \frac{\sum X_i^2 - \frac{1}{N} (\sum X_i)^2}{N} \]  

Where:
- \( Si \): Variants number from every item question
- \( \sum X_i^2 \): Square summary item \( X_i \)
- \( (\sum X_i)^2 \): Summary item \( X_i \) with squared
- \( N \): summary respondent

2. Determine all variants with:

\[ \sum Si = S_1 + S_2 + \ldots + S_n \]  

where:
- \( \sum Si \): total score of the variant at each item.
- \( S_1, S_2, S_n \): Variants item to 1, 2, …, n

3. Determine total variants:

\[ St = \frac{\sum Y_i^2 - \frac{1}{N} (\sum Y_i)^2}{N} \]  

where:
- \( St \): Variants score from each item question
- \( \sum Y_i^2 \): Summary square of item \( Y_i \) each respondent
- \( (\sum Y_i)^2 \): Summary answering item \( Y_i \) each respondent with square
- \( N \): summary respondent

4. Fill in Alpha number:

\[ \rho_{ii} = \left( \frac{K}{K-1} \right) \times \left( 1 - \frac{\sum Si}{St} \right) \]  

where:
- \( \rho_{ii} \): reliability value
- \( \sum Si \): Variants score summary each item
- \( St \): variants score from each question item
- \( K \): summary item
A basis for a decision on this method is to compare the Rii values obtained from the steps above with rtable, as follows:

1. If value \( R_{ii} > r_{table} \), meaning item or variable is reliable.
2. If value \( R_{ii} < r_{table} \), meaning item or variable is not reliable.

To determine the tendency of respondents' answers about the influence of the project contractor reviewed the organizational structure of the variables that influence project team performance against the implementation of building construction projects in the city of Lhokseumawe, then used the average value. In order to get an average of respondents' answers to the five attitude scales. The average score obtained by the following equation:

\[
\text{Average value (} X_m ) = \frac{\sum_{i=1}^{n} f_i \times \text{bobot}_i}{n}
\]

with :
- \( f_i \) : frequency in scale \( i (i = 1, 2, \ldots, 5) \)
- \( n \) : number of data
- \( X \) : aspect code \( (A, B, \ldots, D) \)
- \( m \) : type of following number causing in aspect \( X (1, 2, 3, \ldots) \)

To determine the homogeneity of the respondent's answer, then use variance. Variance is the sum of squares of all deviations of individual values of the average group. The smaller the spreading/value, meaning the same data value, the greater the distribution means that more and more varied the value of the data. Variants can be written mathematically as follows:

\[
\text{Varian (} X_m ) = \frac{1}{n-1} \sum_{i=1}^{n} (\text{bobot}_i \times \text{Nilai Rata2 (} X_m ))^2
\]

2.9.3 Linear Regression Test

A regression test is the development of a simple regression test. Usefulness is to predict the value of the dependent variable \( Y \) if the independent variable of at least two or more (Riduan, 2003). Test multiple linear regression analysis is a tool of forecasting the value of the influence of two or more independent variables on one dependent variable (to prove the presence or absence of a functional relationship or a causal relationship between two or more independent variables \( X_1, X_2, X_3, \ldots, X_n \) with one dependent variable.

Multiple linear regression equation was formulated as follows:

a. Two independent variables:
\[
y = a + b_1X_1 + b_2X_2
\]

b. Three independent variables:
\[
y = a + b_1X_1 + b_2X_2 + b_3X_3
\]

c. Four independent variables:
\[
y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4
\]

d. Five independent variables:
\[
y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5
\]

The correlation coefficient is usually used to measure the degree of relationship of two variables is the simple correlation coefficient are the type of Pearson correlation coefficient \( (R) \). The formula for calculating the Pearson correlation coefficient (Sugiyono, 2005) is:

\[
r = \frac{n \Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{[n \Sigma X^2 - (\Sigma X)^2][n \Sigma Y^2 - (\Sigma Y)^2]}}
\]
Where:
\[ R = \text{Pearson correlation coefficient}; \]
\[ X = \text{Independent variable} \]
\[ Y = \text{dependent variable} \]
\[ n = \text{summary sample} \]

Meanwhile, to declare the size of the contribution variable \( X \) to \( Y \) can be determined by the formula coefficient of determination (R2) as follows (Riduan, 2003):

\[ KP = R^2 \times 100\% \]

where:
\[ KP = \text{determinant coefficient}; \]
\[ R = \text{correlation coefficient}. \]

3. Result and Discussion

3.1. Reliability Test of Questioners Instrument Result

Prior to conducting the descriptive statistical analysis of the mean and variance Likert scale responses provided by respondents, it must first be tested reliably an instrument or tool with data search Cronbach Alpha reliability test. Reliability test conducted to determine the consistency of measurement results from instruments used. The reliability of measurement is used the way one shot or one-time measurement. An instrument is said to reliable when the value of Cronbach’s Alpha greater than 0.60. To test reliability, the tool used a computer with software SPSS Version 16. Briefly, the reliability test results are shown in Table 1. From Table 1 that if the value of Cronbach Alpha obtained \( \geq 0.6 \), then the results of questionnaire responses or otherwise reliable in other words show the results of the questionnaire can give results that are no different when it's done filling questionnaires returned to the same question by the same respondent.

**Table 1 Result Reliability Instrument Questioners testing**

| No. | Variables                                      | Cronbach Alpha value | Cronbach Alpha condition | Status   |
|-----|------------------------------------------------|----------------------|---------------------------|----------|
| 1   | Organizations aspect                           | 0.805                | \( \geq 0.6 \)            | Reliable |
| 2   | Worker aspect                                  | 0.621                | \( \geq 0.6 \)            | Reliable |
| 3   | Physical environment aspect                    | 0.849                | \( \geq 0.6 \)            | Reliable |
| 4   | Aspect Tools and Technology Used in the Project| 0.765                | \( \geq 0.6 \)            | Reliable |
| 5   | Team Performance Quality Aspects               | 0.640                | \( \geq 0.6 \)            | Reliable |
| 6   | Optimally project performance aspect           | 0.638                | \( \geq 0.6 \)            | Reliable |

3.1.1 Results Analysis of Internal Factors Affecting Quality Performance in the Project Team Organization Structure Contractors in Construction Projects Building for Organizational Aspects

The analysis was performed for each sub aspect by finding the average value (mean) and variance of the total number of responses amounted to 32 responses for each subfactors. Scale rating assigned for each rating scale subaspect is 5 for the answer to strongly disagree (scale range from 4.0001 to 5), 4 for the answer does not agree (scale range from 3.0001 to 4), 3 for the answer to neutral (range of scale 2, 0001-3), 2 for answers agree (scale range from 1.0001 to 2) and 1 for the answers strongly agree (scale range 0-1). Results of analysis of the mean value of responses from questionnaires given to each sub aspect /
variable or the questions. If there is the same average value, then the average of the highest value (near one) taken is the average value with the value of the smaller variants. From the results of a study of 32 respondents. Total for all assessment score for "The ability to analyze project risk" is 46, so that the mean is 34: 32 = 1.4375. Average value of 1.4375 is included in the category of the answers "agree".

3.1.2 Results of Multivariate Regression Analysis of Aspect Performance Optimization Project, with Aspect of the Organization, Aspect Workers, Physical Environmental Aspects, Aspect Tools and Technology Used in the Project, and Team Performance Quality Aspects in the Project Organization Structure Contractors

The analysis was performed for each sub aspect by finding the average value (mean) and variance of the total number of responses amounted to 32 responses for each sub factors. Scale rating assigned for each rating scale sub aspect is 5 for the answer to strongly disagree (scale range from 4.0001 to 5), 4 for the answer does not agree (scale range from 3.0001 to 4), 3 for the answer to neutral (range of scale 2, 0001-3), 2 for answers agree (scale range from 1.0001 to 2) and 1 for the answers strongly agree (scale range 0-1). Results of analysis of the mean value of responses from questionnaires given to each sub aspect / variable or the questions. If there is the same average value, then the average of the highest value (near one) taken is the average value with the value of the smaller variants. From the results of a study of 32 respondents. Total for all assessment score for "The ability to analyze project risk" is 46, so that the mean is 34: 32 = 1.4375. Average value of 1.4375 is included in the category of the answers "agree".

\[
Y = 0.310 - 0.002 X1 + 0.373 X2 - 0.048 X3 - 0.037 X4 + 0.252 X5
\]

Where:
\( Y \) = optimally project performance aspect;
\( X1 \) = Organizations aspect;
\( X2 \) = Worker aspect;
\( X3 \) = Physical environment aspect;
\( X4 \) = Aspect Tools and Technology Used in the Project;
\( X5 \) = Team Performance Quality Aspects;

Calculated F value is 15,209 (sig. = 0.000). Calculated t value is 0,322 (sig. = 0.750), for \( X1 = -0.040 \) (sig. = 0.968), for \( X2 = 4.358 \) (sig. = 0.000), for \( X3 = -1.423 \) (sig. = 0.413), for \( X4 = -0.832 \) (sig. = 0.413), and for \( X5 = 3.294 \) (sig. 0.003), with adjusted value \( R^2 = 0.696 \) and \( R = 0.863 \).

From the reliability test results of a questionnaire instrument that affects every aspect of internal quality team performance within the organizational structure of the project contractor on the implementation of building construction in the city of Lhokseumawe, Cronbach Alpha reliability obtained results for the organization aspect of 0.805, 0.621 for labor aspects, aspects of the physical environment of 0.849, aspects of equipment and technology used in the project amounted to 0.765, the aspect of quality of team performance in the organizational structure of the project contractor for 0.640, and aspects of project performance optimization of 0.638. All Cronbach alpha reliability values which have been calculated is greater in value than the Cronbach Alpha reliable criteria which must be greater than 0.6, so it can be concluded that the questionnaire instrument that has been given is reliable. This shows the results of the questionnaire can give results that are no different when it's done filling questionnaires returned to the same question. Analysis of the questionnaire to organizational aspects, work aspects, aspects of the physical environment, aspects of the equipment and technology used in the project, aspects of quality of team performance in the organizational structure of the project contractor, and performance optimization aspects of the project, carried out by looking at the value of the average total score (mean) of total of 20 respondents who gave answers to every sub aspect or variable or questions. If the total
score obtained is in the range of 0.000 to 1.000, the answer given was "strongly agree", range from 1.001 to 2.000 the answer is "agree", 2.001 to 3.000 the answer is "neutral", from 3.001 to 4.000 the answer is "not agree", and range 4.001 to 5.000 the answer is "strongly disagree". From every aspect is taken once sub aspect the most dominant for further analysis. The most dominant Sub aspect show of value to the smallest variance. More results sub aspect answers to each of the aspects in question to the respondents are tabulated in Table 2 to Table 6.

Table 2. The result of a final answer of the responder for organization aspect

| No. | Sub aspect                                                      | Mean | Answer | Varian |
|-----|----------------------------------------------------------------|------|--------|--------|
| A1  | Project risk analysis capability                               | 1.4375 | Agree  | 0.448  |
| A2  | Company management                                            | 1.7187 | Agree  | 0.467  |
| A3  | Company strategy                                              | 1.5938 | Agree  | 0.314  |
| A4  | Company working environment                                   | 1.2188 | Agree  | 0.176  |
| A5  | Company objective                                             | 1.4063 | Agree  | 0.314  |
| A6  | Company culture                                               | 1.7500 | Agree  | 0.516  |
| A7  | poorly coordination and communication between division in working organization | 1.5625 | Agree  | 0.254  |
| A8  | Intersect working between division in organization structure   | 1.1562 | Agree  | 0.136  |
| A9  | Unclear job desk each division in your project                 | 1.6562 | Agree  | 0.426  |
| A10 | Poorly information from each division in the project           | 1.5625 | Agree  | 0.254  |
| A11 | Weakly control about a running project by project director in your project | 1.6250 | Agree  | 0.629  |
| A12 | Weakly decision maker by staff project                         | 1.1875 | agree  | 0.222  |
| A13 | Weakly coordination relationship with the project owner        | 2.0625 | Neutral | 1.093 |

Figure 1 Graphic  Mean Score Answer Respondent For Organization Aspect

If observed from the total score variance value the answer given in Table 2 which also illustrates the homogeneity of the answer, it appears that the organizational aspect, sub aspect "The occurrence of overlapping jobs among divisions in the organizational structure of your project" is sub aspect most respondents gave the answer "agree "with a value of 0.136 variant. Unclear job description or the division of labor for each division caused by overlapping jobs among the divisions of work. This can affect the decline in the quality of team performance contracting company. The result of the respondent to answer the final aspect of workers' mean and variance values are shown in Table 3 and Figure 2. In this aspect, there are 6 sub aspects.
If observed from the total score variance value the answer given in Table 3 which also illustrates the homogeneity of the answer, it appears that the aspect of workers, sub aspect "The ability to place workers in the project" is the most widely sub aspect respondents answered "agree" with a value of 0.322 variant. Professional employment which causes increasing quality team performance contracting company. The result of the final answers of respondents to the environmental aspects of the physical form of the mean and variance are shown in Table 4 and Figure 3. In this aspect, there were 13 subaspects. If observed from the total score variance value the answer given in Table 4 which also illustrates the homogeneity of the answer, it seems that the aspects of the physical environment, sub aspect "The ability to adapt in any change" is the most widely sub aspect respondents answered "agree" with a value of 0.233 variant. Adapting well to any employment conditions can cause the work to continue without a hitch, which means a result of changes in employment conditions.

Figure 2. Graphic Mean Score answer respondent for worker aspect

The result of the final answers of respondents to aspects of the equipment and technology Used in the project of the mean and variance are shown in Table 5 and Figure 4. In this aspect, there are 7 subaspects. If observed from the total score variance value the answer given in Table 5 also which illustrates the homogeneity of the answer, it appears that the aspect of Equipment and Technologies Used in Project, sub aspect "The condition of equipment and machinery to be Used" is sub aspect most respondents gave the answer "agree" with a value of 0.242 variant. The condition of equipment and machinery to carry out the work always be kept in a condition ready to use with good care will from support the implementation of construction works smoothly and can increase quality team performance contracting company.

Figure 3. Graphic Mean Score Answers Respondent for physical environment Aspect.
Table 3  Respondent Final Answering Result for Worker Aspect

| No. | Sub aspect                                      | Mean   | Answer   | Varian |
|-----|------------------------------------------------|--------|----------|--------|
| B1  | Ability work method project staff              | 1.5625 | Neutral  | 0.641  |
| B2  | Ability solve of work divide in project        | 1.4062 | Agree    | 0.378  |
| B3  | Ability placing the worker in the project      | 1.4688 | Agree    | 0.322  |
| B4  | Ability to manage project organization         | 1.5000 | Agree    | 0.323  |
| B5  | Ability implement work schedule to project staff| 1.5000 | Agree    | 0.323  |
| B6  | Ability in split manage work load.             | 1.7500 | Agree    | 0.516  |

Table 4. A result of Responder Final Answer For Physical Environment Aspect

| No. | Sub aspect                                      | Mean   | Answer   | Varian |
|-----|------------------------------------------------|--------|----------|--------|
| C1  | Good communication in a project team           | 1.8750 | agree    | 0.371  |
| C2  | On time                                        | 1.7188 | Agree    | 0.402  |
| C3  | Quality of result                              | 1.4688 | Agree    | 0.257  |
| C4  | Good finance                                   | 1.5313 | Agree    | 0.451  |
| C5  | Ability to motivate staff project team         | 1.5938 | Agree    | 0.701  |
| C6  | Play role staff project team                   | 1.7188 | Agree    | 0.467  |
| C7  | Ability solving problems                       | 1.4375 | Agree    | 0.254  |
| C8  | Ability to analysis project risk               | 1.5000 | Agree    | 0.452  |
| C9  | Success work                                   | 1.5312 | Agree    | 0.322  |
| C10 | Ability to adaptation with project change      | 1.3438 | Agree    | 0.233  |
| C11 | Work environment in company                    | 1.5000 | Agree    | 0.452  |
| C12 | Ability staff project to solve the problem     | 1.5000 | Agree    | 0.645  |
| C13 | Ability to cope with a disparity               | 2.6250 | Neutral  | 1.855  |

Table 5. Result of responder final answer for aspect of tools and technology using in project.

| No. | Sub aspect                                      | Mean   | Answer   | Varian |
|-----|------------------------------------------------|--------|----------|--------|
| D1  | Ability of staff to solve the problems          | 1.5313 | Agree    | 0.386  |
| D2  | Trust                                          | 1.5937 | Agree    | 0.378  |
| D3  | Condition of using tools and machine           | 1.3750 | Agree    | 0.242  |
| D4  | Appropriate price                              | 1.4375 | Agree    | 0.641  |
| D5  | On time                                        | 1.9375 | Agree    | 2.448  |
| D6  | Ability to analysis project risk               | 1.5938 | Agree    | 0.701  |
| D7  | Company management                             | 1.4375 | Agree    | 0.319  |

Figure 4. Graph of Mean Score of Respondents answer to Aspect Tools and Technology Used in the Project
The result of the final answers of respondents to the quality aspects of team performance in the organizational structure contractor project form the mean and variance, are shown in Table 6 and Figure 5. In this aspect, there are 5 sub-aspects. If observed from the total score variance value the answer given in Table 6 which also illustrates the homogeneity of the answer, it appears that the quality aspect of team performance in the organizational structure of the project contractor, sub-aspect "Realization of time according to plan projects in progress" is the sub-aspect most respondents gave answer "agree" with a value of 0.306 variant. The realization of time in accordance with work plan projects in progress in the field causes the job to continue to be done smoothly without any addendum added time. Compliance is a plan of the volume and cost jobs in the field as the fruit of a good estimate can also increase the motivation of contractors to complete the work in accordance with technical specifications and the time given so that the quality of team performance contracting company can be increased.

The result of the final answers of respondents to aspects of project performance optimization of the mean and variance are shown in Table 7 and Figure 6. In this aspect, there are 3 sub-aspects. If observed from the total score variance value the answer given in Table 7, which also illustrates the homogeneity of the answer, it appears that the optimization aspects of project performance, sub-aspect "Time" is the most widely sub-aspect respondents answered "agree" with a value of 0.319 variant. The problem of time can result in losses if the late fee than planned and beneficial when

### Table 6. Respondent Result for Team Performance Quality Aspects

| No. | Sub aspect                                                                 | Mean    | Answer | Variance |
|-----|-----------------------------------------------------------------------------|---------|--------|----------|
| E1  | Appropriate planning from volume and cost in the project                    | 1.5000  | Agree  | 0.452    |
| E2  | Appropriate realization cost from work                                     | 1.8438  | Agree  | 0.717    |
| E3  | Condition of work cost realization consent with target                      | 1.5000  | Agree  | 0.452    |
| E4  | Work product fitting with approval quality                                 | 1.8438  | Agree  | 0.717    |
| E5  | Time realization suitable with project schedule                            | 1.3750  | Agree  | 0.306    |

### Table 7. Responder Result For Optimally Project Performance Aspect

| No. | Sub aspect                                                                 | Mean    | Answer | Variance |
|-----|-----------------------------------------------------------------------------|---------|--------|----------|
| F1  | Cost: relation between planning and implementing during project running     | 1.4687  | Agree  | 0.580    |
| F2  | Quality: relation between final product quality with owner request.         | 1.4062  | Agree  | 0.378    |
| F3  | time: time can be make cost loss if project unscheduled or reverse.         | 1.4375  | Agree  | 0.319    |

accelerating. Good time management and in accordance with the target weight and volume of work time schedule stipulated in the scheme of good and continue to be performed consistently can lead to job construction building completed within the time provided in the contract so that the quality of team performance contracting company can be increased.
From the results of linear regression analysis by F test to test the model linearity significantly, hypotheses used are:

Ho = regression model quality project team performance in the organizational structure of the construction project contractor on the building structure is not significantly linear;
Ha = regression model quality performance within the organizational structure of the project team on implementation of the project contractor building construction is a significant linear;

Reject Ho if, F count> F table, or by using a significance level reject Ho if sig. <Significance level α.
By using significances level α of 5% = 0.05, we see that sig. 0.000 <α = 0.05 significance level, then Ho is rejected, and Ha is received, or in other words, the quality of regression model performance of the project team within the organizational structure of the project contractor on the implementation of building construction is a significant linear.

To test the significant linear relationship between free variables and the dependent variable with the t-test, the hypotheses used are:

Ho = independent variables under consideration have not had a significant linear relationship with the dependent variable;
Ha = independent variable of interest has had a significant linear relationship with the dependent variable;  Reject Ho if, t count> t table, or by using a significance level reject Ho if sig. <Significance level α.
By using significances level α of 5% = 0.05, shows that the independent variable X2 and X5 that have a significant linear relationship because of the value of sig. obtained less than the significance level α = 0.05, ie sig. for variable X2 = 0.000 and sig. for variable X5 = 0.003, or in other words, Ho refused and Ha is received, or independent variables under consideration have a significant linear relationship with the dependent variable. The two independent variables that have a significant linear relationship was X2 = X5 = aspects of the workers and the quality aspects of team performance. This means that both these aspects have an influence on performance optimization project.

From the results, the determinacy coefficient (square of correlation coefficient) obtained showed that R2 R2 value is 0.696. So the KPs (Coefficient of Determinants) is KP = R2 × 100% = 0.696 × 100% = 69.6%. This value means that the influence of organizational aspects, work aspects, aspects of the physical environment, aspects of the equipment and technology used in the project, and aspects of quality of team performance in project organization structure optimization aspects of the performance of contractors on the project amounted to 69.6% and the rest at 100% - 69.6% = 30.4% determined by other variables not examined in this study.

4. CONCLUSIONS

From the results of the analysis carried out research and obtained the following conclusion. The factors most dominant in the optimization of performance contracting projects are: For workers aspect is the ability to place workers in the project. For organizational aspects are the factors of job overlap between the divisions in the organizational structure of the project. For aspects of the physical environment is the ability to adapt to any changes. For aspects of the equipment and technology used is the condition of
equipment and machinery to be used. For aspects of quality of team performance in the organizational structure is the realization of the project contractor in accordance with the project plan was undertaken performance optimization aspects of the project are sub aspects of time. The relationship between project performance optimization factor (Y) with the factors Organization (X1), Workers (x2), Physical Environment (X3), Equipment and Technology used (X4), and the quality of team performance in the Project Organization Structure Contractors (X5) relationship shown in multiple linear regression: Y = 0.310 – 0.002 X1 + 0.373 X2 – 0.048 X3 - 0.037 X4 + 0.252 X5 with determinant coefficient of 69.6%. Factors workers and the quality factor of team performance in the organizational structure of the project contractor have a significant linear relationship with project performance optimization factor.

REFERENCES

[1] Anonim, 1996, A Guide to the Project Management Body of Knowledge (PMBOK) PMI Standards Committee, Four Campus Boulevard Newtown Square, PA 19073-3299 USA.
[2] Arikunto, S., 2002, Manajemen Penelitian, PT. Rineka Cipta, Jakarta.
[3] Curtis, T., 1997, Business and Marketing for Engineers and Scientists, McGraw-Hill Book Company.
[4] Dewi, A.A.D.P., 2010, Identifikasi Faktor-Faktor Profesionalisme Manajer Proyek pada Proyek Konstruksi, Jurnal Ilmiah Teknik Sipil Vol.14, No. 1, Januari 2010, Denpasar.
[5] Dipohusodo, I., 1996, Manajemen Proyek dan Konstruksi, Edisi Kedua, Yayasan Kanisius Jogjakarta.
[6] Ervianto, I.W., 2009, Manajemen Proyek Konstruksi, Edisi Kedua, Andi Offset Jogjakarta.
[7] Hadi, S., 1986, TeorikemungkinandanStatistik, Penerbit ITB, Bandung.
[8] Harinaldi, 2005, Prinsip-PrinsipStatistikuntukTeknikdanSains, Penerbit Erlangga, Jakarta.
[9] Husen, A., 2009, Manajemen Proyek, Edisi Pertama, Andi Offset Jogjakarta.
[10] Irianto, A., 2006, Statistik Konsep Dasar dan Aplikasinya, Penerbit Kencana Prenada Media, Jakarta.
[11] Kenneth, NW dan Garry, 1992, Perilaku Organisasi dan Psikologi Personalia, PT. Gramedia, Jakarta.
[12] Mingus, N., 2006, Project Management dalam 24 jam, Alpha Teach Yourself, Prenada Jakarta.
[13] Nurick, A.J., Thamhain, H J., Cleian D., Gareis, R., 1999, Strategic Project Management, McGraw-Hill International Editions, Chapter 19
[14] Rusdianto, Y., 2006, Faktor-faktor yang mempengaruhi upaya peningkatan kualitas tenaga kerja pada Perusahaan Kontraktor Menengah dan Kecil di Kota Malang Jawa Timur, Tesis Magister, ITS, Surabaya.
[15] Santoso, I., 1996, Organizationnal and Methods Penunjang Berhasilnya Proses Manajemen, CV. Haji Masagung, Jakarta.
[16] Soeharto, I., 1995, Manajemen Proyek Dari Konseptual Sampai Operasional, Erlangga, Jakarta.
[17] Sudarto, 2007, Identifikasi Permasalahan Pada Faktor Internal Yang Mempengaruhi Kinerja Perusahaan Jasa Konstruksi di Indonesia, Jurnal Teknologi, Edisi No.2 Juni 2007, Jakarta.
[18] Sugiyono, 2004, Statistika Untuk Penelitian, Alfabeta, Bandung.
[19] Sulistyawan, A., 2008, Pengaruh Kinerja Tim Proyek terhadap keberhasilan Proyek, Dinamika Teknik Sipil, Volume 8, Januari 2008: 82-88.
[20] Tohardi, A., 2002, Pemahaman Praktis Sumber Daya Manusia, Mandar Maju Bandung.
