

Quality Management Competency to Quality Performance Based on QPASS Standard Measurement (Case Study: Arandra Residence Project)

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Abstract: *In the construction Industry, quality management system focused to directing and controlling process and achievement related of quality for customer requirements. Quality management approach was describes how quality will be managed during the project. Quality used to identifying and achieving documentation for organization activities. This research has focused to the quality management supervision in the Arandra Residence project and it will find out that the construction work has satisfy to the SNI standards. Our methodology is using interviews, observations, and questionnaires that were distributed to 66 experts to processing data. The data obtained is through variable and that measured it, variable X = Independent Variable (Quality Management Ability) and Variable Y= dependent variable (Work Results as measured by QPASS Standards). Other several methods using, Correlation Analysis, Regression Analysis and Validity Test.*

Keywords: Quality Management, QPASS Standards, Construction Project

1. Background

In the construction implementation, in Indonesia, encountered many failures of construction with the cause of the result of construction that does not comply with established quality standards. It shows that there is still low concern for the implementation to meets the expected quality.

Many construction failures are caused by apply quality standards for construction implementation and the non-compliance of the work quality as it should be. In the implementation project, the project management objective is the fulfillment of quality requirements. In this connection, an equipment, materials and work methods are considered to meet quality requirements. Thus, the building constructed consists of equipment and material components that meet the quality requirements can be expected to function satisfactorily for a certain period of time or in other words, ready for use.

Quality Management is an alternative management technique system in the construction industry development process that combines the stages of the development process into one integration. The effectiveness of implementing a project quality management system in the development process can optimize project management and control in terms of quality in achieving predetermined goals. With the quality improvement efforts carried out by construction companies, it will require quality in project implementation. Efforts for implementation quality standards, the contractor seeks to use a quality management system in accordance with the requirements given by the Project Owner.

To determine an objective and measurable quality

assessment, it is necessary to have a system that can be accepted by all parties, namely the Quality Product Assessment System (QPASS), which is an objective assessment system for achieving the quality of construction work by means of scoring. Has the intention of measuring the effort the quality of a job by approaching the initial efforts to reach the specific project owner in an objective and systematic measurement method. The objectives of the QPASS system include:

- 1) To obtain a standard construction project quality assessment system.
- 2) Conduct quality assessment by:
 - a) Measure work carried out against work man ship standards and specifications.
 - b) Sampling approach.
- 3) Obtain a systematic quality assessment of costs.
- 4) Measurable efficiency measurement.

QPASS is a quality standard assessment system for structural and architectural work. The application of QPASS in the field must involve related functions such as engineering functions, commercial functions, QC functions and production.

Scope of problem

- a) The research was conducted on the construction of the Arandra apartment building located in Jakarta.
- b) Observations were made on the structural and architectural work package for building construction.

Research purposes

- a) Knowing the effect of the ability of quality management on work results measured from the QPASS standard.
- b) To find out the importance of the Project Team (Engineering, QC, Production and Commercial

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Functions) can implement quality management and implementation of QPASS quality standards systematically and measurably in the Arandra Residence project.

- c) To find out that the resulting construction work has met the SNI quality standards.

Benefits of Research

The results of this study are expected to be useful for related parties, namely for contractors and organizers of construction projects. This research is expected to be used as a reference basis in carrying out

QPASS scope

QPASS consists of standards for a variety of construction work and gives points for jobs that meet the standards. These points are then added up to get a total quality score which is called the QPASS score.

The QPASS assessment consists of two (2) components:

- 1) Structural Work
- 2) Architectural Work

Each component is then divided into different items for later assessment.

Assessment of a construction, especially in achieving workmanship standards, is carried out through field checks. Assessment is carried out during the process for Structural work, while finishing / architectural work is carried out when the work has been completed.

Determination of the QPASS Standard

The work items, the classification of work items in job categories, the weights of each job and the minimum QPASS standards are generated from the discussion of the Engineering Bureau, Managers and Teams from Divisions and project teams based on Technical Specifications used in the project to be assessed.

In the development of QPASS, studies and several experiments were carried out to adapt the new test techniques and assessment standards. A scoring system development was carried out during the experiment to increase confidence in accuracy and consistency.

Quality Review and Quality Management

In a broad sense "quality" or "quality" is subjective. An item of high quality to one person is not necessarily good quality to another. Therefore, the business world and industry try to provide acceptable limits for interested parties.

Meanwhile, another definition for quality that is often associated with projects is fitness for use. In addition to the meaning described above, this term also pays attention to product availability, reliability and maintenance issues.

The definitions above will of course vary greatly depending on each business sector and industry. However, in general there are 4 (four) quality spectrums, namely quality planning, quality control, quality assurance and quality improvement.

Quality Management System

The Project Management Quality Policy in carrying out a job, and the quality objectives of the work are:

- 1) Availability of complete and useful engineering design details for the implementer of the work in accordance with program requirements.
- 2) Guaranteed implementation of work in accordance with quality management system procedures.
- 3) Quality Management to achieve satisfactory performance.
- 4) Fulfillment of predetermined requirements or product specifications.

2. Methodology

Place and time of research

This research was conducted at the Arandra Residence Apartment Development Project. The project location is in Central Jakarta. The research will be carried out in approximately 6 months starting from preparation, field survey, data analysis to compilation of research results.

Data collection technique

The data collection technique in this study is a questionnaire in the form of a number of statements that must be responded to by workers as respondents. The variable X is measured using a questionnaire which contains several questions.

Construction work, as well as being a quality management procedure and process, can improve the results of the work promised in the Construction Contract by meeting the criteria for good quality standards.

3. Literature Review

Construction Project

Construction Project is an activity to build a certain building according to a plan which is limited by time and allocation of certain resources. Project activities can be defined as temporary activities that take place in a limited period of time, with the allocation of certain resources and are intended to carry out tasks whose objectives are the aspects of cost, time and quality.

Project quality is a project element that is seen and felt by all parties in the project, both internal and external. The quality of project results /good quality is closely related to the brand image of an organization / company. These characteristics will be the parameters of quality and must be managed as best as possible in accordance with existing project implementation procedures.

Quality management

Quality/quality is already a familiar term to hear in our daily lives. Quality itself is a characteristic of a product, either in the form of goods or services and a series of work. In addition, the understanding and interpretation of quality is very subjective, the quality is said to be good if it gives satisfactory results. Conversely, if it gives unsatisfactory results, it will be said that the quality is not good. Quality Management is a way to direct organizational activities in the field with the aim of achieving quality work results as determined.

From the overall description, it can be concluded that Quality Management is a combination or series of activities related to the organization needed to achieve an objective in accordance with quality requirements based on the QPASS Quality standard.

Implementation of QPASS

The expected QPASS output is:

- 1) All functions (engineering, production, equipment, Quality control, commercial, foreman and workers) can understand the QPASS assessment process through direct application in the field during the work process.
- 2) Reducing the number of errors for each work in the field so as to reduce the overall cost of repairs (rework).
- 3) Control tool periodic supervision of the use of work methods and materials in the field
- 4) Encourage every project function, namely Engineering, Production, Equipment, QC, Commercial, Foremen and workers to Understand "DOING THINGS RIGHT THE FIRST TIME."

So the researchers can emphasize that QPASS is an objective and systematic quality assessment program with direct application methods in the field by the Engineering, QC, Production and Commercial functions with the aim of measuring, controlling and monitoring in an effort to achieve good quality values in a job.

QPASS purpose

The Quality Product Assessment System or QPASS was developed to calculate the achievement of the quality level of a job/project.

QPASS is structured with three goals:

- a) Become a standard quality assessment system for construction projects
- b) Make an assessment objective by:
 - Calculating the work that has been carried out in the agreed standards and specifications.
 - Using a sampling approach to get the overall project representation.
 - Allows quality assessment to be carried out systematically in a rational proportion of time and cost.

Each statement is given a value of 5 alternative answers which will be weighted using the Likert 1-5 scale rating method.

The five weights are:

- 1 = for the answer Strongly Agree (SS) 2 = for the answer Agree (S)
 3 = for the answer Neutral (N) 4 = for answers Disagree (TS)
 5 = for the answer Strongly Disagree

The total score obtained from this scale indicates that the quality management control system is very influential on construction work.

4. Implementation Methods

Correlation Analysis

This research was conducted to measure the strength of the relationship between the dependent variable of the QPASS Standard Work outcome procedure with the X variables,

namely the ability to manage quality standards. Correlation analysis is used with the correlation method used if the sample data of this study is more than 30 data (large sample) and the data conditions are normal and the data studied includes parametric statistics.

1) Inter correlation Analysis

Done to determine the magnitude of the inter correlation relationship between one independent variable and another independent variable.

2) Factor Analysis

Factor analysis aims to classify variables according to their characteristics. This aims to recheck whether the existing variables are in accordance with the group and remain in the group like the factor group in the questionnaire. Besides simplifying the number of independent variables which have an inter correlation value of $r > 0.800$, it is necessary to group them so that the resulting model is more stable against the factors of quality standard management capability. This is done by factor analysis.

3) Analysis of Determinant Variables

This analysis is intended to obtain the determining variable variables that affect the ability of quality management based on the variable quality performance parameters (QPASS standards). This variable was selected from the grouping results obtained from the factor analysis, namely the grouping obtained from the factor analysis, namely by grouping the coefficient value of $r > 0.800$ from the results of the correlation analysis and $r < 0.800$ for the results of the inter correlation analysis, which then selected one variable respectively represents each factor.

4) Regression Analysis

Multiple regression analysis (multiple regression analysis) which is conducted to analyze the relationship between one affected variable based on factors that affect the ability of quality management to the results of QPASS standard performance.

5) Validity Test

In this validity test that will be used in measuring the accuracy of the items in the questionnaire. Validation for these items can be seen by correlating the existing variables. From these calculations, it is obtained a correlation coefficient that can be used in measuring the validity level of an item as a determinant of whether an item is feasible or not used in validity testing techniques.

6) Reliability Test

This reliability test is made to determine the consistency of measuring instruments used, which can be appropriate and consistent if measurements are carried out repeatedly. This study is planned to use the Cronbach's alpha method, which is the result of the reliability test, which can be seen in the output of statistical reliability in order to conclude that the measuring instrument is realistic or not.

Research Flowchart

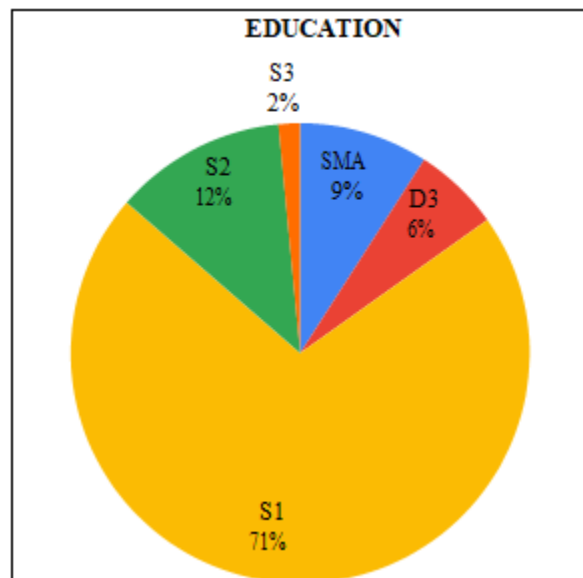
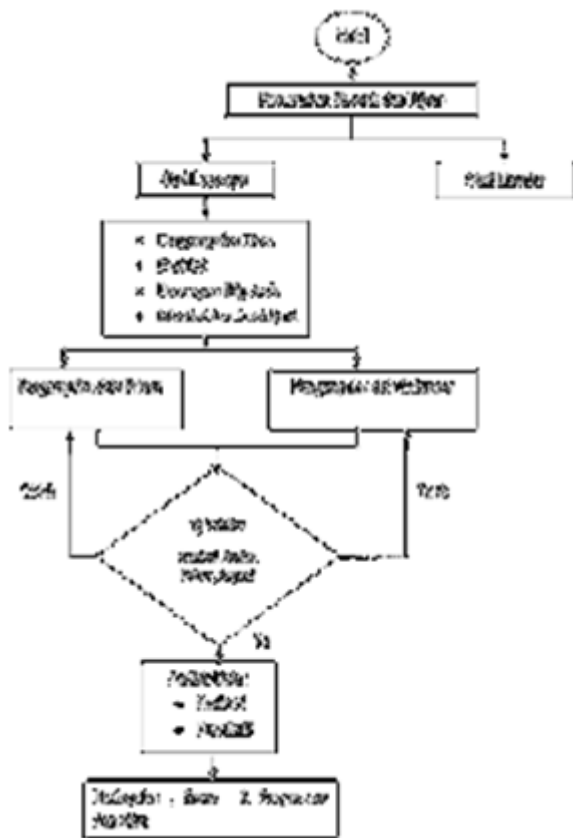


Figure 1.1: Expert Education

Level	Number of Respondents	Percentage
SMA	6	4%
D3	4	6%
S1	47	71%
S2	8	12%
S3	1	2%
General	66	100%

5. Results and Discussion

Place and Time of Research

Project Name: Arandra Residence Apartment Building Construction Project

Location: Cempaka Putih, Central Jakarta Project Owner: PT. Cempaka Sinergy Realty

Respondent Data Analysis

The tools used as data collectors in this study were in the form of cake commissioners, where 66 questionnaires were distributed. The questionnaire is distributed to be filled out by experts working on construction projects.

The construction project used as the object of this research is the Arandra Residence Apartment Building Construction project. Of the 66 copies of the conditioner that were distributed, 66 were also returned. Thus the distributed cake conditioner has a response rate of 100%.

The data obtained from kuestioner is then analyzed to determine data on the status of experts and work experience. The results of the respondent's data analysis are presented in the following three tables:

From the picture above, it can be seen that 71% of the respondents who answered have an S1 education and 12% have a Masters education.

Year	Number of Respondents	Percentage
5 Year	15	23%
10 Year	30	45%
15 Year	8	12%
20 Year	6	9%
25 Year	7	11%
General	66	100%

From the picture above, it can be seen that 45% of the respondents who answered had work experience in their field for an average of 10 years and 11% had experience of more than 25 years.

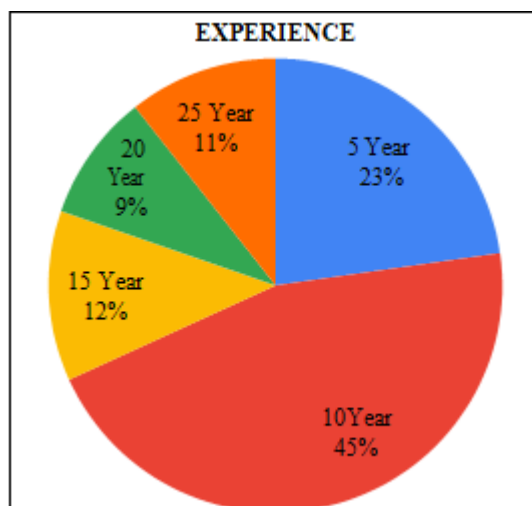


Figure 1.2: Work experience

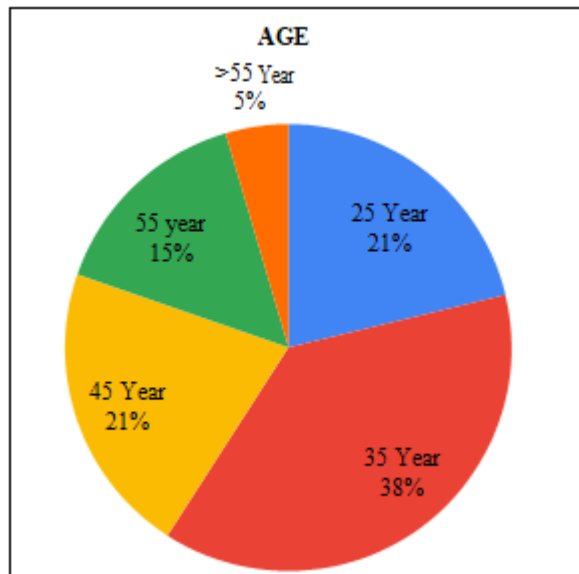


Figure 1.3: Age factor

Year	Number of Respondents	Percentage
25 Year	14	21%
35 Year	25	38%
45 Year	14	21%
55 Year	10	15%
> 55 Year	3	5%
General	66	100%

Based on these criteria, 4 determinants are obtained which represent the model factors that affect the ability of quality management to work results as measured by the QPASS Standard, namely the variables X22, the factors of Quality Improvement and the Factors of Service Management, namely variables X28, X29 and X30 with a coefficient value. intercorrelation has shown in the table above.

From the picture above, it can be seen that 35% of the respondents who answered were 35 years old and 5% who were over 55 years old with work experience of more than 25years.

Figure 2 Variables in the Variable X Statement

The independent variable of the questionnaire results that affects the ability to manage quality management on work results as measured by the QPASS standard

Regression Analysis

The results obtained after several times carried out the regression analysis process by eliminating the variable outliers, it can be adjusted RSquare = 0.783. This linear regression analysis is carried out on a predetermined combination of determinants and results in a multiple regression model:

$$Y = - 0.014 + 0.388 X22 + 0.359 X29 + 0.279 X30$$

Where:

Correlation Analysis and Intercorrelation Analysis

The calculation of this correlation method will select independent variables that have a positive relationship with the variables associated with the first from 30 selected variables to 8 variables and have a moderate to very high

correlation value, so that 8 independent variables have a normal distribution as shown in the table below this:

Factor Analysis

To simplify the number of independent variables that have a value of $r > 0.800$ against the value of the work as measured by the QPASS Standard, a factor analysis is carried out using Principal component analysis and the Varimax rotation method with the criteria of the Kasier, namely take the component that has eigen value > 1 . Determinant Variable Analysis

- Y = Performance Results as measured from the QPASS Standard
- X22 = reviewing quality management practices
- X29 = improve service to customers
- X30 = Improve product quality

This proves that the model predicted previously is in accordance with the existing hypothesis.

Validity test

To test the validity, the Corrected Item-Total Correlation column will be used. If the value of the statement in the column is greater than 0.3 then the statement item is valid, and if it is smaller than 0.3 then the statement item is invalid.

Item-Total Statistics

Scale Mean if Item Deleted Scale Variance if Item Deleted Corrected Item-Total Correlation Squared Multiple Correlation Cronbach's Alpha if Item Deleted

X22	4.43	5,905	.817	.668	.953
X29	4.54	5,752	.904	.845	.884
X30	4.51	5,754	.895	.838	.891

Reliability Test

Cronbach's Alpha N of Items 0.979 31

Cronbach's Alpha value shows $0.979 > 0.70$. This means that the instrument variable X is reliable.

6. Conclusion

From the results of this study, it was found that the quality management ability is closely related to the quality work results measured by the QPASS standard in the research hypothesis, namely the X22 variable, the factor of Quality Improvement, and the factor of Service Management, namely X29 and X30.

The unstandardized regression model which is obtained from the relationship between the factors that affect the ability of quality management to the quality work results as measured by the QPASS Standard has resulted in a linear equation as follows:

$$Y = - 0.014 + 0.388 X22 + 0.359 X29 + 0.279 X30$$

Variables X22, X29, and X30 Review of aspects of quality management practices which are part of the Quality Improvement factor and Service Management Factors which consist of increased customer satisfaction services and increased product quality which can be seen in the regression model that has been generated through statistical analysis which states a strong positive correlation between the factors of Quality Improvement and Service Management with work

results as measured by the QPASS Standard, where Quality improvement and Service Management are things that should not be missed. Given this, it aims to reduce the occurrence of quality failures in the Arandra Residence project, namely:

- a) It is necessary to hold training and certification related to quality to increase the capabilities and skills of project staff in the field of building construction.
- b) The number of technical experts required in the contract document must match those who carry out construction work in the field.
- c) It is necessary to hold training and certification to increase the abilities and skills of workers (workers) in the field of building construction.
- d) It is necessary to increase work competence in the world of construction to improve the quality of Human Resources (HR) owned by the company, which will also improve the quality of construction service companies.

In conclusion, to achieve the project quality objectives can be done by planning the design must be systematic, detailed and detailed at each stage of the project and the steps of construction implementation:

- a) This is because the best quality is only produced by a consistent quality management process from the start of the project to the end, the project must always focus on the process of Management Factors, Quality Planning, Quality Assurance, Quality Control and Improvement. Quality. (Quality Improvement), Service Management and QPASS Quality Standards.
- b) The success of a project implementation is influenced by careful planning, selection of implementation methods, appropriate scheduling and consistent implementation process procedures according to the plan.
- c) Revision of Laws and Regulations regarding Construction Quality Standards for Structure, Architecture and MEP needs to be done immediately to become the Indonesian National Standard.
- d) The role of expert appraisers and the socialization of quality management is indispensable if there is a failure of construction quality as regulated by existing regulations.

Design reviews need to be carried out by service providers / contractors to facilitate contractors in carrying out construction

- a) Routine supervision must be carried out by a supervisory engineer / consultant so that the quality and quality of the construction building are as expected
- b) Many cases of construction failure occur at the implementation stage in the field so that competent management staff are needed in construction activities.
- c) The dominant parties involved are supervisors and providers, the provider's fault is carrying out work that is not according to specifications, while supervisors are negligence when implementing specifications.

The QPASS Quality Standard with the 85% standard in its implementation must be explained to the owner and supervisor so that one goal and correction in the check list can be agreed upon in advance to get better quality from the process to the final finish, monitored and always carried out continuous evaluation by:

- a) QPASS planning before work, check drawings, work

methods and tools.

- b) Monitoring the implementation continuously and ensuring that all rules and standards can run properly according to the agreed standard 85%.
- c) Be consistent in overseeing and supervising the implementation of the process, implementation and post-implementation and continuous quality improvement.

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