

# Building a Model on the Quality Performance of Road Project Implementation

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## ABSTRACT

Road conditions are expected always be safe and comfortable. Earlier road damage is caused by the various causes, one of which is the performance of road project implementation. Performance of project road implementation is an important factor in the construction services that is requirement should be implemented. This study was conducted to know the effects of graded multi dimension management elements from the PDCA elements, 5M elements, on the elements of the quality performance of project road implementation. Data collection technique was by means of distributing questionnaires of questions / statements to the respondents of executor contractors that in the implementation of road project, then conducted data processing that previously conducted data collection and tabulation of data. Statistical analysis method in this study was the *PLS* with the *Smart PLS software* to know the predictive relationship between the variables in a graded multi-dimensional structure. The findings of hypothesis of the multi-dimensional management elements were, Working Implementation, Employee, Working Methods have the significant and positive effects on the performance of road project implementation with the regression equation of the Quality Performance of road projects implementation = 0.436 Employees, Employees = 0.619 Working Implementation and Quality Performance of road project implementation = 0.417 Working Methods, Working Method = 0.762 Working Implementation. Validation strategies were done through interviews and direct observation in the field based on the research findings.

**KEYWORDS:** Quality Performance, influence sand strategies models

## INTRODUCTION

Quality performance of road project implementation in the new road construction, road betterment and road rehabilitation / maintenance projects, is the transportation demand should be met [1]. Failure to achieve the required quality performance may occur in the main construction of roads. Some forms of damage from much road construction damages are like *cracks, potholes, shoving, rutting, and bleeding*. To meet the expectations for the deviation [2], among other, it is needed the management arrangements on the performance quality of roads project as required. General Superintendent and his staff, have responsibility for the quality performance required at all stages of implementation activities [3][4]. Weaknesses and strengths of the contractor, is to be the drive and or inhibitors on the quality performance of the implementation of road projects as required, however the contractors who bear the greatest weight of responsibility as the provider of services [5].

This study originated from the Physical Gaps, which measures the quality performance of the implementation of road projects based on facts that do not match to expectations so that needed the research on model of attitudes / perceptions of the various levels of the variable. Research Gaps, made so as to have the uniqueness and originality / novelty. Based on the background of the problem, it was determined that the formulation of the research problem focused and clear, [6]. This study was conducted in connection with the function of PDCA, 5 M and the project targets in the following question: Which of the Working Implementation factors, and factors Employee, Work Equipment, Finance, Work Materials, Working Methods that significantly influence the quality performance on the road project implementation road construction projects, road betterment and rehabilitation / maintenance of roads, and how the validation strategy?

Basically the purpose of the research is the development of theory and problem solving to the problem formulation [6]. In accordance with the problem formulation, thus the purpose of research in the following statement: Analyzing the Implementation of Occupational factors, and the factors of Employee, Work Equipment, Finance, Materials Work, Working Method that significantly influence the Quality Performance of the Road project implementation on the new road construction, road betterment and rehabilitation / maintenance of roads projects and determine validation strategy. This study was conducted with the hope to be useful for a variety of parties, and can contribute to the study of the construction project management science, especially in the areas of quality performance of the road project implementation.

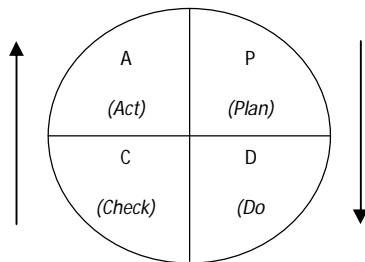
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## MATERIALS AND METHODS

In this section examines the theories and concepts that are used as bases to explain the variables will be studied. Thought framework is built based on the theories examined, by looking for the linkage between the variables to be studied. The next step is to determine the research hypothesis based on theoretical study and thought frame works.

### PDCA Element

Walter Shewhart [7] was the first one who introduced the *Plan-Do-Check-Act cycle* famous with Shewhart cycle. Edward W. Deming [8], popularized the Shewhart cycle in Japan, the Japanese people refer to the PDCA cycle into Deming Cycle. **Figure 1.** presented the Deming's PDCA cycle according to Deming cycle. The meaning of PDCA according to Deming [8] is described by Oberlander [9]: (a) *Plan*: make change planning for improvement: (i). find the problem and identify targets to improve, (ii). Analyse consistent with current situation, (iii). Identify the root of the problem and its impact, (iv). Develop a planning for corrective action, (b). *Do*: implement improvements as planned, (i). implement, (ii). Implement the plan, (c). *Check*: checks the results of the plan implementation and perform testing on the change impact of the already planned, (i). confirm the results of implementation, (ii). compare with the initial plan targets, (c). *Act*: take corrective action against the results obtained and implement the changes that have been tested, (i). standardize the steps necessary to prevent the problem from happening again, (ii). repeat the process includes the remaining problems and increase the chance that the next stage of planning.



**Figure 1.** Deming's PDCA cycle according to Deming cycle

### Implementation of Work

Pre Construction Meeting has the goal to equalize the work planning perception to be carried out. Implementation: (1). a follow-up based on the planning [10], (2). Should be precise, which is preceded by the carefully planning [11], (3). Is a continuation of planning [12], (4). Determined based on the general guidelines [13], (5). follow the regulations established, (6) to realize and achieve the desired results [14].

1. Early Implementation Plan Target: is rather on the Working Implementation corrective action (act), which is a reflection of the initial corrective action on the Working Implementation after known the mismatch between the Working Implementation on work planning and corrective actions (act) [10].
2. Final Implementation Plan Target: is a reflection of the corrective action without stopping. Plan the ultimate target should be implemented to determine the level of irregularities and deficiencies, the final act of control is the result of work control at the last time to implement [10][8][15].

### M Element

Organizational performance includes elements of *man, machine, money, material, method* [16]. There are nine (9) factors that influence products / services: market, money, management, man, motivation, materials, machines and mechanization, modern information methods, mounting product requirements Feigenbaum [17], (2). Required 4 (four) input factors and process, raw materials, workers, energy, capital [18][19]. (3). Technical system is required of four (4) factors of organization, capital, information, technology [20][21][22][23][24]. (4). There are eight (8) factors: workers, managers, equipment, facilities, materials, services, land, energy [25][26].

### Man (Employee)

Human resources in order to meet the expectations for activities affecting quality performance [27], must satisfy the elements of skill and education, experience and discipline of employees [15].

1. Employee Education and Skills: To change effectively when done training and skills development. [28][3][29]. Education and training regarding the team building and critical thinking skills: [30][24]. Conduct education and training to make high leverage [24][31];.
2. Employee Experience: Experience is a learning process asymptomatic lower cost indicated learning curve [25]. Employees who carry out the same work over and over again, time used to complete the faster [32].

3. Enforcement of the Sanctions and Discipline of Employee: Discipline of employees in order to obtain a desired achievement. [33][34][35][36][37]. Sanctions, an act of poor employee behaviour [37][23]. Discipline is strict adherence to the rules of the organization [23][24][31].

#### Machine (Work Equipment)

Activity equipment resources to realize the implementation of good work that can affect the quality of performance [28][38], it includes the following elements: correct use of equipment, and the absorption and utilization of technology:

1. Appropriateness of Equipment Usage: Needs special equipment designed so as to be provided as required, [33]. If the activity is not carried out in accordance with the equipment used there will be waste. Equipment has a very large part of long-term plans should be prepared as carefully as possible [16].
2. Equipment Specifications: The type of equipment used must be in accordance with the provisions of the existing equipment is intended to use equipment that is not working right because it would result in ineffective and inefficient and not economical work performed [16][15].
3. Equipment Age: Uses and capacity of equipment needed for at least the life of the equipment still being met in accordance with the provisions of the limits, intended to be used in the implementation of equipment that is not easily broken or jammed to interfere with efficiency and effectiveness [16][15].
4. Preparation of Equipment Use Schedule: Scheduling the use of the equipment must be prepared when the use of the equipment as well as possible, because if it is not done, much work is stopped and idle. Waiting for their turn, will have a saturation that would interfere with the smooth execution of activities [16].

#### Money (Finance)

Are grouped in finance as a source of costs for the road construction implementation activities in order to get the expected results that could affect the future implementation activities [28], the necessary elements of cost efficiency, cost and availability of appropriate usage fee:

1. Cost Efficiency: With the products that satisfy consumers then have an impact on the efficiency and cost effectiveness so as to generate adequate returns cost for the company [39][40][41].
2. The accuracy of Usage Costs: Rising costs of construction activity then the cost will rise so the price of goods sold and the unit price will be an advanced ride. Attention to the preparation of cost: cost of sales, cost of construction, cost of materials, direct labour cost, corporate overhead [41].
3. Cost Availability: Availability of the financial costs is solely those of the contractor. The project manager must proactively participate to control the fund, because of the external project manager knows that the most liquid or the earlier budget available [29].

#### Material (Material/Work Materials)

Maloney [29] states the cost of covering the costs of inventory, spending policies, the use of materials, waiting time, the model material purchasing, inventory security, and repurchase [42][28].

1. Material Inventory Work: It is impossible to operate without the availability of the material, but that must be considered is the fulfilment of defined quality specifications. In the company urgently needed supplies of materials that can support efficient implementation within acceptable limits [42].
2. Estimated Use of Raw Materials: Raw materials must be taken into account properly, other wise it will lead to scarcity of material due to unavailability of inventory in storage and will be discharged prematurely or before the amounts use dare met [42].
3. Raw Material Price: The price of raw materials may affect the quality of the implementation phase of activity, due to the price increase exceeds the standard price will affect the quantity of production. With prices that do not match your price plan early, make a lot of considerations and decisions of its own [42].
4. Material Inventory Costs: The cost of excess inventory, then spend more money for a relatively long period of time, and stored in a secure storage place and undamaged. Costs are relatively less well off would be better to spend the money as needed [42].
5. Material Purchasing Model: Model the purchase is how to get the materials to be used for the implementation of activities. Purchase with down payment money, is to keep if at any time there is an increase nutrients. But by purchase model with the down payment will certainly affect the cash flow [42].

#### Method (Work Method)

The working method chosen is that generates revenue for a company through effective, efficient and economical activities without leaving the technical elements. For all work activities, involve and require the completion of employees, so it needed a suitable working method based on its activities [28].

1. Overall Production System: This system has the objective to eliminate or shorten the path length of haul distance, work systems and to identify activities waiting time or waiting. All processing is done on the whole and simultaneously, in accordance with the working procedures and job descriptions [28].

2. **Appropriate Placement Employees:** This method aims to simplify working methods, minimizing or eliminating motion of not useful resources. The use and utilization of employees must comply with the activities carried out whether in loading and levelling [43].
3. **Employees Working with Manual Equipment / Machinery:** This method aims to minimize idle and find a balance between employees with equipment or machinery. Employees perform work activities whether using manual / machine dependent and in accordance with the activities carried out [44] [45].
4. **Employees Working Together:** The goal is maximize productivity and minimize the interference of others who are not related to the activities of the work performed. With this technique the employees working in accordance with the job description has been determined based on expertise, experience [44] [45].

### **Quality Performance**

Juran [45] defines that the quality is the product privilege, the better the product privilege, the higher the quality. Quality according to Stamatias [46] defined of seven (7) types: Conformance to requirements [47], Fitness for use [48], Continual improvement [49], As the defined by the customers [50] [51], Loss of society or Quality loss function or Taguchi loss function [52], Meeting 6 criteria (Six Sigma) [53][47]. Each output of inputs must meet four (4) quality criteria [54]: appropriate, accurate / correct, and complete, on-time (3). To improve the quality adjustment ultimately will certainly reduce the cost of project implementation [55][56]. (4). Quality is a dynamic state associated with products, services, people, processes and environments that meet or exceed expectations [57][58]. (5). Quality is a project management objective so that the component materials must meet the requirements of the resulting quality or fitness for use [47].

1. **Conformance To Requirement:** is carrying out the work in accordance with the requirements of technical specifications. Technical specifications are fixing the terms include restrictions on the use and mix of materials, the use and capacity of the equipment, how to use and operation, and recommended a ban on the product as well as the necessity of the project [47].
2. **Fitness For Use:** carrying out the work is acceptable and can be fully utilized, so it must use the procedures and ways to correct and predefined rules. Be accepted and fully utilized is already met the existing standards / specifications / rules / procedures [47].
3. **Zero Defects:** Carry out the work with the correct mechanism, so that there are no defects and deficiencies [47]. After the execution have completed, then, conducted the process of examination and submission of work. The team works to inspect defects and deficiencies have been previously established [59].
4. **Appropriate:** is carrying out the work in accordance with the general specification requirements that have been established [54]. General Specifications are any provisions of a general nature that govern the terms and grammatical administration company, covering the activities of a general nature and fundamental [59].
5. **Complete:** job submission declared complete if it has a main and supporting documents [54]. The document in question is a form of acceptance of the work, as built drawings, documentation photographs, documents the results of laboratory tests of materials, the report documents the implementation of project activities [59].
6. **As the Defined by the Customers:** is that in carrying outwork that meets the requirements of smoothness, safety, and the satisfying of road users [50][51]. Meet the smoothness that the contribution does not result in jammed roads, meet the security that supplementary buildings are met, satisfaction that the pavement surface is not cunning, rough, not bumpy, dry quickly after rain, not shiny and others. [59].

### **Hypothesis**

Quantitative research hypothesis as in this study was developed through a theoretical study as the temporary answer to the problem. Hypothesis there is a suspicion among the respective variables work performance, employee, work equipment, finances, work materials, working methods, affect the quality performance of the implementation of road projects in road construction, road betterment and rehabilitation / maintenance of roads projects.

### **Research Design**

It is starting with the background of the problem, formulation of the problem, research objectives, theoretical studies and determination of the hypothesis. To support the formulation of the problem required a literature review and a preliminary study. In the course of a study hypothesis proves necessary sampling and preparation of a questionnaire study. After meeting the test instrument (test items, validity and reliability) performed statistical analysis, discussion, findings, conclusions and suggestions. Figure 2. presented the Thought flow of Research Design [6].

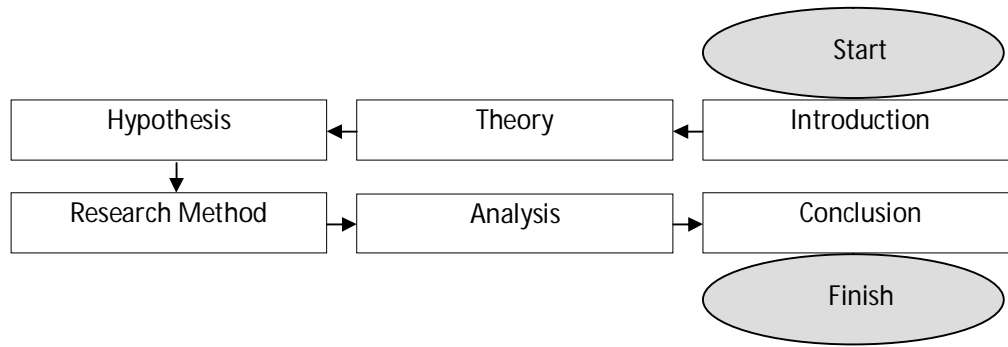


Figure 2. Thought Flow and Research Design

### Research Variables

In studies with respect to the variable always research, information obtained from a variable then be deduced. Variables defined attributes that have a variation between the subjects/objects with others [60] [63]. Variables have variations thus called as variable [61]. The operational definition is the determination of construct so that become variables that can be measured, Kidder [62].

### Research Paradigm

Research paradigm is to show the relationship between the studied variables reflecting the formulation of problem, the theory used to formulate hypothesis, and analytical techniques used. The variables of this study were divided into 2 (two) groups namely exogenous variables, and endogenous variable [6].

### Variable Group

Exogenous variables are Working Implementation ( $X_1$ ) with 2 (two) indicators. Endogenous variable group 1 is the Employee ( $X_6$ ) with three (3) indicators, Work Equipment ( $X_7$ ) with four (4) indicators, Finance ( $X_8$ ) with three (3) indicators, Working Materials ( $X_9$ ) with 5 (five) indicator, Methods of Work ( $X_{10}$ ) with four (4) indicators. Endogenous variable 2 is Quality Performance ( $Y_1$ ) with 6 (six) indicators.

### Scale Measurement

Measurement scale used five (5) scores rank and the gradation were: Strongly Agree (SA), with a rating of 5, Agree (A) with a rating of 4, Uncertain / Neutral (N) with a rating of 3, Disagree (D) with a rank value of 2, and Strongly Disagree (SD) with a rating of 1 [6].

### Population, Sample and Data Collection Techniques

The population is the total number of units of analysis characteristics would supposedly cover the entire reality on the subjects [63]. In this study population were men (subjects), the contractors who carry out the construction of roads and who became the General Superintendent of the target population (GSP) with staff [6].

### Determination of Population

The number of members of the contractor population, (1).General Works Service of Provincial Highways, (2).Centre for Regional Directorate General of Highways Data from the questionnaire results road construction, road improvement, and rehabilitation / maintenance of roads projects in the Fiscal Year 2013 on going projects on a contract  $\geq$  Rp. 2 Billions in East Java Province.

### Determination of Total Sample

Through Table Krejcie [66] with confidence level of 95%, from a high of 180 (one hundred eighty) population size, then, find the number of sample members 180 (one hundred eighty). Total population of 140 (one hundred and forty), samples should be back to 100 (one hundred) and have returned all the circumstances not in damaged condition.

### Data Collection Techniques

The quality of research data is affected by two (2) terms; **First**, the quality of the research instrument in the form of questions/statements with respect to the validity and reliability of the instrument; **Second**, with regard to the quality of the data collection methods used in data collection. This research was done by using a questionnaire technique [6].

### Testing, Research Instrument Matrix and Trial Results

Construction management research instruments there are already available but sometimes hard obtainment. Because it seems that there are different research instruments is not necessarily appropriate,

inappropriate and does not meet validity and reliability. This is due to different conditions so difficult to find similarities [6].

#### Item Analysis

The selection procedure of questions / statements used was in a measuring instrument, by examining the characteristics of each of the questions / statements that are part of the test in question 60 [64] [65]. The questions / statements chosen were which has a correlation value of  $\geq 0.30$ .

#### Validity Analysis

Meet reliability means that the instruments can be used to measure what should be measured (accuracy). Research instruments were arranged so that respondents understood the aim of questions / statements of research instruments. Testing of construct validity was by using factor analysis model [64] [65]. Met the validity test if  $> 0.60$ .

#### Reliability Analysis

Meet the reliability meant that instrument used in several times (consistent) to measure the same object resulting in the same data. Reliability is a measure relating to the use of repeatedly measure to generating the same. Instruments test has reliability if the value of  $\alpha$  or alpha Cronbach is  $> 0.60$  [64] [65].

#### Matrix Research Instruments

Indicators form: (1). Working Implementation of exogenous variables, (2). Endogenous variables 1, Employees, Work Equipment, Finance, Work Materials, Working Methods, Technology, (3). Endogenous variable 2, quality performance. From the results of the research instrument it composed the matrix of research instruments and the amount of research instruments. Table 1 presented Matrix Variables and Indicators.

Table1. Matrix Variables and Indicators

<b>1. Exogenous 1 Variable Group (PDCA Functions)</b>		
No	Variables	Indicators/Items
	X <sub>1</sub> . Working Implementation 2 (two) indicators	X <sub>1.1</sub> . Early target plan implementation X <sub>1.2</sub> . Final target plan implementation
<b>2. Endogenous 1 Variable Group (5 M Functions)</b>		
<b>1</b>	X <sub>2</sub> . Employee 3 (three) indicators	X <sub>2.1</sub> . Skills and educations of employee X <sub>2.2</sub> . Experiences of employee X <sub>2.3</sub> . Enforcement of the Sanction and Discipline of employee
<b>2</b>	X <sub>3</sub> . Work Equipment 4 (four) indicators	X <sub>3.1</sub> . Accuracy of Equipment Use Amount X <sub>3.2</sub> . Accuracy of Equipment Specification X <sub>3.3</sub> . Equipment Age X <sub>3.4</sub> . Arrangement of use schedule
<b>3</b>	X <sub>4</sub> . Finance 3 (three) indicators	X <sub>4.1</sub> . Cost Efficiency X <sub>4.2</sub> . Accuracy of cost use X <sub>4.3</sub> . Cost availability
<b>4</b>	X <sub>5</sub> . Materials/Work Materials 5 (five) indicators	X <sub>5.1</sub> . Supplies / materials X <sub>5.2</sub> . Estimation of raw materials uses X <sub>5.3</sub> . Raw materials costs X <sub>5.4</sub> . Supplies costs X <sub>5.5</sub> . Materials Purchasing Model
<b>5</b>	X <sub>6</sub> . Working Methods 4 (four) indicators	X <sub>6.1</sub> . Whole production system X <sub>6.2</sub> . Suitable labor placement X <sub>6.3</sub> . Employee works with manual equipment / machine X <sub>6.4</sub> . Employee works simultaneously
<b>3. Endogenous 2 Variable Group (Project Targets Functions)</b>		
<b>2</b>	Y <sub>1</sub> . Quality Performance 6 (six) indicators	Y <sub>1.1</sub> . Conformance to requirements Y <sub>1.2</sub> . Fitness for use Y <sub>1.3</sub> . Zero defecto Y <sub>1.4</sub> . Appropriate Y <sub>1.5</sub> . Complete Y <sub>1.6</sub> . User Wants Met

Source: Results of Research Processing

#### Trial Results

Further, trial to research instruments such as the items test, construct validity test, reliability test. Of the number of respondents selected, 30 (thirty) of them represented on the implementation of road construction quality performance activities. The results of the testing instrument of accession with the items test, validity test and reliability test, with the trial does not need to be fixed and can be followed on subsequent studies due to

have qualified in the items test, validity test and reliability test. Table 2 presented The Trial Results of items test, validity test and reliability test.

Table 2. The test results of the test items, test validity and reliability testing.

No	Test Implementation	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	Y <sub>1</sub>
1	Items Test/rt-2	>0.30	>0.30	>0.30	>0.30	>0.30	>0.30	>0.30
2	Validity Test/rt-2	>0.60	>0.60	>0.60	>0.60	>0.60	>0.60	>0.60
3	Reliability Test	0.951	0.933	0.952	0.918	0.848	0.834	0.957

Source: Results of Research Processing

**Data Analysis**

This research used the quantitative research in which, data analysis is an activity in which after the entire data collected through tabulation of questionnaires to the statement/question [6]. Data analysis is the process of data testing that the results are used to draw the conclusions of research.

Model Selection

In a quantitative study which is based on the assumption that the phenomenon / symptoms can be classified and the relationship of phenomena / symptoms is causal. Statistical analysis used the Variance Based Structural Equation Model or Component Based Structural Equation Models or Variance-based SEM or Partial Least Square-PLS [64].

Partial Least Square-PLS

Selection of Partial Least Square-PLS used the *Smart PLS software 2.0 M3*. The model analysed in the relationship of prediction so that the strong support is not so important, the results of the good variable relationships will create new theories and formative indicators.

**RESULTS AND DISCUSSION**

**PLS Statistical Data Analysis by Smart PLS**

PLS statistical data analysis is in which by the exogenous variables, Endogenous variables 1, and Endogenous variables 2. Model testing that produces the standardized regression weight value on the variable. Figure 3 presented Model Path Coefficient Value. Figure 3 presented Model T-statistics Value.

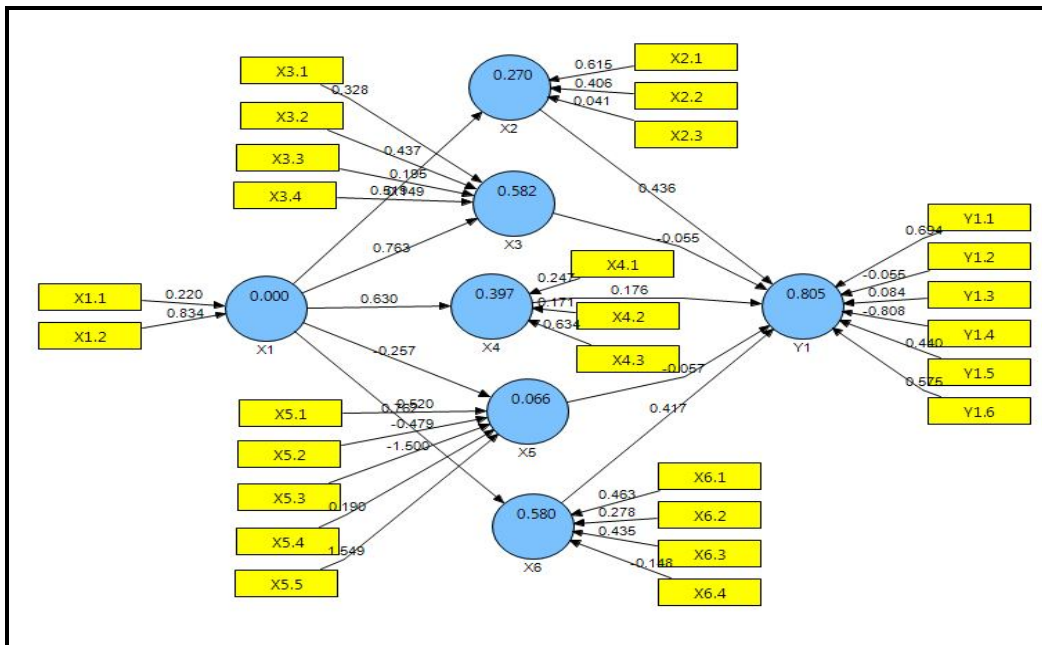


Figure 2.4. Model Path Coefficient Value

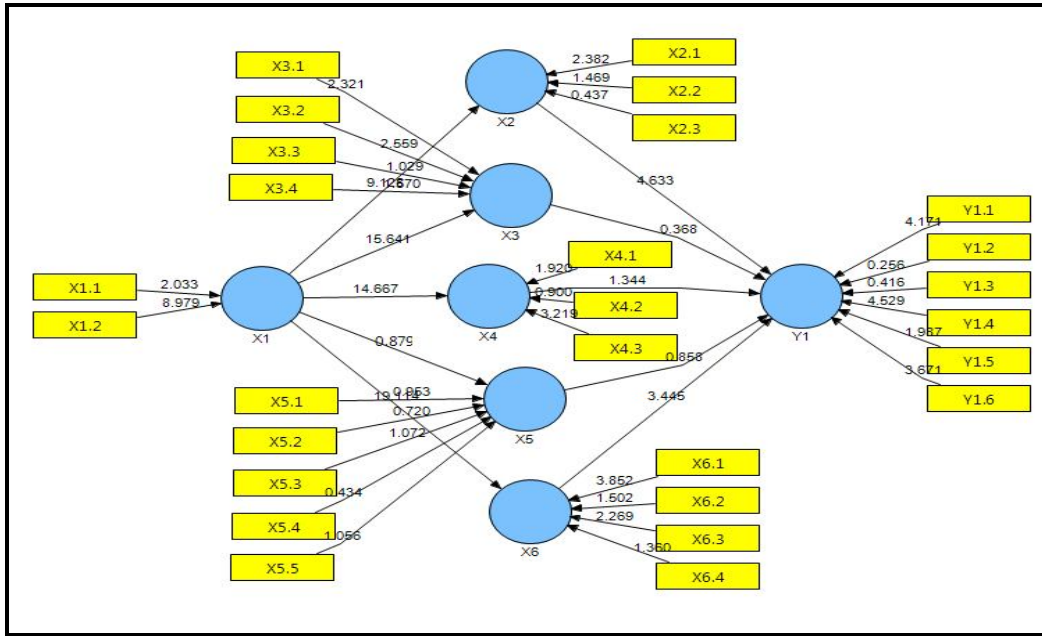


Figure 3. Model T-statistics Value

Testing Between Latent Variables

Hypothesis testing was done by means of comparing the value of T-statistics of each of relationships among latent variables whether larger or smaller than 1.96 by considering to the path coefficients size. (1). There are six (6) Significant influences: Working Implementation -- Employees, Working Implementation -- Work Equipment, Working Implementation – Finance , Working Implementation -- Working Methods, Employee -- Quality Performance, (2). There are four (4) in significant influences: Working Implementation--Work Materials, Work Equipment--Quality Performance, Work Materials -- Quality Performance. Table 3 presented Path Coefficients and T-statistics.

Table 3.Path Coefficients and T-statistics

No	Latent Variables	Path Coef.	T statistics	T table	Remarks	
1	X1 -> X2	Working Implementation-Employee	0.619	8.517	1.96	Sig
2	X1 -> X3	Working Implementation-Work Equipment	0.763	14.804	1.96	Sig
3	X1 -> X4	Working Implementation-Finance	0.630	14.226	1.96	Sig
4	X1 -> X5	Working Implementation-Work Materials	0.257	0.889	1.96	Insig
5	X1 -> X6	Working Implementation-Working Method	0.762	20.918	1.96	Sig
6	X2 -> Y1	Employee-Quality Performance	0.436	4.607	1.96	Sig
7	X3 -> Y1	Work Equipment-Quality Performance	0.056	0.049	1.96	Insig
8	X4 -> Y1	Finance-Quality Performance	0.176	1.389	1.96	Insig
9	X5 -> Y1	Work Materials- Quality Performance	-0.057	0.914	1.96	Insig
10	X6 -> Y1	Working Method- Quality Performance	0.417	3.615	1.96	Sig

Source: Results of Research Processing

Contributions of Variables Relationship

The next step determines the coefficient of determination (R-Square) is a coefficient to determine how far the relationship contribution can be explained by each of variable as described in the following table. Table 4 presented Coefficient of Determination (R-Square).



Table 4 Coefficient of Determination (R-Square)

No	Latent Variables	R-Square	Remarks
1	Employee	0.270	Contributions of the relationship of Working Implementation exogenous variable, to the endogenous variables 1 of Employee by 27.0%
2	Work Equipment	0.582	Contributions of the relationship of Working Implementation exogenous variable, to the endogenous variables 1 of Work Equipment by 58.2%
3	Finance	0.397	Contributions of the relationship of Working Implementation exogenous variable, to the endogenous variables 1 of Finance by 39.7%
4	Work Materials	0.066	Contributions of the relationship of Working Implementation exogenous variable, to the endogenous variables 2 of Work Materials by 6.6%
5	Working Method	0.580	Contributions of the relationship of Working Implementation exogenous variable, to the endogenous variables 1 of Working Method by 58.0%
6	Quality Performance	0.805	Contributions of the relationship of Employee, Work Equipment, Finance, Work Materials, Working Method endogenous 1 variables, to the latent variables of Quality Performance by 66.6%

Source: Results of Research Processing

### DISCUSSION

From the results of statistical analysis of the Smart PLS as shown in Table 4 about Path Coefficient and T-statistic it could be defined the relationship variables arranged in graded:

#### Statistical analysis based on Path Analysis

Statistical analysis results composed as graded (1). Working Implementation Variable had positive and significant effect on Employee; Employee had positive and significant impact on Quality Performance and (2). Working Implementation had positive and significant effect on Working Method; Working Method had positive and significant effect on Quality Performance.

$$Y_1 = 0,436 X_2 \text{ (Employee)}$$

$$X_2 = 0,619 X_1 \text{ (Working Implementation)}$$

$$Y_1 = 0,417 X_6 \text{ (Working Method)}$$

$$X_6 = 0,762 X_1 \text{ (Working Implementation)}$$

#### Statistical analysis based on Factor Analysis

In the statistical analysis that gradually arranged of the Working Implementation variable that had the greatest correlation was an indicator of the Early target plan implementation, of the Working Methods variable that had the greatest correlation was an indicator of Appropriate Employee Placement, and of the Quality Performance variables that had the greatest correlation was the indicator of Conformance to requirements.

#### Validation Results

From the research results through statistical analysis has been known that to complete the quality performance of road projects implementation in order that avoid the earlier damage was by done the validation strategy as outlined in the table. Table 5 showed the Model validation strategy.

Table 5. Model validation strategy

No	Research Variables	Validation Strategy of Physical Action To the Quality Performance of Research Results (Action should be done are:)
1	Working Implementation	<ol style="list-style-type: none"> <li>1. Making implementation improvement when known the presence of discrepancy between implementation and plan.</li> <li>2. Making implementation improvement for the last time in order that not happen any discrepancies.</li> </ol>
2	Employees	<ol style="list-style-type: none"> <li>1. Conduct education and continuous training and placing experienced employees.</li> <li>2. Sanction when an error is found in accordance with the level at the same time in stilling discipline employees.</li> </ol>
3	Working Methods	<ol style="list-style-type: none"> <li>1. Eliminating the long groove and shorten the transport distance, preventing the waiting time.</li> <li>2. Putting employees in accordance with their fields, and maximizing productivity, minimizing the intervention.</li> </ol>
4	Quality Performance	<ol style="list-style-type: none"> <li>1. Carry out work in accordance with the technical specifications that carry out procedures correctly.</li> <li>2. Carry out the work with the correct mechanism, and prevent the occurrence of defects and deficiencies.</li> <li>3. Carry out work in accordance with the general specifications that always put the project documentation.</li> <li>4. Carry out work that meets the requirements of smoothness, safety, and comfort of road users.</li> </ol>

Source: Results of Research Processing

## CONCLUSION

From the analysis results then compose the influence of variables graded structured to establish the validation strategy on the performance of road projects implementation in order to achieve results as expected, and the conclusions are as follows:

1. The results of the model analysis the influence of the elements of a graded structured management, the Quality performance of project road implementation on the road construction, road betterment and rehabilitation / maintenance of roads projects, then:
  - a. Working Implementation has positive and significant effect on the Employee, graded structured with the Employees had positive and significant effect on the Performance of road project implementation. The linear regression equation is: Performance Quality of road project implementation = 0.436 Employees, Employee = 0.619 Working Implementation.
  - b. Working Implementation has positive and significant effect on Working Methods, graded structured by Working Method has positive and significant effect on the Performance of road project implementation. Linear regression equation is: Quality Performance of road project implementation = 0.417 Working Methods, Working Methods = 0.762 Working Implementation
2. The results of the validation strategy analysis of physical action of the research results of graded structured variables of the researcher the results of interviews and direct observation based on the research findings that affect in graded structured (working implementation, employees, and working methods) to the performance of road project implementation in the road construction, road betterment and road rehabilitation / maintenance projects, so that the performance of road project implementation run well so that no damage occurs earlier

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