

Model Influence of External and Internal Factors to the Change Orders on the Road Project by the Method of Structural Equation Modeling Based Covariance

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Received: August 22, 2015
Accepted: November 4, 2015

ABSTRACT

The change order on the road construction project is a habit that is often done, because it can not be predicted volume requirements of each scope of work. Their *change orders* often have a negative impact on the change in time and quality as well as cost. *Change order* for road construction can not be avoided, but the incidence of frequent and many times are not expected because it will affect the completion of projects that are ineffective and inefficient. Discussion of *change orders* in this study focused on two things, which is caused by external and internal factors. External causes include political factors, environmental factors, social-economic and cultural factors, among others, changes in government policy, changes in legislation and internal causes include management factors, technical factors, cost factors, time factors, quality factors, among others: competence and expertise, poor communication systems, the instability of the team. Respondents are owners, consultants and contractors, a number of 205 samples, using *non-probability sampling* method, with *accidental sampling*. By giving questionnaires as research instrument, respondents were asked to answer questions / statements. To determine the influence of the *change order* analysis tools used *Structural Equation Modeling Based Covariance (SEM)* with *AMOS software version 21.0*. Various variables influencing the *change order* on a road construction project derived from literature. Prior to produce factors that influence, the instrument was tested with a item test, validity test and reliability test. Results of this study there are three variables: technical factors, political factors, and economic factors significantly influence to the *Change order* while the dominant influence on the *Change order* is a variable of *Technical Factor* with the strongest correlation indicator of *Change in Policy*

KEYWORDS: Change order, SEM, External, internal factors.

INTRODUCTION

The purpose of this study was to determine the factors that significantly influence the *change order* road construction project. The occurrence of *change orders* in road construction can not be avoided; especially in road construction projects do *change order* is a habit, because the type of work that is *complicated*. On road construction projects will emerge various causes *change orders*, though not the least experienced road construction project *change orders*, in general, the overall project will almost certainly change the order occurs. Road construction projects in large scale construction projects whether in the form of new roads, road maintenance and old road rehabilitation projects, generally always changing scope of work, almost all project work items as well as a small portion of project work items only.

Called *change orders* is a change of job, general changes in the scope of work in the aftermath of the signing of the contract. [1]. In the project activity causes of *change orders* varies depending on the level of interest and depends on various factors, among other: conditions in the field, planning errors, changes in working methods, working drawings were incomplete, calculation errors volume of work, the type of contract that is incomplete, and security concerns in the field working on the project owner's request, proposals from consultants and contractors. [2].

Change orders that occur on the road project will have an impact on job completion time is faster or slower, it will also have an impact on the overall cost of the project completion and quality. Therefore, to be analyzed are the following factors: environmental factor, technical factor, political factor, economic factor, management factor, social-cultural factor, cost factor, time factor, quality factor into the cause of the *change order* road construction projects, the type of *change order* that occur on the road construction project is about changes in government policy, changes in legislation, policies that lead to delayed planning, ethnic and cultural influences, and internal causes include competence and expertise, poor communication system and the instability of the team.

The *change order* as if showing the un-preparedness of the implementation of the road construction project, but the fact that the road construction project *change order* is always the case, because of the vast area and the location is difficult to predict in advance. With the change of this order would have a negative impact on

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road construction projects, because of the time delay, increased costs, will lead to the implementation of road construction projects is ineffective and inefficient. [3]. *Change order* of road construction projects is the most significant cause unexpected additional costs. Almost certainly that all construction projects is due to the *change order* ranks fourth in risk analysis in Thailand. [4]. Problems arising from the *change order* will cause uncertainty contractor, which of the various parties difficulty taking a deal that delayed the project completion time. [5].

MATERIALS AND METHODS

1. Understanding of Change Order

In general, the *change order* to provide information of a general nature and subjective, which is based on experience and observation and just give a little information about the calculation and analysis. Below will be discussed regarding the *change order* are widely contributing factors. Discussions of the *change order* are grouped in three areas: before the *change order* process, during the process of *change orders*, and after the approval of *change orders*. *Change order* is the process of project implementation activities change after the contract is signed for a variety of reasons. [6, page 46]. In the process of implementation of the road construction project *change order* is a matter of common and unavoidable. (1). *Change order* is the most difficult aspect of the entire construction project implementation. (2). *Change order* is a change in the scope of the contract, which is done in writing and legally signed by the parties concerned. (3). *Change order* made after the signing of the contract, which each have the power to change the scope of work to make adjustments to the period and costs. [7]. (4). *Change order* is a modification of the original contract and scope of work whether some form of addition or subtraction work by adjusting the change of time and expense on the implementation of construction projects. [8]. (5). *Change order* is in which the parties have an agreement to change the scope of work partly caused by various things: the incomplete design, which amount can not be predicted in advance, the excess volume of work yet to be implemented, and the lack of volume of work that should be implemented. (6). *Change order* is to change the perceived lack of work needed to be replaced with more important work, more precise, more relevant and more urgent. (7). *Change orders* are significant changes to the scope of work that may affect the duration and cost changes. [9 page 365]. (8). *Change orders* due to changes in technology, safety and comfort, the unfolding of the new conditions are different, different interpretations, accelerate time duration, [10, page 659]. (9). *Change orders* are changes in the scope of work on the project owner's request of preliminary work in the contract which resulted in changes in cost and time. [11, page 53]. (10). *Change orders* are changes due to the absence of the uncertainty of the user environment to get a more appropriate alternative. [12, page 104]. (11). *Change orders* due to the type of work scope, one with another complicated and require efficient handling from start to finish. [13, page 31]. (12). *Change orders* due to three causes: the uncertainty of the technology to be produced, at the request of the user, adjustments to existing provisions, [14, page 536]. (13). *Change order* is an agreement between contractor, consultants and project owners to changes in the scope of work in the form of the addition of the scope of the new work, the removal of one or more of the scope of work, and additional job and reductions from the existing scope of work in accordance with the contract clause. [15].

2. Variable and Indicator Cause of Change Order

Change orders are changes in demand for the scope of work that occurred during the contracting process, namely the change in the volume of work activities carried out by contractors before the entire job has been completed. [16]. *Change orders* are categorized in several causes. The cause of the *change orders* are grouped into nine factors: X1; Environmental factor, X2; Technical factor, X3; Political factor, X4; Economic factor, X5; Management factor, X6; Social-cultural factor, X7; Cost factor, X8; Time factor and X9; Quality factor. [3] [16]. Each of these variables is described in the following indicators:

(1) X1. Environmental factor: X1.1. Weather conditions, that due to changes in weather conditions, the road construction may not be implemented because it is sensitive to weather changes. X1.2 is Natural disasters; due to natural disasters that other urgent road construction handled, X1.3. Conditions of the season that is due to changes in the road construction season should be changed from the original plan. (2) X2. Technical factor: X2.1. The new material that is due to the new material as a replacement for the old material so that the scope of work should be changed into X2.2 The new method, that as a result of new working methods more precise, more effective, and more efficient so that the scope of work had to be replaced, X2.3. Security considerations, that due to safety concerns for workers and should be changed. (3) X3. Political factor: X3.1. Policy changes that due to government policies that would or would not have to change with regard to the scope of work, X3.2. Conditions of employment, that is due consideration of local labor and labor-intensive so that the construction should be changed, X3.3. Delays permit new material that due to the length of time needed to bring, wear new material. (4) X4. Economic factor: X4.1. The impact of inflation, that due to changes in the exchange rate, so it needs to be changed. X4.2. Price fluctuations, that due to the prices of materials and equipment that are not stable to amend the scope of work, X4.3. Scarcity of material, that due to the scarcity and limited amount of

material, it is necessary to change. (5) X5. Management factor: X5.1. Competence and expertise, that the result does not have the competence and expertise, then the changes in the scope of work, X5.2. Less harmonious communication, that due to the lack of harmonious communication is necessary to change the scope of work. X5.3. less compact team, that result is less compact team is necessary to change the scope of work. (6) X6. Social-cultural factor: X6.1. Aesthetics that due to the unattractive view it is necessary to change the shape, and design changes, X6.2. Local culture, that construction must be adapted to the local culture or the culture of Indonesia, X6.3. Ethics, that due to the manners that should be adapted to the local area. (7) X7. Cost factor: X7.1. Increased overhead costs, that due to an increase in overhead costs, then some of the scope of work should be changed, X7.2. Additional overtime costs that due to the excessive number of overtime then pursued in additional overtime work that uses the least, X7.3. Increase in the cost of material that due to price increases on certain work items that need to be changed. (8) X8. Time factor: X8.1. Extension of the duration of working time that due to the duration of the time provided does not meet, it would require an extension of time, X8.2. Extra-time jobs added that the additional work of one or several items of work required overtime, X8.3. Equipment and material are blocked that as a result of equipment and materials is expected to arrive in time to be delayed. (9) X9. Quality factor: X9.1. A decline in quality that is due to the decline in the quality of work items to be replaced or strengthening. X9.2. Occurrence of work defect, that due to some defect work items that must be replaced, it takes additional time, X9.3. The reduction of jobs, that due to the reduction in work so that necessary adjustments to the duration of time. Of the causes of change orders, then indeed change the form of variable Y. *Change order* includes indicators Y1. Change order had to be done, that the change order should be forced to change, Y2. Change orders will be aware, that due to the change order are truly realized, since the beginning. Y3. Change orders will be carried out unconsciously, that change orders are really not aware, from the beginning. Figure 1 Correlation between variable

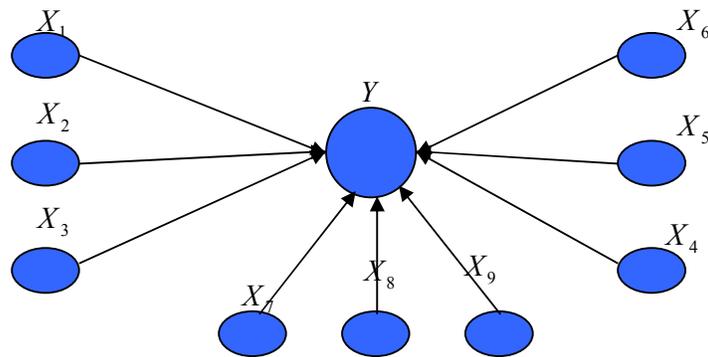


Figure 1 Correlation between Variable

3. Purpose and Research Hypothesis

To determine the influence and causality (causal) between variables, hypothesis needs to be done. [17]. Objectives and hypotheses on road construction projects in this study defined as follows: (1) the correlation and influence between the independent variables on the dependent variable, is *change order*, (2) the correlation between the independent variables with the other independent variables, (3) the correlation between the independent variables, the dependent variable with the indicators.

4. Research Design

This research is a survey that describes the inferential research to establish causality or causal relationships between variables with a variable and between variables with the indicator. Results from the analysis of data and then do the discussion, which will eventually be concluded and suggestions according to the research results. To facilitate and describes the research process it is necessary to research design. [18][19]. Figure 2.Thought Flow and Research Design

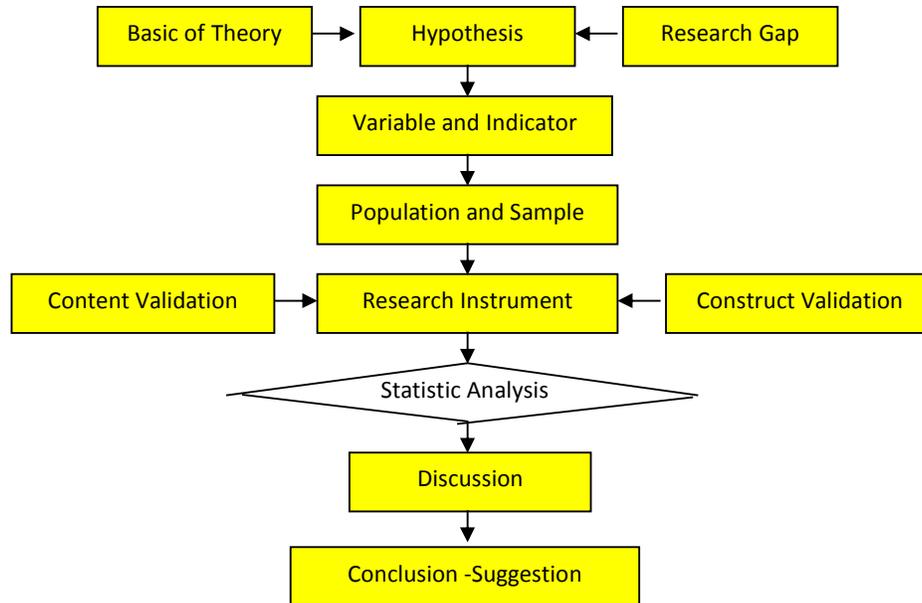


Figure 2. Thought Flow and Research Design

5. Population and Sample

Population is the generalization of a subject / object that wants to be known characteristics. In this study was engineering manager, of contractors, consultants and project owners on projects qualified and capable firmly on the road and bridge construction projects, which exist in Indonesia. Samples carried out by non-probability sampling, with accidental sampling, so that the number of samples that are identified, obtained a number of 205 respondents. [20].

6. Research Instrument Test

To set the real research necessary to test the research instruments, through the test items, test validity and reliability test on 30 samples as a trusted normality. Item test was to determine the validity of each indicator, validity test to determine the validity of each variable and reliability testing to determine the reliability of each variable. Results of the test instrument was meets the requirements of the validity and reliability testing as indicated in the table.

Table 1 Result research instrument test

No.	Variables Indicators	Item ≥ 0.30	Validity $\geq 60\%$	Reliable ≥ 0.60
1	X1. Environmental Factor		76	0.906
	X1.1. Weather conditions	0.803		
	X1.2. Natural disasters	0.831		
	X1.3. Conditions of the season	0.799		
2	X2. Technical Factor		86	0.947
	X2.1. New material	0.906		
	X2.2. New method	0.944		
	X2.3. Security considerations	0.823		
3	X3. Politic Factor		73	0.888
	X3.1. Policy changes	0.821		
	X3.2. Conditions of employment	0.768		
	X3.3. Delays permit new material	0.761		
4	X4. Economic Factor		77	0.906
	X4.1. Inflation impact	0.776		
	X4.2. Price fluctuation	0.848		
	X4.3. Material scarcity	0.844		
5	X5. Management Factor		63	0.830
	X5.1. Competence and expertise	0.705		
	X5.2. Less harmonious communication	0.741		
	X5.3. Less compact team	0.623		
6	X6. Social-Culture Factor		70	0.830
	X6.1. Aesthetics	0.764		
	X6.2. Local culture	0.820		

	X6.3. Ethics	0.658		
7	X7. Cost Factor		64	0.838
	X7.1. Increased overhead costs	0.690		
	X7.2. Additional overtime costs	0.719		
	X7.3. Increase in the cost of material	0.710		
8	X8. Time Factor		78	0.912
	X8.1. Extension of the duration of working time	0.786		
	X8.2. Extra-time jobs added	0.782		
	X8.3. Equipment and material are blocked	0.814		
9	X9. Quality Factor		77	0.905
	X9.1. A decline in quality	0.867		
	X9.2. Occurrence of work defect	0.863		
	X9.3. The reduction of jobs volume	0.737		
10	Y. Change order		79	0.915
	Y1. Change order had to be done	0.853		
	Y2. Change orders will be aware	0.830		
	Y3. Change orders will be carried out unconsciously	0.810		

Source: Research result

7. Statistical Analysis Tool

Statistical analysis in this study is use of *Structural Equation Modeling based Covariance (SEM)*, with AMOS software program version 21.0. [21] [22] [23]. Questionnaires as a means of collecting data from respondents have a known amount of a sample representing population generalization. The research instrument was used after validation tested. Statistical analysis using *Structural Equation Modeling based Covariance* is to develop a model from an existing model, with a reflective indicator. [21].

RESULTS AND DISCUSSION

1. Item Test, Validity Test and Reliability Test

Latent variables are on the independent variables X1; Environmental factor, X2; Technical factor, X3; Political factor, X4; Economic factor, X5; Management factor, X6; Social-cultural factor, X7; Cost factor, X8; Time factor and X9. Quality factor and latent variables on the dependent variable Y. Change order in testing the model produces *standardized regression weight values*. Statistical analysis of *Structural Equation Modeling based Covariance (SEM)* with AMOS software program version 21.0 as mentioned is to investigate the influence of independent variables on the dependent variable, which is obtained from the statements of the respondents who have met the sample size. Before determining the influence of independent variables on the dependent variable, then first perform the items test, validity test and reliability test. (a) Item test: as many as 30 indicators of the 10 variables used item test and (b) the validity test: as many as 30 indicators and 10 variables in the model is found to comply with the validity if the *loading factor* greater than CR (2.00), (c) Reliability test: as many as 10 variables in the model is found to comply with reliability if the *reliability construct* larger than CR (≥ 0.70). Table 2 presents the Item Test and Validity Test, Table 3 Reliability Test.

Table 2 Item Test and Validity Test

No.	Variables Indicators	Factor Loading	Critical Ratio	Remark CR $\geq 2,00$
1	X1. Environmental Factor	-	-	-
	X1.1. Weather conditions	0.80	Ref var	Sig
	X1.2. Natural disasters	0.92	13.96	Sig
	X1.3. Conditions of the season	0.83	13.00	Sig
2	X2. Technical Factor	-	-	-
	X2.1. New material	0.94	Ref var	Sig
	X2.2. New method	0.95	26.28	Sig
	X2.3. Security considerations	0.87	20.26	Sig
3	X3. Politic Factor	-	-	-
	X3.1. Policy changes	1.00	Ref var	Sig
	X3.2. Conditions of employment	0.79	13.63	Sig
	X3.3. Delays permit new material	0.71	11.30	Sig
4	X4. Economic Factor	-	-	-
	X4.1. Inflation impact	0.75	Ref var	Sig
	X4.2. Price fluctuation	0.95	13.28	Sig
	X4.3. Material scarcity	0.86	12.85	Sig
5	X5. Management Factor	-	-	-
	X5.1. Competence and expertise	0.84	Ref var	Sig
	X5.2. Less harmonious communication	0.86	14.11	Sig
	X5.3. Less compact team	0.87	14.13	Sig
6	X6. Social-Culture Factor	-	-	-
	X6.1. Aesthetics	0.83	Ref var	Sig

	X6.2. Local culture	0.89	12.96	Sig
	X6.3. Ethics	0.74	11.32	Sig
7	X7. Cost Factor	-	-	-
	X7.1. Increased overhead costs	0.90	Ref var	Sig
	X7.2. Additional overtime costs	0.86	15.78	Sig
	X7.3. Increase in the cost of material	0.86	15.95	Sig
8	X8. Time Factor	-	-	-
	X8.1. Extension of the duration of working time	0.91	Ref var	Sig
	X8.2. Extra-time jobs added	0.81	19.23	Sig
	X8.3. Equipment and material are blocked	0.87	17.80	Sig
9	X9. Quality Factor	-	-	-
	X9.1. A decline in quality	0.94	Ref var	Sig
	X9.2. Occurrence of work defect	0.40	22.48	Sig
	X9.3. The reduction of jobs volume	0.82	17.10	Sig
10	Y. Change order	-	-	-
	Y1. Change order had to be done	0.77	Ref var	Sig
	Y2. Change orders will be aware	0.87	11.56	Sig
	Y3. Change orders will be carried out unconsciously	0.56	7.86	Sig

Source: Research result

Table 3 Reliability test

No.	Variables Indicators	Factor Loading	Criteria CR ≥ 0.70	Remark
1	X1. Environmental Factor	0.91	> 0.70	Reliable
2	X2. Technical Factor	0.97	> 0.70	Reliable
3	X3. Politic Factor	0.91	> 0.70	Reliable
4	X4. Economic Factor	0.92	> 0.70	Reliable
5	X5. Management Factor	0.91	> 0.70	Reliable
6	X6. Social-Culture Factor	0.87	> 0.70	Reliable
7	X7. Cost Factors	0.93	> 0.70	Reliable
8	X8. Time Factors	0.95	> 0.70	Reliable
9	X9. Quality Factor	0.96	> 0.70	Reliable
10	Y. Change order	0.73	> 0.70	Reliable

Source: Research result

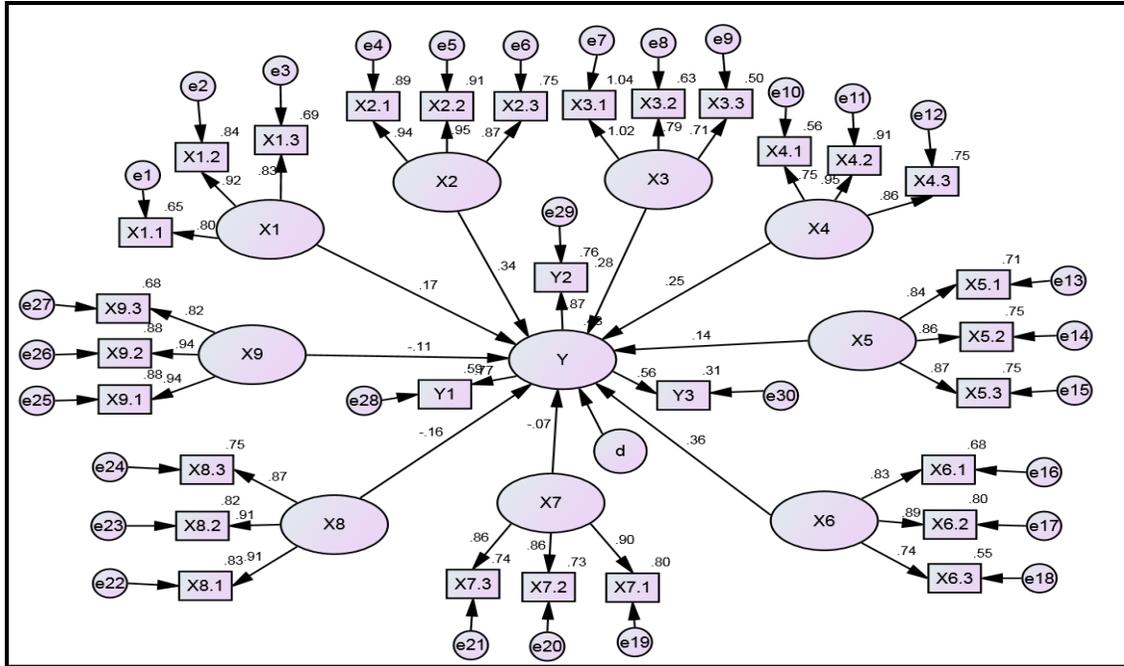
2. Initial Model Test

First model of variables is X1. Environmental factors, X2. Technical factors, X3. Political factors, X4. Economic factors, X5. Management factors, X6. Social-cultural factors, X7. Cost factors, X8; Time factors and X9; Quality factors to Y. *Change Order* is description of the hypothesized relationship in this study can be seen in the table and figure below. Table 4 presents the Result of Goodness of Fit Index for Testing Initial Models, Figure 3 presents the Result of Testing Initial Models. In the table shows the initial model is generated based on the theory that was rejected, because there are some requirements are rejected, because it is not supported by sufficient empirical data, so the results do not fit. Of the seven requirements of *the goodness of fit index* there is only one received. Furthermore, from the initial models that do not meet this requirement, in order to be fit to do the modifications based on the *modification indices* were fixed and supported by relevant theory and related to what was discussed. In making modifications to look for a relationship (correlation) between indicators with indicators are either indicators in a one variable or indicators of outside variables. Such that it becomes *goodness of fit index* in the model that shows the acceptance criteria of the model. *Initial models* were rejected did not need to be discussed because it does not provide a good index of conformity (*goodness of fit index*).

Table 4. The Result of Goodness of Fit Index for Testing Initial Models

No	Goodness of Fit Index Testing	Result	Criteria	Explanation
1	Probality	0,00	> 0,05	No-Accepted
2	CMIN / DF	4,31	< 5	Accepted
3	GFI	0,70	> 0,90	No-Accepted
4	AGFI	0,61	> 0,90	No-Accepted
5	TLI	0,76	> 0,90	No-Accepted
6	CFI	0,80	> 0,90	No-Accepted
7	RMSEA	0,13	> 0,90	No-Accepted

Source: Result of Research



Source: Result of Research

Figure 3 The Result of Testing Initial Models

3. Modification Model

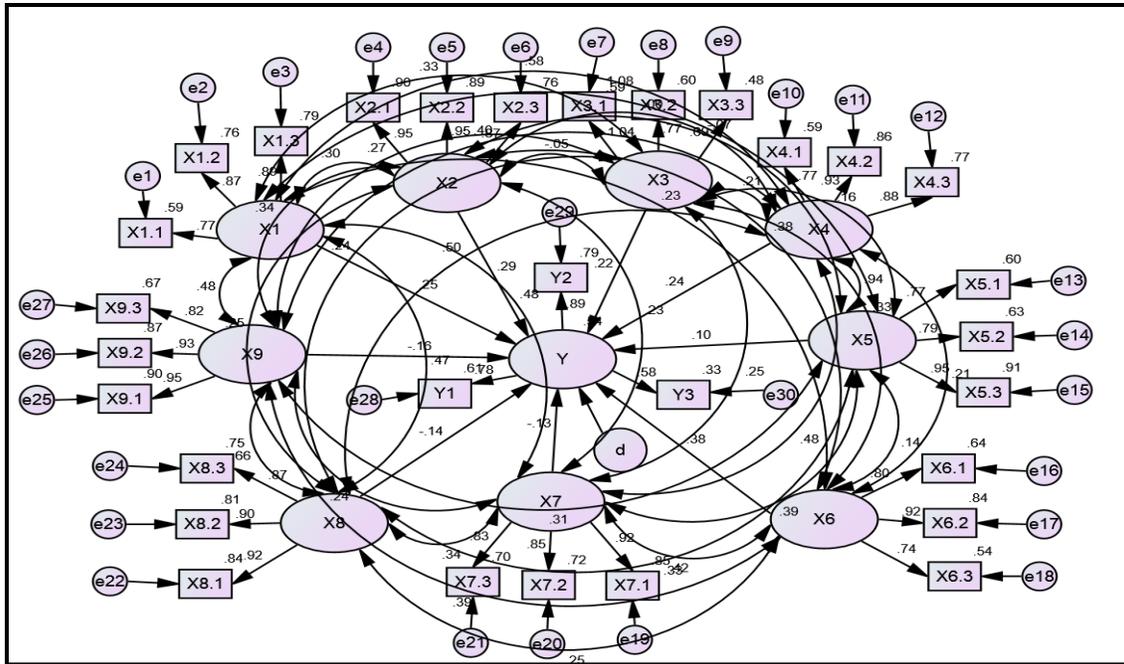
Modification models performed based on the *modification indices*, if the *initial model* is rejected, by modifying the initial model of the changing patterns of relationships between indicators and variables while maintaining the initial independent variables to the dependent variable of change order by maintaining an appropriate theory. Modification of this model is then evaluated, to determine whether the model has met *goodness of fit index* as the requirements and the results are shown in figures and tables. Of the seven requirements of the *goodness of fit index* there are three received? Table 5 presents *The Goodness of fit index for testing nested models* and Figure 4 *The result of testing nested models*. In the figure and table shows the proposed *modification model* is theoretically acceptable, because it has been supported by empirical data, so the result has become fit, as a whole, and the results are acceptable.

Pursuant to provision which if all or one of up to three shows *goodness of fit index* that meet is not denied can be concluded that the model is said to fit, meaning that the proposed model can be accepted. Once the model is acceptable next step to analyze the influence between variables in order to determine the relationship, and establish a relationship (correlation) indicators relating to the relationship of these variables.

Table 5. *The Goodness of Fit Index for Testing Nested Models*

No	Goodness of Fit Index Testing	Result	Criteria	Explanation
1	Probability	0,00	> 0,05	No-Accepted
2	CMIN / DF	2,81	< 5	Accepted
3	GFI	0,80	> 0,90	No-Accepted
4	AGFI	0,70	> 0,90	No-Accepted
5	TLI	0,90	> 0,90	Accepted
6	CFI	0,90	> 0,90	Accepted
7	RMSEA	0,09	> 0,90	No-Accepted

Source: Result of Research



Source: Result of Research

Figure 4 the result of testing nested models

4. Analysis of the Influence between Latent Variable

After the research model adopted in accordance with the change of the initial model into a modification model, the next steps include testing the influence of latent variables on the independent variable of X1. Environmental factors, X2; Technical factor, X3; Political factor, X4; Economic factor, X5; Management factor, X6; Social-cultural factor, X7; Cost factor, X8; Time factor and X9; Quality factor to the latent variable in dependent variable of Y. Change Order that has been done on the hypothesis.

Hypothesis testing is done by comparing the value of the critical ratio (CR), each variable with significant CR (CR > 2.00), variables can be said to be significant if it exceeds the CR value of 2.00. Of the results of the modification model, the influence of variables and the correlations between the independent variables on the dependent variable and indicators are described as follows:

1. Independent variable of X1. *Environmental factor*, has a value of CR 1.791 < 2.00 with path coefficient value of 0.166. This indicates that the X1. Environmental factors not significant effect on Y. Change order. Means that despite the stronger X1. Environmental factors, then there is no higher level of Y. Change order. X1.2 indicator. Natural disasters have a correlation of 0.92 against the most dominant variable X1. Environmental factors. This means that the variable X1. Environmental factors strongly influence the indicators X1.2. Natural disasters.
2. Independent variable of X2. *Technical factor*, has a value of CR 4.321 > 2.00 with path coefficient value of 0.337. This indicates that the X2. Technical factors have significant effect on Y. Change order. Means that the stronger X2. Technical factors hence there is no higher level of Y. Change order. X2.2. indicator. New method has a correlation of 0.95, most dominant to X2. Technical factors variable. This means that the variable X2. Technical factors strongly influence the indicators X2.2. New method.
3. Independent variable of X3. *Political factor*, has a value of CR 4.023 > 2.00 with path coefficient value of 0.284. This indicates that the X3. Political factors have significant effect on Y. Change order. Means that the stronger X3. Political factors hence there is no higher level of Y. Change order. X3.1. indicator. Policy change has a correlation of 1.00, most dominant to X3. Political factors variable. This means that the variable X3. Political factors strongly influence the indicators X3.1. Policy change.
4. Independent variable of X4. *Economic factor*, has a value of CR 1.836 < 2.00 with path coefficient value of 0.253. This indicates that the X4. Economic factors not significant effect on Y. Change order. Means that despite the stronger X4. Economic factors, then there is no higher level of Y. Change order. X4.2. indicator. Price fluctuation has a correlation of 0.95 against the most dominant variable X4. Economic factors. This means that the variable X4. Economic factors strongly influence the indicators X4.2. Price fluctuation.
5. Independent variable of X5. *Management factor*, has a value of CR 1.104 < 2.00 with path coefficient value of 0.141. This indicates that the X5. Management factors not significant effect on Y. Change order. Means that despite the stronger X5. Management factors, then there is no higher level of Y. Change order. X5.3.

indicator. Less compact team has a correlation of 0.87 against the most dominant variable X5. Management factors. This means that the variable X5. Management factors strongly influence the indicators X5.3. Less compact team.

6. Independent variable of X6. *Social-cultural factor*, has a value of CR 4.282 > 2.00 with path coefficient value of 0.295. This indicates that the X6. Socio-cultural factors have significant effect on Y. Change order. Means that the stronger X6. Socio-cultural factors hence there is the higher level of Y. Change order. X6.2. indicator. Local culture has a correlation of 0.89, most dominant to X6. Socio-cultural factors variable. This means that the variable X6. Socio-cultural factors strongly influence the indicators X6.2. Local culture.
7. Independent variable of X7. *Cost factor*, has a value of CR 0,923 < 2.00 with path coefficient value of -0.072. This indicates that the X7. Cost factors not significant effect on Y. Change order. Means that despite the stronger X7. Cost factors, and then there is no the higher level of Y. Change order. X7.1. indicator. Increased overhead costs have a correlation of 0.90 against the most dominant variable X7. Cost factors. This means that the variable X7. Cost factors strongly influence the indicators X7.1. Increased overhead costs.
8. Independent variable of X8. *Time factor*, has a value of CR -1.793 < 2.00 with path coefficient value of -0.156. This indicates that the X8. The time factor not significant effect on Y. Change order. Means that despite the stronger X8. The time factor, and then there is no the higher level of Y. Change order. X8.1. indicator. Extension of the duration of working time has a correlation of 0.91 against the most dominant variable X8. Time factors. This means that the variable X8. Time factors strongly influence the indicators X8.1. Extension of the duration of working time.
9. Independent variable of X9. *Quality factor*, has a value of CR -1.298 < 2.00 with path coefficient value of -0.114. This indicates that the X9. Quality factor not significant effect on Y. Change order. Means that despite the stronger X9. Quality factor, and then there is no the higher level of Y. Change order. X9.1. indicator. A decline in quality has a correlation of -0.94 against the most dominant variable X9. Quality factors. This means that the variable X9. Quality factors strongly influence the indicators X9.1. A decline in quality.
10. Indicator of Y2. *Change orders* will be realized in the variable Y. Change order has a correlation of 0.87, the most dominant variable Y. Change order. This means that the variable Y. Change order greatly affect the indicators Y2. Change orders will be realized.

CONCLUSION

From the discussion about the influence of variables concluded three important things: the independent variable on the dependent variable, and the most influential dominant and indicators that have the strongest correlation and significant influence among the independent variables / dependent variable is explained as follows:

1. The independent variables that significantly influence to the dependent variable Y. Change Order is
 - (a) Variable of X2. Technical factor with the strongest correlation is an indicator of X2.2. New method.
 - (b) Variable of X3. Political factor with the strongest correlation is an indicator of X3.1. Policy change
 - (c) Variable of X6. Social-culture factor with the strongest correlation is an indicator of X6.2. Local culture.
2. The dominant independent variable significant influence to the dependent variable of Y. Change Order is the independent variable of Technical Factor with the most powerful correlation in respectively is an indicator X3.1. Policy changes.
3. Among the variables (independent variables with independent variables, dependent and independent variables) (a) which significantly (sig.) As much as 36 and (b) the influence was not significant (no sig.) As much as 9.

ACKNOWLEDGEMENT

On this occasion the researchers would like to thank all those who provided support and facilities as well as honesty in answering the questions / statements from questionnaires submitted by the researcher. Researchers also say thank you to all the relevant authorities, particularly the Department of Public Works Bina Marga of Provinces.

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