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Preface: The 3rd International Conference on Construction and Building Engineering (ICONBUILD 2017)

The organizing Committee of ICONBUILD 2017 honored to welcomes you to join the 3rd International Conference on Construction and Building Engineering (ICONBUILD 2017), held on 14th-17th August 2017 in Palembang, Indonesia

It is our great pleasure to see that this conference is effective media to link the engineers from many parts of the world, especially those with a commitment to advance sustainable development and environmental friendly buildings and infrastructures.

The theme of ICONBUILD 2017 is 'Smart Constructions towards Global Challenges', with the aims of this conference is to provide worthwhile platform for researchers and engineer to present their findings in the areas on multidisciplinary related to civil engineering and built environment issues for any global challenges. It provides opportunities for delegates and participant to exchange new ideas, information and application experiences.

ICONBUILD 2017 had received 261 manuscripts and 154 submissions had been accepted by our reviewers in AIP Conference Proceedings, and the rest are included in other publications. All manuscript was reviewed by appropriately qualified experts in the field selected by the conference committee. The manuscripts were reviewed using a double-blind review process (authors declare their names and affiliations in the manuscript for the reviewers to see, but reviewrs did not know each other's identities, nor the author receive information about who had reviewed their manuscript). The committee of ICONBUILD 2017 invested great efforts in reviewing the papers submitted to the conference and organizing the sessions to enable the participants to gain maximum benefit.

Hopefully, all participants and other interested readers benefit scientifically from the proceedings and also find it stimulating in the process.

Edited by: Saloma, William Reza Borgan, Flandy Buntoro, and Victor
3rd International Conference on Construction and Building Engineering (ICONBUILD) 2017
Palembang, Indonesia

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Dwi Dinariana; Yuki Yohana

AIP Conf. Proc. 1903, 070008 (2017)
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Redesign Effect on the Time Performance and Cost Performance Project Design and Build House in Chinatown Kelapa Gading Jakarta

Dwi Dinariana[1, a)], Yuki Yohana[2]

[1,2]*University of Persada Indonesia YAI, Jl. Salemba 7 Central Jakarta*

[a)]Corresponding author : dwidinariana@yahoo.com

Abstract. In general, the design and build contractor, a project will surely experience a change at the time of it's implementation is in progress which will affect the quality, time and cost of construction projects. And any changes that occur not infrequently be a significant problem in construction projects, especially at the time of its execution performance. Given this research, the reader can find out how much the relationship / linkages between items redesigning at the time of execution of the execution time. The data used in this study are primary data and secondary data. Primary data were collected through questionnaires distributed to the project manager, while the secondary data obtained from the study of literature relating to the existing problems. The data has been collected, then analyzed using correlation and inter-correlation analysis, factor analysis, analysis of decision variables, and regression analysis model and testing validation test to obtain an appropriate regression model. From these results several conclusions can be drawn as follows, among others, the independent variable determinant of design changes that occurred during the implementation phase has a negative correlation to the performance of a construction project which changes the electrical installation work, changes to excavation and backfilling, changes to the finishing work interior, and changes to the ancillary buildings such as fence construction time significantly affect performance.

INTRODUCTION

Background

In the implementation of construction, many of issues or disputes between the owner and the contractor. One of them is the delay in construction projects. In fact it could be said in general about 80% of the projects experienced delays. One of factor that often occur and very influential significance of delays in construction projects is redesign at the time of construction. Hardly ever encountered a project that's all its activities run in accordance with the initial planning. Therefore, the change of plans was always happening. Changes at the time of construction is almost unvoidable.

According to the surveyy of Assaf and Al-Heiji (2006) of the various types of construction projects had increased the time to 30-70% of the initial duration of the contract, and 45 of 76 projects suffered delay completion of the overall projects.

On the design and build contractors, redesign is one of the factor for the delay which has a very high frequency. This is because at the time of design until the construction is completed, there are many interventions from the owners, so that sometimes the construction appeared during the period of consideration to increase or reduce the functionality or performance of the buildings so that the necessary chances to the draft that would affect the construction time is no longer the same as that described in the original contract..

In addition to a redesign by the owner, the other changes that occurred during construction relating to the time performance of construction are chances in working methods, the determination of the types of material changes by owner, etc.

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This redesign could happen ranging from job preparation, work structure to finishing work. Almost every project in every period is always had the same problems experienced. This means that players of the projects construction often underestimate redesign on construction time and do not make it as a lesson for future projects. In fact, delays in construction projects are much related to construction cost overruns.

Problem Formulation

We cannot avoid changes during the implementation is in progress. Therefore, we must determine how much influence the redesign at the time of the project, so we can estimate the possibility of how much risk would have happened if we execute construction projects, especially in the design and build contractor at Kelapa Gading , North Jakarta.

Objective

The purpose of this study was to determine how much the relationships between items redesign at the time of the execution time for residential development in the design and build contractor. This will facilitate the creation of a regression model equations that can be used to predict the influence of the redesign at the time of the execution time performance.

REVIEW OF LITERATURE

Redesign of the construction period is a modification or affect projects which increase or decrease the scope of the initial contract Classification redesign can be classified into several groups viewed from various perspectives, among others, viewed from:

- Redesign based on components of the building in the project, in its basic outline is divided into several components, among others:
  - Work structure, consisting of foundation work, basement work, work the upper structure, roof structure work, etc.
  - The work of architecture, consisting of works exterior cladding, wall work and interior doors, interior finishing work, etc.
  - Electrical Mechanical Works, consisting of work plumbing, air conditioning, fire protection, electrical installations.
- Meanwhile, according to Oberlender, redesign the project can at the breakdown into three categories, among others:
  - Utilities on side: Storm water, sanitary sewer, electrical, water: domestic, fire protection, natural gas, telephone: domestic, security.
  - Site work, site improvement: fencing, landscaping, plant watering, Paving: subbase, concrete-Rodway/ parking, aggregate.
  - Building, architectural: plot plan, floor plan, and structural: foundation, building shell, mechanical: plumbing, heat and water, electrical, finishes, elevator.
- Source of the causes of the changes that occur during the construction period can be initiated by the parties as follows :
  - Owner
  - Contractor
  - Third party or other reasons, caused by forces that are beyond the control of the owner / contractor
- Type redesign based sources cause of the change. Barrier and Poulson (1992) detailing the kinds of changes that are caused by:
  - Changes caused by the owner

    Performance owners were low, the addition or reduction of the scope of work, delays in the supply of items that should be provided by the owners, a major change in the design, many small changes in design, instruction acceleration, suspension work, interference by the owners/ representatives, slow/ lack of response to the submission or request for information, the termination of the construction contract.
  - Changes caused by the Contractor

Delays in the provision of design drawings for the construction that has been approved, a defect in the design or specification that their mistakes and incomplete designs, many issuing an addendum at the implementation stage, construction delays in reaching the site, delays in the supply of images/ clarification of the design for construction has been approved, a contract clause is ambiguous/ vague/ to the contrary, the failure to start work as planned, the failure to supply the manpower optimal, failure of performance of the contractor or subcontractor, the quality of work that is not good / defect in the installation work, delays in work schedules / sub contractor procurement schedule.

- Effect of Changes on the Performance of Construction Project Time

Redesign has a great influence on the performance of a construction project. Changes to the scope of work at the time of project implementation is in progress can cause additional costs of the project and/ or extension of the timetable.

RESEARCH METHODS

Collection Methods Data Processing

Collecting data in this study conducted Study of literature, interview, and questionnaires. Model hypothesis used is shown in Fig. 1. Variables in this study were changed during construction with the following assessment scale in the Table 1.

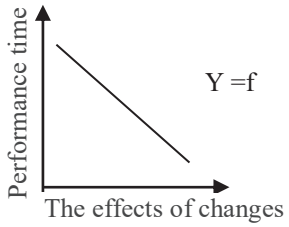

FIGURE 1. Model hypothesis

TABLE 1. Scale ratings of independent variables

1	2	3	4	5
Very low	Low	Medium	High	Very high

Assessment criteria:
(1): Almost no change
(2): There is a change ≤ 25 %
(3): There is a change of 25% ≤ x ≤ 50 %
(4): There is a change of 50 % ≤ x ≤ 75 %
(5): There is a change ≥ 75 %

The dependent variable in this study is the performance time, with a scale of assessment and calculation of the scale ratings:

(1) : x≥55 % / it's too late once
The project duration increased more than 45 % of the duration of the plan.
(2) : 55 % < x≤70 % / Very Late
The project duration increased from 30% to 45 % of the duration of the plan.
(3) : 70 % < x≤85 % / Late
The project duration increased from 0 to 30 % of the duration.
(4) : 85 % < x≤100 % / bit late
The project duration increased from 0 to 15 % of the duration of the plan.
(5) : x > 100 % / Faster
Project duration decreases by more than 0 % of the duration of the plan .

The Method of Data Analysis

- Statistical Analysis and Data Input
  - Input Data
  - Analysis of correlation and inter correlation
  - Analysis of Factors
  - Determinants Variable Analysis
  - Multiple Regression Analysis
- Test Model
  - Coefficient of Determinant Test or R2 test
  - F Test
  - t Test
  - Test the autocorrelation (Durbin - Watson Test)
  - Validation Test

RESULTS AND DISCUSSION

Overview Locations

Nearly 65% of the population Kelapa Gading are citizens of Chinese descent. Profession Kelapa Gading community is diverse, and many of them who work as traders.

The majority of Chinese people believe the use of feng shui in the construction of residential homes for them. And it can be said that feng shui and interior design has a close relationship with the construction of residential houses.

Therefore, it is not uncommon in the planning and construction, the owners in creating a design using feng shui consultant who has believed. Feng shui this will affect all aspects of development ranging from structural work to the finishing work.

From the interviews that have been made to some project managers, it is known that there are fundamental factors that influence the redesign during ongoing execution, is the weakness of the construction contract or incomplete articles are binding on the design changes, the owner of the lack of trust, etc.

The Results of Data Analysis

Cost-performance data analysis on the sample data the majority have additional costs ranging from 9 to 13% of the original contract.

Factor Analysis

The results of the factor analysis redesigning Time Performance of construction projects, are the following:

- X4 Changes to excavation and backfilling
- X7 Changes to employment landscape
- X21 Changes on the job AC
- X13 Upper Structure Changes on the job
- X16 Changes in employment Exterior Cladding
- X2 Amendments to ancillary buildings (barn, fencing, security, Keet directors, etc.)
- X18 Changes to the interior finishing
- X24 Changes in the electrical installation work

Factor 1 is:

X4 Changes to excavation and backfilling
X7 Changes to employment landscape
X21 Changes on the job AC

Factor 2 is:

X13 Upper Structure Changes on the job
X16 Changes in employment Exterior Cladding

Factor 3 is:

X2 Amendments to ancillary buildings (barn, fencing, security, Keet directors, etc.)
X18 Changes to the interior finishing
X24 Changes in the electrical installation work

Analysis Determinant Variables

Correlations between independent variables and the dependent variable determinant of the average is above the critical number value r fisher. The combination of variables is:

Y1 is as follows:

- X2 Amendments to ancillary buildings (barn, fence, long experienced -man, etc.)
- X4 Changes to excavation and backfilling
- X18 Changes to the interior finishing
- X24 Changes in the electrical installation work

Y2 is as follows:

- X24 Changes in the electrical installation work

Regression analysis

Regression analysis is performed in a linear manner to prove that the initial hypothesis of design changes during construction is underway can affect the performance time and cost performance.

• Regression Analysis - Time Performance (Y1) is as follows:

$$Y1 = 5{,}691 – 0{,}173\ X24 – 0{,}514\ X4 - 0{,}245\ X18 – 0{,}528\ X2 \quad (1)$$

Where :

- Y1 = Time performance
- X2 = Changes to support buildings (barn, fencing, security, Keet directors, etc.)
- X4 = Changes to the excavation and backfilling
- X18 = Changes to the interior finishing
- X24 = Change in Electrical installation work

• Regression Analysis Cost performance (Y2) is as follows:

$$Y2 = 3{,}593 – 0{,}471\ X24 \quad (2)$$

Where :

- Y2 = Cost Performance
- X24 = Changes in the electrical installation work

CONCLUSIONS

- It is very influential on the design changes during construction in progress are:
  - Delays in the supply of images / clarifications design for the approved construction
  - The number of small changes in design
  - Addition Scope The work
- Causes most dominant design changes during construction in progress are:
  - Design changes by owner
  - The difference in the condition of the field at the time of construction

- The independent variable determinant of the redesign that occurred during the implementation phase has a negative correlation to the performance time and the performance of the project cost.
- The independent variable determinant that has a negative correlation to the performance of a residential construction project by the contractor Design and Build in Kelapa Gading- North Jakarta is a change in the electrical installation work, changes to the excavation and backfilling, the changes to the interior finishing work, alterations to buildings supporters. While the determinant variable that has a negative correlation to the performance fees are changes in the electrical installation work.
- Based on the performance analysis results obtained when the value of R^2 = 0.911, meaning 91.1% of the percentage of influence-time performance based on the contribution of variable determinant in the amount of 56.8% by changes in the electrical installation work, 17.3% By changes to the excavation and backfilling, 11.1% by the changes to the interior finishing work, 5.3% by changes to support buildings (warehouses, fences, security
- Based on the analysis of cost performance obtained R^2 = 0.412, meaning 41.2% of the percentage of influence of performance fees based on the contribution of variable determinant in the amount of 41.2% by the changes to the work Electrical Installation,
- Regression Model redesign of the performance period, namely:

  Y1 = 5,691 – 0,173 X24– 0,514 X4 -0,245 X18 – 0,528 X2

  Information:

  X2 = Changes to support buildings (barn, fencing, security, Keet directors, etc.)
  X4 = Changes to the excavation and backfilling
  X18 = Changes to the interior finishing
  X24 = Changes in the electrical installation work
- Obtained from the regression model between the influence of the redesign of the performance fee, namely:

  Y2 = 3,593 – 0,471 X24

  Information:

  X24 = Changes in the electrical installation work

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