

Housing Project Performance Evaluation with Review Sharia Construction Management

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Abstract

Review of sharia construction management aimed to evaluate the performance of housing projects by the contractor in Jember district of East Java, Indonesia. This review results generate eight service factors include aesthetics, convenience, guarantees, responses, reliability, performance, facilities, durability, environmental friendliness, and Islamic values in design. User performance factors can affect guarantees on contract agreements, payment, design, document and file, the condition of force majeure, building damage, disruption and intimidation. The housing procurement project so that it can be repaired and improved with the regression model used to evaluated and predicted the performance of the contractor.



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Introduction

The Indonesian Construction Project evolves with many changes in everything, especially the methods and management of the project. Contractors are required to create many innovations in method development and management of construction projects to be trusted by the public. This study aims to estimate the performance of housing projects undertaken by contractors. A review of performance evaluations that refers to is sharia construction management which is the Islamic sharia principles

can be applied in all sectors that can provide solutions to solve many problems, especially in the construction project sector. The housing project in Jember Regency, East Java, was chosen as the object and location of this study. This research refers to several previous studies in determining contractor's performance factors in providing construction services.

Some of previous studies that became the reference include research conducted by Huda¹

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to obtain variables Appropriate Energy Efficiency, Site Development, Refrigerant, Material Resources, Water Conservation, Cycle, Indoor environmental quality and Comfortness. The method used is the GreenShip standard ranking become research variables consisting of Spatial, Form and visible buildings, and air conditioner in the room². Research methods including comparative study, modelling with software, & direct measurement to measure energy efficiency, natural and artificial lighting, ventilation, climate change impact & air conditioning systems variables³. Survey methods and field applications to generate variables from research covering flood intensity, groundwater quality, flood areas, and soil types⁴. They have researched modelling the quality of service on green open space. The methods used are Focus Group Discussion (FGD), Quality Function Deployment (QFD), and Importance-Performance Analysis (IPA)⁵. Produce variables such as shape, size, material, color, and texture are the components on the facade element of the great mosque of Malang⁶ in addition to variables covering sustainable environment-friendly and high-performance building⁷. It was also for Sharia construction management & green building principles⁸ with Importance-Performance Analysis (IPA) and Quality Function Deployment (QFD) method⁹. Similarly, there are technical aspects without considering the user's needs to assess the performance results of the contractor¹⁰.

User perceptions are based on voice to get a performance evaluation. Some of the previous studies have become a reference in this study. However, there are differences between this research and previous research. The previous research can be referred to in the development of research variables with adjustments to different research sites. The variables of the study were developed by using the existing research methods and methods.

Methods

Determination of Research Variables

The initial stages of the study are determination the research instruments containing research variables obtained through previous researches, preliminary survey, and field interview. The research variables are the performance factors of housing procurement projects arranged in tools for the collection of research data. The research instrument is a questionnaire that was distributed and answered by several respondents. The measurement scale of this research instrument is user satisfaction level on housing procurement projects that is described in Table 1. The level of user needs is used in the preliminary survey to calculate the research variables, while the level of user satisfaction is used in the continuation survey for data collection.

In the trial test, the research instrument was distributed to 30 respondents. Also, the validity and reliability of the device are tested. In this study, a tool has strong correlation if the correlation value is above the number 0,6.¹¹ The Pearson product moment correlation is used in the correlation test, that is formula will calculate the correlation coefficient of each item with the total score. The reliability test is implemented to calculate data collection tool indicates the level of accuracy, stability, or consistency of the device in expressing specific symptoms of a group of individuals at different times. The reliability test is implemented on strongly correlated statements. The Internal Consistency test uses a coefficient of consistency (Alpha Cronbach). Determination of several respondents using Slovin formula. The number of population is the user or housing buyers as much as 300 people. The number of respondents is found by equation (1) as follows.

$$n = \frac{N}{(1+(N \times e^2))} \dots(1)$$

Table 1: Measurement Scale of research instruments

Variables	User Requirement	User Satisfaction
Measurement Scale	1 = not required	1 = not satisfied
	2 = less required	2 = less satisfied
	3 = quite required	3 = quite satisfied
	4 = required	4 = satisfied
	5 = very required	5 = very satisfied

thus becoming

$$n = \frac{300}{(1+(300 \times 0,05^2))} = 171,43 \approx 172$$

Description,

- n = responden
- N = total population
- e = 5% error rate

The calculation with Slovin formula generates respondents of 172 people who became the target of the distribution of questionnaires as research instruments.

Multiple Linear Regression Analysis

The analysis determines the influence of research variables on the performance of the housing project. To evaluate the performance of the housing project are need a model from the study. The level of user satisfaction will be measured to get the performance of the housing project. This analysis necessitate a test requirement called Classical Assumption Test that includes Linearity of Regression Lines, Normality, Autocorrelation, Multicollinearity, Partial Test, and Heteroscedasticity. SPSS 20 is used as a computer program for analysis uses to inform the statistic of the study. Ten independent variables & one dependent variable consist. Figure 1 is the relationship of 10 separate variables to one dependent variable. Multiple regression models developed with the following functions:

$$Y = a_1X_1 + a_2X_2 + + a_nX_n + e \quad \dots(2)$$

With Y = Dependent variable ; a_0 = Intercept; a_1, a_2, a_3 = Independent coefficient; X_1 = Independent variable 1; X_2 = Independent variable 2 ; X_n = Independent variable at n

Results and Discussion

Results of Determination of Research Variables

The research variables are the performance factors of housing procurement projects arranged in the instrument as a tool for collecting research data. These performance factors were obtained through the previous study, preliminary survey, and interviews. The result of determining the performance factor that becomes the research variable by considering the level of user requirement is shown in Table 2.

The eight service factors include aesthetics, convenience, guarantees, responses, reliability, performance, facilities, durability, environmental friendliness, and Islamic values in design. Table 1 describes that the factor of guarantee (assurance) on the contract agreement, payment, design, document and file, condition of force majeure, building damage, interference and intimidation (K_1) to be a performance factor with the highest ranking in the level of user needs with the mean value of 4,325. The element of Aesthetics by the design, cost, material specifications, and technical agreement (K_4) with the mean value of 3,862.

Results of Validity & Reliability Test

The validity test results of the instrument describe the scale of measuring the level of user satisfaction on the performance of housing projects. The correlation value of all question items exceeds 0.6, which results in the validity test indicating that the instrument is valid. While the reliability test results show that the device has a Cronbach Alpha value of 0.974, which exceeds 0.6. The reliability test outcomes shows that the research instrument is reliable. The research instrument, which is valid and safe, can be used for data collection in the purposes of research analysis.

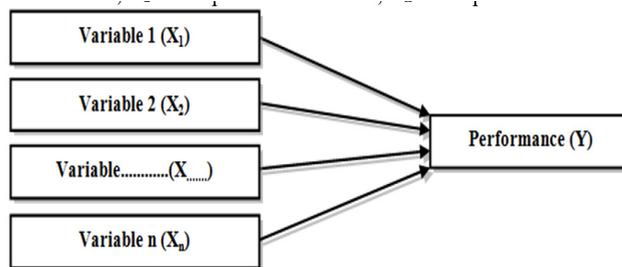


Fig.1: The relationship of 10 independent variables to one dependent variable

Table 2: Classification of Performance Factor

Notation	Performance Factors	Mean	Ranking
K ₁	Guarantee (assurance) on the contract agreement, payment, design, documenta and file, condition of force majeure, building damage, interference and intimidation	4.325	1
K ₂	Contractor responsiveness and reliability in terms of attention, responsiveness in problem solving, courtesy and friendliness, control of information, and the construction process was completed on time	4.033	4
K ₃	Performance results from facilities and utilities in housing, and performance of construction and non-construction materials	3.937	5
K ₄	Aesthetics in accordance with the design, cost, material specifications, and technical agreement	3.862	8
K ₅	Ease in information, inspection, evaluation, service, coordination, execution and banking	3.884	7
K ₆	Construction durability and nonconstruction materials and material specifications accordingly with drawing standard	4.117	2
K ₇	Environmentally friendly (eco-friendly) in design, materials, alternative energy of solar and wind, no negative areas, natural lighting and air conditioning, view and direction, and space organization	4.054	3
K ₈	Islamic Design on the distinction of space women and men, toilet direction, bathroom location, building material, and provided a place of worship	3.918	6

Table 3: Results of Multiple Linear Regression Analysis

Variables	Unstandardized	t- count	t- table	Information
(constant)	17,192			
Assurance (X ₁)	3,423	3,335		t count > t table (significant)
Responsibility and Reliability (X ₂)	2,036	2,811		t count > t table (significant)
Performance of facilities (X ₃)	7,129	5,007		t count > t table (significant)
Aesthetics (X ₄)	4,921	4,127	1,812 (dk = 50 and alpha = 5%)	t count > t table (significant)
Easiness (X ₅)	2,774	3,228		t count > t table (significant)
Durability (X ₆)	7,605	7,172		t count > t table (significant)
Islamic Design (X ₇)	6,872	4,613		t count > t table (significant)
Enviromentally friendly (X ₈)	7,483	6,832		t count > t table (significant)
R = 0,963				
R Square = 0,927				
α = 0,05				

INFORMATION : - NUMBER OF DATA (RESPONDENTS) = 172

- DEPENDENT VARIABLE (Y)

Results of Multiple Linear Regression Analysis Preparation of Regression Model For Quality Service of Housing Procurement

The regression model analyses variants to the regression line. The test is intended for knowing the level of regression line significance. The regression analysis uses SPSS program that generates coefficient-F, Coefficient of Durbin-Watson, and Coefficient of significance (P value) depends on the results setting. The equation of multiple linear regression is declared like the following:

$$Y = a + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + a_6X_6 + a_7X_7 + a_8X_8 + e$$

With description, Y = Project performance, X_1 = Assurance, X_2 = Responsibility and Reliability, X_3 = Performance of facilities, X_4 = Aesthetics, X_5 = Easiness, X_6 = Durability, X_7 = Islamic Design, and X_8 = Environmentally friendly.

Multiple linear regression analysis performs several stages to find the relationship between the independent variable & dependent variable. A significance test of the regression coefficient of each independent variable is processed can be done by using a ratio of t-count.¹² If the coefficient t-count is used as a measure, The coefficient value should be compared with the amount of t-table for the alpha level of 0.05.

Table 3 shows the influences of the eight performance factor represented by X_1 = Assurance, X_2 = Responsibility and Reliability, X_3 = Performance of facilities, X_4 = Aesthetics, X_5 = Easiness, X_6 = Durability, X_7 = Islamic Design, and X_8 = Environmentally friendly that obtain value of R-Square = 0.927. This value indicates that the variation of project performance of the housing procurement project by contractor can be explained by the regression equation R-value of 92.7%, while other factors outside the equation model explain the remaining 7.3%. The R-value of 0.963 means that the influence of the eight performance factors is very strong. Therefore, the analysis process can create a regression model as follows.

$$Y = 17,192 + 3,423X_1 + 2,036X_2 + 7,129X_3 + 4,921X_4 + 2,774X_5 + 7,605X_6 + 6,872X_7 + 7,483X_8$$

Normality Test

The calculation results with using SPSS 20 for the Kolmogorov-Smirnov Z normality test shows that for each variable has the value of Asymp.Sig. 2 tails > alpha level 0.05. This means that population data is normally distributed.

Linearity Test

Linearity test tries to find out the linearity of a regression model by using significance coefficient of Deviation from Linearity if coefficient alpha level 0.05 (with 5% error rate and 95% confidence level). The analysis shows that the significance value of more than 0.05 for eight factors, the regression line model is linear.

Multicollinearity Test

The results for this test indicate that the significance value is higher than the alpha level of 0.05. Thus the relationship of independent variables does not occur in multicollinearity.

Autocorrelation Test

The results for this test obtain a Durbin-Watson value of 1.983, which approaches the value of 2, therefore there is no autocorrelation in the observation data.

Heteroscedasticity Test

Result of the eight variables has a significance value higher than the determined alpha level (0.05). Therefore there is no heteroscedasticity.

Partial Test

Partial test results show that eight variables have a strong influence because t-count was more than t-table.

Conclusion

The contract agreement, payment, design, document and file, condition of force majeure, building damage, interference and intimidation to be performance factors with the highest ranking in the level of user needs this describe the element of assurance. The regression model obtained can be used to evaluate and predict the contractor performance in the housing procurement project. The evaluation results can improve contractor performance.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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