

The Effect of Manager's Commitment, Training, and Sustainable Improvement on Construction Project Performance in the Pandemic Era

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Abstract. The purpose of this study was to determine The Effect of Manager Commitment, Training, and Continuous Improvement on PT Harvest City Construction Project Performance in the Pandemic Era. The method used in this study is a quantitative method with primary data types. The sampling technique used was purposive sampling with a sample of 218 construction workers with 126 respondents. The techniques employed for data management and analysis include external model analysis (measurement model) and internal model analysis (structural model) utilizing the SmartPLS 3 Multivariate Structural Equation Model (SEM) approach. Partially the results of this study indicate that the manager's commitment has a P-value of $0.106 > 0.05$, so it can be interpreted that the manager's commitment does not affect project performance, training has a P-value of $0.029 < 0.05$, so it can be interpreted that training effect on project performance and continuous improvement has a P-Value of $0.005 < 0.05$, so it can be interpreted that continuous improvement has an effect on project performance. Concurrently, this investigation achieved an R-Square (R²) value of 0.81, equivalent to 81%. This indicates that the project performance variable is influenced by manager commitment, training, and continuous improvement to the extent of 81%.

Keywords: *Manager Commitment, Training, Continuous Improvement and Project Performance.*

A. INTRODUCTION

The construction industry holds a significant position in contributing to the economic, social, and political development of nations. However, the emergence of the COVID-19 pandemic has left an indelible mark on the construction sector, triggering profound effects on various facets of our world. This global crisis compelled governments worldwide to impose prolonged lockdowns, resulting in a cessation of most activities that involve direct human contact. The consequential impact on daily life has been substantial, with substantial disruptions in employment opportunities, stemming from the stringent measures implemented to curb the virus's spread (Alaloul et al., 2021).

Amid the pandemic, the construction industry's vital role extends beyond the execution of government infrastructure projects; it encompasses essential contributions to the private sector, including mining and processing. Particularly in the mining sector, construction companies play a crucial role by providing diverse services, ranging from the construction of processing plants and roads to port facilities. These services are integral in supporting the operational needs of mining companies, demonstrating the industry's multifaceted involvement in shaping both public and private sector landscapes (Ebekozen & Aigbavboa, 2021).

The ramifications of the pandemic on the construction industry have been profound, leading to a reassessment of its adaptability and resilience in the face of unforeseen challenges. The decline in employment opportunities within the sector has been exacerbated by disruptions stemming from the various constraints imposed to mitigate the virus's spread. As a result, the construction industry is confronted with the imperative to recalibrate its strategies and embrace innovative approaches to navigate the evolving landscape (Sun et al., 2021).

Despite the challenges posed by the pandemic, the construction industry remains pivotal in revitalizing economies and contributing to post-crisis recovery efforts. Governments and stakeholders in the construction sector must collaborate to formulate adaptive policies that promote the industry's sustainable growth (Suriyankietkaew & Nimsai, 2021). By recognizing the industry's diverse contributions and fostering an environment conducive to innovation and resilience, nations can harness the construction sector's potential to stimulate economic, social, and political development, even in the aftermath of a global crisis (Ahmad et al., 2023).

In a broader sense, mining construction includes the construction of new facilities, additional facilities, and repairs and Harvest City is one of the residential areas that has the concept of an independent city originating from the combination of three major developers, namely the Suryamas Dutamakmur Group, Duta Putra Mahkota Group, and Kalidoland later. founded a company called PT Dwigunatama Rintisprima. This housing estate is located in Cileungsi–Cibubur, Bogor Regency, and has an area of 1,350 hectares.

Based on a survey conducted by the development team, consumers who choose to live in Harvest City have reasons because they see additional facilities every year. Several commercial and educational facilities that will be built in 2020, including Pertamina gas stations, Supermarkets, BJ home buildings, and LP3I campuses.



Figure 1. Graph of Number of Housing Sold in 2019 (Harvest City)

Based on the formulation of the problem above, this study aims to find out more deeply whether manager commitment, training, and continuous improvement influence construction performance. Furthermore, it will be analyzed which selection criteria have a dominant effect on construction performance.

B. LITERATURE REVIEW

1. Project Performance

Heizer and Render state that a project is a series of tasks that are directed toward a primary outcome. According to King and Cleland (1), a project is a combination of several resources collected in a temporary organizational structure to achieve a goal (Radhakrishnan et al., 2022). The research of Adinda and Daryanto describes 4 project phases, namely:

a. Conception Phase

In general, this concept can be divided into two parts, namely project initiation and feasibility. Ideas are clarified and formulated in clear statements, then alternative solutions are identified and sought, while feasibility is the process of investigating problems and developing solutions in more detail when problem-solving is economically feasible and beneficial (Arrieta et al., 2020).

b. Planning stage

The planning stage in the project cycle involves the elaboration of a detailed project plan and detailed project specifications (Wuni & Shen, 2020).

c. Execution Phase

In this phase, the intervention from service users is very small. Decision-making is mainly in the hands of project implementers. For construction projects, this phase includes design, procurement, and construction activities. In general, projects have a result, in the form of a physical product and implementation (McCampbell et al., 2022).

d. Operational activities, namely delivery to users. Operation level according to the project results to the service (user) services are considered entirely from the project (Glyptis et al., 2020).

Project performance can be measured using project performance indicators to facilitate project control, a project manager must have a reference as control goals and objectives, which consist of five indicators, namely; Cost Metrics, Time Metrics, Time and Cost Metrics, Quality Metrics, and Work Safety Metrics (Stanitsas et al., 2021).

2. Manager's Commitment

According to Panggabean, commitment is defined as the recognition and strong involvement of an individual within a specific organization, emphasizing a personal connection to the goals and values of that entity. Simultaneously, commitment is the inclination to consistently pursue a particular course of action, taking into consideration the associated costs of diverting attention to alternative activities, including the cessation of ongoing work (Afshari et al., 2020).

In the realm of effective Total Quality Management (TQM) implementation, the commitment of managers emerges as a pivotal factor. The success of TQM initiatives is intricately linked to the level of dedication exhibited by organizational leaders. When managers participate in TQM with insufficient commitment and fail to allocate adequate time, the efficacy of TQM programs becomes questionable, often failing. Essentially, the commitment of managers plays a crucial role in steering TQM toward success, ensuring the alignment of organizational goals with the principles of Total Quality Management (Alsharari & Aljohani, 2023).

Managers who wholeheartedly commit to the implementation of TQM principles will seamlessly integrate these values into their daily professional lives. The adoption of TQM values becomes a pervasive aspect of managerial decision-making, driven by the overarching objective of enhancing the quality of everyday work. By embodying the ethos of Total Quality Management, committed managers foster a culture of continuous improvement, instilling a mindset that resonates throughout the organization and contributes to sustained success in achieving high-quality outcomes (Kong & Muthuveloo, 2022).

3. Training

Training can be defined as the systematic acquisition of knowledge, skills, and attitudes combined to improve performance in a particular environment. Several things cause the need for training and development within the organization (Urbancová et al., 2021). Tjiptono and Diana explain that 5 factors cause the need for training, namely:

a. Quality of the existing workforce

The workforce consists of people who hope to find work. These tasks are fulfilled by employees. Therefore, the quality of this workforce is very necessary and very important for the company. The quality referred to here is. That is the character and potential that exists (Selimović et al., 2021).

b. Global competition.

In the current era of globalization, competition between companies globally is no longer something new. To win the competition, the company should prepare a powerful "weapon". The weapons are training and education (Naradda Gamage et al., 2020).

c. Rapid and continuous change.

In this world, there is not one thing that does not change. Change occurs quickly and takes place continuously. New knowledge and skills will continue to emerge and follow the needs of an ever-changing environment. In such an environment, it is very important to update the knowledge and skills of employees in the organization to keep up with these changes (Grass et al., 2020).

d. Technology transfer issues.

Technology transfer involves the conveyance of technology from one entity to another. The technology transfer process comprises two phases. The initial stage involves the commercialization of newly developed technologies originating from research laboratories or individual inventors. The second stage of the process is the diffusion of technology which requires training. This second stage will not go well if employees do not know the technology they are using, therefore training is needed to maximize the use of existing technology in the company (Xie & Wang, 2020).

e. Changes in demographic conditions.

To overcome social, cultural, gender, and background differences, training is needed to improve teamwork which is a key element of TQM (Al-Zoubi et al., 2023).

4. Continuous Improvement

The definition of continuous improvement according to Bhuiyan and Baghel is a culture of continuous improvement that aims to reduce or eliminate ineffective processes and systems in an organization. In his book, Subagyo suggests the concept of continuous improvement by using the PDCA concept or Deming's concept for problem-solving (van Assen, 2021).

a. Plan

In the plan, the team first analyzes and selects the processes that need improvement such as machines, activities, policies, or methods. Then make qualitatively formulated goals and discuss together how to achieve these goals. After considering the costs and benefits of each alternative, the team selects the most appropriate plan for obtaining development (Guo & Zhang, 2022).

b. Do

The team implements the plan that has been made and besides that, it also monitors its progress. Data is collected regularly, to see the progress of the process. Every change in the process is always recorded, and if necessary, training is held (Puri & Turkan, 2020).

c. Check

In this stage, the team analyzes the data collected from the implementation of the activity (Do stage), to see its suitability with the goals set in the Plan stage. If there are weaknesses, the team immediately evaluates the plans that have been made, if they have to, it can be ended by stopping project activities (Kineber et al., 2020).

d. Act

If the implementation of the activity (Do stage) is successful, then what the team did successfully is used as a guide for the same activity. In other words, based on the improved process, a guideline or standard procedure is made. Every employee who wants to carry out the same job must use the standard procedure (Graafmans et al., 2021).

C. METHOD

This study uses a quantitative approach and primary data types. The population in this study is Harvest City employees who handle or make procurement members who choose contractors based on contractor selection criteria. The population includes 218 project managers, engineers, and procurement employees, so the population in this study is 218 people. The sample in this study amounted to 126 construction workers. The sample in this study used a simple random sampling technique. The data collection technique used in this research is field research. In this study, the method used to obtain information from respondents is to provide questionnaires. Then the results of the questionnaire are entered into the SEM application.

D. RESULT AND DISCUSSION

1. Validity and Reliability Test

The evaluation of the measurement model (outer model) involves examining convergent validity, focusing on the loading factor values for each construct. Convergent validity of the reflexive indicators in the measurement model is determined by assessing the association between the item score/component score and the construct score computed by PLS. In the context of individual reflexive measures, a correlation exceeding 0.70 with the targeted construct indicates a high level. Nevertheless, during the initial phases of scale development in research, a loading factor value ranging from 0.50 to 0.60 is deemed satisfactory.

Table 1. Loading Factor

	Project Performance	Manager's Commitment	Training	Continuous Improvement
KM2		0.821		
KM5		0.838		
KP5	0.744			
KP6	0.829			
KP7	0.843			
PB3				0.925
PB4				0.774
PL2			0.730	
PL8			0.833	

The test table results demonstrate that the indicators for each variable in this study possess loading factor values exceeding 0.70, confirming their validity. In the manager commitment variable, the first indicator, KM2, exhibits a value of 0.821, while KM5 shows a value of 0.838. For the training variable, the second indicator includes PL2 with a result of 0.730, and PL8 with a result of 0.833. In the continuous improvement variable, the third indicator comprises PB3 with a value of 0.925, and PB4 with a result of 0.774. Lastly, the project performance variable's fourth indicator consists of KP5 with a result of 0.744, KP6 with a result of 0.829, and KP7 with a result of 0.843.

Table 2. Average Variance Extracted

	Cronbach's Alpha	rho-A	Composite Reliability	Average Variance Extracted
Project Performance	0.773	0.720	0.818	0.603
Manager's Commitment	0.854	0.724	0.744	0.594
Training	0.712	0.832	0.760	0.613
Continuous Improvement	0.799	0.759	0.841	0.728

The test results indicate that the Average Variance Extracted (AVE) values for auditor performance, auditor experience, and auditor professionalism are all greater than 0.50, signifying strong discriminant validity for each variable. Discriminant validity is commonly assessed using the Fornell-Larcker Criterion (FLC) and cross-loadings. In the FLC test,

indicators of latent constructs are expected to have values higher than their cross-loadings on other latent constructs. The subsequent table presents the outcomes of the Fornell-Larcker Criterion (FLC) test in this study:

Table 3. Fornel Larcker Criterion (FLC)

	Project Performance (Y)	Manager's Commitment (X1)	Training (X2)	Continuous Improvement (X3)
Project Performance (Y)	0.776			
Manager's Commitment (X1)	-0.147	0.771		
Training (X2)	0.286	0.153	0.783	
Continuous Improvement (X3)	0.308	0.194	0.224	0.853

According to the presented table, the Fornell-Larcker Criterion (FLC) value for the project performance variable is notably highest within the latent construct itself, registering at 0.776, in contrast to the FLC values in other constructs, which are -0.147, 0.286, and 0.308. Similarly, in the manager's commitment variable, the highest FLC latent construct value is 0.771, while other construct values are 0.153 and 0.194. For the training variable, the highest FLC value within the latent construct is 0.783, with other construct values at 0.224. The continuous improvement variable boasts the highest latent construct FLC value at 0.853.

Table 4. Cross Loading

	Project Performance (Y)	Manager's Commitment (X1)	Training (X2)	Continuous Improvement (X3)
KM2	-0.097	0.697	0.105	0.153
KM5	-0.128	0.838	0.129	0.149
KP5	0.640	-0.307	0.123	0.019
KP6	0.829	-0.020	0.221	0.301
KP7	0.843	-0.080	0.290	0.329
PB3	0.315	0.163	0.160	0.925
PB4	0.189	0.177	0.253	0.774
PL2	0.200	0.239	0.730	0.287
PL8	0.246	0.024	0.833	0.087

According to the presented table, it is evident that the relationship values between the variables and their respective indicators surpass the relationships with indicators from other variables. Consequently, all latent variables exhibit robust discriminant validity, indicating that the indicators within each variable's block outperform those in other blocks. The path coefficient is employed to assess the impact of the independent variable on the dependent variable.

Table 5. Path Coefficient

	Project Performance (Y)	Manager's Commitment (X1)	Training (X2)	Continuous Improvement (X3)
Project Performance (Y)				
Manager's Commitment (X1)	-0.244			
Training (X2)	0.257			
Continuous Improvement (X3)	0.298			

Referring to the provided table, the relationship between the manager's commitment variable (X1) and the project performance variable (Y) is indicated by a path coefficient value of -0.244. This suggests that manager's commitment has a negative impact on project performance. In contrast, the training variable (X2) exhibits a path coefficient value of 0.257 in relation to project performance (Y), indicating a positive influence of training on project performance. Similarly, the continuous improvement variable (X3) shows a path coefficient value of 0.298 on project performance (Y), signifying a positive influence of continuous improvement on project performance.

Table 6. Reliability Test Results

Variable	Cronbach's Alpha	Critical Value	Description
Manager's Commitment (X1)	0.854	0.700	Reliable
Training (X2)	0.712	0.700	Reliable
Continuous Improvement (X3)	0.799	0.700	Reliable
Project Performance (Y)	0.773	0.700	Reliable

Referring to the provided table, the reliability test results were conducted on the question items that were confirmed as valid. A variable is considered reliable if the responses to its questions consistently align. The Cronbach's alpha reliability results for the manager's commitment instrument, training, continuous improvement, and project performance are 0.854, 0.712, 0.799, and 0.773, respectively. Among these instruments, manager commitment, continuous improvement, and project performance exhibit Cronbach's alpha values greater than 0.7, indicating satisfactory reliability.

According to the information presented in Table 2, it is evident that the Composite Reliability (CR) values for each variable surpass the 0.70 threshold. The manager's commitment variable demonstrates a CR value of 0.744, training has a CR value of 0.760, continuous improvement boasts a CR value of 0.841, and project performance exhibits a CR value of 0.818. These CR values, as obtained in the research's Composite Reliability test, affirm that all variables possess excellent reliability, meeting the predetermined minimum value criteria.

As per the findings in Table 2, it is evident that the Cronbach Alpha (CA) values for the variables meet the reliability criteria. The manager's commitment variable has a CA value of 0.854, the training variable has a CA value of 0.712, the continuous improvement variable demonstrates a CA value of 0.799, and the project performance variable exhibits a CA value of 0.773. All these values are greater than the commonly accepted threshold of 0.70, indicating a high level of reliability for these four variables.

2. Model Fit

Below is a table containing the results of statistical tests on various existing variables.

Table 7. T Test Statistics (Bootstrapping)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistic (IO/STDEV)	P Values
Manager's Commitment (X1) -> Project Performance (Y)	-0.244	-0.228	0.151	1.618	0.106
Training (X2) -> Project Performance (Y)	0.257	0.251	0.118	2.184	0.029
Continuous Improvement (X3) -> Project Performance (Y)	0.298	0.318	0.105	2.829	0.005

Referring to the presented table, the manager's commitment variable (X1) indicates a P-value of 0.106, suggesting that it does not have a statistically significant effect on project performance. In contrast, the training variable (X2) shows a P-value of 0.029, and continuous improvement (X3) has a P-value of 0.005. These results lead to the conclusion that the training and continuous improvement variables do have a statistically significant influence on project performance.

Table 8. R – Square (R2)

	R Square	R Square Adjusted
Project Performance (Y)	0.814	0.785

Referring to the provided table, an R-Square (R2) value of 0.814 or 81% has been obtained. This indicates that 81% of the project performance variable is accounted for by manager commitment, training, and continuous improvement, while the remaining 19% may

be influenced by other variables not investigated in this study. The Q-Square value in this study is employed to assess the model's goodness, where an increasing Q-Square value suggests better compatibility of the structural model with the data. The specifics of the Q-Square test in this study are outlined as follows:

Table 9. Contract Crossvalidated Redundancy Q-Square

	SSO	SSE	Q ² (=1-SSE/SSO)
Project Performance (Y)	276.000	251.479	0.723
Manager's Commitment (X1)	184.000	184.000	
Training (X2)	184.000	184.000	
Continuous Improvement (X3)	184.000	184.000	

Referring to the presented table, the Q-Square value for the endogenous variable is 0.723, indicating that 72% of the data diversity in this research model is accounted for. The remaining 28% is attributed to other variables outside the scope of the research model. Consequently, the research model is deemed to meet the criteria for goodness (model fit).

Based on the outcomes of the data processing conducted to address the proposed hypotheses, it is observed that one hypothesis is not acceptable, while two hypotheses are deemed acceptable. This indicates the presence of both significant and non-significant effects between the independent and dependent variables. Further analysis pertaining to the influence between variables corresponding to the proposed hypotheses is provided as follows:

a. Effect of Manager's Commitment (X1) on Project Performance (Y)

Based on the results of hypothesis testing, it is evident that the T-Statistics value is 1.618, and the associated P-Values indicating the effect of manager commitment on project performance is 0.106, which is greater than the significance level of 0.05. Therefore, it can be concluded that manager commitment does not have a statistically significant effect on project performance. This shows that the manager's commitment cannot improve project performance at PT Harvest City. This happens because the manager's commitment is not the only thing needed in project performance but the commitment of all workers involved in a construction project.

b. Based on the results of hypothesis testing, the T-Statistics value is 2.184, and the associated P-Values indicating the effect of training on project performance is 0.029, which is less than the significance level of 0.05. Therefore, it can be concluded that training has a statistically significant and positive effect on project performance. This shows that training can improve project performance at PT Harvest City. This happens because the training carried out by construction project workers can improve the quality of the existing workforce so that workers can understand and overcome existing problems, including the COVID-19 pandemic problem that is being faced by the whole world.

c. Based on the results of hypothesis testing, the T-Statistics value is 2.829, and the associated P-Values indicating the effect of continuous improvement on project performance is 0.005, which is less than the significance level of 0.05. Therefore, it can be concluded that continuous improvement has a statistically significant and positive effect on project performance. This shows that continuous improvement can improve project performance at PT Harvest City. This happens because continuous improvement can remove ineffective processes and systems in an organization with continuous improvement, even though there is currently a COVID-19 pandemic it does not affect the performance of construction projects.

E. CONCLUSION

Partially the results of this study indicate that the manager's commitment has a P-value of $0.106 > 0.05$, it can be interpreted that the manager's commitment does not affect project performance, training has a P-Value of $0.029 < 0.05$, so it can be interpreted that training effect on project performance and continuous improvement has a P-Value of $0.005 < 0.05$, it can be interpreted that continuous improvement affects project performance. Simultaneously, this study achieved an R-Square (R²) value of 0.81 or 81%, indicating that 81% of the variability in the project performance variable can be attributed to the influences of manager's commitment, training, and continuous improvement.

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