

# OPTIMIZATION OF WORK QUALITY IN LOW-COST APARTMENT CONSTRUCTION THROUGH OHS COMPLIANCE, LEADERSHIP, AND THE MEDIATING ROLE OF WORK MOTIVATION

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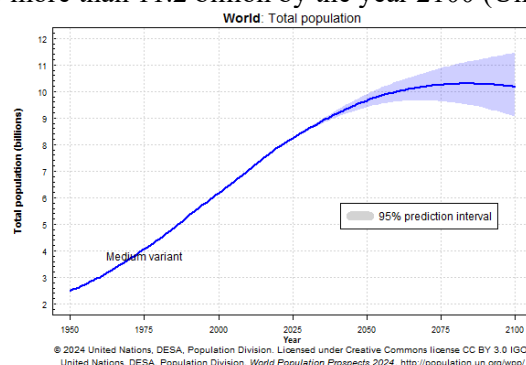
## Abstract

This study is a quantitative research using an explanatory approach that aims to analyze the influence of compliance with the Occupational Health and Safety (OHS) Program and leadership on the work quality of employees in the low-cost apartment construction project in DKI Jakarta, both directly and indirectly through work motivation as a mediating variable. The population of this study consists of 800 project implementation employees at one of regional owned enterprises engaged in the property and infrastructure sector, with a sample of 267 respondents determined using the Slovin formula at a 5% margin of error. Data were collected through a survey using a Likert-scale questionnaire and analyzed using the Structural Equation Modeling (SEM) method with the help of AMOS software version 22.00. The results show that compliance with the OHS Program has a significant positive effect on work quality but does not significantly affect work motivation. Leadership has a significant positive effect on both work motivation and work quality. Furthermore, work motivation serves as a significant mediating variable in bridging the effects of the OHS Program and leadership on work quality. The mediating effect of work motivation on the relationship between leadership and work quality is stronger than its effect on the relationship between the OHS Program and work quality. These findings indicate that in addition to the importance of implementing the OHS Program, effective leadership plays a strategic role in enhancing the motivation and work quality of construction project employees.

**Keywords:** *OHS Compliance, Leadership, Motivation, Work Quality*

## INTRODUCTION

The rapid growth of the global population has become a major challenge for countries around the world, including Indonesia. According to data from the United Nations (UN), the world population in 2024 has reached 8.2 billion people and is projected to surge to more than 11.2 billion by the year 2100 (United Nations, 2022).



**Figure 1. World Total Population Forecast**

At the national level, Statistics Indonesia (BPS, 2023) recorded that Indonesia's population reached 280 million people in 2024 and is projected to peak at 324 million by 2061. This population growth inevitably drives an increased demand for food, water, materials, and housing. In the context of housing provision, Indonesia still faces a significant housing backlog, amounting to 9.9 million households (Badan Pusat Statistik, 2023).

To answer these challenges, the Indonesian government initiated the One Million Houses Program, one of the forms of implementation of which is the construction of flats in various regions (Haris, 2024). From 2005 to 2024, 2,302 apartment towers have been built with a total of 51,777 residential units, and specifically in DKI Jakarta, 198

towers have been built with a total of 25,465 residential units. However, the implementation of large-scale and geographically dispersed construction projects presents complex challenges related to quality control, time, cost, and occupational safety and health (Fauzi, 2024).

In terms of occupational safety, global data from the International Labour Organization (ILO) shows that each year there are 430 million cases of work-related accidents and illnesses, resulting in 2.78 million worker deaths and economic losses amounting to 3.94% to 4% of a country's Gross Domestic Product (GDP) (International Labour Organization, 2023). In DKI Jakarta Province, in 2023 there were 7,298 cases of workplace accidents, involving 9,224 victims. In response, the Indonesian government has issued various regulations, such as Government Regulation Number 50 of 2012 on Occupational Health and Safety Management Systems (SMK3) and Minister of Public Works and Housing Regulation Number 10 of 2021 on Construction Work Safety Management (SMKK), to strengthen the safety culture within the construction sector (Indonesia, 2021) (Indonesia, 2012).

The quality of work in public housing (rusun) construction also remains a major concern. Data from the DKI Jakarta Provincial Government indicates that 4,994 public housing units remain unoccupied. Although the causes vary, issues related to building quality and compliance with project contracts are among the factors that have not been fully disclosed publicly. Mulyani (2022) found a positive correlation between workplace accidents and the low quality of construction work (Mulyani, 2022).

Furthermore, leadership aspects significantly affect project quality. A study revealed that leadership styles can influence work culture, work ethic, and employee motivation, all of which impact the final project outcomes (Fahrian et al., 2022). However, observations show that some project implementers still do not meet the minimum experience requirements, which may affect leadership effectiveness in project execution. In addition, observations from the 2023 Government Performance Accountability Report and the Integrity Assessment Survey (SPI) conducted by the Corruption Eradication Commission (KPK) indicate that the integrity motivation of project leaders remains a high-risk factor.

Based on the aforementioned background, this study focuses on examining how compliance with Occupational Health and Safety (OHS) programs and leadership influence work quality, with work motivation as a mediating variable, in public housing development projects in the DKI Jakarta area. The research questions are: Do compliance with OHS implementation and leadership style directly affect work quality and work motivation of employees in the DKI Jakarta public housing construction projects? Additionally, does work motivation mediate the relationship between OHS compliance and leadership style with work quality?

The objectives of this study are to determine the extent of the direct influence of OHS compliance and leadership style on work quality and motivation. This research also aims to assess whether work motivation serves as a mediator in the relationship between OHS compliance and leadership with employee work quality in public housing projects.

Occupational Health and Safety (OHS) programs are a vital component in creating a safe and productive work environment (Isradi et al., 2024). These programs aim to prevent workplace accidents and illnesses, as well as to protect human resources and organizational assets (Ashari, 2022) (Ali et al., 2019). Consistent and integrated implementation of OHS is believed to enhance work comfort, a sense of security, and employee satisfaction, ultimately leading to improved work quality (Juba, 2024).

On the other hand, leadership style plays a crucial role in supporting successful OHS implementation and fostering a healthy work culture. Leaders who provide clear direction, model safe work practices, and build effective communication can create a work climate conducive to increased employee motivation and performance (Shen et al., 2017).

Work motivation is a psychological factor that drives employees to perform optimally. When employees feel their safety is valued by both the organization and their superiors, an intrinsic motivation to perform better will emerge. This motivation can be strengthened through supportive leadership and consistent implementation of OHS programs (Ismail et al., 2023).

Thus, there is a strong relationship between OHS programs, leadership style, work motivation, and work quality. This interconnection forms the basis for the hypotheses tested in this study using a quantitative approach. Based on theory and previous studies, six hypotheses are proposed. First, OHS programs are hypothesized to have a significant influence on work quality, as proper OHS implementation can create a safe environment that supports productivity. Second, leadership style is also assumed to significantly influence work quality, as effective leaders can motivate and guide employees well. The third and fourth hypotheses state that OHS programs and leadership style influence work motivation, as both contribute to a comfortable and spirited work atmosphere. Lastly, the fifth and sixth hypotheses suggest that work motivation mediates the relationship between OHS programs and work quality, as well

as between leadership style and work quality. In other words, OHS programs and leadership styles can enhance work quality indirectly through increased work motivation.

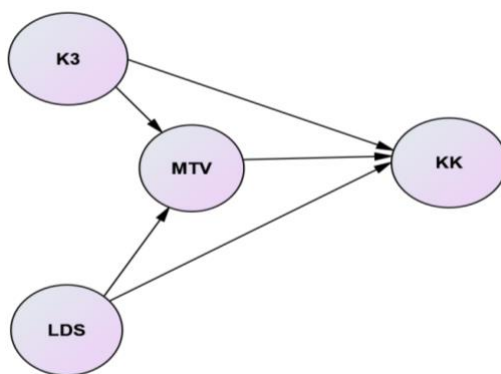
## METHOD

This study employs a quantitative approach with an explanatory research design, aiming to explain the causal relationship between compliance with Occupational Health and Safety (OHS) implementation, leadership style, work motivation, and work quality of employees involved in the construction of low-cost apartment projects (rusun) in the Special Capital Region (DKI) of Jakarta.

A survey method was used to collect data, as is commonly applied in organizational and project management research. The population of this study includes all project implementation employees under the coordinated by one of regional owned enterprises engaged in the property and infrastructure sector, particularly those involved in projects managed with a focus on the Priok and Pinus Elok areas. According to internal data, the target population is estimated at 800 employees.

The sample size was determined using the Slovin formula with a 5% margin of error, resulting in a total of 267 respondents. A purposive sampling technique was applied, with the main criterion being that respondents must be directly involved in project execution activities.

Primary data were collected using a structured, closed-ended questionnaire designed based on relevant indicators from previous studies. The instrument was tested for validity and reliability prior to distribution. A five-point Likert scale was used, ranging from "strongly disagree" to "strongly agree." The variables studied include two exogenous variables: compliance with OHS implementation and leadership style; one intervening variable: work motivation; and one endogenous variable: work quality.



K3 (X1) = OHS Compliance  
LDS (X2) = Leadership Style

MTV (Z) = Work Motivation  
KK (Y) = Work Quality

**Figure 2. Relationship Constellation Among the Research Variables**

Data analysis was performed using Structural Equation Modeling (SEM), processed through the AMOS software. This approach was chosen because it allows for the simultaneous testing of both direct and indirect relationships among the variables (Sangapan et al., 2025). Model fit testing was conducted using several goodness-of-fit indicators, such as Chi-square, RMSEA, CFI, and TLI, to ensure that the developed model aligns with the empirical data. All analysis procedures were carried out sequentially and logically in order to systematically represent problem-solving and to allow replication in similar research contexts in the future.

## RESULTS AND DISCUSSION

The presentation of the research results you have created outlines the descriptive analysis and the Structural Equation Modeling (SEM) analysis used to evaluate the relationships between the variables.

### *Descriptive Analysis Result*

The research results present descriptive analysis that provides an overview of the respondents' perceptions regarding the various indicators measured in this study. For the indicator of K3 compliance, the majority of respondents showed a good understanding of the implemented K3 policies. However, there were some indicators, such as the proper use of personal protective equipment (PPE) and job security assurance, that showed some doubts among the respondents.

Table 1. Descriptive Analysis of K3 Compliance Variable Indicators

	Ind.1K3	Ind.2K3	Ind.3K3	Ind.4K3	Ind.5K3	Ind.6K3	Ind.7K3	Ind.8K3	Ind.9K3	Ind.10K3
N	267	267	267	267	267	267	267	267	267	267
Mode	3	4	4	4	4	4	4	3	3	3
Std. Dev	0,798	0,798	0,841	0,786	0,863	0,839	0,869	0,864	0,841	0,879
Min	2	2	2	2	2	2	2	2	2	2
Max	5	5	5	5	5	5	5	5	5	5

This indicates that while there is generally good compliance, there are still areas that require further attention to improve the implementation of K3 in construction projects.

On the other hand, the leadership indicators overall show questionable results, with the majority of respondents doubting the leader's ability to create a work climate of mutual trust, provide recognition, and consider the comfort and feelings of subordinates. This suggests the need to improve leadership styles in the workplace to better support productivity and employee well-being.

Table 2. Descriptive Analysis of Leadership Variable Indicators

	Ind.1LDS	Ind.2LDS	Ind.3LDS	Ind.4LDS	Ind.5LDS	Ind.6LDS
n	267	267	267	267	267	267
Mode	3	3	3	3	3	3
Std. Dev	0,883	0,870	0,868	0,877	0,848	0,850
Min	2	2	2	2	2	2
Max	5	5	5	5	5	5

In terms of work motivation, the majority of respondents showed a positive attitude and willingness to work according to the established procedures, as well as being oriented towards good work quality. However, there were several indicators that showed doubts, particularly regarding voluntary compliance with the applicable K3 regulations..

Table 3. Descriptive Analysis of Motivation Variable Indicators

	Ind.1 MTV	Ind.2 MTV	Ind.3 MTV	Ind.4 MTV	Ind.5 MTV
n	267	267	267	267	267
Mode	3	4	4	4	4
Std. Dev	0,847	0,880	0,870	0,822	0,830
Min	2	2	2	2	2
Max	5	5	5	5	5

Lastly, the quality of work indicators showed fairly good results, although there are some areas that require more attention, such as discussions on work innovation and responses to supervisor reprimands.

Table 4. Descriptive Analysis of Work Quality Variable Indicators

	Ind.1KK	Ind.2KK	Ind.3KK	Ind.4KK	Ind.5KK	Ind.6KK	Ind.7KK	Ind.8KK
n	267	267	267	267	267	267	267	267
Mode	4	4	4	4	4	3	3	3
Std. Dev	0,828	0,874	0,831	0,7840	,829	0,815	0,849	0,798
Min	2	2	1	2	2	2	2	2
Max	5	5	5	5	5	5	5	5

Overall, this study concludes that the variables of OHS compliance, motivation, and work quality fall into the good category, while leadership requires further attention to improve its effectiveness. Subsequently, the study will proceed with Structural Equation Modeling (SEM) analysis to evaluate the relationships among variables in greater depth.

### **SEM Analysis Result**

The analysis of the structural equation model (SEM) was carried out in two main stages: the measurement model and the structural model. The first stage, the measurement model, aims to test the validity and reliability of the indicators that reflect the latent variables. The second stage, the structural model, is used to test the research hypotheses regarding the relationships among the variables.

In the measurement model stage, indicator validity was tested using the Standardized Loading Factor (SLF) and Critical Ratio (CR) values. Based on data processing using AMOS, all indicators for each variable (OHS compliance, leadership, motivation, and work quality) showed SLF values greater than 0.60. This indicates that all indicators are valid in reflecting the latent variables being measured. For example, the OHS compliance variable had the highest SLF of 0.756. Similarly, the variables of leadership, motivation, and work quality also showed values that meet the validity criteria.

**Table 5. Construct Validity and Reliability Test Results**

Construct	Ind.	SLF (>0,5)	CR (>0,7)	AVE (>0,5)	Notes
K3	10	0,603–0,756	0,71	0,52	Valid & Reliabel
LDS	6	0,616–0,705	0,74	0,69	Valid & Reliabel
MTV	5	0,618–0,910	0,72	0,62	Valid & Reliabel
KK	8	0,617–0,726	0,78	0,61	Valid & Reliabel

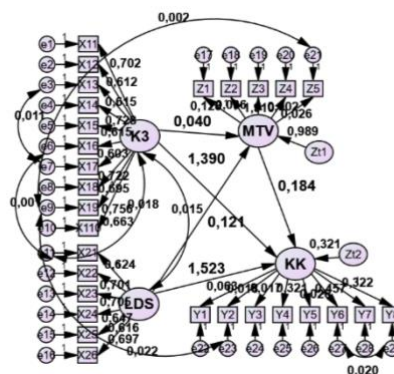
In addition to validity, construct reliability was also tested using the values of Construct Reliability (CR) and Variance Extracted (VE), with reference criteria of CR > 0.70 and VE > 0.50. The results of the testing indicate that all variables meet these criteria, with CR and VE values of 0.71 and 0.52 for OHS compliance, 0.74 and 0.69 for leadership, 0.72 and 0.62 for motivation, and 0.78 and 0.61 for work quality, respectively. These findings suggest that all measurement indicators used in this study are reliable.

Subsequently, in the structural model stage, an analysis was conducted to examine the direct and indirect effects among variables. The estimation results show that OHS compliance has a significant direct effect on work quality (CR = 2.545; p = 0.031), but no significant effect on motivation (CR = 0.200; p = 0.836). This implies that improved compliance with OHS procedures can directly enhance work quality, but it does not have a substantial impact on increasing work motivation..

**Table 6. Estimation of Loading Factors and Their Significance**

			Estimate	S.E.	C.R.	P
MTV	<---	K3	0,013	0,065	0,200	0,836
MTV	<---	LDS	0,018	0,007	2,571	0,032
KK	<---	K3	0,537	0,211	2,545	0,031
KK	<---	LDS	0,321	0,123	2,610	0,029
KK	<---	MTV	0,437	0,221	1,977	0,041

The leadership variable shows a significant direct effect on both motivation (CR = 2.571; p = 0.032) and work quality (CR = 2.610; p = 0.029). This implies that the better the quality of leadership in the project, the higher the employees' motivation and work quality will be. Furthermore, the motivation variable has been proven to have a positive and significant effect on work quality (CR = 1.977; p = 0.041), indicating that motivation plays an important role in enhancing employee performance.



**Figure 3. SEM Explicit Model**

As for the indirect effects, the calculation results show that the indirect effect of K3 compliance on work quality through motivation is not significant (value = 0.000), which aligns with the finding that K3 compliance does not



significantly affect motivation. Meanwhile, leadership has an indirect effect on work quality through motivation amounting to 0.018

**Table 7. Indirect effect K3 dan LDS through MTV**

	K3	LDS
KK	0,000	0,018

Thus, the total effect of leadership on work quality consists of both direct and indirect effects through motivation, which collectively supports the important role of leadership in creating a high-quality work environment.

In the Structural Equation Modeling (SEM) analysis, the model's fit to the data is assessed through various Goodness of Fit (GOF) measures. These measures reflect how well the constructed model aligns with the empirical data being analyzed. Based on the results, all GOF indicators show values within the acceptable criteria range, suggesting that the model has a good fit.

Specifically, the Chi-square (CMIN) value of 59.259 indicates that the model does not deviate significantly from the data, with a CMIN/DF value of 1.852, which is within the ideal range of 1.00 to 3.00. Next, absolute fit indices such as the Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) show values of 0.904 and 0.901, respectively, both exceeding the minimum required value of 0.90, indicating good fit.

The model's approximation error measure, Root Mean Square Error of Approximation (RMSEA), shows a value of 0.062, which falls within the range of 0.05 to 0.08 and is categorized as good. Similarly, the Root Mean Square Residual (RMR) value of 0.042 remains below the maximum threshold of 0.50, indicating low residuals between the model and the data.

Additionally, comparative fit indices such as the Tucker-Lewis Index (TLI) and Normed Fit Index (NFI) achieved values of 0.911 and 0.910, both exceeding the minimum required value of 0.90. This indicates that the developed structural model has a good fit in explaining the relationships among the latent variables.

**Table 8. Goodness of Fit (GOF) Criteria**

No.	GOFI	Criteria	Result	Status
1	<i>Statistic Chi-square (<math>\chi^2</math>)</i> atau CMIN	Less is Good	59,259	Good
2	<i>Goodness of Fit Index (GFI)</i>	$GFI \geq 0,90$	0,904	Good
3	<i>Adjusted Goodness of Fit Index (AGFI)</i>	$AGFI \geq 0,90$	0,901	Good
4	<i>Normed Ch-Square (CMIN/DF)</i>	$1,00 \leq CMIN/DF \leq 3,00$	1,852	Good
5	<i>Root Mean Square Error of Approximation (RMSEA)</i>	$0,05 \leq RMSEA \leq 0,08$	0,062	Good
6	<i>Root Mean Square Residual (RMR)</i>	$RMR \leq 0,50$	0,042	Good
7	<i>Tucker-Lewis Index (TLI)</i>	$TLI \geq 0,90$	0,911	Good
8	<i>Normed Fit Index (NFI)</i>	$NFI \geq 0,90$	0,910	Good

With the fulfillment of all the recommended criteria in the GOF evaluation, it can be concluded that the SEM model used in this study fits the empirical data. No indicators suggest misfit, thus the model is deemed appropriate for interpreting the effects among the constructs being studied.

## Discussion

Based on the analysis results, this study found that compliance with Occupational Health and Safety (K3) has a significant positive effect on work quality. The higher the compliance with K3, the better the work quality. This result shows that the implementation of clear K3 policies, leadership preparedness for emergency situations, regular K3 performance reporting, and the competence of K3 officers in managing risks contribute positively to the quality of work outcomes. Good work quality is reflected in the workers' responsibility for their work both quantitatively and qualitatively, the alignment of technical abilities with tasks, and solid teamwork (Ramdhani, 2021). This finding is consistent with research emphasizing the importance of work safety systems in ensuring worker safety and improving work quality (Kartika Sari & Paramita, 2023). Non-compliance with K3, improper use of personal protective equipment (PPE), and lack of leadership support can reduce a sense of security and work focus (Zhao et al., 2022).

Furthermore, leadership was also found to have a significant positive effect on work quality. Workers' perceptions of effective leadership will encourage the improvement of work quality. However, the analysis results indicate that overall perception of leadership is still relatively low. Many workers doubt the leader's ability to create a climate of trust, reward ideas, show empathy for work comfort, and recognize subordinates' roles and status. This situation affects workers' low participation in providing innovations, suggesting improvements, or reporting work progress honestly (Novitasari et al., 2021). This finding supports research indicating that effective leadership can motivate

workers and improve work quality (Cahyati & Adelia, 2024; Sinaga Jhonni, 2023), although it contradicts studies that state leadership does not have a significant effect on work quality (Deddy, 2022; Rivaldo & Ratnasari, 2020; Tarmizi & Hutasuht, 2021).

Although compliance with K3 is proven to affect work quality, the study results show that compliance with K3 does not significantly affect work motivation. Senior workers tend to feel more experienced and are reluctant to voluntarily comply with K3 rules, which diminishes K3's positive impact on work motivation (Amar, 2024)(Froehlich et al., 2023). Meanwhile, Alderfer's motivation theory suggests that work motivation, especially extrinsic motivation, requires continuous development (Sugito, 2025)(Regysta et al., 2024). This finding also indicates that the work motivation indicators used were not able to capture the complexity of K3's influence on workers' psychological aspects.

On the other hand, leadership is proven to have a significant effect on work motivation. Leaders who can create a positive work environment, provide emotional support, and acknowledge workers' contributions can enhance work motivation. Unfortunately, perceptions of leadership quality in the studied project still show doubts in several key aspects. This finding is consistent and supports research indicating that a servant leadership style can encourage an increase in work motivation (Ellahi et al., 2022; Susanto et al., 2024)(Tran & Truong, 2021).

Furthermore, this study also revealed that work motivation mediates the effect of K3 compliance on work quality, although the effect is relatively small. This finding does not strongly support research stating that the K3 system can significantly increase work motivation (Nasution et al., 2021). It suggests that work motivation as a mediating variable in this context is still weak and needs to be strengthened through the development of more comprehensive team-based indicators.

Meanwhile, work motivation strongly mediates the effect of leadership on work quality. Workers who are motivated because they feel valued and supported by their leaders demonstrate better performance. This finding is consistent with research stating that motivation can be a mediating variable in the relationship between commitment and project performance (Pratama, 2023). However, this result differs from studies that claim leadership does not significantly affect work quality (Efendi & Hardiyanto, 2021). Therefore, it is crucial for project organizations to strengthen leadership indicators relevant to the context and characteristics of workers in the field.

## CONCLUSION

The conclusion explains what is expected in the Introduction section, as well as conclusions from the Results and Discussion section. Conclusions can also be added to the development plan for the implementation of the future service. Based on the objectives and results of this study, it can be concluded that compliance with the implementation of the Occupational Health and Safety (K3) Program has a direct, positive, and significant effect on work quality. This means that the more compliant workers are with the application of K3, the higher their work quality will be. Additionally, leadership was also proven to have a positive direct effect on work quality. The better the leadership perceived by workers, the better the work results achieved. However, the K3 program does not have a direct effect on work motivation. On the other hand, leadership was proven to have a positive effect on work motivation. Good leadership can enhance workers' enthusiasm and drive. Interestingly, although K3 does not directly affect motivation, the study results show that K3 still influences work quality when work motivation is involved as an intermediary. The same applies to leadership, where its effect on work quality becomes stronger when work motivation is involved.

Based on these results, it is recommended that future researchers develop work motivation indicators, including intrinsic motivation, and refine the measurement of leadership based on relevant theories. For project leaders in the construction of apartment buildings in DKI Jakarta, it is advised to improve compliance with the implementation of K3 through regular field coaching, guidance, and supervision. In addition, leadership styles should be evaluated to better align with workers' needs. The relationship between supervisors and subordinates can be improved through team-building activities, such as outbound activities, to enhance teamwork. Thus, the implementation of K3 and good leadership can motivate and improve the work quality of project workers.

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