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The Influence of Transformational Leadership and Work Facilities for Airport Rescue and Fire Fighting Personnel (ARFF) on Personnel Performance with Motivation as a Mediating Variable (Case Study of Soekarno Hatta Airport)

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Abstract: Soekarno-Hatta International Airport is the main airport in Indonesia located in Cengkareng, West Jakarta. In the aviation industry, all parties such as airlines, airport managers and air traffic controllers must comply with strict safety and security standards. The Airport Rescue And Fire Fighting Unit (ARFF) at Soekarno-Hatta Airport has an important role in handling emergencies in accordance with national and international regulations. ARFF main tasks include saving lives and property as well as fighting fires in the airport area. However, some of the challenges faced by this unit are related to human resources, facilities and leadership. This research shows that ARFF performance is very dependent on improvements in the aspects of people, facilities and leadership to increase readiness and response in dealing with emergency incidents at airports. The research methodology used is quantitative data. Meanwhile, the data source used in this research is primary data, namely data obtained from Angkasa Pura II employees who work in the ARFF division of Soekarno Hatta Airport and using analytical tools SEM PLS And Smart PLS. This research aims to examine the influence of transformational leadership and work facilities on the performance of ARFF personnel at Soekarno-Hatta Airport, with motivation as a mediating variable.

Keyword: Transformational Leadership, Work Facilities, Personnel Performance, Motivation, ARFF

INTRODUCTION

Technology and infrastructure that support security and safety in airports are essential requirements, as stated in the Regulation of the Director General of Civil Aviation regarding technical and operational standard requirements. This regulation mandates that every airport must provide and implement Aviation Accident and Firefighting Services (Abinza et al., 2023). Airport Rescue and Firefighting Unit, known as PKP-PK, is an emergency response unit regulated by both national and international regulations.

To ensure the optimal performance of the ARFF unit at Soekarno-Hatta Airport, several critical factors must be considered, including People, Facilities, and Leadership (Adinnagara et al., 2024). Leadership not only influences job satisfaction but also affects motivation, as evidenced by previous research conducted by (Banin et al., 2020). Furthermore, the findings of this study indicate that employee performance is influenced by the work environment and motivation, while leadership and perceived organizational support also play a role. This research also highlights that motivation acts as a mediating variable between leadership and employee performance, as well as between perceived organizational support and employee performance

A similar study was previously conducted by (Syamsuddin et al., 2024), which examined the influence of motivation and facilities on performance. The study found that motivation had a positive and significant impact on performance, while facilities did not affect performance. However, there is a difference in findings regarding the facility variable compared to a study by (Rambe et al., 2023), which indicated that employee performance can be influenced by work facilities, either directly or indirectly through the motivation variable.

Based on the background above, this study aims to examine the influence of transformational leadership and work facilities on the performance of Airport Rescue and Firefighting (ARFF) personnel, with motivation as a mediating variable (Case Study: Soekarno-Hatta International Airport).

METHOD

This study employs a quantitative approach. According to Bahri & Zamzam (2015), the quantitative method is designed to investigate a specific population or sample. Data collection is conducted quantitatively or statistically with the aim of testing hypotheses. This research focuses on several key variables, namely transformational leadership, work facilities, motivation, and performance. The subject of this study consists of personnel from the Airport Rescue and Firefighting (ARFF) unit. The study population includes all employees of Angkasa Pura II working in the ARFF division at Soekarno-Hatta International Airport, totaling 209 individuals. The researcher utilizes a simple random sampling technique, ensuring that each member of the population has an equal chance of being selected as a research sample. To determine the sample size, the Slovin formula is applied, resulting in a total sample of 137 respondents. The data collection method used in this study involves distributing research instruments through an online survey platform. The questionnaire provided includes a predefined scale for respondents to complete.

The data analysis in this study consists of two methods: univariate and multivariate analysis. Univariate analysis is used to identify the central tendency and variation of each variable based on the mean and standard deviation, which are calculated using SPSS 26.0 software. Meanwhile, multivariate analysis is applied for hypothesis testing using Structural Equation Modeling (SEM) to determine the relationships between variables, both directly and indirectly. This analysis is conducted using Smart PLS 3.3 software.

Data Analysis Technique

1. Outer Model
   a) Validity Testing : The validity test aims to determine the accuracy of the measurement instruments used in the study, ensuring that the data collection tools are reliable and precise.
   b) Reliability Testing : The reliability test assesses the consistency of the questionnaire used by the researcher, ensuring that the same questionnaire can produce stable results even when used repeatedly over different periods. Reliability testing is conducted by examining the Cronbach's alpha coefficient and composite reliability. A Cronbach's

alpha value greater than 0.7, along with a composite reliability score above 0.70, indicates that the instrument is reliable.

2. Inner Model

After testing the outer model, the next step is to assess the inner model by evaluating the coefficient of determination (R^2) and conducting hypothesis testing.

a) Coefficient of Determination (R^2) : The coefficient of determination measures the proportion of variance in the dependent variable explained by the independent variables. The R^2 value ranges from 0 to 1, where a value closer to 1 indicates a stronger model.

b) Hypothesis Testing : Hypothesis testing aims to evaluate the significance of the influence of transformational leadership and work facilities on performance, both directly and indirectly, through motivation as a mediating variable. This test is conducted by comparing the calculated t-value with the critical t-table value or by referring to a significance level of 0.05 (5%).

RESULTS AND DISCUSSION

Validity and Reliability Testing

1. Validity Testing

Based on the validity test results for each indicator (Transformational Leadership, Work Facilities, Motivation, and Performance), it was found that the loading factor value for each indicator used to measure these variables exceeded 0.50. Therefore, it can be concluded that all 43 indicators used in measuring each variable (Transformational Leadership, Work Facilities, Motivation, and Performance) meet the criteria for convergent validity.

2. Reliability Testing

The Cronbach's alpha values for the construct variables of transformational leadership, work facilities, motivation, and performance are as follows:

Table 1. Cronbach's Alpha Test Results

No	Variable	*Cronbach Alpha*	Description
1	Transformational Leadership	0.941	Rerliable
2	Work Facilities	0.974	Rerliable
3	Motivation	0.963	Rerliable
4	Performance	0.975	Rerliable

Source: Smart PLS Data Processing Results by Authors

Based on the reliability test results presented in Table 1, it is evident that the Cronbach's alpha values for the variables of transformational leadership, work facilities, motivation, and performance exceed 0.70. Therefore, it can be concluded that the research instrument is reliable and consistent.

Table 2. Coefficient of Determination Value

No	Variable	*R Square*	*R Square Adjusted*
1	Motivation	0.865	0.863
2	Performance	0.945	0.944

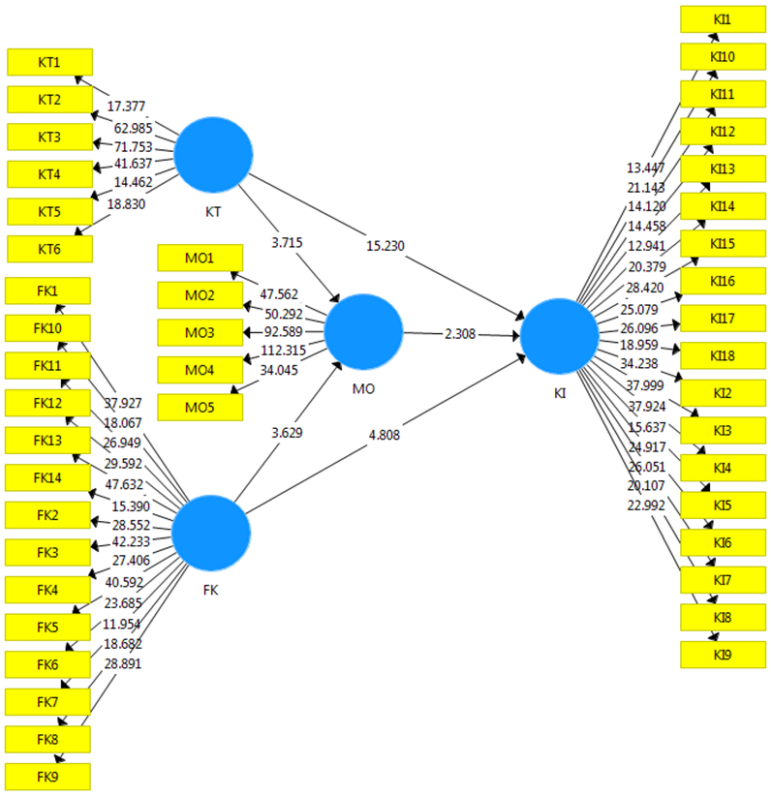
Source: Smart PLS Data Processing Results by Authors

Based on Table 2, the coefficient of determination (R^2) indicates the accuracy level between actual and predicted values for the endogenous latent variables. The motivation model has an R^2 value of 0.863 or 86%, meaning that the variation in motivation can be explained by transformational leadership and work facilities by 86%, while the remaining 14% is influenced by other variables not included in the model. The R^2 value for performance is 0.944 or 94%, indicating that performance can be explained by transformational leadership, work facilities,

and motivation, while the remaining 6% is influenced by other variables outside the model. The coefficient of determination values presented in Table 2 demonstrate that the research model used is substantial and strong.

Hypothesis Testing

This study utilizes SEM (Structural Equation Modeling) using the Smart PLS 3.3 software. Hypothesis testing is conducted to examine whether the independent variables, namely transformational leadership and work facilities, influence the dependent variable, which is performance, both directly and indirectly through the mediating variable, motivation. The output of the hypothesis test using Smart PLS 3.3 in the form of a path diagram can be seen in Figure 1 below.



Source: Smart PLS Data Processing Results by Authors

Figure 1. Hypothesis Testing Result

Based on the data processing results using Smart PLS version 3.3, as shown in the bootstrapping output in Figure 1, the next step is to conduct hypothesis testing. The results of this hypothesis test can be seen in Table 3 below.

Table 3. Results of Direct Effect Hypothesis Testing

Influence	Estimate	S.E.	C.R	P Value	Decision
Transformational leadership towards motivation	0.475	0.127	3.715	0.000	H1 accepted
Work facilities towards work motivation	0.489	0.135	3.629	0.000	H2 accepted
Transformational leadership towards employee performance	0.866	0.057	15.230	0.000	H3 accepted
Work facilities towards employee performance	0.296	0.060	4.808	0.000	H4 accepted

Motivation towards employee performance	0.375	0.074	2.308	0.011	H5 accepted

Source: Smart PLS Data Processing Results by Authors

Hypothesis 1

The results of hypothesis testing indicate a p-value of 0.000, which is less than 0.05, meaning that H1 is accepted. Statistically, at a 95% confidence level, transformational leadership has a positive influence on work motivation.

Leadership in an organizational context plays a crucial role in influencing individuals toward achieving organizational goals, including within the ARFF Division at Soekarno-Hatta Airport. Effective leadership involves taking proactive approaches and implementing various strategies to influence others, particularly in enhancing subordinates' job performance.

Hypothesis 2

The hypothesis test results also show a p-value of 0.000, which is less than 0.05, indicating that H2 is accepted. Statistically, at a 95% confidence level, workplace facilities positively influence work motivation. The availability of workplace facilities is an essential factor for employees within an organization, including those working in the ARFF Division at Soekarno-Hatta Airport.

The availability of workplace facilities is a crucial aspect for employees within a company, including those assigned to the ARFF Division at Soekarno-Hatta Airport, as these facilities are part of the infrastructure that supports employees in achieving good performance. The ARFF unit at Soekarno-Hatta Airport, like other airports, utilizes equipment such as ambulances, fire trucks, and command vehicles. These vehicles are manufactured by countries such as the United States, Japan, and Austria.

Hypothesis 3

The hypothesis test results further indicate a p-value of 0.000, which is less than 0.05, meaning that H3 is accepted. Statistically, at a 95% confidence level, transformational leadership has a positive impact on employee performance.

This research aligns with previous studies conducted by Poling & Surya (2020), which found that transformational leadership has a significant positive effect on employee performance. Additionally, the study concluded that transformational leadership positively and significantly influences job satisfaction, job satisfaction positively and significantly affects employee performance, and job satisfaction serves as a mediating variable in the relationship between transformational leadership and employee performance.

Hypothesis 4

The results of the hypothesis test show a p-value of 0.000, which is less than 0.05, indicating that H4 is accepted. Statistically, at a 95% confidence level, work facilities have a positive influence on employee performance.

This study is consistent with previous research conducted by (Rambe et al., 2023), which suggests that employee performance can be influenced by workplace facilities. One of the factors that determine high employee performance is the availability of facilities. Facilities serve as physical resources utilized in company activities, which are used in the normal operations of the company. These facilities have a relatively permanent usage period and provide benefits for the future. Workplace facilities in a corporate structure play a crucial role in supporting employees' tasks, such as assisting them in completing their work efficiently.

Hypothesis 5

The hypothesis test results also indicate a p-value of 0.011, which is less than 0.05, meaning that H5 is accepted. Statistically, at a 95% confidence level, work motivation positively influences employee performance.

Motivation is an essential element for personnel in the ARFF unit, as it serves as an internal driving force that encourages individuals to achieve their goals. One strategy to achieve higher goals and development is motivation. Employees who are motivated tend to provide high-quality and effective services, signifying that motivation is a key factor in the effectiveness of an institution or organization

Hypothesis 6

Based on the hypothesis test results shown in Table 3, the p-value is 0.036, which is less than 0.05. This indicates that H6 is accepted, and at a 95% confidence level, transformational leadership has an influence on employee performance through work motivation.

Leaders in the ARFF unit play a significant role in enhancing both motivation and performance among personnel under their supervision. To foster motivation and improve employee performance, effective leadership is essential. Leadership refers to the structured process of influencing others to understand and agree on what needs to be done, how it should be done, and ultimately achieving shared goals.

Hypothesis 7

Based on the hypothesis test results shown in Table 4.5, the p-value is 0.020, which is less than 0.05. This means that H7 is accepted, and at a 95% confidence level, workplace facilities influence employee performance through work motivation.

Workplace facilities for ARFF personnel are an essential requirement for the continuity of the organization and its employees. Adequate workplace facilities contribute to increased work motivation and performance among ARFF personnel. Facilities encompass various forms of infrastructure and resources provided by the organization to support production processes, distribution activities, and service delivery to customers.

CONCLUSION

Based on the research findings, it can be concluded that transformational leadership and workplace facilities play a significant role in enhancing employee motivation and performance. Well-implemented transformational leadership has been shown to improve work motivation, which ultimately contributes to better employee performance. Similarly, adequate workplace facilities help boost employee motivation and performance, while limited facilities may hinder productivity.

Furthermore, work motivation has been proven to act as a mediating variable in the relationship between transformational leadership and employee performance, as well as between workplace facilities and employee performance. This implies that effective leadership and well-provided workplace facilities can enhance motivation, which in turn positively impacts employee performance. Therefore, companies should focus on implementing transformational leadership practices and ensuring the availability of optimal workplace facilities to create a conducive work environment that supports employee performance improvement.

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