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The Influence of Work Discipline, Workload and Work Environment on the Performance of Air Traffic Controller Employees in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch

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Abstract: The aim of this research is to determine the magnitude of the influence of Work Discipline, Workload and Work Environment, both partially and simultaneously, on the performance of air traffic controller employees. The method used is associative with a quantitative approach. The number of samples used was 132 respondent, with a simple random sampling technique. Data was taken using a survey method. Data analysis was carried out to test the significance of the hypothesis, coefficient of determination using SPSS V.25 software. The research results show that work discipline, and work environment have a positive and significant effect, both partially. Workload has a negative and significant effect on the performance of air traffic controller employees. As simultaneously, Work discipline, workload and work environment have a positive and significant influence employee work performance in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch.

Keywords: Work Discipline, Workload, Work Environment, Employee Performance.

INTRODUCTION

AirNav Indonesia is the only flight navigation provider in Indonesia. As a Business Entity, AirNav Indonesia's performance benchmarks are seen from the safety side which consists of many elements such as human resources, equipment, procedures and so on, all of which must follow developments and standards that are strictly regulated in the Civil Aviation Safety Regulations (CASR). In working to regulate air traffic, the Air Traffic Controller must follow the applicable standard operating procedures (SOP) and also look at conditions in the field to achieve the objectives of air traffic services, namely speeding up and smoothing the flow of air traffic in accordance with the five objectives of air traffic services (ICAO Annex 11:2016:2-2).

The current phenomenon is the density of aircraft landing and taking off in the Jakarta FIR airspace as well as international aircraft passing through the Jakarta FIR airspace. The

accumulation of aircraft movements at certain hours or at certain slot times results in the discovery of obstacles on the taxiway in the form of many aircraft waiting in line to carry out take-off so that the planes do not immediately depart (take-off). The increase in flight traffic flow in Indonesia will affect the amount of traffic served by each air traffic service provider at every airport in Indonesia, if it is not balanced with high performance it will be prone to accidents.

Factors causing aviation accidents in 2019 and 2021 are caused by human factors or human error amounting to 75% and 66.70%, technical factors in 2021 amounting to 33.30%, environmental factors in 2020 100% and facility factors in 2019 amounting to 25%. It can be concluded that the factor that often occurs as the main cause of aviation accidents is mostly human error. In the period from 2020 to Semester I of 2023, the National Transportation Safety Committee (KNKT) was recorded as having issued 48 recommendations as a result of aviation accident investigations. The most recommendations issued to aircraft operators were 36 recommendations. The following is a table and graph of recipients of aviation accident recommendations based on the Year of Accident Event, Semester I, 2023.

Employee performance is the result of a person's work in quality and quantity in accordance with standards that have been determined based on the responsibilities given. Many factors influence the high and low performance of employees, as stated by Kasmir (2016) in (Rakhamlina, 2021), stating that factors influencing performance are competence, work design, personality, work motivation, leadership, organizational culture, job satisfaction, work environment, loyalty, commitment, and work discipline. Continued by M Parwoto, et al (2017) dalam (Wijaya, 2021), factors that influence performance are: personal/individual, motivation, individual commitment, leadership, team, work system, contextual (situational), such as pressure and changes in the external and internal environment.

From the description above, the factors that influence performance in Air Traffic Controllers are thought to be discipline, workload and work environment. The first factor that is thought to influence performance is employee work discipline. According to Singodimejo in (Sutrisno, 2017), discipline is an attitude of a person's willingness and willingness to obey and adhere to the regulatory norms that apply around him. According to (Siswanto Sastrohadiwiryono, 2019). Work Discipline is an attitude of respect, appreciation, obedience and obedience to applicable regulations, both written and unwritten and being able to carry them out and not avoiding receiving sanctions if he violates his duties and obligations. authority given to him.

Becoming an air traffic controller (ATC) is not easy because you have to go through strict special education. Strict ATC education is aimed at creating human resources who are competent and disciplined in their work. An ATC must be disciplined and have a good focus. ATC works by communicating through a special communication network assisted by the instrument system in the work space. Instruments that help ATC work are tools used to determine aircraft coordinates, wind direction, aircraft movement and weather information (Susanto et al., 2021).

In relation to discipline, air traffic controller (ATC) operators are required to have speed and accuracy to process the information obtained in making the right decisions so that accidents do not occur. ATC work hours are very constant in the sense that ATC work schedules are busy and dense plus situations and environments that can be said to be isolated. Usually ATC also often relates to high workloads which have an impact on ATC performance which is starting to decline. In the Director General of Civil Aviation Regulation Number PR 15 of 2022, it is stated in CHAPTER VII Article 7 Paragraph 1 which states that the number of working hours of flight traffic control personnel in 1 day is a maximum of 8 hours and is given rest breaks, and paragraph 2 states that the number of consecutive working days is a maximum of 5 days in 1 week, the number of hours in 1 week is 40 hours. Thus,

ATC operators must have high work discipline, manage the workload because the process of controlling air traffic is not only aircraft in the air but also landing, take-off traffic and arranging aircraft to the parking stand (Fitri et al., 2019).

Currently, the results of observations made by the author at Airnav on the air traffic controller (ATC) unit, employee work discipline can be seen in the following Table 1. Based on Table 1 regarding the JATST Branch ATC Employee Attendance List, employee attendance towards the last 6 months of 2023 from July – December has increased quite significantly, especially sick employees from August – October increased drastically, and most employees were absent due to permission. in October there were 11 employees, this was due to the high workload so employees easily felt tired and were susceptible to illness.

Table 1. List of Attendance of JATSC Branch ATC Employees in 2023

Month	Number of Employees	Attendance		
		Sick	Permit	Without explanation
Jan-23	180	0	0	0
Feb-23	171	0	0	0
Mar-23	182	0	0	0
Apr-23	173	0	0	0
May-23	182	0	0	0
Jun-23	182	0	0	0
Jul-23	192	6	3	0
Aug-23	192	15	6	0
Sep-23	191	13	2	0
Oct-23	195	14	11	0
Nov-23	194	5	6	0
Dec-23	200	7	3	0

According to Utomo (2014) in (Magfirah & Risambessy, 2023) workload is the amount of work that must be carried by a position/organizational unit and is the product of work volume and time norms. Excessive workload can cause stress, because of the need to work a very large number of hours, both physically and mentally, so it is a source of work stress. Patel (Febriana, 2016) states that stress is a certain reaction that appears in the body which can be caused by various demands, for example when humans face challenges, when they are faced with threats, or when they have to try to face expectations. - unrealistic expectations from the environment. However, stress for one person may not necessarily be stress for another person because each individual has different perceptions regarding things they consider to be obstacles or threats.

Apart from that, work environmental factors also influence the performance of ATC operators. The work environment is a condition in which employees work in a company which can affect the physical and psychological condition of employees. (Negara & Subarjo, 2022). Work environment such as lighting, optical reflections, noise level, microclimate, unergonomic body posture, number of breaks, relaxation and canteen facilities, lifts or stairs. Companies with poor or poor work environments will result in employees not being able to work well. The work environment greatly influences employee performance in terms of safety and comfort (Negara & Subarjo, 2022).

The work environment is designed in such a way as to create a work relationship that ties work to the environment. A pleasant work environment can make employees feel at home in completing their work and able to achieve optimal results. On the other hand, if the working environment conditions are inadequate, it will have a negative impact in reducing the level of employee performance productivity (Senjani et al., 2021).

Currently, the working environment for ATC officers in providing services by air traffic controllers is in an isolated area, there is high noise from aircraft operating 24 hours

with a fairly high risk of stress. Ergonomic conditions are considered not optimal in providing ergonomic conditions when working. For example, the condition of the desk controller is considered too narrow and not spacious enough, there is additional equipment that is not used in the work. the condition of the chairs has many problems or is less comfortable and there are different types of chairs. Conditions of facilities that sometimes experience problems such as frequency/direct speech/push to talk devices. There are no pick-up and drop-off facilities, especially during night duty, so that employees feel tired which makes employees feel bored and have decreased motivation/mentality. Rest area facilities are not yet optimal, requiring more rest areas and facilities that support rest

From the description above, it can be concluded that in improving ATC performance, the factors that need to be considered are work discipline, workload and work environment. So the formulation of this research is whether Work Discipline, Workload and Work Environment either partially or simultaneously influence the Performance of Air Traffic Controller Employees in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch.

METHOD

The research method used is an associative research method with a quantitative approach, namely research carried out to determine the relationship between two or more variables. According to (Sugiyono, 2019) an associative problem formulation is a research problem formulation that asks about the relationship between two or more variables. Sugiyono continued (2019:93) adding that a causal relationship is a relationship that is cause and effect. So here there are independent variables (variables that influence) and dependent (influenced). According to (Sugiyono, 2019) the quantitative approach is: "As a research method based on the philosophy of positivism, used to research certain populations or samples, collecting data using research instruments, quantitative/statistical data analysis, with the aim of testing existing hypotheses. has been established".

The population in this study were all employees at the Air Traffic Controller. The sample taken was 132 respondents, generated by calculating the number using the Slovin formula. Data were collected using a questionnaire with a simple random sampling technique. The data analysis method in this research is assisted by using statistical software, namely SPSS V.25, while the data analysis technique uses Multiple Regression, which is a technique for determining the correlation between a criterion variable and a combination of two or more predictor variables. Classic assumption test and determination test.

RESULTS AND DISCUSSION

Based on the normality test using Kormogorov-Smirnov, the result is 0.2 which is greater than 0.05. This shows that the research data is normal data. So the data can be tested further, namely the regression test. Table 3 shows the results of the hypothesis test from multiple regression on the variables of work discipline, workload and work environment on work performance. And in Table 4, the results of the determination test are 0.486. This means that the contribution of employee work performance is influenced by work discipline, workload and work environment by 48.6 percent, the remaining 51.4 percent is influenced by other than the variables studied.

Table 2. Normality One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		132
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	5.64405640
Most Extreme Differences	Absolute	.044

	Positive	.044
	Negative	-.037
Test Statistic		.044
Asymp. Sig. (2-tailed)		.200c,d
Monte Carlo Sig. (2-tailed)	Sig.	.952e
	99% Confidence Interval	Lower Bound .947
		Upper Bound .958

Table 3. Hypothesis Test Results

Hypothesis	Path	Koef Regression	T Value/ F Value	Sign	Result
H1	Work Disciplin -- > Employee Performance	0.389	4.676	.000	Accepted
H2	Workload -- > Employee Performance	-0.219	-4.088	.000	Accepted
H3	Work Environment -- > Employee Performance	0.220	2.525	.013	Accepted
H4	Work Disciplin, Workload, Work Environment -- > Employee Performance		42.328	.000	Accepted

Table 4. Determination Test Results

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.706a	.498	.486	5.70981

a. Predictors: (Constant), Work Environment, Work Discipline, Workload

From the results of the hypothesis test as shown in Table 3, the first hypothesis test in the test resulted in a t value of $4.676 > t$ table 1.96, so hypothesis **H1 was accepted**, thus work discipline had a positive and significant effect on employee performance in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch. The results of this research are in line with the results of research (Shalsabila et al., 2023) that work discipline influences employee work performance. Work discipline is important for employee performance and productivity goals. Greater work discipline leads to greater employee performance (Nurfadlika & Adinata, 2023). Lack of discipline causes a decrease in employee performance. Research results (Nuraeni et al., 2023) show that work discipline has a positive impact on employee performance in the organization. Discipline influences productivity and compliance with workplace regulations for employees (Aulia & Resawati, 2023).

In testing the second hypothesis, the calculated t value was $-4.088 < t$ table -1.96, so **H2 was accepted** and it was proven that workload had a negative and significant effect on the work performance of the Area Control Center Unit employees at Airnav Indonesia Jakarta Air Traffic Service Center Branch. This is in line with research conducted by (Ali & Zia-ur-Rehman, 2020) showing that work overload has a negative impact on employee performance. Fear of negative evaluation also has a negative impact on employee performance. Research results (Malau & Kasmir, 2021) show that workload has a negative impact on employee performance through job satisfaction. High workload causes a decrease in job satisfaction and performance. According to (Alfian & Rahmana, 2023) workload has a negative effect on employee performance. A high workload can result in substandard task completion. However, research results (Herawati et al., 2023) show that workload influences employee performance. Companies that provide manageable workloads can improve employee performance effectively. Likewise, research results (Cahyaningsih & Dyahjatmayanti, 2023) show that workload has a positive and significant effect on employee performance. Employee

performance can be improved by managing workload effectively. The more workload that is completed, the better employee performance will be.

In the second hypothesis, the resulting t value is $2.525 > t$ table 1.96. Hypothesis **H3 was accepted** and it is proven that the work environment has a positive and significant effect on employee work performance in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch. This research is in line with (Hidayatullah, 2023) (Hidayatullah, 2023) (Aulia & Resawati, 2023) that a comfortable and supportive work environment improves employee performance. (Lusitawati et al., 2023) The work environment positively influences employee performance in the setting organization. (Andre Masago Manik et al., 2023) A better work environment leads to increased employee performance.

In simultaneous testing it was proven that work discipline, workload and work environment had an influence positive and significant on employee work performance in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch with the result of an F value of 42.328 with a sign of 0.000, therefore **H4 was accepted**. Employee performance is significantly influenced by factors such as discipline, workload, and work environment. Research by (Lusitawati et al., 2023) states that discipline and a conducive work environment have a positive impact on employee performance. Physical work environment, work motivation, and work discipline have an important role in predicting employee performance, underscoring the shift from viewing employees as resources to assets in the organization. (Aulia & Resawati, 2023) emphasizes the importance of work discipline and non-physical work environments in improving employee performance, (Aulia & Resawati, 2023) that supervisors must monitor tasks and recognize employees who perform well while also fostering relationships between co-workers.

CONCLUSION

From the results and discussion, the author can conclude that work discipline has a positive and significant effect on employee work performance in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch, workload has a negative and significant effect on employee work performance in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch and the work environment has a positive and significant influence on employee work performance in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch. Work discipline, workload and work environment simultaneously have a positive and significant influence employee work performance in the Area Control Center Unit at Airnav Indonesia Jakarta Air Traffic Services Center Branch.

The managerial implications that the author can suggest are based on a comprehensive analysis of the questions given to respondents. Work Performance: Employees should be given work responsibilities in accordance with the job description and in accordance with the targets that have been set. There needs to be good cooperation between colleagues. Work Discipline: The discipline of ATC officers needs to be manifested in high work enthusiasm in obeying and carrying out their duties well. Workload: Mental readiness for a lot of work and difficulty so that it does not interfere with concentration and work stress. Work environment; Minimizing noise outside the work environment really interferes with concentration and focus in carrying out work. Suggestions for further research could be to use other variables that influence work performance such as work stress as an independent variable.

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