

## The Effect of High Workload and Organizational Communication on Air Traffic Controller (ATC) Work Engagement at the PERUM LPPNPI Palembang Branch with Interpersonal Conflict as an Intervening Variable

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### ABSTRACT

This study examines how workload and organizational communication impact work engagement among air traffic controllers at AirNav Indonesia, Palembang, with interpersonal conflict as an intervening variable. Using a causal quantitative design with a structural equation model, findings show that a high workload negatively affects work engagement through increased interpersonal conflict. In contrast, effective organizational communication enhances work engagement and reduces conflict. Thus, while workload diminishes engagement through conflict, good communication boosts engagement and minimizes conflicts among air traffic controllers.

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## **INTRODUCTION**

Air Traffic Control (ATC) is a profession that specializes in the provision of traffic control services, particularly for aircraft, in order to prevent collisions or aircraft from approaching each other too closely. In general, the responsibilities of an air traffic controller include the regulation of air traffic, the provision of critical flight-related information to pilots, the monitoring of flight velocities, the granting of permission for take-off, and other duties (Susanto et al., 2021). ATC personnel are obligated to be meticulous, precise, and timely in their performance of their responsibilities, as well as accurate in the organization and provision of aircraft traffic information during take-off and landing. This is necessary to ensure that flight operations are conducted safely and efficiently (Fathimahhayati, 2018).

Work engagement is a collection of work attitudes that encourage employees to experience positive emotions toward their work, consider their high burden to be manageable, and have optimism about the future of their work (Qodariah, 2019). An increase in performance at a higher level, a sense of belonging and pride in the work, and a commitment to the organization are all indicative of this attitude. There has been one incident of brake down of separation or a near miss incident (almost an accident) in 2021 at the Palembang branch office. This incident may have been the result of a lack of work engagement, such as the ATC adaptation process, for a newcomer who had recently been transferred to the Palembang branch office.

It is important to acknowledge that in 2021, there were 8,657 aircraft movements, both taking off, landing, or crossing flights, and in 2021, there were 8,951 aircraft movements, a 3.4% increase. With Indonesia entering a new normal in 2022, aircraft movements will rise, increasing ATC strain. Given their workload, ATC staff must make immediate choices to ensure flight safety and smoothness. According to (Juhnisa & Fitria, 2020), the many demands of work produce a tremendous burden for employees, which can lower work engagement if they are unable to react to requests or challenges. ATC's significant workload is due to its vital role in flight safety and traffic management. ATCs' emotional and physical health might be affected by high workload, thus work engagement must be considered (Susanti, 2017).

Additionally, air traffic controllers, management, and co-workers must communicate well. Team support, effective communication channels, and clear instructions can improve air traffic controllers' task comprehension, coordination, and trust. Resdiana & Aima (2017) found that organizational communication affects employee engagement. The research shows that employee engagement increases with communication. In previous research, it has been demonstrated that competence, excessive workload, and work stress are factors that affect employee work engagement (Idawani et al., 2018). Rizky & Suhariadi (2021) stated that workload and social support had a substantial impact on work fatigue in health workers during the COVID-19 pandemic, both simultaneously and partially. Additionally, (Kismanto, 2019) discovered that employee engagement was influenced by leadership communication style and organizational climate.

The data analysis method for this investigation will be PLS-SEM, and a sample of up to 88 Air Traffic Controllers will be employed. A reduction in aviation safety is expected as a consequence of the aforementioned factors not being adequately addressed. To investigate the influence of high workload and organizational communication on work engagement in the air traffic controller profession, at the Palembang Branch Office, adverse consequences may arise. Interpersonal conflict's mediation function in the relationship between organizational communication, work engagement, and workload will be examined in that investigation.

## **THEORETICAL REVIEW**

### ***Concept of Work Engagement***

Work engagement is a positive mental state that is associated with the work activities that an individual engages in, as evidenced by the presence of enthusiasm, dedication, and appreciation (Schaufeli et al., 2002). Work engagement is a positive work-related active state of employees in carrying out their work by actively participating and being marked by enthusiasm, dedication, and absorption, as also conveyed by the statement from (Bakker & Leiter, 2010). Engagement is the capacity of an individual to commit both intellectually and psychologically to the organization, as stated by Lockwood (2005). According to Gibbons (2006), work engagement is a relationship between intellect and emotion that exists in employees in the context of their work, the organization, or their colleagues. This relationship can influence the increase in work contributions or discretionary effort.

Many organizations and companies make numerous efforts to retain their personnel in order to ensure that they can make the most valuable contributions to their work. When employees experience a sense of attachment to their work, which is referred to as Work Engagement, they are able to work at their best and make the most valuable contributions to the organization. Employees perceive themselves as capable of finishing their assignments through Work Engagement (Bakker et al., 2007).

There are three indicators of Bakker's work engagement measurement method (2011) . 1) Vigor: This element is characterized by a high level of enthusiasm or vitality, mental resilience, and tenacity in the face of a variety of obstacles. 2) Commitment; this attribute is defined as a sense of pride and enthusiasm in confronting work-related obstacles, as well as a sense of involvement. 3) Absorption; Absorption is defined by a complete focus on the task at hand, accompanied by a sense of joy that is interwoven with the work being completed, to the extent that the passage of time is inextricably linked to the work.

### ***Concept of High Workload***

High workloads are among the numerous critical factors that organizations must evaluate, as they can have an impact on employee productivity. The term "high workload" refers to the discrepancy between the demands of the work and the employee's capacity, as per Arifin et al. (2019).

The fulfillment of work obligations designated to an employee is a form of responsibility to the organization. High workload is defined by (Kimbali et al., 2015) as a responsibility in the form of work duties that are assigned to the incumbent and must be completed within the designated time frame.

Nevertheless, the employee's capacity to handle this substantial caseload is frequently exceeded, necessitating immediate completion within the designated time frame. Tarwaka (2014) posits that a high burden is a result of the disparity between the demands of the work and the capacity or ability of the workers, as stated by Schultz & Schultz (2016). In layman's terms, a high workload is a job demand that becomes the obligation and responsibility of employees. This demand can take the form of overcapacities or under capacities that must be completed within a specific time frame in order to achieve organizational objectives.

The high workload is frequently assessed using the following indicators: 1) Working Conditions: This encompasses an employee's perspective on their position. Employees will experience increased productivity and engagement when they are provided with conducive working conditions. 2) Utilization of Working Time; this metric pertains to the manner in which employees allocate their time to accomplish work-related duties. The burden may increase if working time is inefficient. 3) Targets to be achieved: Targets are the expected work results or targets of an employee. Workload may become an issue if the objectives are excessively ambitious or unrealistic (Koesomowidjojo & Mastuti, 2018).

### ***Concept of Organizational Communication***

We engage in communication to either send or receive information. In this existence, communication is a critical component of the sustainability of relationships between individuals and groups. Effective communication will establish a work environment conducive to productivity. According to Hovland (1948) and Hermawan et al. (2018), he holds the belief that effective communication not only establishes a connection with others, but also aims to change the behavior of those who receive the message. Endang also stated in Agustini & Harefa (2016) that communication in a company is a determinant of success in achieving goals. Communication in a company will result in a reciprocal relationship from each person, whether in the form of orders, suggestions, opinions, or criticism.

According to Barret, primary communication—the act of expressing one's thoughts or emotions to another individual using symbols as a medium—is the process that conducts the transfer or reception of messages. The communicator directly translates their thoughts or emotions into language, gestures, and other symbols for the communicant. Secondary communication is the process of conveying messages from one individual to another through media tools such as email, letters, and reports (Hermawan et al., 2018). Communication can be defined as an instrument that facilitates the transmission or reception of messages through either a direct or indirect process.

The following three communication channels can be employed as assessment dimensions, as per (Soesanto, in Priansa & Garnida, 2013): 1) Vertical communication is a form of communication that can take the form of verbal, written, memo, complaint, proposal, idea, and more. It is characterized by its upward and downward movement. 2) Horizontal Communication; is the exchange of ideas and the sharing of experiences among members who are at the same level. The style is coordinative. 3. Diagonal Communication: cross-communication within an organization's chain.

### ***Concept of Interpersonal Conflict***

Conflict is defined by (Coser, 1964) as an insufficiently prepared disagreement over values or demands regarding status, power, and sources of wealth. Conflict typically develops within organizations as a consequence of communication issues, personal relationships, or organizational structures (Churiyah, 2011). Nevertheless, the duration of a conflict without a satisfactory resolution will result in pandemonium for both the individual and the organization. In a group of individuals, differences in perception, objectives, or values are typically the factors that initiate conflict, as per (Scannell & Gifford, 2010). In contrast, interpersonal conflict is more specific, as it pertains to conflict that arises between two or more individuals due to a variety of factors, including personality differences (Dewi & Handayani, 2013).

Conflict is classified into two categories, as per Robbins et al. (2019). The indicator that is used to evaluate interpersonal conflict is: 1) functional conflict; Functional conflict is a conflict that enables the realization of group objectives. 2) Dysfunctional conflict; dysfunctional conflict is a conflict that obstructs the achievement of group objectives.

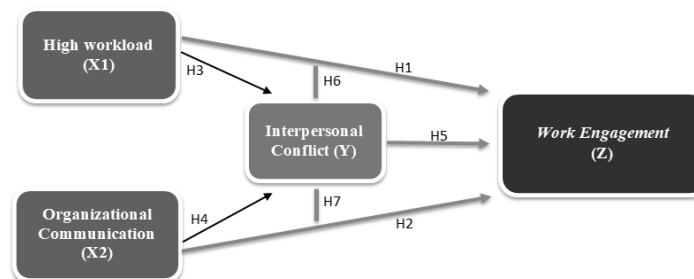


Figure 1. Conceptual Framework

## **METHODOLOGY**

In order to assess a hypothesis regarding the interrelationships of variables, quantitative research methodology is employed (Tan, 2022; Yusuf, 2016). The research employed a causal study design to determine the causal relationship between existing variables on this occasion (Creswell, 2013). The research's objective was to determine the effect of high workload and organizational communication on the work engagement of the Air Traffic Controller at the PERUM LPPNPI Palembang Branch Office, with interpersonal

conflict serving as an intervening variable. This investigation used a questionnaire for data acquisition. The responses provided by the respondents are converted into research data when this questionnaire is disseminated in the form of queries. The Multivariate Analysis-Structural Equation Model (SEM-PLS) is then employed to analyze this data.

The PERUM LPPNPI Palembang Branch Office was the site of the survey, which was conducted on a population of 88 Air Traffic Controllers. The investigation included a total of 88 respondents. Researchers employ questionnaires, documentation, and observation as tools for data collection. This study employs two data analysis methodologies: descriptive statistical analysis and Structural Equation Model-Partial Least Squares (SEM-PLS).

## RESULTS

### *Descriptive Analysis*

The study included 88 respondents who were air traffic controllers at the PERUM LPPNPI Palembang Branch Office. The average age of the respondents is 33.3 years, with a range of 26 to 56 years. The gender distribution of respondents is as follows: 63.6% are male and 36.4% are female. Additionally, Diploma (D-III) dominates the respondents' educational attainment, with a percentage of 93.2%. D-IV follows with a percentage of 5.7%, and 1.1% possess a bachelor's degree.

Table 1. Respondent Demographics

No	Initial	Gender	Educational Level	Age
1	A.P.R.	L	D.III	30
2	A.F.	L	D.III	33
3	A.S.P.	L	D.III	32
4	A.T.A.	P	D.III	34
5	A.D.C.	L	D.III	30
6	A.D.D.S.	L	D.III	28
7	A.B.	L	D.III	29
8	A.S.	P	D.III	32
9	A.G.R.	L	D.III	33
10	A.S.A.	L	D.III	33
11	B.W.R.	L	D.III	33
12	D.A.W.	L	D.IV	28
13	E.F.P.	L	D.IV	39
14	E.C.	L	D.IV	28
15	E.R.A.M.	P	D.III	26
16	F.	L	D.III	33
17	F.A.W.	P	D.III	28
18	F.S.P.	P	D.III	29
19	F.R.	P	D.III	34
20	F.J.P.M.	L	D.III	30
21	F.	P	S1	40
22	F.D.	P	D.III	32
23	F.A.	L	D.III	37
24	G.S.	L	D.III	27
25	H.Y.	L	D.III	30
26	H.A.	P	S1	37
27	H.	L	D.IV	30

28	I.R.	L	D.IV	27
29	I.R.S.	P	D.III	34
30	L.H.M.	L	D.III	31
31	L.I.N.	P	D.IV	40
32	M.K.	P	D.III	30
33	M.S.	P	S1	31
34	M.F.	L	D.III	29
35	M.A.A.G.	L	D.III	26
36	M.A.D.	L	D.III	33
37	N.G.	P	D.III	48
38	N.O.S.	P	D.III	29
39	P.F.K.	L	D.III	32
40	P.H.J.	P	D.III	35
41	R.A.	P	D.III	26
42	R.A.P.	L	D.IV	28
43	R.S.S.	L	D.III	27
44	S.K.	P	D.III	32
45	S.C.P.	P	D.III	29
46	S.D.R.	P	D.IV	27
47	S.L.A.I.	P	D.III	29
48	S.N.D.	L	D.III	27
49	S.C.R.	P	D.III	30
50	S.H.	L	D.IV	27
51	S.N.J.	L	D.III	28
52	T.A.N.	L	D.IV	27
53	T.H.	P	S1	35
54	V.L.	P	S1	36
55	Y.S.	L	D.IV	36
56	Y.D.	P	D.III	32
57	Y.P.	L	D.III	47
58	A.R.	L	D.III	34
59	E.P.E.	L	D.III	45
60	F.N.S.	P	D.III	28
61	I.T.S.	P	D.III	28
62	N.N.A.	P	D.III	29
63	R.A.S.	L	D.III	36
64	R.A.L.	L	D.III	26
65	R.M.	L	D.III	36
66	S.A.H.	L	D.III	29
67	S.	L	D.III	56
68	V.P.	L	D.III	33
69	A.N.A.	P	D.III	28
70	A.S.	L	D.III	38
71	A.R.S.	L	D.III	28
72	D.H.	L	D.IV	45
73	D.Y.	L	D.III	33
74	F.	P	D.III	35
75	G.S.	L	D.III	33
76	K.D.T.W.	P	D.III	30
77	M.P.N.R.	L	D.III	31
78	M.D.S.	L	D.III	33
79	N.F.B.	P	D.III	30
80	R.A.	L	D.III	36

81	R.Z.P.	P	D.III	35
82	S.O.	S	D.II	36
83	A.W.	P	D.III	28
84	D.D.A.	L	D.III	30
85	F.Y.	L	D.III	45
86	F.K.	L	D.III	45
87	G.A.	P	D.III	29
88	I.M.D.	L	D.III	30

### *Descriptive Statistics*

The statistical data presented below indicates the mean, median, minimum value (scale min), maximum value (scale max), and standard deviation of various variables that were employed in this investigation.

Table 2. Variable Description

Indicators	Mean	Assessment criteria
X1.1	3.807	Good
X1.2	4.000	Good
X1.3	4.000	Good
X1.4	3.841	Good
X1.5	4.023	Good
X1.6	3.886	Good
<b>Average of Variable X1</b>	<b>3.915</b>	<b>Good</b>
X2.1	3.864	Good
X2.2	4.045	Good
X2.3	4.193	Good
X2.4	4.193	Good
X2.5	4.136	Good
X2.6	3.875	Good
<b>Average of Variable X2</b>	<b>4.025</b>	<b>Good</b>
Y1	4.011	Good
Y2	4.193	Good
Y3	4.307	Good
Y4	4.455	Good
Y5	4.136	Good
Y6	3.875	Good
<b>Average of Variable Y</b>	<b>4.136</b>	<b>Good</b>
Z1	4.193	Good
Z2	4.386	Good
Z3	4.057	Good
Z4	4.420	Good
Z5	4.159	Good
<b>Average of Variable Z</b>	<b>4.243</b>	<b>Good</b>

Source: Processed (2024)

### *Evaluation of the Measurement Model*

The research employs a reflective measuring paradigm, in which the variables of high workload, organizational communication, interpersonal conflict and ATC work engagement are measured reflectively. According to (Hair et al., 2021), the reflective measurement model's evaluation criteria include a loading factor of  $\geq 0.70$ , composite reliability of  $\geq 0.70$ , Cronbach's alpha of  $\geq 0.70$ , and

AVE (convergent validity) of  $\geq 0.50$ . Additionally, discriminant validity is evaluated using Fornell and Lacker criteria, HTMT of  $\leq 0.90$ , and cross loading.

Table 3. Outer Loading, Cronbach's Alpha, Composite Reliability and Average Variance Extracted

Variable	Measurement Item	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
<b>High workload</b>	X1.1	0.745	0.875	0.905	0.615
	X1.2	0.729			
	X1.3	0.825			
	X1.4	0.852			
	X1.5	0.767			
	X1.6	0.782			
<b>Organizational Communication</b>	X2.1	0.712	0.859	0.895	0.587
	X2.2	0.772			
	X2.3	0.784			
	X2.4	0.810			
	X2.5	0.732			
	X2.6	0.781			
<b>Interpersonal Conflict</b>	Y1	0.802	0.905	0.927	0.679
	Y2	0.866			
	Y3	0.890			
	Y4	0.858			
	Y5	0.742			
	Y6	0.778			
<b>Work Engagement</b>	Z1	0.826	0.904	0.929	0.724
	Z2	0.842			
	Z3	0.787			
	Z4	0.915			
	Z5	0.878			

Source: Processed (2024)

According to the table above, the high workload variable is assessed by six valid items with outer loading values ranging from 0.729 to 0.852, indicating that the six measurement items are highly associated in describing high ATC workload. The high workload variable has adequate reliability, as evidenced by a composite reliability score of 0.905 and Cronbach's alpha of  $0.875 > 0.70$  (reliable). The convergent validity level indicated by the AVE value of  $0.615 > 0.50$  meets the criteria for good convergent validity. Overall, the variation of measurement items within the high workload variable is 61.5%. Among the six measurement items, X1.3 and X1.4 have the largest outer loading (0.825) and (0.852), indicating that these two items best describe the fluctuation in data measurement caused by the high workload variable.

The organizational communication variable is then tested using six valid items, with an outer loading value ranging from 0.712 to 0.810, indicating that the six measurement items are substantially associated in explaining ATC communication. The communication variable has adequate reliability, as evidenced by a composite reliability score of 0.895 and Cronbach's alpha of  $0.859 > 0.70$  (reliable). The AVE score of  $0.587 > 0.50$  indicates strong convergent validity. Overall, the variation of measurement items within the organizational communication variable is 58.7%. Among the six measurement items, X2.3 and

X2.4 have the largest outer loading (0.784) and (0.810), indicating that the two items best capture the variation in data measurement caused by the communication variable.

The third variable in this study is interpersonal conflict, which is measured using six (six) legitimate items with outer loading values ranging from 0.742 to 0.890, indicating that the six assessment items are highly associated in explaining ATC interpersonal conflict. The interpersonal conflict variable has adequate reliability, as evidenced by the composite reliability score of 0.927 and Cronbach's alpha 0.905 > 0.70 (reliable). The AVE score of 0.679 > 0.50 indicates strong convergent validity. Overall, the variation of measurement items within the interpersonal conflict variable is 67.9%. Out of the six measurement items, Y2 and Y3 have the largest outer loading (0.866) and (0.890), indicating that the two items best capture the variation in data measurement from the interpersonal conflict variable.

The last variable in this study is work engagement, which is the dependent variable. It is measured with 5 (five) valid items, and the outer loading value ranges from 0.787 to 0.915, indicating that all measurement items are closely associated in explaining ATC job engagement. The work engagement variable has adequate reliability, as evidenced by a composite reliability score of 0.929 and Cronbach's alpha of 0.904 > 0.70 (reliable). The convergent validity level indicated by the AVE value of 0.724 > 0.50 meets the criteria for good convergent validity. Overall, the variation of measurement items within the work engagement variable is 72.4%. Among the six measurement items, measurement items Z4 and Z5 have the highest outer loading (0.915) and (0.878), indicating that the two items best describe the variation in data measurement caused by the work engagement variable.

Table 4. Fornell and Lacker

	High Workload	Organizational Communication	Interpersonal Conflict	Work Engagement
High Workload	0.784			
Organizational Communication	0.697	0.766		
Interpersonal Conflict	0.782	0.863	0.824	
Work Engagement	0.754	0.776	0.848	0.851

*The diagonal value is the root AVE and the other values are correlations*

Source: Processed (2024)

Fornell and Lacker criteria must be used to assess discriminant validity. A discriminant validity examination ensures that variables are conceptually different and empirically/statistically demonstrated. Fornell and Lacker require that the variable's AVE root exceeds the correlation. The AVE root (0.784) of the high workload variable exhibits a stronger correlation with communication (0.697), conflict (0.782), and work engagement (0.754). These results demonstrate the high workload variable's discriminant validity. Communication, conflict, and work engagement are legitimate when the AVE root is bigger than the correlation.

Table 5. HTMT

	High Workload	Organizational Communication	Interpersonal Conflict
Organizational Communication	0.881		
Interpersonal Conflict	0.777	0.769	
Work Engagement	0.830	0.696	0.643

Source: Processed (2024)

(Hair et al., 2019) indicate that HTMT is more sensitive or accurate for discriminant validity. The test findings show discriminant validity because the variable pair's HTMT value is smaller than 0.90. The variable divides the variance of the measurement item against the item that measures it more strongly than other variable items.

### Structural Model Evaluation

This structural model's hypothesis testing evaluation considers research variable influence. The inner VIF measure is used to test the structural model for multicollinearity in the first of three phases. An inner VIF value of less than 5 indicates no multicollinearity (Hair et al., 2021). Using the t-statistic or p-value, hypothesis testing between variables is done. A substantial influence between variables is indicated by a t statistic more than 1.96 (t table) or a test p-value less than 0.05. Note that the computed path coefficient parameters include results and 95% confidence interval. Third, the structural direct variable influence is the f square value (0.02 low, 0.15 medium, 0.35 high). Hair et al. (2021) call the Upsilon V statistic, produced by squaring the mediation coefficient, the f square of the mediation effect. According to Ogbeibu et al. (2021), Lachowicz et al.'s mediation effect is low at 0.02, medium at 0.075, and high at 0.175.

Table 6. Inner VIF

	Interpersonal Conflict	Work Engagement
High Workload	1.670	2.699
Organizational Communication	1.670	2.675
Interpersonal Conflict		2.890

Source: Processed (2024)

Before evaluating the structural model's hypothesis, variables must be checked for multicollinearity, particularly with the inner VIF statistical measure. The inner VIF value is less than 5, indicating little multicollinearity between variables, according to estimation results. These data support SEM PLS parameter estimation's impartiality and robustness.

Table 7. Direct Effect Hypothesis Testing

Hypothesis	Path coefficient	p-value	95% Interval Kepercayaan Path Coefficient		f square
			Lower limit	Upper limit	
High Workload → Work Engagement	0.306	0.002	0.175	0.533	0.144
Organizational	0.241	0.028	-0.022	0.502	0.090

<b>Communication → Work Engagement</b>					
<b>High Workload → Interpersonal Conflict</b>	0.535	0.000	0.402	0.678	0.490
<b>Organizational Communication → Interpersonal Conflict</b>	0.352	0.000	0.159	0.512	0.212
<b>Interpersonal Conflict → Work Engagement</b>	0.282	0.011	0.084	0.521	0.114

Source: Processed (2024)

Based on the results of testing the direct effect hypothesis above, it is known that:

1. H1 (High Workload→Work Engagement). The hypothesis is accepted, as it indicates a substantial impact of burden on work engagement, as evidenced by a path coefficient (0.306) and a p-value (0.002 <0.05). ATC work engagement will be influenced by any modification in duties. The influence of burden on ATC work engagement is between 0.175 and 0.533 in the 95% confidence interval. Nevertheless, the structural level classifies the existence of ATC burden and its impact on ATC work engagement as moderate (f square = 0.144).
2. H2 (Organizational Communication→Work Engagement). The hypothesis is accepted, with a path coefficient of 0.241 and a p-value of 0.028, which is less than 0.05, indicating a substantial impact of communication on work engagement. ATC work engagement will be influenced by any modification in the manner of communication. The influence of communication on ATC work engagement is between -0.022 and 0.502 within the 95% confidence interval. Nevertheless, the structural level classifies the existence of ATC communication and its impact on ATC work engagement as low (f square = 0.090).
3. H3 (High Workload→Interpersonal Conflict). The hypothesis is accepted, the significant influence of Workload on Conflict is evidenced by a path coefficient (0.535) and p-value (0.000 < 0.05). The ATC Conflict will be influenced by any modification to the workload forms. In the 95% confidence interval, the impact of workload on ATC conflict is between 0.402 and 0.678. However, the structural level classifies the existence of ATC workload and its impact on ATC Conflict as high (f square = 0.490).
4. H4 (Organizational Communication→ Interpersonal Conflict). The hypothesis is accepted where conflict is significantly influenced by communication, as evidenced by a path coefficient of 0.352 and a p-value of 0.000 which is less than 0.05. ATC Conflict will be impacted by any modification to the communication format. The influence of communication on ATC Conflict is between 0.159 and 0.512 within the 95% confidence interval. Nevertheless, the structural level classifies the existence of ATC communication and its impact on ATC Conflict as moderate (f square = 0.212).
5. H5 (Interpersonal Conflict→Work Engagement). The hypothesis is accepted. The path coefficient (0.282) and p-value (0.011 < 0.05) indicate a substantial impact of Conflict on Work Engagement. Work Engagement

ATC will be influenced by any modification in the nature of Conflict. The influence of Conflict on Work Engagement ATC is between 0.084 and 0.521 in the 95% confidence interval. Nevertheless, the structural level classifies ATC Conflict and its impact on Work Engagement as moderate (f square = 0.114).

Table 8. Direct Effect Hypothesis Testing

Hypothesis	Path coefficient	p-value	95% Interval Kepercayaan		f square
			Lower limit	Upper limit	
High workload→Interpersonal Conflict→Work Engagement	0.151	0.023	0.021	0.283	0.022
Organizational Communication→Interpersonal Conflict→Work Engagement	0.099	0.031	0.011	0.190	0.009

Source: Processed (2024)

Based on the results of testing the direct effect hypothesis above, it is known that:

- H6 (High Workload→Interpersonal Conflict→Work Engagement). The sixth hypothesis (H6) is accepted, as conflict substantially serves as an intervening variable, mediating the indirect effect of workload on work engagement with a mediation path coefficient (0.151) and p-value (0.023 <0.05). Nevertheless, the mediation role of interpersonal conflict remains relatively low at the structural level (Upsilon V = 0.022). Ogbeibu et al (2020) elucidate that a mediation effect of 0.01 is low, 0.075 is moderate, and 0.175 is high.
- H7 (Organizational Communication→Interpersonal Conflict→Work Engagement). The seventh hypothesis (H7) is accepted, suggesting that conflict substantially serves as an intervening variable, mediating the indirect effect of communication on work engagement with a mediation path coefficient (0.099) and p-value (0.031 <0.05). Nevertheless, the mediation role of interpersonal conflict remains relatively low at the structural level (Upsilon V = 0.009).

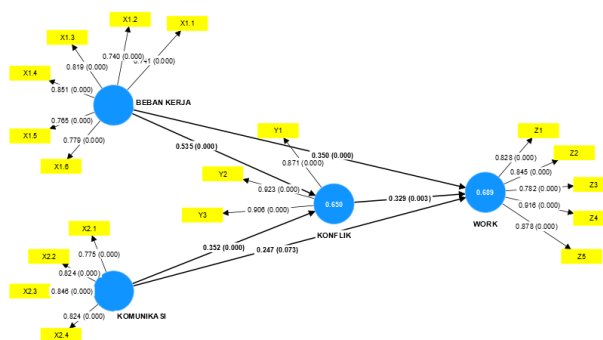


Figure 2. PLS SEM Analysis

**Description:**

High workload (Beban kerja), Organizational communication (Komunikasi), Interpersonal Conflict (Konflik), Work Engagement (Work)

Variance-based SEM analysis, PLS, evaluates prediction study model theory (Hair et al., 2021). The structural model is tested by assessing the R square value, which shows the percentage of endogenous variable variation accounted for by other exogenous or endogenous factors. The qualitative interpretation value of R square is 0.75 for strong influence, 0.50 for moderate/moderate influence, and 0.25 for feeble influence, according to Hair et al. (2021). The data processing findings above show its major impact.

Table 9. R-Square

	R-square
Interpersonal Conflict	0.650
Work Engagement	0.759

Source: Processed (2024)

According to the table above, high workload and ATC communication affect ATC interpersonal conflict by 65%. Then excessive workload, communication, and ATC interpersonal conflict affect ATC work engagement by 75.9%.

Table 10. SRMR

	Estimated Model
SRMR	0.083

Source: Processed (2024)

Standardized Root Mean Square Residual is "SRMR." This value is the difference between the data correlation matrix and the estimated model correlation matrix for model fit (Yamin, 2022). A model fit is satisfactory if SRMR is less than 0.08 (Hair et al., 2021). Karin et al.'s 0.08-0.10 SRMR fits well. The model estimation result is 0.083, indicating an acceptable or fair fit. Empirical data can show model variables' effects.

**DISCUSSION**

***Effect of High Workload (X1) on Work Engagement (Z)***

From the hypothesis testing data in the direct effect category (high workload to work engagement) the regression coefficient (B) is 0.306, the significance value (p) is 0.002, and the 95% CI is 0.175-0.533. R2=0.144. High workload boosts work engagement significantly. Employees are more engaged when they have a heavy workload. High workload affects work engagement by 0.306. Every unit of high workload increases work engagement by 0.306 units. At 0.05 alpha, increased workload affects work engagement statistically with a significance value of 0.002. The probability of this impact occurring by chance is less than 0.2%. The confidence interval range of 0.175-0.533 represents the possible regression coefficient values with 95% confidence. If this study is performed with a different sample, the regression coefficient will likely be between 0.175 and 0.533. The R square value of 0.144 shows that increased workload explains 14.4% of work engagement variation. This suggests that work engagement is affected by variables other than workload.

***Effect of Organizational Communication (X2) on Work Engagement (Z)***

This data has a regression coefficient (B) of 0.241, a significance value (p) of 0.028, and a 95% CI of -0.022-0.502.  $R^2=0.090$ . This evidence shows that communication boosts work engagement. This means that better communication between employees, superiors, coworkers, and customers increases work engagement. Communications affect work engagement by 0.241. Each unit of communication increases work engagement by 0.241 units. At the alpha level of 0.05, communication affects work engagement with a significance value of 0.028. This suggests this influence is unlikely to happen by coincidence, less than 2.8%. A 95% confidence interval of -0.022-0.502 represents the range of probable regression coefficient values. If this study is performed with a different sample, the regression coefficient will likely be between -0.022 and 0.502. The R square value of 0.090 suggests that communication explains 9% of work engagement variation. This suggests that work engagement is affected by more than communication.

***Effect of Interpersonal Conflict (Y) on Air Traffic Controller Performance (Z)***

This data illustrates the findings of the investigation into the impact of conflict on the work engagement of ATC at the Palembang Branch Office of Perum LPPNPI. The regression coefficient value (B) of this data is 0.282, with a significance value (p) of 0.011 and a 95% confidence interval (CI) of 0.084-0.521. The R square value ( $R^2$ ) is 0.114. This data suggests that conflict has a substantial and positive impact on work engagement. Additionally, any modification to the nature of conflict will have an impact on ATC work engagement. Conflict has a magnitude of 0.282 in terms of its impact on work engagement. This implies that each unit increase in conflict will result in a 0.282 unit increase in work engagement. The alpha level of 0.05 indicates that the influence of conflict on work engagement is statistically significant, as evidenced by the significance value of 0.011. This implies that the likelihood of this influence occurring by coincidence is exceedingly low, at less than 1.1%. With a confidence level of 95%, the confidence interval value of 0.084-0.521 denotes the range of potential regression coefficient values. This implies that the regression coefficient value will likely fall within the range of 0.084 to 0.521 if the study is re-conducted with a different sample. Conflict can account for 11.4% of the variation in work engagement, as evidenced by the R square value of 0.114. This implies that work engagement is influenced by a variety of additional factors in addition to conflict.

***Effect of High Workload (X1) on Interpersonal Conflict (Y)***

The analysis of the impact of a high workload on conflict among ATC of the Perum LPPNPI Palembang Branch Office resulted in the following data. The regression coefficient value (B) of this data is 0.535, with a significance value (p) of 0.000 and a 95% confidence interval (CI) value of 0.402-0.678. The R square value ( $R^2$ ) is 0.490. Based on this data, it is evident that conflict is significantly and positively impacted by a high burden. In other words, the greater the burden experienced by employees, the more likely it is that conflict will arise

between them and their superiors, colleagues, or customers. The impact of a high caseload on conflict is 0.535 in magnitude. This implies that conflict will increase by 0.535 units for every one unit increase in elevated workload. The alpha level of 0.05 indicates that the influence of high labor on conflict is statistically significant, as evidenced by the significance value of 0.000. This implies that the likelihood of this influence occurring by coincidence is exceedingly low, nearly nonexistent. The range of potential regression coefficient values with a 95% confidence level is indicated by the confidence interval value of 0.402-0.678. This implies that the regression coefficient value will likely fall within the range of 0.402 to 0.678 if the study is re-conducted with a different sample. The R square value of 0.490 suggests that a large workload can account for 49% of the variation in conflict. This implies that the primary factor influencing conflict is the elevated workload.

#### ***Effect of Organizational Communication (X2) on Interpersonal Conflict (Y)***

The findings of this study illustrate the impact of communication on conflict among ATC of the Perum LPPNPI Palembang Branch Office. This data has a regression coefficient value (B) of 0.352, a significance value (p) of 0.000, and a 95% confidence interval (CI) value of 0.159-0.512. R squared (R<sup>2</sup>) is determined to be 0.212. Based on this data, it is evident that communication has a substantial and beneficial impact on conflict. Each modification to the manner of communication will influence conflict. In terms of conflict, communication exerts an influence of 0.352 magnitude. This indicates that a 0.352 unit increase in conflict will result from each unit of communication that is increased. The influence of communication on conflict is statistically significant at the alpha level of 0.05, as evidenced by a significance value of 0.000. This indicates that the likelihood of this influence occurring by coincidence is exceedingly low, equivalent to nearly zero. With a confidence level of 95%, the confidence interval value of 0.159-0.512 denotes the range of potential regression coefficient values. Consequently, the regression coefficient value will likely fall within the range of 0.159 to 0.512 if this study is re-conducted with a different sample. According to the R square value of 0.212, communication can account for 21.2% of the variance in conflict. This implies that there are additional variables that contribute to conflict in addition to communication.

#### ***The Effect of High Workload (X1) on the Work Engagement (Z) Through Interpersonal Conflict (Y)***

This data illustrates the findings of the analysis of the impact of high workload and interpersonal conflict on the work engagement of ATC at the Perum LPPNPI Palembang Branch Office. The regression coefficient value (B) of 0.151, the significance value (p) of 0.023, and the 95% confidence interval (CI) value of 0.021-0.283 are all present in this data. The R square value (R<sup>2</sup>) is 0.022. Based on this data, it can be inferred that conflict serves as an intervening variable, specifically mediating the indirect impact of a high burden on work engagement, with a mediation path coefficient of 0.151 and a p value of 0.023, which is less than 0.05. Nevertheless, the mediation role of interpersonal conflict remains relatively low at the structural level (Upsilon V = 0.022).

Ogbeibu et al (2020) elucidated that a mediation effect of 0.01 is low, 0.075 is moderate, and 0.175 is high.

***The Effect of Organizational Communication (X<sub>2</sub>) on the Work Engagement (Z) Through Interpersonal Conflict (Y)***

Interpersonal conflict is a highly significant intervening variable, as it mediates the indirect effect of communication on work engagement with a path coefficient of mediation (0.099) and p-value (0.031 < 0.05). The mediating role of interpersonal conflict is, however, still relatively low at the structural level (Upsilon V = 0.009).

**CONCLUSIONS AND RECOMMENDATIONS**

In the air traffic controller profession, the conclusions that can be derived from the study on the influence of high workload and organizational communication on work engagement mediated by interpersonal conflict are as follows:

1. Air traffic controllers' work engagement is significantly and adversely affected by their high workloads. As the high workload of air traffic controllers increases, their level of work engagement decreases. According to the job demands-resources (JDR) theory, a high burden is one of the factors that can decrease work engagement.
2. The work engagement of air traffic controllers in their work is significantly and positively influenced by organizational communication. This implies that, the more effective the organizational communication among air traffic controllers, the greater their level of work engagement. Organizational communication is one of the factors that can enhance work engagement, as per the social exchange theory (SET).
3. The work engagement of air traffic controllers in their work is significantly and adversely affected by interpersonal conflict. This indicates that the level of work engagement among air traffic controllers decreases as the level of interpersonal conflict increases. Interpersonal conflict is one of the factors that can reduce work engagement, according to the conflict management theory.
4. The mediating variable between high workload and air traffic controller work engagement is interpersonal conflict. This implies that air traffic controllers' work engagement is influenced by their high workloads as a result of interpersonal conflict. Air traffic controllers' work engagement is ultimately diminished as a result of the increased interpersonal conflict that arises as a result of the increased burden.
5. Organizational communication and air traffic controller work engagement are dependent on interpersonal conflict, which functions as a mediating variable. Organizational communication influences the work engagement of air traffic controllers in their work by means of interpersonal conflict. Interpersonal conflict among air traffic controllers is diminished as a result of improved organizational communication, which ultimately enhances their work engagement.

The conversation's conclusions and outcomes may prompt consideration of certain suggestions. The Perum LPPNPI Palembang Branch Office should implement the managerial recommendations, which include encouraging air traffic controller work engagement, improving organizational communication, resolving interpersonal conflicts, and reducing a high burden. Perum LPPNPI should assess and monitor the welfare and performance of air traffic controllers, while also providing the necessary support and facilities. The behaviour of air traffic controllers should be professional and encouraging, with an emphasis on fostering participation in a manner that is effective for them. As well as maintaining their physical and emotional well-being, air traffic controllers must also collaborate effectively with others.

### **FURTHER STUDY**

Quantitative research has various disadvantages. As a result, this investigation exclusively establishes a correlation between work engagement, interpersonal conflict, and organizational communication. The sampling was limited to 88 air traffic controllers at the Palembang Branch Office of the Perum LPPNPI. This may diminish the study's generalizability, as it does not accurately represent the air traffic controller community as a whole. This research is not applicable to air traffic controllers in other countries. A questionnaire is employed in this survey, which respondents complete in accordance with their perceptions. Bias or measurement errors may result from this, as respondents' perceptions may be influenced by their mood, physical state, or situation during the questionnaire completion cycle. As a result, the authenticity and dependability of the data are not guaranteed by this study. This research exclusively investigated work engagement, interpersonal conflict, organizational communication, and elevated workload. Other variables that influence work engagement include organizational commitment, job satisfaction, leadership, and company culture. Thus, this investigation is incapable of providing a comprehensive account of the characteristics of work engagement.

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