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The Effect of Workload on ATC's Performance at Makassar Air Traffic Service Centre by Using Work Satisfaction and Work Stress as Intervening Variables

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Abstrak
The prosperity and enduring sustainability of a company are intrinsically connected to the role and efficacy of its employees, as evaluated by the caliber of their work. In addition, the extent of tasks achieved and the timeliness of task completion can enhance performance and contribute to the achievement of organizational goals. The aim of this study is to assess the influence of workload on the performance of air traffic control (ATC), with work stress and job satisfaction acting as mediating factors. This study utilizes a quantitative methodology to investigate the cause-and-effect relationship between variables and assess the concept of their interconnectedness. A survey was conducted by distributing questionnaires to 100 participants, and the gathered data was analyzed using the SmartPLS 4 software. The data analysis indicates that work stress is positively and significantly correlated with ATC officer workload, although workload negatively impacts ATC performance and job satisfaction, but this influence is not statistically significant. More tasks mean weaker ATC performance. The path coefficient and p-value of this investigation are -0.004. With a path coefficient of -0.114 and a p-value larger than 0.05, work stress has a small effect on performance. A favorable and substantial link exists between job happiness and ATC officer performance (path coefficient = 0.841, p-value < 0.05). Work stress still mediates little structurally. This is compared to job happiness, which is high and strongly mediates workload on ATC performance.

Keywords : *workload*; *work stress; work satisfaction; air traffic controller; performance*

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INTRODUCTION

An organization is a collective of individuals who collaborate on a regular basis to achieve shared objectives. Several factors can influence the success of an organization or business (Robbins & Judge, 2021). Corporations utilize human resources (HR) as a strategic tool to achieve their objectives. The importance of human resources in the attainment of corporate success is widely acknowledged. In order to effectively achieve their organizational objectives, firms must prioritize quality and recruit high-performing employees, as per (Robbins et al., 2019). According to Mangkunegara (2015) performance is the quality and quantity of work that an employee achieves in fulfilling their responsibilities, and (Zainal, 2015) defined performance as the measure of an

individual's success in carrying out their duties within a specific timeframe. Factors such as workload, emotional intelligence, and job dedication might influence the quality of an employee's work or HR.

The quality of work can be affected by the extent to which the tasks assigned to a person match their ability. As per Schultz & Schultz (2016), workload is defined as an excessive volume of tasks to be completed within a given time period or work that is too difficult for employees. The difference lies in the proficiency or ability of an employee and the specific qualifications that the job demands to be met (Tarwaka, 2014). If an individual feels overwhelmed by being given tasks that do not match his skills, whether they are below or beyond his capabilities, this is considered to have an influence on his performance (Paramitadewi, 2017).

The burden that the organization assigns to its employees may result in work-related tension. When employees' burden exceeds their capacity, they may experience work tension. To guarantee that the burden has an impact on work tension (Kusuma & Soesatyo, 2014). Stress defines as a state of tension that affects an individual's physical condition, thoughts, and emotions (Siagian et al., 2018). The inability to interact favorably with one's environment, whether it is the external environment or their work environment, is typically the result of an insufficiently managed stress. Tinambunan, et al. (2022) define work stress as the sensation of pain, distress, or tension that individuals experience as a result of their occupation, the work environment, or a specific working situation. Consequently, it is imperative for organizations to prioritize factors that may induce employee tension.

Employment satisfaction is an additional variable that can influence employee performance, in addition to workload and work stress. According to the research conducted by (Wahyudi & Sudibya, 2016) and (Syawal, 2018), employee performance is significantly and advantageously affected by work satisfaction. The primary goal of this investigation is to investigate the impact of workload, work tension, work satisfaction, and performance on the performance of air traffic controllers at the Perum LPPNPI MATSC Branch.

LITERATURE REVIEW

The quality, quantity, and timeliness of an individual's work in an organization are all closely correlated with their performance as an employee (Widayati et al., 2021). According to (Farisi et al., 2020), performance is an essential factor in evaluating the integrity of a company. The operational success of a corporation is contingent upon the capacity of its human resources to fulfill specific work requirements over time. HR departments in organizations are obligated to consistently achieve optimal work outcomes that are consistent with the organization's standards and objectives, as stated by (Mangkunegara, 2015). Performance refers to the outcomes that an employee achieves in the execution of their designated responsibilities, including both quantity and quality. Performance is defined as the capacity of an individual to effectively fulfill their obligations or tasks in (Farisi et al., 2020). When assessing performance, it is deemed desirable and rewarding to achieve specific benchmarks. In essence, the author's conclusion is that the performance of an organization is the outcome of the work responsibilities that employees have assigned to it.

A person's workload is the process of completing the duties of a job or group of jobs within a specified time frame under normal circumstances (Muldani, 2014). Employee efficacy is substantially determined by workload. In this situation, it is essential for the organization to assign tasks that are consistent with the staff members' competencies. The competence of employees will be indirectly affected if the burden is either below or above their capabilities. Furthermore, this will impede the company's progress in achieving its goals. Paramitadewi (2017) also identified a comparable phenomenon, which indicates that an elevated burden has a statistically significant and adverse effect on employee performance. This phenomenon suggests that an increase in employee performance is a consequence of a reduction in labor. A

workload is a collection of duties that must be completed by a particular department or individual within a predetermined timeframe (Dhania, 2010). Workload is the term used to describe the tasks or responsibilities that are assigned to all available human resources and must be completed within a specific timeframe, as per (Koesomowidjojo & Mastuti, 2018) Consequently, it is possible to infer that duty is the term used to describe the assignment of tasks to employees, which must be completed within a predetermined timeframe.

Stress is an internal condition that is characterized by the potential for negative outcomes as a result of physical, environmental, and social situational disturbances. There are two categories of stress: internal and external. The burden experienced by the individual is one of the external stressors (Souisa et al., 2022). (Kreitner, 2008) define stress as an adaptive response that is influenced by individual characteristics and/or psychological processes. This response is the result of external actions, situations, or events that impose physical and/or psychological demands on an individual. Work conditions, role problems, interpersonal relationships, career development opportunities, and organizational structure are among the numerous indicators that (Cooper, 1995) for measuring work stress.

Every individual who is employed anticipates obtaining gratification from their work environment. Fundamentally, job satisfaction is an individual phenomenon, as the degree of satisfaction will vary depending on the values that are relevant to each individual. Higher levels of satisfaction are experienced when the position encompasses a greater number of aspects that align with the individual's preferences. Hasibuan (2017) defines work satisfaction as an emotional attitude that is pleasant and demonstrates a passion for one's work. This mentality is evident in the morale of work. Work satisfaction is a positive outlook on one's work that is a consequence of one's attributes, as per (Handoko, 2014). Employees who experience positive emotions are more productive than those who are dissatisfied, as they are content with their work. When it comes to human resource management practices and organizational behavior, job satisfaction is an extremely significant metric. According to (Umar, 2001) work satisfaction is the emotion and evaluations that an individual has regarding their work, particularly in relation to whether it is able to fulfill their expectations, requirements, and desires. From the aforementioned definitions, it is evident that job satisfaction is a psychological state of well-being that employees experience in a work environment when their needs are satisfactorily addressed.

The Effect of Workload on Work Stress.

Risambessy et al. (2011) define workload as the activities that an individual undertakes to complete the responsibilities associated with a particular job or set of tasks within a specified timeframe under typical circumstances. Robbins & Judge (2021) asserted that work stress is a dynamic condition that arises in individuals when they encounter an expectation, obstacle, or pressure. This condition is associated with something that is desired and perceived as uncertain but significant. Work stress is precipitated by an excessive burden that can influence an individual's emotional state, cognitive functioning, and physical health. This is corroborated by the findings of (Fachruddin et al., 2019), who discovered that employee work stress is influenced by workload.

H_1 : *The higher workload (X) , the more higher work stress (Z^1)*

The Effect of Workload on Work Satisfaction.

A workload is a set of activities or the total number of tasks that an organizational unit or job holder is required to complete within a specific time frame. Workload can also transpire when there are numerous tasks that require an insufficient amount of time to be completed, as a result of the demand for tasks or work to be completed by an individual or group of individuals during a specific period within the organization (Sunarso, 2012). According to Nilvia (2002), employee job satisfaction is a critical factor that must be taken into account when enhancing an

organization's human resource capabilities. This is because employees are more productive when they are able to experience job satisfaction. According to the research findings of(Mahendrawan & Indrawati, 2015), the workload variable has a detrimental impact on job satisfaction. Specifically, the higher the workload experienced by employees, the lower the job satisfaction.

H_2 : *The higher workload (X) , the less work satisfaction (Z^2)*

The Effect of Workload on Performance.

Risambessy et al. (2011) define workload as the activities that an individual undertakes to complete the responsibilities associated with a particular job or set of tasks within a specified timeframe under typical circumstances. ATC employment necessitates a significant amount of cognitive engagement, which includes the following: visual observation or surveillance, critical thinking, decision-making, complex calculations, and information retention. According to the research conducted by (Budiman, 2013) the mental workload of APP and ACC operators is classified as high. This is evident in the substantial number of operators that are classified as being overburdened. A study was conducted by (Souisa et al., 2022) to investigate the extent to which the workload and the amount of work assigned to an individual have a significant and advantageous effect on their propensity to quit their position. Husin et al. (2021) discovered that work burden and compensation variables had a statistically significant and partially favorable effect on employee performance in their study.

H_3 : *The less workload (X) , the higher performance (Y)*

The Effect of Work Stress on Performance.

Rivai & Mulyadi (2006) posits that work stress is a result of an imbalance between the capacity to fulfill one's desires and the desire to do so. This imbalance has significant repercussions for the individual. Stress is also frequently perceived as a disagreeable disturbance, tension, or pressure that originates from outside of an individual. (Mangkunegara, 2015) defines work stress as a state of tension or pressure that arises when the demands placed upon us surpass our inherent capacity. According to Ahmed & Ramzan's (2013) research, employees' performance is significantly and adversely affected by work stress. Specifically, individuals who experience work stress will experience a decline in their performance. Shahriari et al. (2013) also expressed the same sentiment in their research, which demonstrated that work tension and performance have a detrimental impact. Nevertheless, performance is not always adversely affected by work stress.

H_4 : *The higher work stress (Z^1) , the less performance (Y)*

The Effect of Work Satisfaction on Performance.

The degree of contentment experienced by an individual is directly proportional to the number of aspects of a job that align with their preferences. Work satisfaction is defined by (Robbins et al., 2019) as a positive sentiment regarding one's occupation that is the outcome of an assessment of its attributes. Several factors, including supportive working conditions, supportive colleagues, mentally challenging work, and personality compatibility with the job, determine job satisfaction. (Antoni, 2013) asserted that job satisfaction is intricately linked to employee attitudes toward their own work, work situations, and cooperation between leaders and colleagues. Additionally, the value system of each individual determines their level of satisfaction. According to Oktavianti's (2020)research, work satisfaction has a substantial and beneficial impact on the performance of employees.

H_5 : *The higher work satisfaction (Z^2) , the more higher performance (Y)*

The Effect of Workload on Performance Through Work Stress

Workload (Koesomowidjojo & Mastuti, 2018) is the assignment of tasks and responsibilities to all available human resources with the expectation of completion within a given timeframe. Employee workload is the duties they must complete in a certain timeframe. Workload analysis is the systematic process of determining the amount of personnel and their skills needed to achieve corporate goals (Purba et al., 2019). According to Schultz & Schultz (2016), a worker's aptitude or competence is different from job requirements. Utami et al. (2019) found that workload has a positive and significant effect on work Stress.

H_6 : *The less workload (X) , the less the work stress (Z^1), the higher performance (Y)*

The Effect of Workload on Performance Through Work Satisfaction

The assignment of tasks and responsibilities to all available human resources with the expectation of completion within a specified timeframe is referred to as workload (Koesomowidjojo & Mastuti, 2018). The burden of an employee refers to the tasks that must be completed within a specific time frame. The systematic process of determining the number of personnel and their skills required to attain corporate objectives is known as workload analysis (Purba et al., 2019). A worker's aptitude or competence is distinct from job requirements, as per Schultz & Schultz (2016). According to the research findings of (Mahendrawan & Indrawati, 2015), the workload variable has a detrimental impact on job satisfaction. Specifically, the higher the workload experienced by employees, the lower the job satisfaction.

H_7 : *The less workload (X) , the higher the work satisfaction (Z^2), the higher performance (Y)*

Conceptual Model

The study provides a framework for understanding the interaction between variables. This paper outlines the framework that has been established.

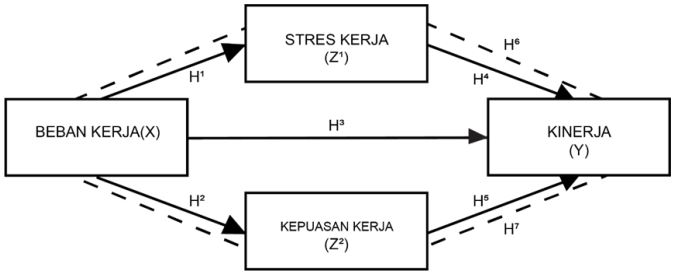

Figure 1: The Conceptual Model

RESEARCH METHOD

Location and Research Design

The theory that underpins the relationship between extant variables is examined in this study through quantitative research. To ascertain the cause-and-effect relationship between the variables in this investigation, a causal study design, as proposed by (Creswell, 2013; Yusuf, 2016), is implemented. The objective of this investigation is to investigate the influence of emotional intelligence and burden on the performance of ATC employees by employing commitment as an intervening variable. The researchers allocated approximately two months for this investigation, commencing with the issuance of the research authorization. This period consisted of one month for data collection and an additional month for data processing. This inquiry was conducted at the Makassar Air Traffic Service Center (MATSC), which is situated

within the administrative area of Sultan Hasanuddin Makassar International Airport in South Sulawesi.

Population or Samples

Population is essential for the acquisition of meaningful and reliable research findings, as per (Sugiyono, 2013) 135 ATC employees from the Makassar Branch of Perum LPPNPI (AirNav) participated in the survey. The research population is represented by the sample. Slovin analysis is employed to ascertain the number of samples utilized as respondents in this investigation at a 5% significance level. The population was represented by a sample of 100 ATC employees in this investigation.

Data Collection Method

Data was collected through the use of a questionnaire by the researcher. A series of queries and statements are required to be answered by respondents in this questionnaire. After that, the responses are categorized using a Likert scale that ranges from 1 to 5.

Data Analysis Method

The research data obtained from the participants' responses was subsequently subjected to quantitative descriptive analysis techniques using PLS-SEM with the help of the SmartPLS software. The data under investigation comprises the following: the F statistical test, the R2 test, the determination coefficient, and the dominant variable test, the hypothesis test (T-test), and multiple linear regression analysis.

EMPIRICAL RESULTS

Descriptive Statistics

The standard deviation, minimum, and maximum values are shown by these statistical details.

Table-1: Variables Description

Name	Mean	Scale Min	Scale Max	Standard deviation
X1	3.81	4	1	5
X2	3.97	4	2	5
X3	3.98	4	2	5
X4	3.86	4	1	5
Z1.1	4	4	1	5
Z1.2	3.91	4	2	5
Z1.3	3.87	4	1	5
Z1.4	4	4	1	5
Z1.5	4.18	4	1	5
Z2.1	4.17	4	1	5
Z2.2	4.09	4	2	5
Z2.3	3.85	4	2	5
Z2.4	3.98	4	2	5
Z2.5	4.15	4	2	5
Y1	4.27	4	1	5
Y2	4.44	5	1	5
Y3	4.09	4	2	5
Y4	3.85	4	2	5

Source: Nugraha (2024) on SmartPLS 4

For the objectives of this investigation, the Makassar Air Transportation Service Center (MATSC) employed 100 individuals as ATCs. The average age of air traffic controllers (ATCs)

was 39 years, with the senior air traffic controller being 56 years old and the youngest being 28 years old. The maximum working duration of ATCs was 35 years, while the minimum working time was 9 years. The average working duration of ATCs was 15 years. The ATC population was distinguished by a higher proportion of males (M) than females (F). Approximately 79% of the population was composed of males, while 21% was composed of females. The table below displays the data:

Table-2: Respondent Demographics

No	Initial	Gender	Length of service	Age	No	Initial	Gender	Length of service	Age
1	JRW	M	13	34	51	RPDF	M	9	32
2	AM	M	13	34	52	PS	F	9	30
3	FD	F	13	34	53	GCD	F	9	31
4	SDH	F	12	34	54	CS	F	9	30
5	DHTA	M	24	46	55	OMA	F	10	32
6	TH	M	10	35	56	YN	M	9	31
7	MWA	M	13	35	57	KUT	F	9	30
8	FBE	M	10	35	58	YPF	M	9	31
9	NMH	F	10	35	59	ICS	F	9	31
10	INA	M	26	46	60	AR	M	10	32
11	DVS	F	10	35	61	NFB	F	9	30
12	HM	F	10	35	62	UMS	F	9	30
13	EDM	F	24	46	63	AFA	M	11	32
14	TVS	F	10	35	64	IW	F	9	30
15	SKS	F	24	46	65	EAF	M	11	32
16	AN	F	10	35	66	WHA	M	9	30
17	SR	M	26	47	67	FRRN	M	10	33
18	YIS	M	25	47	68	MAW	M	11	33
19	MSJ	M	13	36	69	BPT	M	9	31
20	AIA	M	13	36	70	MRH	M	10	31
21	GRMP	F	13	36	71	And	M	10	31
22	MB	M	25	47	72	AS	M	11	33
23	SR	M	15	37	73	AA	M	9	31
24	AA	M	11	37	74	JEES	M	10	31
25	MA	M	15	37	75	GSS	M	10	31
26	ADS	F	15	37	76	RA	F	10	31

27	WH	M	10	39	77	M	F	10	31
28	EL	F	23	47	78	WHB	M	11	33
29	AIA	M	15	39	79	AHH	M	10	31
30	RAH	M	17	41	80	ARF	M	10	31
31	P	M	17	41	81	MAK	F	10	31
32	HP	F	17	41	82	HI	F	10	31
33	BRH	M	23	43	83	AWPM	M	9	32
34	YM	F	25	47	84	III	M	11	32
35	FVK	M	23	43	85	DA	F	10	31
36	MEBW	M	23	48	86	ADS	M	11	33
37	YF	M	23	44	87	RDMN	M	10	32
38	RR	M	25	45	88	SFA	M	9	32
39	TH	M	26	48	89	MM	F	10	33
40	AE	M	23	45	90	H	F	10	32
41	HYP	M	26	48	91	A	F	10	33
42	SDP	F	26	48	92	LD	M	11	34
43	YH	M	24	45	93	AQMM	F	10	32
44	YEW	M	25	49	94	FM	F	10	34
45	RS	M	26	49	95	N	F	11	34
46	YND	M	23	45	96	MAS	M	10	32
47	YDR	F	24	45	97	HP	F	10	32
48	HM	M	35	55	98	PW	F	10	34
49	ESW	F	23	45	99	AS	M	11	32
50	M	M	34	56	100	EKS	F	10	34

Source: Nugraha (2024)

The data in the table demonstrates that the respondents' backgrounds are diverse; nevertheless, they are a representative sample of the complete workforce. This responder profile can be used as the basis for additional research and analysis.

Prerequisite Evaluations

The variables of workload, job tension, job satisfaction, and ATC performance were reflectively measured in this study using a reflective measurement model. The reflective model's evaluation is comprised of a loading factor of at least 0.70, a composite reliability of at least 0.70, a Cronbach's alpha of at least 0.70, and an AVE (convergent validity) of at least 0.50, as per (Hair et al., 2021). Furthermore, the Fornell and Lacker criteria, as well as cross-validation, are employed to assess discriminant validity.

Table-3: Outer Loading, Cronbachs' Alpha, Composite Reliability and Average Variance Extracted

Variable	Measurement Items	*Outer Loading*	*Cronbachs' Alpha*	*Composite Reliability*	AVE
Workload	X1	0.789	0.811	0.876	0.639
	X2	0.751			
	X3	0.801			
	X4	0.853			
Work Stress	Z1.1	0.727	0.79	0.856	0.544
	Z1.2	0.701			
	Z1.3	0.743			
	Z1.4	0.704			
	Z1.5	0.808			
Work Satisfaction	Z2.1	0.761	0.853	0.895	0.631
	Z2.2	0.741			
	Z2.3	0.837			
	Z2.4	0.794			
	Z2.5	0.833			
Performance	Y1	0.870	0.856	0.903	0.699
	Y2	0.865			
	Y3	0.803			
	Y4	0.804			

According to the table above, the workload variable is assessed by 4 valid items with an outer loading value between 0.751 and 0.853, indicating that the five measurement items are closely associated in explaining ATC workload. The workload variable's composite reliability rating of 0.876 and Cronbach's alpha 0.811> 0.70 show acceptable reliability. The AVE score of 0.639> 0.50 indicates strong convergent validity. The workload variable has 63.9% measurement item variation. X3 and X4 had the largest outer loading (0.801) and (0.853) of the five measurement items, indicating that they best capture data measurement variation from the workload variable.

Then the first intervening variable is work stress measured by five valid items with an outer loading value between 0.701 and 0.808, indicating that the five items strongly explain ATC job stress. The job stress variable's composite reliability rating of 0.856 and Cronbach's alpha 0.79> 0.70 imply acceptable reliability. The AVE score of 0.544> 0.50 indicates strong convergent validity. Z1.3 and Z1.5 have the highest outer loadings, 0.743 and 0.808, of the five measurement items, indicating that they best represent the variation in data measurement from the work stress variable.

Work satisfaction is the third variable and second intervening variable in this study. Five legitimate items are used to measure it, and the outer loading value is between 0.741 and 0.837, indicating that the five things are closely connected with ATC satisfaction. Job satisfaction's composite reliability value of 0.895 and Cronbach's alpha of 0.853> 0.70 imply acceptable dependability. The AVE score of 0.631> 0.50 indicates strong convergent validity. The job satisfaction variable has 63.1% measurement item variation. Z2.5 and Z2.3 had the highest outside loading, 0.833 and 0.837, among the five measurement items, indicating that they best capture job satisfaction data measurement variation.

The last variable in this study, performance, is measured by four valid items with an outside loading value of 0.803–0.870, indicating that all measurement items are significantly associated in explaining ATC performance. The performance variable's composite reliability rating of 0.903 and Cronbach's alpha 0.856>0.70 imply adequate reliability. The AVE score of 0.699>0.50 indicates strong convergent validity. The performance variable has 69.9% measurement item variation. Y2 and Y1 have the largest outer loading (0.865) and (0.870) of the four measurement items, indicating that they best capture data measurement variation from the performance variable.

Table-4: Fornell and Lacker

	Performance	**Work Satisfaction**	**Work Stress**	**Workload**
Performance	0.929			
Work Satisfaction	0.836	0.794		
Work Stress	0.743	0.745	0.771	
Workload	0.726	0.754	0.738	0.799

Source: Nugraha (2024) on SmartPLS 4

The Fornell and Lacker criterion should be employed to assess discriminant validity. Discriminant validity is a method of verifying that variables are theoretically distinct and empirically or statistically distinct through testing. The AVE root of the variables is greater than the correlation between the variables, as demonstrated by the Fornell and Lacker criterion. The performance variable exhibits a stronger correlation with work satisfaction (0.836), work stress (0.743), and workload (0.726) when it has an AVE root of 0.929. The performance variable's discriminant validity is demonstrated by these findings. Additionally, this is applicable to the validity of workload, work stress, and work satisfaction, where the AVE root exceeds the correlation between the variables.

Table-5: Inner VIF

	VIF
Work Satisfaction -> Performance	2.739
Work Stress -> Performance	2.906
Workload -> Performance	3
Workload -> Work Satisfaction	1
Workload -> Work Stress	1

Source: Nugraha (2024) on SmartPLS 4

The influence between research variables is a component of structural model evaluation, which is also associated with hypothesis testing. The structural model evaluation is conducted in three phases. The initial stage involves ensuring that the inner VIF measure does not indicate any multicollinearity between variables. According to Hair et al. (2021), the absence of multicollinearity between variables is indicated by an interior VIF value of less than 5.

Table-6: Direct Effect Hypothesis Testing

Hypothesis	*Path coefficient*	*p-value*	95% Confidence Interval Path Coefficient		*f square*
			Lower limit	Upper limit	
Workload -> Work Stress	0.771	0.000	0.652	0.859	1.461
Workload -> Work Satisfaction	-0.754	0.000	-0.646	0.842	1.319
Workload -> Performance	-0.004	0.947	-0.129	0.114	0.03
Work Stress -> Performance	-0.114	0.064	-0.003	0.236	0.034
Work Satisfaction -> Performance	0.841	0.000	0.73	0.951	1.966

The direct effect hypothesis test reveals that H1 (Workload → Work Stress) has a positive and significant effect, indicating that as workload increases, so does ATC work stress. This effect has a path coefficient (0.771) and p-value (0.000 <0.05). The 95% confidence interval shows that workload affects ATC work stress by 0.652 to 0.859. The structural impact of ATC burden on work stress is very high (f square = 1.461). Accepting H2 (Workload → Work Satisfaction) reveals a strong negative effect, indicating that ATC work satisfaction decreases with increased workload. This effect has a path coefficient (-0.754) and p-value (0.000 <0.05). The 95% confidence interval shows that workload affects ATC work stress by 0.646 to 0.842. Thus, structurally, ATC workload and job satisfaction are very high (f square = 1.319).

Accepting H3 (Workload → Performance) results in a negative but negligible effect, indicating that ATC performance decreases with increased workload. This influence has a path coefficient (-0.004) and p-value (0.947>0.05). In the 95% confidence interval, workload affects ATC performance by -0.129 to 0.114. Thus, structural ATC workload and performance are classified as low (f square = 0.03). H4 (Work Stress → Performance) is accepted with a tiny detrimental impact. Higher work stress causes lower ATC performance. Influence of path coefficient (-0.114) and p-value (0.064>0.05). In the 95% confidence interval, work stress affects performance by -0.003 to 0.236. The structural level of work stress and performance is classified as low (f square = 0.034). H5 (Work Satisfaction → Performance) has a positive and significant effect on ATC performance. Higher job satisfaction levels correlate with higher ATC performance levels. Influence of path coefficient (0.841) and p-value (0.000<0.05). In the 95% confidence interval, work happiness affects ATC performance by 0.73 to 0.951. Thus, structurally, ATC job happiness and performance are very high (f square = 1.966).

Table-7: Indirect Effect Hypothesis Testing

Hypothesis	*Path coefficient*	*p-value*	95% Confidence Interval Path Coefficient		Upsilon V
			Lower limit	Upper limit	
Workload -> Work Stress -> Performance	0.087	0.073	-0.002	0.188	0.007
Workload -> Work Satisfaction -> Performance	0.634	0.000	0.529	0.744	0.401

The sixth hypothesis (H6), which is based on the indirect effect hypothesis test aforementioned, asserts that work stress mediates the indirect effect of burden on performance with a mediation path coefficient (0.087) and p-value (0.073> 0.05). However, its structural mediation role is still very low (Upsilon V = 0.007). As a result of the enhancement of work stress on ATC, its mediation role will increase to 0.188 in the 95% confidence interval. According to Ogbeibu et al. (2020), the mediation effect of Upsilon V is negligible at 0.01, moderate at 0.075, and robust at 0.175. The seventh hypothesis (H7) hypothesizes that job satisfaction mediates the indirect effect of workload on performance, with a mediation path coefficient of 0.634 and a p-value of 0.000>0.05. Job satisfaction plays a significant role in mediation at the structural level very high (Upsilon V = 0.401).

Work performance is the outcome that an individual achieves when they complete the duties that have been assigned to them. There are numerous variables that influence employee productivity, such as workload, job satisfaction, and tension. This study's findings are largely consistent with the findings of research (Umar, 2012) that job satisfaction has a substantial impact on worker performance. Tjiabrata (2017) also concluded that employee performance is influenced by burden. Ahmed and Ramzan (2013) conducted research that found that work stress in a company has a significant and adverse impact on employee performance. Specifically, the performance of an employee will decline as a result of work stress.

DISCUSSION

In the aviation sector, air traffic controllers (ATC) are indispensable. They are accountable for the administration of air traffic, security, and flight control in the vicinity of the airport. The level of work stress and the level of ATC burden are positively and significantly correlated, according to research conducted at Perum LPPNPI MATSC Branch on the relationship between workload, job stress, job satisfaction, and performance of air traffic controllers (ATC). The stress level associated with the duties that must be completed is increased when they are more difficult and challenging.

The workload of an employee or unit refers to the duties that must be completed within a specified time frame. Kurnia (2017, Irawati, Carollina): Workload analysis is a method that determines the amount of time individuals allocate to work or job unit tasks. Multiple linear regressions were implemented in the investigation. The data indicated that the burden has a significant and positive impact on the stress experienced by ATC employees. Burnout and stress are induced by work overburden (Fajriani and Septiari, 2015; Kusuma and Soesatyo, 2014). ATC employment stress is significantly influenced by workload, and any workload adjustment will have a moderate impact.

This study indicates that work satisfaction is lower among ATCs who have an increased workload. This study supports the findings of Yo and Surya (2015), Mahendrawan and Indrawati (2015), Tembengi et al. (2016), and Parimita (2017) that job satisfaction is reduced by productivity. ATC performance is adversely affected by workload; performance is enhanced

by reduced workload. In high-stress situations, errors happen when employees are unable to manage critical duties, as per Huey and Wickens (1993:55). Performance is diminished as a result of an increased burden. Shah et al. (2011), who demonstrated that performance is reduced as the burden increases from low to medium, are supported by this study. According to a study, employees' productivity is diminished by their workload.

The study found that employee efficacy was slightly reduced by work stress. Performance is also diminished by work tension, according to the investigation. Handoko's (2010:200) argument that employee conduct can cause stress in almost any work setting and Sopiah's (2008:95) theory that elevated stress can lower performance are both confirmed by this study. Ahmed and Ramzan (2013) asserted that employee performance is adversely affected by corporate work stress, which this study corroborates. Shahriari et al. (2013) discovered that performance is impaired by work stress.
This investigation demonstrated that ATC performance is substantially enhanced by job satisfaction. High performance is indicative of high satisfaction. Employee performance is enhanced by increased job satisfaction. In order to achieve success, organizations must prioritize customer and employee fulfillment. In Sri Lanka, work satisfaction exceeded employee performance, as per Perera, Khatibi, and Navartana (2014). In the 2020 study conducted by Suardi, 58.62% of respondents reported that their expressions were satisfactory, indicating that their staff performed well. The investigation determined that 86.92% of respondents were content with their occupations.

Stress has an impact on the relationship between workload and performance. The indirect impact of burden on performance was mediated by occupational stress in this study. Job stress is scarcely mediated (Upsilon V = 0.007). This suggests that workload-ATC performance is not mediated by occupational stress. Workload-performance is moderated by job satisfaction. The indirect impact of burden on performance was mitigated by job satisfaction in this study. Mediation between high and low work satisfaction, Upsilon V = 0.401. This suggests that workload-ATC performance is influenced by work satisfaction.

CONCLUSION

Based on data analysis and discussion, this study found that workload influences air traffic controller work satisfaction. More workload means lower work satisfaction for ATC. This influence has a path coefficient of -0.754 and a p-value below 0.05. This study indicated that workload moderately affects air traffic controller (ATC) work satisfaction. Workload also hurts ATC performance and job happiness, although not statistically. More tasks mean weaker ATC performance. The path coefficient and p-value of this investigation are -0.004. More work stress means poorer ATC performance. The path coefficient of -0.114 and p-value greater than 0.05 demonstrate that work stress has a small effect on performance. This study found a positive and significant correlation between ATC officer job satisfaction and performance. ATC officers' performance is affected by job satisfaction. A path coefficient of 0.841 and a p-value of less than or equal to Moderate work satisfaction and performance impact. Work stress still mediates little structurally. In contrast, high job satisfaction strongly mediates workload on ATC performance. The route value of 0.841 shows that job happiness has the highest impact on performance. Job satisfaction improves ATC performance, with a significant p-value (0.000). Thus, ATC performance improvement strategies must directly improve job happiness for optimal results.

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