THE EFFECT OF WORKLOAD ON WORK PRODUCTIVITY THROUGH JOB STRESS IN AIR TRAFFIC CONTROLLER (ATC) EMPLOYEES AT MAKASSAR INTERNATIONAL AIRPORT SULTAN HASANUDDIN MAKASSAR

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ABSTRACT

Objective: Air Traffic Controller (ATC) is one of the professions that has a high level of stress due to the very heavy burden of PLLU job responsibilities that risk the lives of airplane passengers and all flight crews. Work stress for ATC officers must be avoided because it can affect personal health and productivity at work. ATC officers require a lot of focus and energy that should be balanced with a lot of human resources as well.

Method: This research design is cross-sectional, namely observational research design with a sample size of 65 Air Traffic Controller (ATC) employees selected by proportional random sampling. The SPSS program was used to process data univariately and the Smart PLS program was used to process data bivariately and multivariately using path analysis.

Results: Then, the results showed that there was an effect of tenure on work stress (p=0.025), workload on work stress (p=0.00), age on work productivity (p=0.01), the effect of workload on work productivity (p=0.016), while there was no effect of age on work stress (p=0.22), tenure on work productivity (p=0.692), work stress on work productivity (p=0.46). Based on the intervening test, the indirect effect of age on work productivity through work stress (p=0.6530), the indirect effect of tenure on work productivity through work stress (p=0.542) and the indirect effect of workload on work productivity through work stress is (p=0.461).

Conclusion: Age, tenure and workload have a direct and indirect effect on work productivity, while the variables of age on productivity through work stress, tenure on productivity through work stress, and workload on productivity through work stress have no direct effect.

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Implication of the research: This research can help Air Traffic Controller employees by educating them about the causes of heavy workload and work stress resulting in decreased work productivity.

Originality: This journal presents a study of age, tenure and workload, on work productivity through work stress in Air Traffic Controller employees at Sultan Hasanuddin International Airport Makassar. Previous work stress studies only used questionnaire measuring instruments, so in this study the use of questionnaires was replaced by measuring instruments Cocorometer. This study discusses the effect of age, tenure and workload, on work productivity through work stress. The findings explain the effect of age on work productivity, tenure on stress, workload on stress, and workload on work productivity.

Keywords: age, tenure, workload, work stress, work productivity, air traffic controller.

Implication of the research: Este estudio puede ayudar a los empleados de los Controladores de Tráfico Aéreo (ATC) al educarlos sobre las causas de una carga de trabajo pesada y el estrés de trabajo resultando en una disminución de la productividad de trabajo.

Originalidad: Este estudio presenta una investigación de la edad, la antigüedad y la carga de trabajo, en la productividad de trabajo a través del estrés de trabajo en los empleados de los Controladores de Tráfico Aéreo en el Aeropuerto Internacional de Makassar Sultan Hasanuddin. Los estudios anteriores de estrés de trabajo solo utilizaron instrumentos de medición por cuestionario, por lo que en este estudio el uso de cuestionarios fue reemplazado con instrumentos Cocorometer. Este estudio discute el efecto de la edad, la antigüedad y la carga de trabajo, en la productividad de trabajo a través del estrés de trabajo. Los hallazgos explican el efecto de la edad en la productividad de trabajo, la antigüedad en el estrés, la carga de trabajo en el estrés, y la carga de trabajo en la productividad de trabajo.

Palabras clave: edad, antigüedad, carga de trabajo, estrés de trabajo, productividad de trabajo, controlador de tráfico aéreo.

O EFEITO DA CARGA DE TRABALHO NA PRODUTIVIDADE DO TRABALHO ATRAVÉS DA TENSÃO NO TRABALHO NOS FUNCIONÁRIOS DO CONTROLADOR DE TRÁFEGO AÉREO (ATC) NO AEROPORTO INTERNACIONAL DE MAKASSAR SULTAN HASANUDDIN MAKASSAR

RESUMO

Objetivo: O Controlador de Tráfego Aéreo (ATC) é uma das profissões que tem um alto nível de estresse devido ao peso muito pesado das responsabilidades de trabalho da PLLU que arriscam a vida dos passageiros de avião e de todas as tripulações de voo. O estresse no trabalho para os agentes do ATC deve ser evitado, porque pode afetar a saúde pessoal e a produtividade do trabalho. Os oficiais do ATC exigem muito foco e energia que devem ser equilibrados com muitos recursos humanos também.

Método: Este projeto de pesquisa é transversal, ou seja, projeto de pesquisa observacional com um tamanho de amostra de 65 funcionários do Controlador de Tráfego Aéreo (ATC) selecionados por amostragem aleatória proporcional. O programa SPSS foi usado para processar dados univariadamente e o programa Smart PLS foi usado para processar dados bivariadamente e multivariavelmente usando análise de caminho.

Resultados: Em seguida, os resultados mostraram que houve um efeito da estabilidade no estrresse do trabalho (p=0,025), carga de trabalho no estresse do trabalho (p=0,00), idade na produtividade do trabalho (p=0,01), o efeito da carga de trabalho na produtividade do trabalho (p=0,016), enquanto não houve efeito da idade no estresse do trabalho (p=0,22), estabilidade na produtividade do trabalho (p=0,692), tensão do trabalho na produtividade do trabalho (p=0,46). Com base no teste de intervenção, o efeito indireto da idade na produtividade do trabalho através do estresse do trabalho (p=0,653), o efeito indireto da estabilidade na produtividade do trabalho através do estresse do trabalho (p=0,542) e o efeito indireto da carga de trabalho na produtividade do trabalho através do estresse é (p=0,461).

Conclusão: A idade, o emprego e a carga de trabalho têm um efeito direto e indireto na produtividade do trabalho, enquanto as variáveis da idade sobre a produtividade através do stress do trabalho, o emprego sobre a produtividade através do stress do trabalho e a carga de trabalho sobre a produtividade através do stress do trabalho não têm efeito direto.
Implicação da pesquisa: Esta pesquisa pode ajudar os funcionários do controlador de tráfego aéreo, educando-os sobre as causas da carga de trabalho pesada e do estresse no trabalho, resultando em menor produtividade no trabalho.

Originalidade: Esta revista apresenta um estudo de idade, estabilidade e carga de trabalho, sobre a produtividade do trabalho através do estresse no trabalho dos funcionários do controlador de tráfego aéreo no Sultan Hasanuddin International Airport Makassar. Os estudos de estresse de trabalho anteriores só usavam instrumentos de medição de questionários, então neste estudo o uso de questionários foi substituído por instrumentos de medição Cocorometer. Este estudo discute o efeito da idade, estabilidade e carga de trabalho, na produtividade do trabalho através do estresse no trabalho. As descobertas explicam o efeito da idade na produtividade do trabalho, estabilidade no estresse, carga de trabalho no estresse e carga de trabalho na produtividade do trabalho.

Palavras-chave: idade, estabilidade, carga de trabalho, estresse no trabalho, produtividade no trabalho, controlador de tráfego aéreo.

1 INTRODUCTION

Air Traffic Controller (ATC) is a high-stress profession because the workload of PLLU is so high that it endangers the lives of passengers and the entire cabin crew. Stress is the result of a lot of work. Stress increases when something happens such as bad weather for flights and navigation and communication equipment does not work properly, exchange systems that are not suitable or do not function properly [1]. There are ground and air Air Traffic Controller (ATC) areas with special operating characteristics, the ground control area covers all movements within the airport flight area. Airspace management includes arrivals, instrument approaches, visual approaches, takeoffs, landings, and transfer of control from one airport to another.

In research by Fathimahayati et al (2018)[2], air traffic controller (ATC) operators manage navigation and radar services and establish good communication with pilots and co-pilots to avoid fatal errors in flight. The workload experienced by the air traffic controller operator is mental, because in his work the controller must concentrate a lot on navigation, radiation control as well as control and implementation of aircraft control to ensure the safety and regularity of traffic during long-distance and short-distance flights. AirNav XYZ is an airline whose mission is to provide navigation services and regulate air traffic at XYZ Balikpapan Airport. Navigation services require the accuracy of air traffic controllers in performing on-screen scans to control air traffic taking off and landing at XYZ Airport as well as serving aircraft operating below 245 in the Balikpapan TMA area and all flights to Samarinda Temindung Airport. The very large control area means that the workload experienced by air traffic controllers is very
high due to very heavy traffic under certain operating conditions, which can be more than 20 flights per hour.

Research by Saleh L.M (2020) [3], stress is of particular concern in measuring the health status of air traffic controllers, because stressful conditions can cause excessive physical and mental fatigue, thus affecting the efficiency of officers in serving customers (pilots). Therefore, it is very important for supervisors to understand the signs and symptoms of stress. MATSC operators who lacked understanding of stress were 38.1% and after training or understanding stress and safety activities, their understanding of stress increased which means that the awareness of air traffic officers increased before and after the study, although there were still about 9.5% lacking information.

Makassar ATC operators work for 24 hours which is divided into 4 shifts, namely morning, afternoon and night shift 1 and night shift 2. Morning, afternoon, night 1 and night 2 shift air traffic controllers work 6 hours each. This is a busy time when the number of aircraft being controlled is very high and air traffic control is increasing. The number of tasks makes ATCs must be able to adapt, if it is not possible, it will cause an imbalance which is one of the causes of work stress... Air Traffic Controller (ATC) Airnav Sultan Hasanuddin airport branch has a total of 187 officers divided into 3 units namely ADC (Aedrome Control Tower), APP (Approach Control Office) and ACC (Area Control Center).

Job stress for Air Traffic Controllers should be avoided as it can affect personal health and work productivity. Air traffic control personnel require great focus and energy, which must be balanced with a lot of human resources. For this reason, the authors are interested in conducting research on what factors are associated with job stress in Air Traffic Controller (ATC) employees at Sultan Hasanuddin Airport Makassar, where this is one of the factors that can affect the productivity of ATC employees so that it can be fatal to the world of flight safety.

2 THEORITICAL FRAMEWORK

Age is one of the factors that cause occupational stress. Age greatly affects certain jobs, especially the sensory system and physical strength [4]. Age can affect work productivity because age can also affect work productivity [5].

Working period is one of the factors that can affect the emergence of work stress both in old working hours and new working hours. Working period is the time when
workers use their energy to work. The longer the working period, the more experience he has and the easier he adapts to the work environment. Extensive experience can increase productivity in a work organization. This reduces the likelihood of stress[6].

The greater the workload given, the greater the possibility of stress in the workforce [7]. Workload also affects employee productivity. This is because the amount of work given to employees is often not in accordance with their skills and competencies [8].

Human resources are the most important asset that every business or organization must have, because the success of an organization depends on its human resources. But often companies need human resources to improve their skills and abilities, this can unwittingly cause stress in employees which in turn affects job satisfaction and employee productivity [9].

Labor productivity is interpreted as a prerequisite for measuring the production capacity of a product, whether measured individually, in groups, or in organizations [10]. Productivity is the efficient and effective use of resources (inputs) to produce or increase the output of goods and services. To increase employee productivity, every company must pay attention to factors that affect labor productivity [11].

3 METHODOLOGY

This study used an observational method using a cross-sectional design. The study was conducted in September 2023 at AirNav Makassar Air Traffic Service Center, Makassar City, South Sulawesi, Indonesia. There were 65 Traffic Controller (ATC) employees studied and selected by proportional random sampling technique.

The variables in this study are age, tenure and workload as exogenous variables, work productivity as endogenous variable, and work stress as intervening variable. Workload data collection uses the Nasa-TLX questionnaire, where this questionnaire consists of calculating ratings and weights which are then categorized into 3 namely light, medium and heavy workloads. The work stress variable is determined using a cocorometer measuring instrument which is then categorized into 3, namely no stress, mild stress, moderate stress and severe stress, while the work productivity variable is measured using the Work Utility Factor or Labor Utilization Rate (LUR), which consists of calculating effective working time, contributed working time and ineffective working time (minutes) in one working day. The work productivity questionnaire is categorized
as values <50% less satisfactory (low), 50-80% moderately satisfactory (high), and 81-100% highly satisfactory (very high).

Data processing was carried out using the SPSS and Smart PLS applications to see the direct and indirect effects through intervening variables using path analysis. The results of the study will be presented in the form of tables and narratives. This study has received approval from the health research ethics commission (KEPK) Faculty of Public Health, Hasanuddin University with protocol number: 22823062180 and letter number: 5041/UN4.14.1/TP.01.02/2023.

4 RESULT AND DISCUSSION

4.1 RESULT

In Table 1, the characteristics of respondents based on age show that 27 people (41.5%) are in the 30-37 years category. Based on the work unit, 42 (64.6%) were placed in the ACC unit. The table also shows that most respondents have more than 5 years of service.

<table>
<thead>
<tr>
<th>Air Traffic Controller Characteristics</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 – 29 Years</td>
<td>21</td>
<td>32.3</td>
</tr>
<tr>
<td>30 – 37 Years</td>
<td>27</td>
<td>41.5</td>
</tr>
<tr>
<td>38 – 45 Years</td>
<td>8</td>
<td>12.3</td>
</tr>
<tr>
<td>46 – 53 Years</td>
<td>9</td>
<td>13.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65</strong></td>
<td><strong>100%</strong></td>
</tr>
<tr>
<td>Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>42</td>
<td>64.6</td>
</tr>
<tr>
<td>ADC/Tower</td>
<td>9</td>
<td>13.8</td>
</tr>
<tr>
<td>APP</td>
<td>14</td>
<td>21.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65</strong></td>
<td><strong>100%</strong></td>
</tr>
<tr>
<td>Tenure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New (&lt; 5 Years)</td>
<td>6</td>
<td>9.2</td>
</tr>
<tr>
<td>Old (≥5 Years)</td>
<td>59</td>
<td>90.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source Prepared by the Author, (2023)

In Table 2, the results of bivariate analysis show that 29 Air Traffic Controllers (44.6%) with a young age category have satisfactory work productivity. Furthermore, 37 Air Traffic Controllers (56.9%) who have a long tenure show satisfactory productivity. Furthermore, 22 Air Traffic Controllers (33.8%) who have a long workload show satisfactory productivity and 37 Air Traffic Controllers (56.9%) with moderate work stress have satisfactory work productivity.
Table 2. Cross-Tabulation of Agr, Period of Employment, Workload, Work Stress dan Work Produktivity

<table>
<thead>
<tr>
<th>Respondent Characteristics</th>
<th>Work Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Young (≤ 40 years)</td>
<td>23</td>
</tr>
<tr>
<td>Old (&gt; 40 years)</td>
<td>1</td>
</tr>
<tr>
<td>Period of Employment</td>
<td></td>
</tr>
<tr>
<td>New (≤ 5 years)</td>
<td>4</td>
</tr>
<tr>
<td>Old (&gt; 5 years)</td>
<td>22</td>
</tr>
<tr>
<td>Workload</td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td>19</td>
</tr>
<tr>
<td>Heavy</td>
<td>5</td>
</tr>
<tr>
<td>Work stress</td>
<td></td>
</tr>
<tr>
<td>Not Stressed</td>
<td>23</td>
</tr>
<tr>
<td>Stress</td>
<td>1</td>
</tr>
</tbody>
</table>

Source Prepared by the Author, (2023)

Table 3 shows the significance of the direct effect of variables, it can be investigated based on the t-count and p-value. A variable is said to affect the endogenous variable (accept the hypothesis) if the t value > t table or p-value < 0.05, where in this study for an error rate of 5% t table = 1.96, so we can know that hypothesis 2, hypothesis 3, hypothesis 4 and hypothesis 6 are accepted. This is because the four hypotheses show the value of t count > 1.96 or p-value < 0.05.
Table 3. Tabulated Result of The Direct Effect of Path Analysis on Air Traffic Controller (ATC) di Bandar Udara Internasional Sultan Hasanuddin Makassar

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Direct Effect</th>
<th>Original Sample</th>
<th>Mean</th>
<th>St Dev</th>
<th>T Statistics</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Age → Work stress</td>
<td>-0.163</td>
<td>-0.152</td>
<td>0.133</td>
<td>1.229</td>
<td>0.22</td>
</tr>
<tr>
<td></td>
<td>Period of Employment → Work stress</td>
<td>0.212</td>
<td>0.198</td>
<td>0.095</td>
<td>2.241</td>
<td>0.025</td>
</tr>
<tr>
<td>H2</td>
<td>Work stress → Work Productivity</td>
<td>0.339</td>
<td>0.333</td>
<td>0.093</td>
<td>3.635</td>
<td>0.00</td>
</tr>
<tr>
<td>H3</td>
<td>Age → Work Productivity</td>
<td>0.35</td>
<td>0.35</td>
<td>0.136</td>
<td>2.575</td>
<td>0.01</td>
</tr>
<tr>
<td>H4</td>
<td>Period of Employment → Work Productivity</td>
<td>-0.053</td>
<td>-0.052</td>
<td>0.133</td>
<td>0.396</td>
<td>0.692</td>
</tr>
<tr>
<td>H5</td>
<td>Workload → Work Productivity</td>
<td>0.307</td>
<td>0.317</td>
<td>0.127</td>
<td>2.414</td>
<td>0.016</td>
</tr>
<tr>
<td>H6</td>
<td>Work stress → Work Productivity</td>
<td>0.077</td>
<td>0.073</td>
<td>0.104</td>
<td>0.74</td>
<td>0.46</td>
</tr>
</tbody>
</table>

Source: Prepared by the Author, (2023)

Table 4 shows the significance of the indirect effect of variables, it can be investigated based on the t-count and p-value. The work stress variable is said to be a moderating variable if the t value > t table or p-value < 0.05, where in this study for an error rate of 5% t table = 1.96, so we can know that there is no accepted hypothesis in, because the overall t count < 1.96 and overall p-value > 0.05.

Table 4. Tabulated Result of The Indirect Effect of Path Analysis on Air Traffic Controller (ATC) at Sultan Hasanuddin Makassar International Airport

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Indirect Effect</th>
<th>Original Sample</th>
<th>Mean</th>
<th>St Dev</th>
<th>T Statistics</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>H8</td>
<td>Age → Work stress → Work Productivity</td>
<td>-0.013</td>
<td>-0.017</td>
<td>0.028</td>
<td>0.45</td>
<td>0.653</td>
</tr>
<tr>
<td>H9</td>
<td>Period of Employment → Work stress → Work Productivity</td>
<td>0.016</td>
<td>0.017</td>
<td>0.027</td>
<td>0.61</td>
<td>0.542</td>
</tr>
<tr>
<td>H10</td>
<td>Workload → Work stress → Work Productivity</td>
<td>0.026</td>
<td>0.024</td>
<td>0.035</td>
<td>0.737</td>
<td>0.461</td>
</tr>
</tbody>
</table>


5 DISCUSSION

5.1 THE EFFECT OF AGE ON PRODUCTIVITY THROUGH JOB STRESS ON AIR TRAFFIC CONTROLLER (ATC) EMPLOYEES AT SULTAN HASANUDDIN INTERNATIONAL AIRPORT MAKASSAR

Based on the results of hypothesis testing, it was found that age has no effect on employee productivity through job stress. This shows that job stress does not mediate the age factor on employee productivity.

According to the opinion of Simanjuntak (1985 in Kumbadewi et al., 2021) [12], the increasing age of workers, the level of productivity of workers is increasing because workers are at a productive age and the increasing age of workers, the higher the
productivity of workers. The level of labor productivity is also increasing. The level of labor productivity also increases, decreasing due to physical and health factors that affect it.

The success of the company is determined by its human resources, because without human resources the company cannot achieve company goals. Good and optimal human resources have a direct effect on the company's success in achieving company goals [13]. A successful company not only gives tasks to its employees, but also pays attention to what employees need, so that employees can work comfortably. Human resources whose needs are met, employees automatically produce more than the company expects, so the company also highly values employee productivity [14].

This is in accordance with (Alianto and Anindita, 2018)[15] and (Agustini and Dewi, 2019)[14] that remuneration affects employee productivity. Job stress is one of the internal factors that requires increased organizational progress in order to achieve maximum performance. Organizations should pay attention to the causes of job stress in their employees, because job stress causes employees to be unwilling and dissatisfied working with each other, both with superiors and colleagues. In addition to job stress, job satisfaction, work-life balance and compensation are very important topics because they affect the success or failure of an organization.

Work stress is a common occurrence in the work environment. However, workers who are able to cope with stress well, such as expanding friendships, strengthening relationships with coworkers, or finding other things that can increase work productivity, will survive.

5.2 THE EFFECT OF TENURE ON PRODUCTIVITY THROUGH JOB STRESS ON AIR TRAFFIC CONTROLLER (ATC) EMPLOYEES AT SULTAN HASANUDDIN INTERNATIONAL AIRPORT MAKASSAR

Based on the results of hypothesis testing, it is found that tenure has no effect on employee work productivity through job stress. This shows that job stress does not mediate the effect of tenure on employee productivity.

Working period is one of the factors that can increase the productivity of an employee with a lot of work experience [16]. This is based on observations (Aprilyanti, 2017)[13] which state that work experience affects employee productivity. The longer the working period of an employee, the more developed the skills and abilities in doing the
job should be. Continuous work experience that a person has can increase his technical maturity.

Alignment of organizational goals and alignment with individual goals in the organization is a necessity that cannot be denied. Aligning the goals of each individual as an organizational resource with organizational goals is an effective motivation for each individual to achieve organizational goals. Therefore, improving the quality of individuals in an organization is an important factor in optimizing their contribution to the organization.

The experience gained by a person helps to provide knowledge and skills that are suitable for the job. Someone who does such work repeatedly over a long period of time makes himself more accustomed and skilled in doing the job. The experience gained by a person helps provide knowledge and skills that are in accordance with their work [17]. The longer the working period of an employee, the more experience he gets. The more work experience, the greater the motivation of each employee to improve their work results [18].

The performance of employees who have little or no work experience is different from employees who have quite a lot of work experience. Work experience can be an advantage for someone in a future job, because at least he has done his job so that employees know about his future work.

Experienced employees are always more flexible than younger, inexperienced or fresh graduates. Experienced employees are also familiar with work pressure, work culture, and work ethic. This is because they have experienced it before and this makes it easier for them than others [19].

Tenure is also the most important factor in explaining employee performance. The longer employees work for a company, the greater the desire to improve their results. Evidence also suggests that one's past employment is a strong predictor of future termination.
5.3 THE EFFECT OF WORKLOAD ON PRODUCTIVITY THROUGH WORK STRESS ON AIR TRAFFIC CONTROLLER (ATC) EMPLOYEES AT SULTAN HASANUDDIN INTERNATIONAL AIRPORT MAKASSAR

Based on the results of the analysis, it shows that workload has no effect on employee productivity through work stress. This shows that work stress does not mediate the relationship between workload and employee productivity.

The workload given by the company to the organization is encouraged to increase employee productivity and create employee discipline. However, the results achieved with workloads that exceed the limits of staff capabilities and do not complete tasks on time are not as expected and can cause stress in the workforce. This is in accordance with (Yo and Surya, 2015) [20] that workload affects employee work stress.

To achieve optimal performance, human resources must be managed and managed as well as possible so that the organization's human resources are comfortable in carrying out their duties and obtaining maximum results [21]. Every company always has a way to improve the discipline of its employees. Discipline is a behavior that must be instilled in every individual inside and outside the organization. Everyone must be willing to obey or obey all existing and previously agreed rules and be able to accept all sanctions if they violate these rules. In this way, it gradually becomes a good habit and is realized in his heart and soul.

Work discipline is used with the aim of changing attitudes and increasing awareness of employees' willingness to comply with all rules and standards that affect the company. Employees who are motivated by work discipline can work better and cope better with their tasks and roles. It is hoped that every organization can properly design a work discipline system to strengthen positive employee behavior that affects their performance [22].

When employees perceive work as a workload so that employees experience stress at work because their skills do not meet organizational demands, this has an impact on employee behavior, namely ineffective behavior at work such as laziness, task avoidance, or low employee motivation and efficiency [23].

Work stress consists of excessive workload, superior pressure, time pressure, income pressure, work relationships. Where excessive workload most influences work stress [24]. Job stress is also an important aspect of job autonomy, meaning that job design that provides autonomy in work causes a decrease in job stress levels. If work stress is
high the cause is increased absenteeism, levels of conflict and a decrease in overall productivity [25].

Planning to achieve work success in an organization requires goals to be achieved, so that employee workload is increasing. Workload is measured by conflict in the workplace. When task demands are low, employees can easily complete tasks with little workload and efficiency remains at optimal levels.

The complexity of the workload experienced and expected by air traffic controllers leads to psychological fatigue, creating stressful conditions and lowering their quality of life. Some stress that requires intervention is experienced at an individual level and manifests as a state of depression. These problems should be prevented from an early age with stress management strategies. Long-term effects of stress contribute to memory loss, stomach ulcers, colitis, musculoskeletal disorders, health problems, high blood pressure, heart disease, cancer, and death. Stress is also a potential mediator of poor quality of life and negatively impacts health, work performance and productivity. Therefore, it is necessary to provide interventions in the form of relaxation routines that have the same effect as exercise, namely to stabilize organ function. Relaxation to relieve psychological fatigue in traffic controllers in Indonesia can reduce the impact of the stress they experience, increase productivity and help them lead healthy, safe and efficient lives at work and at home [26].

6 CONCLUSIONS

In conclusion, age, tenure and workload have a direct and indirect effect on work productivity, while for age variables on productivity through work stress, tenure on productivity through work stress, and workload on productivity through work stress have no direct effect. A heavy workload results in satisfactory productivity, it is hoped that the Air Traffic Controller can get enough rest, maintain a diet and diligently perform muscle relaxation techniques. Future researchers are expected to examine other factors that can affect productivity besides age, tenure and workload.

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