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## THE EFFECT OF WORKLOAD ON THE PRODUCTIVITY OF SHIP GUIDES MEDIATED BY WORK FATIGUE AND WORK STRESS: A CONCEPTUAL MODEL

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### ABSTRACT

The maritime sector relies on ship guiding to maintain safe, secure, and efficient marine traffic. Ship guides work with port authorities, captains, and other staff to smooth sailing operations. This conceptual paper explores the critical function of ship guides in the maritime sector, concentrating on Indonesian legislation requiring foreign ships to use ship guides. Navigating ships in Indonesia provides problems owing to the complicated seas, necessitating highly trained and knowledgeable guides. The research focuses on the effect of workload on ship guide productivity and the mediating elements of work fatigue and stress. The study used a quantitative methodology, including path analysis, to analyze the relationship between workload, job weariness, work stress, and productivity. The goal is to give valuable insights into enhancing ship guide performance and efficiency at the PT. Pelindo IV Balikpapan Branch.

### KeyWords

Conceptual Model, Productivity, Workload, Work Fatigue, Work Stress, Ship Guides, Ship Pilot.

### INTRODUCTION

Ship guidance plays a crucial role in the maritime industry, as it enhances sea transportation's safety, security, and efficiency. Ship guides collaborate with port officials, captains, and other personnel to facilitate the efficient execution of sailing operations (Direktorat Jenderal Perhubungan Laut, 2017). The ship piloting laws and regulations in Indonesia are under the government's jurisdiction. One example is Undang Undang Nomor 17 of 2008 Regarding Shipping, which regulates ship pilotage and mandates foreign ships to utilize the assistance of ship guides while navigating Indonesian waters.

Nevertheless, navigating ships in Indonesia poses certain challenges. The complexity of the Indonesian seas, characterized by diverse topographical features such as narrow straits, powerful currents, and challenging navigation conditions, underscores the need for proficient and knowledgeable ship guides. Consequently, it is necessary to continue enhancing the standard of ship guidance. These efforts encompass investing in training programs for ship guides, developing navigation technologies, and maintaining pilotage facilities (Direktorat Jenderal Perhubungan Laut, 2014).

Based on the statistical data for the year 2021, it is projected that 973 guided ships will be entering Balikpapan Port. These ships are expected to exhibit an average productivity rate of 2.72 ships per hour. Nevertheless, the decrease in productivity poses a significant challenge in improving ship pilotage efficiency. An important factor contributing to decreased productivity is the presence of a heavy workload. Based on the available data, there was an observed increase in workload levels, weariness, and work-related stress between 2021 and 2022. The upward trend observed in this data indicates that there may be a negative impact on the work productivity of ship guides. The presence of fatigue and job-related stress has the potential to negatively impact performance and productivity, thereby leading to a decrease in overall output.

This conceptual paper will focus on examining the impact of workload on productivity, emphasizing the moderating factors of work tiredness and stress instead of delving into the analysis of work environment concerns.

## LITERATURE REVIEW

### A. Workload

In the study conducted by Hariyati (2011), the concept of workload is defined as the discrepancy between an employee's capacity or capability and the demands imposed by their work responsibilities. The allocation of workload exhibits a range of variations, encompassing diverse levels of complexity. According to Munandar (2001), workload refers to the circumstances in which employees are confronted with tasks that need to be accomplished within a specified timeframe. According to Moekijat (2009), workload refers to the number of work outcomes or records of work productivity that indicate the amount of work generated by a specific group of employees within a particular unit. In accordance with Permendagri (2008), workload refers to the quantity of work that a particular position or organizational unit is responsible for, determined by multiplying the volume of work by the time norm.

Within the realm of workload, various factors exert an influence on the well-being of employees, originating from both external and internal sources (Soleman, 2011). External factors encompass the impact of the surrounding environment on an employee, containing various elements such as the assigned tasks, the work environment, and other relevant factors. Moreover, there exist internal factors that arise from within an individual's body or personality in reaction to external workloads, which possess the capacity to serve as stressors. The internal factors that contribute to a phenomenon encompass both somatic aspects, which pertain to the physical body, and psychological factors, which relate to the mind and emotions.

A comprehensive comprehension of these factors holds significant implications for human resource management. Successful job satisfaction management necessitates implementing strategies aimed at effectively handling organizational changes, resolving conflicts, fostering a secure work environment, managing frustration, and comprehending the divergent values held by the company and its employees. In the present scenario, it is advisable to undertake additional research to examine successful approaches for effectively handling these factors to enhance employee job satisfaction.

### B. Work Fatigue

Fatigue is a commonly reported issue among individuals from various backgrounds, including the general population and employees. Approximately 20% of individuals within the employed demographic encounter manifestations of job burnout. Silastuti's (2007) study explores the concept of work fatigue as a multifaceted phenomenon. It encompasses not only physiological and psychological dimensions but also exhibits a strong association with reduced physical performance, feelings of tiredness, diminished motivation, and decreased productivity in the workplace. Within this framework, it is essential to note that fatigue extends beyond its physical manifestations and encompasses detrimental consequences on individuals' psychological well-being and the quality of work output.

Work fatigue is a multifaceted phenomenon that is impacted by a range of factors that necessitate comprehensive comprehension. According to Russeng's (2011) findings, work fatigue can be attributed to the burden of tasks, which can arise from external and internal sources.

In addition to the workload factor, other contributing factors influence the occurrence of work fatigue. One contributing factor is the presence of an overwhelming workload caused by a shortage of skilled personnel, leading to an accumulation of tasks (Hariyati, 2011).

According to Suma'mur (2009), the assessment of work fatigue involves the consideration of various indicators. These indicators, as identified by the author, include:

- 1) Displays symptoms of physical weakness, including the desire to lie down and symptoms such as a heavy head, heavy legs, frequent yawning, confused thoughts, sleepiness, and eye strain.
- 2) Displays a lack of motivation by exhibiting symptoms such as difficulty thinking, exhaustion from speaking, nervousness, difficulty concentrating, difficulty paying attention to anything, forgetfulness, lack of confidence, anxiety about something, problems managing attitudes, and a lack of persistence in work.
- 3) Displays a description of physical exhaustion brought on by body symptoms such as headaches, stiff shoulders, back discomfort, shortness of breath, thirst, hoarseness, dizziness, twitching eyelids, trembling limbs, and feeling unwell.

### C. Work Stress

Siagian (2014) defines work stress as tension that impacts an individual's emotional, cognitive, and physical well-being. According to Rivai (2011), work-related stress can lead to physical and psychological imbalances, which in turn can impact employees' emotions, cognitive functioning, and overall well-being. In line with the findings of Robbins and Judge (2017), work stress can be described as a constantly changing state in which individuals encounter various circumstances related to their goals, such as opportunities, demands, or resources. However, the outcomes of these circumstances are uncertain and hold significant importance. Based on the definitions mentioned above, one can deduce that job stress refers to a state in which an individual encounters tension due to various factors that impact their emotional and cognitive functioning.

According to Handoko (2011), there are several symptoms of work stress that need to be fully comprehended, including the following:

- 1) Incompatibility of expected roles, amount of time, and available resources to fulfill these requirements.
- 2) Role conflict, the differences in concepts between employees and superiors regarding the tasks that need to be done. Role conflict occurs when there are conflicting pressures, so fulfilling one demand will make it challenging to fulfill other requests.
- 3) Role ambiguity, related to the ambiguity regarding the tasks that must be carried out by an employee. Role ambiguity occurs when superiors must provide clear job descriptions so that employees know the roles and goals that must be achieved.

Workload includes the number of tasks that must be carried out, time availability, and resource availability. The imbalance between these three factors can cause job stress.

#### **D. Productivity**

As stated by Chen Lin Blocer, as cited in Widodo's work in 2015, productivity can be defined as the measure of the efficiency with which output is generated concerning the input resources utilized for production. In the context of productivity, Husein Umar, as cited by Widodo (2015), defines it as the ratio between the achieved outcomes (output) and the resources utilized (input). According to Rivianto, as cited in Sutrisno (2015), productivity can be understood as a mindset that consistently prioritizes continuous improvement in one's daily life. This mindset entails striving for a better quality of life each day, surpassing the previous day's achievements, and aspiring to make tomorrow even more fruitful.

Based on the experts' insights, work productivity primarily stems from utilizing labor and work tools while considering the time invested. Productivity can be defined as measuring how efficiently and effectively goals are accomplished by using the resources at one's disposal. Within the context of an organization, the enhancement of work productivity holds significant importance in attaining heightened levels of success and competitiveness.

According to Simanjuntak, quoted in Sutrisno (2015), several factors can affect employee work productivity, including:

- 1) Training
- 2) Mental and Physical Abilities of Employees
- 3) The relationship between superiors and subordinates

According to Sedarmayanti (2011), it is important to focus on two key work productivity indicators: effectiveness and efficiency. These two factors demonstrate the organization's capacity to achieve its established objectives and evaluate the effectiveness in attaining the intended outcomes.

According to Sinungan, quoted in Indriyani (2015), measuring work productivity has several benefits, including:

- 1) Feedback on the implementation of the work
- 2) Performance evaluation
- 3) Planning and development
- 4) Identification of irregularities
- 5) Information Accuracy

By utilizing work productivity measurements effectively, organizations can optimize employee performance.

#### **CONCEPTUAL MODEL**

This research will employ a conceptual model with several hypotheses to provide a clearer understanding of the connection between related variables. These hypotheses are visually shown in Figure 1. Within this model, workload is regarded as an independent variable, meaning it is not influenced by other factors in the model. On the other hand, work fatigue and work stress are mediating variables, which means they act as intermediaries between the workload and other variables in the model. Productivity, on the other hand, will be the dependent variable.

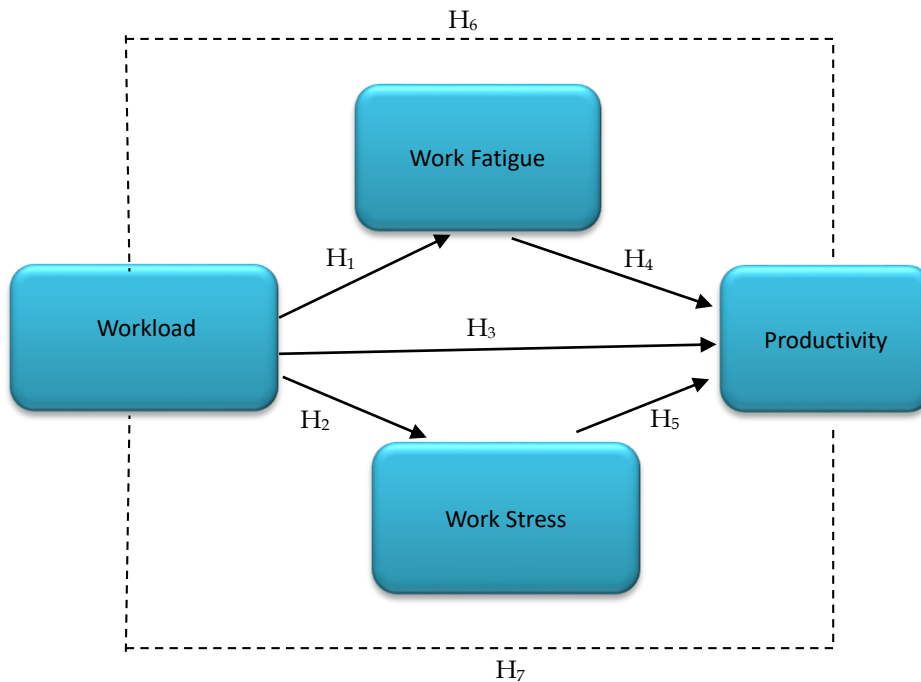


Figure 1. The Conceptual Model

Description:

- : Direct Effect
- - - - -> : Indirect Effect (Mediated)

## HYPOTHESES

The researchers created this study by evaluating the phenomena that occurred between the variables analyzed in order to generate hypotheses. This study provides confirmation of the notion that variables such as workload, work stress, and work fatigue have an impact on productivity. Based on the research conceptual model in Figure 1, theory and previous research studies, the hypothesis can be formulated as follows:

- H1: Workload has a positive and significant effect on work fatigue.
- H2: Workload has a positive and significant effect on work stress.
- H3: Workload has a positive and significant effect on productivity.
- H4: Work fatigue has a positive and significant effect on productivity.
- H5: Work stress has a positive and significant effect on productivity.
- H6: Work Fatigue acts as a variable that mediates the relationship between Workload and Productivity.
- H7: Work Stress acts as a variable that mediates the relationship between Workload and Productivity.

## METHODOLOGY

The research methodology employed in this study is quantitative, meaning that data will be collected using predetermined standards and measurements. This study focused on the ship guides employed at PT. Pelindo IV Balikpapan Branch as the target population. This study utilized a sample of the entire population, precisely 41 boat guides employed at PT. Pelindo IV Balikpapan Branch.

During the data collection phase, researchers employed various methods commonly utilized in quantitative research, namely the Likert scale questionnaire, interviews, and observations. The methodology used in this study involves using a path analysis technique for data analysis. The present study aims to assess the research instrument's validity, reliability, and path analysis by utilizing SPSS software.

## CONCLUSION

The purpose of this study was to construct a theoretical framework that explores the impact of workload on productivity, with work fatigue and work stress serving as mediating factors. The research was conducted specifically among ship guides. This paper encompasses various sections including research background, literature reviews, conceptual models, hypotheses, and research methodology. The objective is to investigate the impact of workload on ship guide productivity at PT. Pelindo IV Balikpapan Branch, with a

focus on the mediating factors of work fatigue and work stress. The objective of this paper is to present an analysis of the interconnections among the chosen variables, namely workload, work productivity for ship guides, and the mediating factors of work fatigue and work stress. The aim is to provide valuable insights into the relationship between these variables.

## REFERENCES

- [1] Direktorat Jenderal Perhubungan Laut. (2014). Pandu Kapal Diminta Terus Tingkatkan Profesionalitas. Kementerian Perhubungan Republik Indonesia. <https://dephub.go.id/post/read/pandu-kapal-diminta-terus-tingkatkan-profesionalitas-60186>
- [2] Direktorat Jenderal Perhubungan Laut. (2017). Pentingnya Petugas Pandu Dalam Memastikan keselamatan pelayaran. Portal Hubla Direktorat Jenderal Perhubungan Laut. <https://hubla.dephub.go.id/home/post/read/4968/pentingnya-petugas-pandu-dalam-memastikan-keselamatan-pelayaran-09-10-2>
- [3] Handoko, (2011). Manajemen Personalia dan Sumberdaya Manusia. Yogyakarta: Penerbit BPFE.
- [4] Hariyati, M. (2011), Pengaruh Beban Kerja terhadap Kelelahan Kerja pada Pekerja Linting Manual di PT. Djitoe Indonesia Tobacco Surakarta, Skripsi, Universitas Sebelas Maret, Surakarta
- [5] Hariyati, M. (2011), Pengaruh Beban Kerja terhadap Kelelahan Kerja pada Pekerja Linting Manual di PT. Djitoe Indonesia Tobacco Surakarta, Skripsi, Universitas Sebelas Maret, Surakarta.
- [6] Indriyani S. (2015). Skripsi Pengaruh Pelatihan Kerja dan Disiplin Kerja Terhadap Produktivitas Kerja Karyawan pada PT. Paradise Island Furniture. DIY Yogyakarta: Universitas Negri Yogyakarta
- [7] Moekijat, (2009), Sumber Daya Manusia, Mandar Maju, Bandung.
- [8] Munandar, M. (2001), Budgeting : Perencanaan Kerja, Pengkoordinasian Kerja, Pengawasan Kerja, Edisi ke 2, BPFE, Yogyakarta.
- [9] Permendagri, (2008), Pedoman Analisis Beban Kerja di Lingkungan Departemen Dalam Negeri dan Pemerintah Daerah, Peraturan Menteri Dalam Negeri dan Pemerintah Daerah Nomor 12 Tahun 2008, hal 2-3.
- [10] Rivai, V & Sagala, Juavani, E. (2011). Manajen Sumber Daya Manusia untuk Perusahaan. Jakarta: PT. Raja Grafindo Persada
- [11] Robbins & Judge. (2017). Perilaku Organisasi. Jakkarta: Salemba Empat. Handoko, T.H. 2011. Manajemen Personalia dan Sumber Daya Manusia, Edisi Kedua. Cetakan Kedelapan belas. Yogyakarta: BPFE.
- [12] Russeng, S. (2011). Kelelahan Kerja Dan Kecelakaan Lalu Lintas. yogyakarta: Ombak.
- [13] Sedarmayanti. (2011). Tata kerja dan produktivitas kerja. Bandung: CV Mandar Maju.
- [14] Siagian S. P. (2014). Manajemen Sumber Daya Manusia. Jakarta : Bumi Aksara.
- [15] Silastuti, A. (2007). Hubungan Antara Kelelahan dengan Produktivitas Tenaga Kerja Di Bagian Penjahitan PT. Bengawan Solo Garment Indonesia. Universitas Negeri Semarang npatti Poka), Arika, Vol. 5, No. 2, hal. 83-98.
- [16] Soleman, A. (2011), Analisis Beban Kerja Ditinjau dari Faktor Usia dengan Pendekatan Recommended Weight Limit (Studi Kasus Mahasiswa U
- [17] Suma'mur, P. (2009). Higiene Perusahaan dan Kesehatan Kerja, Jakarta, Agung Seto
- [18] Sutrisno, E. (2015). Manajemen Sumber Daya Manusia (edisi pertama). Jakarta: Kencana.
- [19] Undang Undang Nomor 17 Tahun 2008. (2008). <https://mahpel.dephub.go.id/web/doc/d4145dde-fc3c-4f86-993e-a3cdef29211>
- [20] Widodo, E. S. (2015). Manajemen Pengembangan Sumber Daya Manusia. Pustaka Pelajar. Yogyakarta.