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The Effect Of Workload On Work Productivity With Work Motivation As An Intervening Variable On Employees Of PT. Pelayaran Nasional Indonesia (Persero) Makassar Branch

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Abstract: *This study aims to analyze the effect of workload on work productivity, with work motivation as an intervening variable, at PT. Pelayaran Nasional Indonesia (Persero), Makassar Branch. The primary focus of this study is to identify the direct and indirect influences and the most significant factors in increasing work productivity, and how the relationships between these variables influence the maintenance of work productivity. This study used a quantitative approach with a survey method. Data were collected through questionnaires distributed to 34 respondents, employees of PT. Pelayaran Nasional Indonesia (Persero), Makassar Branch. The analytical technique used was path analysis to test the indirect effect of an independent variable on the dependent variable through an intervening variable (the effect of workload on work productivity, with work motivation as the intervening variable). The results indicate that workload has a negative and significant effect on work productivity, workload has no negative and significant effect on work motivation, work motivation has a positive and significant effect on work productivity, and workload has no negative and significant effect on work productivity, with motivation as the intervening variable, among PT. Indonesian National Shipping (Persero) Makassar Branch.*
Keywords: *Workload, Work Productivity, Work Motivation*

INTRODUCTION

Human resources are a crucial aspect in the development of any organization or company. The success of a company largely depends on its ability to manage the resources it possesses, particularly human resources. A company cannot be separated from human resources, which play a decisive role in contributing effectively and efficiently to achieving the company's goals. According to Sofyandi (2018), human resource management (HRM) is a strategy in implementing management functions such as planning, organizing, leading, and controlling in all operational activities of human resources, including recruitment, selection, training, development, placement (including promotion and demotion), performance appraisal, compensation, industrial relations, and termination, with the aim of enhancing the productive contribution of human resources to achieve organizational goals effectively and efficiently (Ismartaya et al., 2023).

Employee productivity is an essential aspect that must be considered by any organization or company. It arises naturally in every workplace, influenced by various internal and external factors that support the creation of effective and efficient employee productivity. The overall productivity of a company depends on the contribution of each individual employee in performing their tasks.

According to Sedarmayanti (2017), several factors influence employee productivity, including discipline, work motivation, excessive workload, work environment, work-related stress, supervisor-subordinate relationships, and social security (Ismartaya et al., 2023).

In this study, the selected variables are workload, work motivation, and work productivity. These variables align with the observed issues in the research setting, where employee productivity is low due to excessive working hours and tasks, as well as insufficient work motivation. Therefore, these variables were chosen to examine the phenomenon occurring in the organization.

This study is also based on prior research findings. Research on the relationship between workload and work motivation conducted by Ismartaya et al. (2023) showed that workload significantly affects work motivation. This aligns with Maslow's Need Theory, which suggests that if workload negatively impacts physical health, security, or social relationships, motivation will decline. Research by Ilmi et al. (2024) indicated that workload significantly affects work productivity, consistent with the Yerkes-Dodson Theory (1908), which states that excessive stress or pressure, including workload, reduces productivity. Studies on the influence of work motivation on productivity by Mardiansyah and Badar (2023) found a significant effect, supporting Expectancy Theory, which posits that belief in rewards for good performance increases motivation and productivity. Furthermore, Ismartaya et al. (2023) found that work motivation mediates the effect of workload on productivity, consistent with Herzberg's Two-Factor Theory, which asserts that motivation mediates the relationship between workload and productivity.

Based on these prior findings, this study seeks to further investigate the combined effects of these variables in a different setting, aiming to examine the influence of workload on productivity with work motivation as an intervening variable. Although the study shares similarities with previous research in terms of variables, methods, and research period, it also highlights differences. First, few studies have explored workload's effect on productivity with work motivation as an intervening variable. Second, the research location differs from previous studies, with no prior research addressing these variables in this specific organizational setting.

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PT. Pelayaran Nasional Indonesia (PT. PELNI) is a company engaged in maritime transportation services, with several branches across Indonesia, including the Makassar branch (PT. PELNI Persero, 2019). Observations revealed that low employee productivity at the Makassar branch is primarily due to excessive workload and insufficient work motivation. Motivation is further affected by unequal distribution of compensation, such as housing allowances, which are granted to some employees based on job level, with higher positions receiving higher allowances.

Daily workloads include routine tasks such as administration, coordination, and completing job responsibilities, with some days being more demanding than others. Excessive workload can pressure employees, especially when multiple tasks accumulate under tight deadlines, reducing focus and potentially lowering work quality. While productivity may remain stable under manageable workload increases, excessive workload without sufficient breaks can reduce both quality and motivation, especially if employees feel their efforts are undervalued or work-life balance is compromised.

The following figure presents the revenue from goods and services at PT. PELNI from 2022 to 2024.

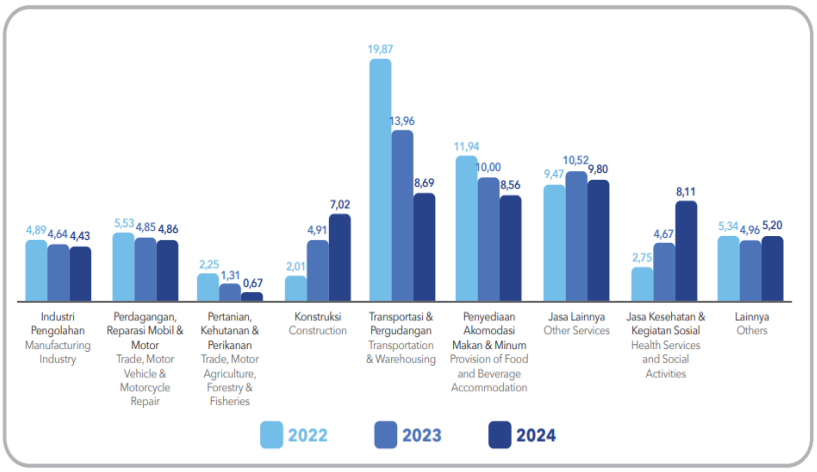

Figure 1. *Revenue from Goods and Services, 2022–2024*
Source: PT. PELNI (2025)

The main business sectors contributing to goods and services at PT. PELNI include other services (9.80%), transportation and warehousing (8.69%), and accommodation and food services (8.56%). The manufacturing industry contributes 4.43%, while wholesale and retail trade, motor vehicle and motorcycle repair, and agriculture, forestry, and fisheries account for 4.86% and

0.67%, respectively. Changes in goods and services production are partly influenced by employee productivity within the company.

Based on these issues and background, this study aims to examine the effect of workload on employee productivity with work motivation as an intervening variable at PT. Pelayaran Nasional Indonesia (Persero) Makassar Branch, South Sulawesi, under the title "The Effect of Workload on Employee Productivity with Work Motivation as an Intervening Variable at PT. Pelayaran Nasional Indonesia (Persero) Makassar Branch."

METHOD

The research employed a quantitative approach, conducted from May to September 2025 at PT. Pelayaran Nasional Indonesia (Persero) Makassar Branch. A descriptive research design was applied to examine the effect of workload on employee productivity with work motivation as an intervening variable. The population comprised all 34 permanent employees, and saturated sampling was used, including the entire population as the sample. Data were collected through primary sources, including questionnaires, interviews, and observations, and secondary sources, such as journals and official reports. The study's variables included workload as the independent variable, work productivity as the dependent variable, and work motivation as the intervening variable. Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM), with the outer model assessing validity and reliability of indicators and the inner model evaluating causal relationships among latent variables. Hypotheses were tested via bootstrapping, with acceptance determined by t-values exceeding 1.96 at a 5% significance level.

RESULTS AND DISCUSSION

The data processing technique used in this study is to use Smart PLS (Partial Least Square) software with the SEM (Structural Equational Model) method.

Measurement Model Analysis (Outer Model)

In outer model analysis, the model is evaluated to verify indicators that can later be tested to ensure that the indicators and latent variables used in the prediction model provide valid and reliable results. If the factor loading value is >0.7, it is considered ideal, meaning the indicator validly measures the construct. In empirical research, a factor loading value >0.5 is acceptable.

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Some experts even accept 0.4. This value indicates the construct's ability to explain the variation in the indicators (Haryono, 2017). The following is an outer model conducted using PLS analysis.

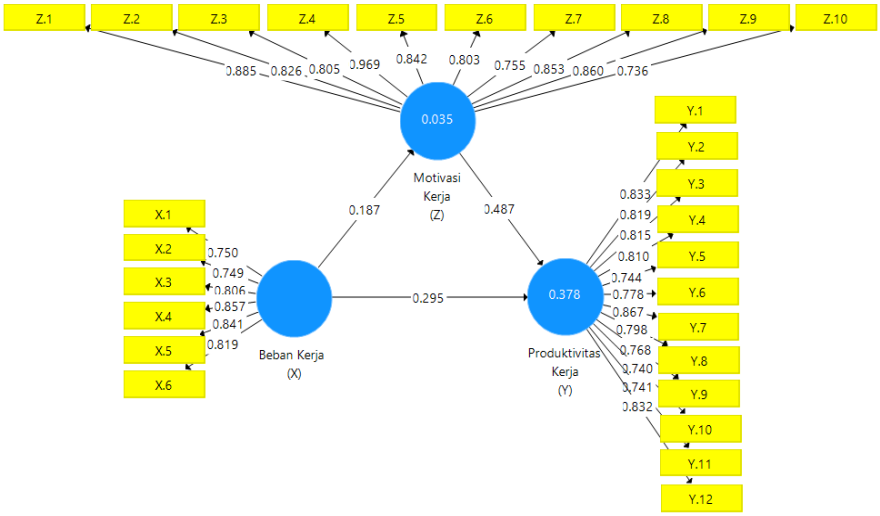

Figure 1. *Outer Model*
Source: Data processed 2025

The figure above shows that of the 28 statements from the indicators in this study, all indicators are considered valid and suitable for use because they meet the loading factor requirement of >0.7.

1) Convergent Validity

Convergent validity measures the correlation between a construct and a latent variable. Convergent validity can be tested by examining the loading factor for each construct indicator. A loading factor value >0.7 is ideal, meaning the indicator validly measures the construct. In empirical research, a loading factor value >0.5 is acceptable. In fact, some experts even accept 0.4.

a. Loading factor value

	Workload	Work Productivity	Work motivation
X.1	0,750		
X.2	0,749		
X.3	0,806		
X.4	0,857		
X.5	0,841		
X.5	0,819		
Y.1		0,833	
Y.2		0,819	
Y.3		0,815	
Y.4		0,810	

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Y.5	0,744	
Y.6	0,778	
Y.7	0,867	
Y.8	0,798	
Y.9	0,768	
Y.10	0,740	
Y.11	0,741	
Y.12	0,832	
Z.1		0,885
Z.2		0,826
Z.3		0,805
Z.4		0,969
Z.5		0,842
Z.6		0,803
Z.7		0,755
Z.8		0,853
Z.9		0,860
Z.10		0,736

Table 1. *Loading Factor Values*

Source: Data processed 2025

The table above shows that high loading factor values indicate that the indicators in the research instrument have good convergent validity. The factor loading values for each statement of the workload, work productivity, and work motivation variables are >0.70, indicating a very strong contribution to the construct.

b. Average Variance Extracted (AVE) value

Convergent validity is a measure of the relationship between an indicator and the latent variable being measured. The higher the Average Variance Extracted (AVE) value, the higher the convergent validity of a construct.

Variables	**Average Variance Extracted *(AVE)***
Workload (X)	0,648
Work Motivation (Z)	0,699
Work Productivity (Y)	0,634

Table 2. *Average Variance Extracted (AVE) Value*

Source: Data processed 2025

The table above shows that the three variables have AVE values above the minimum limit of 0.50 (>50), namely Workload (X) with a value of 0.648, Work Motivation (Z) with a value of 0.699 and Work Productivity (Y) with a value of 0.634 which indicates good convergent validity.

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2) Discriminant Validity

Discriminant validity is measured by examining the cross-loading values of construct measurements. Cross-loading values indicate the magnitude of the correlation between each construct and its indicators and indicators from other construct blocks. A measurement model has good discriminant validity if the correlation between the construct and its indicators is higher than the correlation with indicators from other construct blocks. After processing, the cross-loading results can be seen in the table below:

	Workload	**Work Productivity**	**Work motivation**
X.1	**0,750**	0,208	0,070
X.2	**0,749**	0,133	-0,026
X.3	**0,806**	0,281	0,280
X.4	**0,857**	0,318	0,209
X.5	**0,841**	0,288	-0,015
X.5	**0,819**	0,443	0,174
Y.1	0,339	**0,833**	0,637
Y.2	0,274	**0,819**	0,450
Y.3	0,223	**0,815**	0,410
Y.4	0,259	**0,810**	0,328
Y.5	0,251	**0,744**	0,185
Y.6	0,252	**0,778**	0,467
Y.7	0,368	**0,867**	0,596
Y.8	0,420	**0,798**	0,359
Y.9	0,236	**0,768**	0,439
Y.10	0,234	**0,740**	0,352
Y.11	0,278	**0,741**	0,372
Y.12	0,480	**0,832**	0,337
Z.1	-0,024	0,376	**0,885**
Z.2	0,133	0,315	**0,826**
Z.3	-0,030	0,327	**0,805**
Z.4	0,052	0,526	**0,969**
Z.5	0,195	0,533	**0,842**
Z.6	0,177	0,354	**0,803**
Z.7	0,161	0,333	**0,755**
Z.8	0,374	0,621	**0,853**
Z.9	0,055	0,563	**0,860**
Z.10	0,133	0,257	**0,736**

Table 3. *Cross Loading*

Source: Data processed 2025

The table above shows that the correlation between a construct and its indicators is greater than the correlation with other constructs. Therefore, it can be concluded that all constructs or latent variables have good discriminant validity.

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The analysis was then conducted by comparing discriminant validity and the square root of the Average Variance Extracted (AVE). If the square root of the AVE for each construct is greater than the correlation between that construct and the other constructs in the model, the model is said to have good discriminant validity, and the expected AVE value is >0.05. The results of the correlation between constructs and the square root of the AVE can be seen in the following table:

	Workload	**Work motivation**	**ork Productivity**
Workload	0,805		
Work motivation	0,187	0,836	
Work Productivity	0,386	0,542	0,796

Table 4. *Correlation Values Between Constructs and AVE Square Root Values*

Source: Data processed 2025

Based on the table above, it shows that the squared value of AVE for each construct is greater than the correlation value so that the constructs in this study can be said to have good discriminant validity.

3) Reliability

Reliability testing is used to assess the consistency, accuracy, and precision of indicators in measuring constructs. Construct reliability is measured using Composite Reliability. To establish construct reliability, the Composite Reliability value must be >0.70.

	Cronbach's alpha	**Composite reliability**
Workload	0,897	0,917
Work Motivation	0,952	0,958
Work Productivity	0, 948	0,954

Table 5*. Reliability Test*

Source: Data processed 2025

Based on the table above, it shows that all constructs have a composite reliability value > 0.70, thus no reliability problems were found, which means that the three variables are declared reliable or can be trusted.

Analisis Model Struktural (*Inner Model*)

A structural model (inner model) describes the relationships between latent variables. Latent variables refer to concepts or factors that cannot be directly measured but are represented by

specific measurable indicators. The relationship between these latent variables is measured using the path coefficients R^2 and f^2.

1) *R-Square* (R^2)

The R^2 value test measures the proportion of variance in the dependent (endogenous) variable that can be explained by the independent (exogenous) variables. This test aims to assess whether the model is strong or weak (Juliandi, 2018). According to Juliandi (2018), the R^2 criteria are as follows: an adjusted R^2 of 0.75 indicates a substantial (strong) model, 0.50 indicates a moderate model, and 0.25 indicates a weak (poor) model.

	R Square	***R Square Adjusted***
Work motivation	0,035	0,005
Work Productivity	0,378	0,338

Table 5. *R-Square Value*
Source: Data processed 2025

The conclusion of the R-Square test on work motivation is that the Adjusted R-Square for the path model using the intervening variable is 0.005. This means that the ability of workload to explain work motivation is 0.5%. Thus, the model is classified as weak (poor). Meanwhile, the R-Square test on work productivity is the Adjusted R-Square for the path model using the intervening variable is 0.338. This means that the workload variable on work productivity in explaining employee work productivity is 33.8%. Thus, the model is classified as weak (poor).

2) *F-Square* (F^2)

F-Square is a measure used to assess the relative impact of an independent (exogenous) variable on a dependent (endogenous) variable. Changes in the R^2 value when a specific exogenous variable is removed from the model can indicate whether the excluded variable has a substantial effect on the endogenous construct (Juliandi, 2018). According to Juliandi (2018), an F^2 value of 0.02 indicates a small effect, 0.15 indicates a medium effect, and 0.35 indicates a large effect of the exogenous variable on the endogenous variable.

	Workload	**Work motivation**	**Work Productivity**
Workload		0,036	0,135
Work Motivation			0,368

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Work Productivity

Table 6. *F-Square Value*
Source: Data processed 2025

The conclusion of the F-Square test in the table above is that the workload variable on employee work productivity has an F2 value of 0.135. Therefore, there is a small effect of the exogenous variable on the endogenous variable. The workload variable on work motivation has an F2 value of 0.036, so there is a small effect of the exogenous variable on the endogenous variable. Meanwhile, the work motivation variable on employee work productivity has an F2 value of 0.368. Therefore, there is a large effect of the exogenous variable on the endogenous variable.

3) Direct Effect

The purpose of direct effect analysis is to test the hypothesis of the direct influence of an independent (exogenous) variable on a dependent (endogenous) variable (Juliandi, 2018). The significance of this effect is determined using the P-Value: if the P-Value is less than 0.05, the effect is considered significant, whereas a P-Value greater than 0.05 indicates a non-significant effect.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P-Value
Workload ▼ Work Motivation	0.187	0.208	0.251	2.744	0.228
Workload ▼ Work Productivity	0.295	0.315	0.176	2.681	0.046
Work Motivation ▼ Work Productivity	0.487	0.506	0.182	2.678	0.004

Tabel 7. *Dirrect Effect*

Source: Data processed 2025

The conclusions from the direct effect analysis are as follows: First, hypothesis H1 is accepted, indicating that workload has a significant effect on employee productivity, with a path coefficient of 0.295 and a P-Value of 0.046 (< 0.05). Second, hypothesis H2 is rejected, showing that workload does not have a significant effect on work motivation, with a path coefficient of 0.187 and a P-Value of 0.228 (> 0.05). Third, hypothesis H3 is accepted, demonstrating that work motivation has a significant effect on employee productivity, with a path coefficient of 0.487 and a P-Value of 0.004 (< 0.05).

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4) *Indirrect Effect*

The analysis of indirect effects is used to test hypotheses regarding the indirect influence of an exogenous variable on an endogenous variable, mediated by an intervening (mediator) variable. According to Juliandi (2018), the criteria are as follows: if the P-Value < 0.05, the effect is significant, meaning the mediator variable successfully mediates the influence of the exogenous variable on the endogenous variable, indicating an indirect effect. Conversely, if the P-Value > 0.05, the effect is not significant, meaning the mediator does not mediate the relationship, indicating a direct effect.

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P-Value
Workload ▼ Work Motivation ▼ Work Productivity	0.091	0.099	0.145	0.627	0.265

Tabel 8. *Indirrect Effect*

Source: Data processed 2025

The conclusion of the indirect effect value in the table above is that the fifth hypothesis (H4) is rejected because of the indirect influence of the workload variable on employee work productivity through work motivation with a path coefficient value of 0.091 with a P-Value of 0.265 (> 0.05), meaning that work motivation cannot mediate the influence of workload on employee work productivity. The analysis of the research findings was conducted to examine the consistency of the results with existing theories, opinions, and previous studies. The study focuses on four main aspects:

The direct effect hypothesis indicates that workload has a significant negative impact on employee productivity. High workload, especially during peak passenger seasons, leads to inefficiencies due to uneven work distribution and limited human resources. Respondents noted the need for better task allocation, additional personnel, and digitalized processes to improve efficiency. These findings align with prior studies by Ilmi et al. (2024) and Prayoga (2023), which also found a significant negative effect of workload on productivity.

The results show that workload does not have a significant effect on employee motivation. Despite high workloads, employees maintain high levels of loyalty, responsibility, and a sense of

belonging, which drive motivation. These results are consistent with Faozen (2021) and Tyas et al. (2024), who also reported that workload does not significantly affect employee motivation.

Work motivation has a significant positive effect on productivity. Employees' commitment and coordination ensure smooth operations, even under time pressure. This supports the findings of Kuswibowo (2020) and Pitriani & Mubarok (2023), which demonstrated that higher motivation leads to higher productivity.

The indirect effect analysis indicates that work motivation does not mediate the relationship between workload and productivity. Although motivation can help mitigate workload and improve productivity, in this context, it is not sufficient to mediate the impact of high workload on employee productivity, this is consistent with Ismartaya et al. (2023). This study contributes to the human resource management literature by demonstrating that workload and motivation play distinct but interconnected roles in shaping employee productivity. While motivation positively influences productivity, excessive workload directly constrains performance and cannot be fully mitigated through motivational factors alone. These findings underscore the importance of balanced workload management as a prerequisite for sustaining productivity in labor-intensive service organizations.

CONCLUSION

Based on the data obtained in the study on The Effect of Workload on Job Productivity with Work Motivation as an Intervening Variable among Employees of PT. Pelayaran Nasional Indonesia (Persero), Makassar Branch, a total of 34 employees participated as respondents. After analysis, the study concluded the following findings. First, workload has a negative and significant effect on job productivity among the employees of PT. Pelayaran Nasional Indonesia (Persero), Makassar Branch. Second, workload does not have a negative and significant effect on work motivation among these employees. Third, work motivation has a positive and significant effect on job productivity among the employees. Finally, workload does not have a negative and significant effect on job productivity when work motivation is considered as an intervening variable among the employees of PT. Pelayaran Nasional Indonesia (Persero), Makassar Branch.

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