

The Effect of Occupational Safety and TKBM Competence on Performance and Its Implications on Loading and Unloading Productivity at Tanjung Priok Port

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Abstract: Loading and unloading productivity problems at Tanjung Priok Port such as congestion, long waiting times, and lack of efficiency in the loading and unloading process can hinder port productivity. The formulation and objectives of this study are to determine and analyze the effect of work safety and TKBM competence on loading and unloading productivity mediated by loading and unloading performance at Tanjung Priok Port. This research design uses a cross sectional design. The type of data used with primary and secondary data. The population in this study were users of port services at Tanjung Priok Port. With a sample of 60 service users at Tanjung Priok Port. The analytical tool used is SmartPLS software. The results of the research and discussion show that there is a significant positive direct effect of work safety on loading and unloading performance, there is a significant positive direct effect of TKBM competence on loading and unloading performance, there is a significant positive direct effect of work safety on loading and unloading productivity, there is a significant positive direct effect of TKBM competence on loading and unloading productivity, there is a significant positive direct effect of performance on loading and unloading productivity, performance is able to mediate work safety on loading and unloading productivity and performance is able to mediate TKBM competence on loading and unloading productivity at Tanjung Priok Port. It is concluded that directly and indirectly, there is an influence of work safety and TKBM competence on performance and its implications for loading and unloading productivity at Tanjung Priok Port.

Keyword: Work Safety, TKBM Competence, Performance, Unloading Productivity

INTRODUCTION

The development of ports in the world continues to grow along with the increase in international trade. In Indonesia, as an archipelagic country with a strategic position, port development has a significant impact on the national economy. Tanjung Priok Port, as the largest port in Indonesia, has a very important role in supporting international trade activities.



Figure 1. Tanjung Priok Port

Loading and unloading is a key stage in the port management process. The development of loading and unloading technology and infrastructure in Indonesia is an important indicator of the progress of ports and the logistics sector as a whole. Previous studies have shown that loading and unloading efficiency can have a significant impact on port productivity and supply chain sustainability. Table 1.1 shows the loading and unloading performance at Tanjung Priok Port (PTP 1 and 2).

Loading is very important. The quality and skills of workers can affect productivity and performance at the port. Tanjung Priok Port is fully aware that the process of loading and unloading activities cannot be separated from the role of human resources. The Loading and Unloading Workforce or TKBM has a primary role in achieving loading and unloading performance from and to ships at the port and a general description of Human Resources (HR) which plays a very important role in all activities at the port. Basically, the loading and unloading workforce is an inseparable part of human resources at the port in general, which because its function and role at the port are more specific than loading and unloading goods, it is called the Loading and Unloading Workforce.

The following is the number of stevedoring and unloading workers at PTP during the 2018-2022 period.

Table 1. Number of TKBM Period 2018-2022					
No	Period	Number of TKBM	Cha	ange	
1	2018	2363			
2	2019	2334	-29	-1.2%	
3	2020	2305	-29	-1.2%	
4	2021	2264	-41	-1.8%	
5	2022	3035	771	34.1%	

In 2022, Tanjung Priok Port began to experience an increase in TKBM so that port productivity increased becausealso supported by stevedoring workers, namely all workers registered at the local port who carry out loading and unloading work at the port. AThe presence of the 2020-2021 pandemic inevitably forced several companies to reduce the number of

83.366.616

37.416.732

120.783.348

Internasional

Domestik

TOTAL

workers or a number of employees, this also happened at Tanjung Priok Port. With the reduction in the workforce, Tanjung Priok Port was affected, resulting in a decline in the company's loading and unloading performance. And also the implementation of the WFH system at Tanjung Priok Port which made the work less than optimal. This is reflected in the data on the operational workforce which has decreased.

From the international and domestic Ship Call and GT Call data at Tanjung Priok Port for the period 2019 - 2022 are as follows:

	-		• •	-
		2022		
Ship Call	2019	2020	2021	2022
Internasional	3.473	3.146	3.505	3.482
Domestik	9.182	7.935	8.342	8.511
TOTAL	12.655	11.081	11.847	11.993
GT Call	2019	2020	2021	2022

96.212.038

51.031.140

147.243.178

Table 2. International and domestic Ship Call and GT Call at Tanjung Priok Port for the period 2019 -

130.626.696 Source: Public Expose of Pelindo Tanjung Priok (2023)

89.545.944

41.080.752

82.158.953

39.615.023

121.773.976

Table 2 shows the increase and decrease in both Ship Call and GT Call from 2019 to 2022, where the 2020-2021 period experienced a decrease due to the Covid-19 pandemic. This is also supported by efforts made to improve the performance of a port, including by increasing the productivity of loading and unloading equipment and the number of TKBM for ships and accelerating the ship entry process by using faster ships.

Productivity of the loading and unloading terminal inPort of Tanjung Priokseen from several time periods, it is still felt that there has been no increase. This can be seen from the existence of several factors that cause the productivity of loading and unloading goods to increase or even decrease, namely, the performance of human resources, loading and unloading equipment and operations that support the loading and unloading activities of goods.

This study will analyze the influence of work safety and competence of stevedoring workers on port operational performance. In addition, this study will also identify the implications of the results of the analysis on stevedoring productivity at Tanjung Priok Port. The results of this study are expected to provide a clearer view of the improvement efforts that can be made to increase productivity and work safety at the port.Based on the explanation of the research background above, the researcher is interested in conducting research and compiling a thesis with the title "THE EFFECT OF OCCUPATIONAL SAFETY AND TKBM COMPETENCE ON PERFORMANCE AND ITS IMPLICATIONS ON LOADING AND UNLOADING PRODUCTIVITY AT TANJUNG PRIOK PORT"

Based on the identification of the problems discussed in this research, it is necessary to formulate the following: (1)Is there a direct influence of occupational safety on performance at Tanjung Priok Port? (2) Is there a direct influence of TKBM competence on performance at Tanjung Priok Port? (3) Is there a direct influence of occupational safety on loading and unloading productivity at Tanjung Priok Port? (4) Is there a direct influence of TKBM competence on loading and unloading productivity at Tanjung Priok Port? (5) Is there a direct influence of Occupational Safety of port service users on loading and unloading productivity at Tanjung Priok Port? (6) Is there an indirect influence of Occupational Safety on loading and unloading productivity mediated by performance at Tanjung Priok Port? (7) Is there an indirect influence of TKBM competence on loading and unloading productivity mediated by performance at Tanjung Priok Port?

The framework of thought is a conceptual model of how theory relates to various factors that have been identified as important problems, so the research framework of thought can be seen in Figure 2.1 below:



Figure 2. Conceptual Framework

Information :

Influence

- --► Indirect influence
- H1 Occupational safety affects performance at Tanjung Priok Port
- H2 TKBM competency influences performance at Tanjung Priok Port
- H3 Occupational safety affects loading and unloading productivity at Tanjung Priok Port
- H4 TKBM competency influences loading and unloading productivity at Tanjung Priok Port
- H5 Performance affects loading and unloading productivity at Tanjung Priok Port
- H6 Occupational safety has an impact on loading and unloading productivity mediated by performance at Tanjung Priok Port.
- H7 TKBM competency influences loading and unloading productivity mediated by performance at Tanjung Priok Port

METHOD

Quantitative research methods, as stated by Sugiyono (2019: 8), namely: Research methods based on the philosophy of positivism, used to research certain populations or samples, data collection using research instruments, data analysis is quantitative/statistical, with the aim of testing the established hypothesis. This research design uses a cross-sectional design. Cross Sectional is a study of independent, intervening and dependent variables measured at the same time

The population in this study at Tanjung Priok Port was 60 port service users consisting of

No	Company Type	Amount Company	Respondents Company (person)	Population (person)
1	Shipping Line (Shipping Company)	2	5	10
2	Freight Forwarder	2	5	10
3	EMKL (Sea Freight Forwarding)	2	5	10
4	Trucking Company	2	5	10
5	Exporter/Importer	2	5	10
6	Consignee (owner of goods).	2	5	10

Total	12	30	60

With several companies namely Freight Forwarder

- 1. PT Berdikari Logistics
- 2. PT Samudera Express

Sea freight forwarding

- 1. PT. Global Logistics Award
- 2. PT Lima Samudera Cargo

Trucking Company

- 1. PT Indotama Partner Logistics
- 2. PT Aditya Andika Utama

Exporter/importer

- 1. PT Nataya
- 2. PT Inti Logistik Makmur

The sampling technique used in this study was obtained by using the sampling technique (sampling technique) Nonprobability Sampling with Saturated Sampling. The researcher used this sampling technique because the population was 60 customers or users of loading and unloading services. According to Riduwan (2012:64), "saturated sampling is a sampling technique when all populations are used as samples and is also known as a census". So Saturated sampling was carried out with a sample of 60 service users. The sampling taken was a number of companies involved in activities at Tanjung Priok Port

Researchers use data analysis in the form of descriptive data analysis using Smart PLS software. version 4.0. Researchers choose to use this software so that the calculation results can be obtained better and easier.

RESULTS AND DISCUSSION

Validity Test

Table 3. Average Variance Extracted (AVE) results					
Variables	Average Variance Extracted (AVE) Information				
OCCUPATIONAL SAFETY (X1)	0.634	Valid			
TKBM COMPETENCY (X2)	0.697	Valid			
LOADING AND UNLOADING PERFORMANCE (Y)	0.638	Valid			
LOADING AND UNLOADING PRODUCTIVITY (Z)	0.710	Valid			

Source: Smart PLS Program Output (2023)

Based on the results of the AVE test above, it shows that the AVE value obtained from the Occupational Safety variable (X1) > 0.5 with a value of 0.634. The TKBM competency variable (X2) produces an AVE value of 0.697. The loading and unloading performance variable (Y) produces an AVE value of 0.638 and the loading and unloading productivity variable (Z) produces an AVE value of 0.710. From the results of the AVE test, all variables have good values because all values are > 0.5.

Reliability Test

Table 4. Composite Reability Results					
Variables	Composite reliability	information			
OCCUPATIONAL SAFETY (X1)	0.945	Reliable			
TKBM COMPETENCY (X2)	0.958	Reliable			
LOADING AND UNLOADING	0.022	Paliable			
PERFORMANCE (Y)	0.933	Kellable			
LOADING AND UNLOADING		Dolighto			
PRODUCTIVITY (Z)	0.930	Kellable			

Source: Smart PLS Program Output (2023)

Based on the table above, it can be explained that the composite reliability value of all the variables above, namely, the Occupational Safety variable (X1) is 0.945 for the TKBM Competence variable (X2) is 0.958 for the Loading and Unloading Performance variable (Y) is 0.933 and for the Loading and Unloading Productivity variable (Z) is 0.936. So it can be concluded that all research variables are considered reliable because they have a composite reliability> 0.7 for all variables.

Table 5. Coefficient of Determination (Rsquare) Results					
R Square R Square Adjuste					
LOADING AND UNLOADING PERFORMANCE (Y)	0.868	0.864			
LOADING AND UNLOADING PRODUCTIVITY (Z) 0.898 0.86					
Source: Smart PLS Program Output (2023)					

From the table above, it can be seen that the loading and unloading productivity variable obtained an R-Square value of 0.898. This shows that simultaneously the work safety and TKBM competency variables and loading and unloading performance can explain their influence on the loading and unloading productivity variable by 89.8%.

Then the R-Square value on the Performance variable obtained a value of 0.868, this shows that the influence of the work safety and TKBM competency variables on the Performance variable is 86.8%. It can be said that the existing independent variables have a major influence on productivity.

Hypothesis Testing

Table 6. Results of Direct Influence and Mediating Influence					
Influence of Variables	Original Sample (O)	T Statistics (O/STDEV)	P Values	Results	
WORK SAFETY (X1) ->LOADING				Ho is rejected/Ha is	
AND UNLOADING	0.472	3,435	0.001	accepted Conclusion:	
PERFORMANCE (Y)				There is an influence	
TKBM COMPETENCY (X2) -				Ho is rejected/Ha is	
>LOADING AND UNLOADING	0.487	3,614	0,000	accepted Conclusion:	
PERFORMANCE (Y)				There is an influence	
OCCUPATIONAL SAFETY (X1) -				Ho is rejected/Ha is	
>LOADING AND UNLOADING	0.206	2,963	0.003	accepted Conclusion:	
PRODUCTIVITY (Z)				There is an influence	
TKBM COMPETENCY (X2) -				Ho is rejected/Ha is	
>LOADING AND UNLOADING	0.504	6,661	0,000	accepted Conclusion:	
PRODUCTIVITY (Z)				There is an influence	
LOADING AND UNLOADING				Ho is rejected/Ha is	
PERFORMANCE (Y) ->LOADING	0 657	7 002	0.000	accepted Conclusion:	
AND UNLOADING	0.057	7,005	0,000	There is an influence	
PRODUCTIVITY (Z)					

Influence of Variables	Original Sample (O)	T Statistics (O/STDEV)	P Values	Results
WORK SAFETY (X1) ->LOADING AND UNLOADING PERFORMANCE (Y) -> LOADING AND UNLOADING PRODUCTIVITY (Z)	0.310	2,851	0.005	Ho is rejected/Ha is accepted Conclusion: There is an influence
TKBM COMPETENCY (X2) - >LOADING AND UNLOADING PERFORMANCE (Y) -> LOADING AND UNLOADING PRODUCTIVITY (Z)	0.320	3,352	0.001	Ho is rejected/Ha is accepted Conclusion: There is an influence

Source: Smart PLS Program Output (2023)

Based on Table 6 above, it shows that the seven hypotheses that have a direct and indirect influence are all accepted because the value*T*-*Statistics*> 2,000*P*-*Values* < 0.05.Based on Table 6 above, it shows that:

Hypothesis 1: Direct influence of occupational safety on loading and unloading performance at Tanjung Priok Port.

Based on Table 6 above, it shows that the influence of work safety on performance with a parameter coefficient of 0.472, which shows that the direction of influence between work safety on performance is positive at 0.472, meaning that if there is an increase in work safety by 1 unit, it increases performance by 0.472. Furthermore, based on *T*-StatisticsH₁of 3.435 is greater than its level or 3.435 > 2.000 and P-values H1 of 0.001 is smaller than the real level or 0.001 < 0.05 this shows that the direct influence of work safety on performance is significant. Therefore, it can be concluded that H1 is accepted, then there is a positive and significant direct influence of work safety on loading and unloading performance at Tanjung Priok Port.

Hypothesis 2: Direct influence of TKBM competence on loading and unloading performance at Tanjung Priok Port.

Based on Table 6 above, it shows that the influence of TKBM competence on performance is positive with a parameter coefficient of 0.487, which shows that the direction of influence between TKBM competence and performance is positive at 0.487, meaning that if there is an increase in TKBM competence by 1 unit, it will increase performance by 0.487. Furthermore, based on *T*-StatisticsH2 of 3.614 is greater than its level or 3.614 > 2.000 and P-values H2 of 0.000 is smaller than the real level or 0.000 < 0.05 this shows that the direct influence of TKBM competence on performance is significant. Therefore, it can be concluded that H2 is accepted, then there is a direct positive and significant influence of TKBM competence on loading performance at Tanjung Priok Port.

Hypothesis 3: The direct influence of occupational safety on loading and unloading productivity at Tanjung Priok Port.

Based on Table 6 above, it shows that the influence of work safety on loading and unloading productivity is positive with a parameter coefficient of 0.206, which shows that the direction of influence between work safety and loading and unloading productivity is positive at 0.206, meaning that if there is an increase in work safety by 1 unit, it will increase loading and unloading productivity by 0.206. Furthermore, based on *T-Statistics*H3 is 2.963 which is greater than its level or 2.963 > 2.000 and the value *P-values*of 0.003 is smaller than the real level or 0.003 < 0.05, this indicates that the direct influence of work safety on loading and unloading productivity is significant. Therefore, it can be concluded that H3 is accepted, so there is a direct positive and significant influence of work safety on loading and unloading productivity at Tanjung Priok Port.

Hypothesis 4: Direct influence of TKBM competence on loading and unloading productivity at Tanjung Priok Port.

Based on Table 6 above, it shows that the influence of TKBM competence on loading and unloading productivity is positive with a parameter coefficient of 0.504, which shows that the direction of influence between TKBM competence and loading and unloading productivity is positive at 0.504, meaning that if there is an increase in TKBM competence by 1 unit, it will increase loading and unloading productivity by 0.504. Furthermore, based on*T-Statistics*H4 of 6.661 is greater than its level or 6.661 > 2.000 and P-values of 0.000 are smaller than the real level or 0.000 < 0.05, this indicates that the influence of TKBM competence on loading and unloading productivity is significant. Therefore, it can be concluded that H4 is accepted, so there is a direct positive and significant influence of TKBM competence on loading and unloading productivity at Tanjung Priok Port.

Hypothesis 5: Direct influence of performance on loading and unloading productivity at Tanjung Priok Port.

Based on Table 6 above, it shows that the influence of performance on loading and unloading productivity is positive with a parameter coefficient of 0.657, which shows that the direction of the influence between performance and loading and unloading productivity is positive at 0.657, meaning that if there is an increase in loading and unloading productivity of 1 unit, it increases performance by 0.657. Furthermore, based on *T-Statistics*H5 of 7.003 is greater than its level or 7.003 > 2.000 and P-values H5 of 0.000 is smaller than the real level or 0.000 < 0.05 this shows that the direct effect of performance on loading and unloading productivity is productivity is significant. Therefore, it can be concluded that H5 is accepted, so there is a positive and significant direct effect of performance on loading and unloading productivity at Tanjung Priok Port.

Hypothesis 6: Indirect influence of work safety on loading and unloading productivity through loading and unloading performance at Tanjung Priok Port.

Based on Table 6 shows that the indirect effect of work safety on loading and unloading productivity through performance is positive with a parameter coefficient of 0.310 which shows that the direction of the effect between work safety on loading and unloading productivity through performance is positive at 0.310 meaning that if there is an increase in work safety through loading and unloading productivity by 1 unit, it increases performance by 0.310.

Next based on *T*-Statistics H6 of 2.851 is greater than its level or 2.851 > 2.000 and P-values H6 of 0.005 is smaller than the real level or 0.005 < 0.05 this shows that the indirect effect of work safety on loading and unloading productivity through performance is significant. Therefore, it can be concluded that H6 is accepted, so there is an indirect effect of work safety on loading productivity through loading and unloading performance at Tanjung Priok Port.

Hypothesis 7: Indirect influence of TKBM competence on loading and unloading productivity through loading and unloading performance at Tanjung Priok Port.

Based on Table 6 shows that the indirect influence of TKBM competence on loading and unloading productivity through performance is positive with a parameter coefficient of 0.320 which shows that the direction of influence between TKBM competence on loading and unloading productivity through performance is positive at 0.320 meaning that if there is an increase in TKBM competence through loading and unloading productivity by 1 unit, it increases performance by 0.320.

Next based onobtained *T*-Statistics H7 of 3.352 is greater than its level or 3.352 > 2.000 and P-values H7 of 0.001 is smaller than the real level or 0.001 < 0.05 this shows that the indirect effect of TKBM competence on loading and unloading productivity through performance is significant. Therefore, it can be concluded that H7 is accepted, so there is an indirect effect of TKBM competence on loading and unloading productivity through loading and unloading performance at Tanjung Priok Port.

Table 7. Summary Results of Research Hypothesis					
	Research Hypothesis	Results			
H1	There is a direct influence of work safety on loading and unloading performance at Tanjung Priok Port	Positive and Significant			
H2	There is a direct influence of TKBM competence on loading and unloading performance at Tanjung Priok Port	Positive and Significant			
Н3	There is a direct influence of work safety on loading and unloading productivity at Tanjung Priok Port.	Positive and Significant			
H4	There is a direct influence of TKBM competence on loading and unloading productivity at Tanjung Priok Port	Positive and Significant			
Н5	There is a direct influence of performance on loading and unloading productivity at Tanjung Priok Port	Positive and Significant			
H6	Performance is able to mediate work safety towards loading and unloading productivity at Tanjung Priok Port	Positive and Significant			
H7	Performance is able to mediate TKBM competency towards loading and unloading productivity at Tanjung Priok Port	Positive and Significant			

CONCLUSION

- 1. There is a significant positive direct influence of work safety on loading and unloading performance at Tanjung Priok Port, with a P-Value of 0.001 <0.05 where H0 is rejected or Ha1 is accepted, meaning that every increase in work safety will increase the performance operated by Tanjung Priok Port.
- 2. There is a significant positive direct influence of TKBM competence on loading and unloading performance at Tanjung Priok Port, with a P-Value of 0.000 <0.05 where H0 is rejected or Ha2 is accepted, meaning that every increase in TKBM competence will improve the performance operated by Tanjung Priok Port.
- 3. There is a significant positive direct influence of work safety on loading and unloading productivity at Tanjung Priok Port, with a P-Value of 0.003 <0.05 where H0 is rejected or Ha3 is accepted, meaning that work safety has an impact on loading and unloading productivity at Tanjung Priok Port.
- 4. There is a significant positive direct influence of TKBM competence on loading and unloading productivity at Tanjung Priok Port, with a P-Value of 0.000 <0.05 where H0 is rejected or Ha4 is accepted, meaning that TKBM competence has an impact on loading and unloading productivity at Tanjung Priok Port.
- 5. There is a significant positive direct influence of performance on loading and unloading productivity at Tanjung Priok Port, with a P-Value of 0.000 <0.05 where H0 is rejected or Ha5 is accepted, meaning that performance has an impact on loading and unloading productivity at Tanjung Priok Port.
- 6. Performance is able to mediate work safety on loading and unloading productivity at Tanjung Priok Port, with a P-Value of 0.005 <0.05 where H0 is rejected or Ha6 is accepted,

meaning that performance strengthens the influence of work safety on loading and unloading productivity at Tanjung Priok Port.

7. Performance is able to mediate TKBM competence on loading and unloading productivity at Tanjung Priok Port, with a P-Value of 0.001 <0.05 where H0 is rejected or Ha7 is accepted, meaning that performance strengthens the influence of TKBM competence on loading and unloading productivity at Tanjung Priok Port.

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