Load Unloading Equipment, Workers (Longshormen), and Ship Service to Performance of General Cargo Loads Unloading in Terminal Jamrud Port of Tanjung Perak, Surab

by Titiek Suntari

ARTICLE

Load Unloading Equipment, Workers (Longshormen), and Ship Service to Performance of General Cargo Loads Unloading in Terminal Jamrud Port of Tanjung Perak, Surabaya

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Abstract

The port is a node from the transportation system chain and is a gateway for sea transportation in the activities of sea traffic is increasing demanded in the globalization. Loading and unloading equipment, Workers/ longshormen, and Ship Service are the parts that determine the performance of loading and unloading of general cargo in this sense is for Jamrud terminal port of Tanjung Perak, Surabaya, the second largest port in Indonesia. This research was conducted with the aim to determine whether there is a relationship (correlation) and the influence of loading and unloading equipment, workers/ longshormen, and ship services on the performance of loading and unloading general cargo at the terminal so that it can be used as a means of performance of the terminal more effectively and efficiently in handling loading and unloading. The method used is a quantitative method with primary data analysis in the form of numbers through the distribution of questionnaire data (Likert scale) analyzed. The results indicated that there was a positive correlation or correlation and significant influence for the relationship of loading and unloading equipment, workers/ longshormen, and ship service simultaneously on loading and unloading performance and correlate significant. This shows that there is a positive and significant correlation between loading and unloading equipment, workers/ longshormen, and ship services to the loading and unloading performance at the Jamrud terminal. Therefore, to improve the performance of loading and unloading general cargo at the terminal port of Tanjung Perak, Surabaya must pay attention to these three factors.

Introduction

Port is a place consisting of land and / or waters with certain limits as a place of government and business activities used as a place for ships to lean on, up and down passengers, and / or loading and unloading of goods, in the form of terminals and berths equipped with ships shipping safety and security facilities and port support

activities as well as a place for intra-and intermodal transportation (Undang – Undang No. 17, 2008). Operation is responsible for supplying the product or service of the organization. Operation managers make decisions regarding the operations function and its connection with other function (Roger G, 2007).The management of systems or processes that create goods and or provide service (Roger G, 2007). Operation management (OM) is defined as the design, operation, and improvement of the systems that create and deliver the firm's primary products and service (Dafl Richard, 2006). Port performance indicator or port performance is the achievement of the level of success or service output, the use of port facilities and equipment over a certain period of time, which is determined in units of time, weight units, percentages or comparison ratios. Operation management (OM) is the set of activities that creates value in the form of goods and services by transforming inputs into outputs (Barry Render, 2014). The calculation accuracy of a port's performance depends on the accuracy of the data and information submitted by port service users or port users. If port performance or port performance improves or increases, it can be said that the port can provide a good level of service to service users or port users (customers), and vice versa if port performance or port performance deteriorates or decreases, it can be said that the port cannot provide good level of service to service users or port users (customers).Operations management is inseparable from the notion of management in general, which contains elements of the activities carried out by coordinating activities and resources to achieve a certain goal (Herjanto, 2003).

The scope of management range across the organization. Operation management people are involved in product and service design, process selection, location planning, selection and management of technology, design of work systems, facilities planning, and quality

improvement of the organization's product or service (Stevenson, 2009). The main components that can affect port performance are the level of ship service quality, ship movement, workers or longshormen productivity, loading and unloading equipment, cargo intensity at the dock or mooring, and cargo load intensity at the storage warehouse. The management process consist of planning, organizing, staffing, leading, and controlling (Heizer J, 2011).Operation managemnet is integrated in three (3) main components that support in the organization's processes i. e : customers, processes, and capacities (Melnyk, 2002).

One component that will be discussed in this study is the loading and unloading equipment, workers or longshormen, and ship services in serving loading and unloading activities, especially general cargo at the Jamrud terminal so that optimal, efficient, and effective loading and unloading performance is achieved.

The loading and unloading service system at the Jamrud terminal of Tanjung Perak port, Surabaya can be served by loading and unloading equipment according to the type of cargo. In general the type of cargo in question is the cargo that is packed with containers, general cargo, and bulk cargo (liquid bulk and dry bulk). Each pier has been designated for the use of loading and unloading equipment. The availability and readiness of loading and unloading equipment, workers or longshormen, and ship services really need to be considered so the authors are interested in testing and want to do research on "**LoadUnloading Equipment, Workers or Longshormen, and Ship Services on General Cargo Load Unloading Performance at Terminal Jamrud Tanjung Perak of Surabaya Port** ".

The formulation of the problem from this research that can be done by the writer based on the background above is as follow :

1. Does the loading and unloading equipment partially have a significant relationship or correlation to the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya?

2. Does the worker or longshormen partially have a significant relationship or correlation to the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya?

3. Does the ship service partially have a significant relationship or correlation to the performance of loading and unloading of general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya?

4. Do loading and unloading equipment,worker/ longshormen, and ship services jointly (simultaneous) have a significant relationship or correlation with the performance of loading and unloading general cargo at Jamrud Terminal port of Tanjung Perak, Surabaya?

Foundation of Theory and Development of Hypotheses

Sailing is everything related to transportation in waters, port and security and safety. Broadly speaking, shipping is divided into two, namely commercial shipping (related to commercial activities), and non-commercial shipping (related to non-commercial activities such as government and state defense). The voyage that connects the islands is the artery of life and at the same time unifying the Indonesian nation and state. The potential of commercial shipping for the world of commerce in general and in particular international trade plays an important role. Shipping activities arise because of the need to transport goods produced by one region and will be sold to other regions. The Indonesian shipping fleet faces many problems such as:

1. there are quite a lot of ships but only a few are able to provide satisfaction to its customers.

2. The number of conventional ships that are unemployed due to prolonged cargo waiting times.

3. Unstable or unproductive price wars due to excess cargo capacity.

The location is very strategic for the Indonesian people because it is located in the crossing of international trade traffic.From the description above, the research objectives can be formulated as follows:

1. Knowing loading and unloading equipment, worker/ longshormen, and ship services have a significant partial effect on the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya.

2. Knowing loading and unloading equipment, worker/ longshormen, and ship services have a significant simultaneous effect on the performance of loading and unloading general cargo at the Jamrudterminal port of Tanjung Perak, Surabaya.

The expected benefits of this research are to find out the problems and factors related to the performance of general cargo cargo at the Jamrud terminal port of Tanjung Perak, Surabaya.

Loading and Unloading Equipment

Services for goods (cargo) at the port include the activity of moving goods (cargo) from the sea transportation mode to land transportation vehicles or vice versa from land transportation vehicles to sea transportation modes of ships. The transfer of cargo between modes of transportation is intended through a series of activities that are divided into several stages of operation, namely (D.A Lasse, 2017):
1. Operation of the ship.
2. Quay or quay transfer operations.
3. Warehouse and field operations.
4. Reception and submission operations.

The type of equipment used in these operations is determined by the type, size and shape of the load.

Unloading equipment needed in accordance with the current activity of ships and loading and unloading of goods can be categorized in 3 (three) types, namely:

1. Ship equipment to serve ships to be anchored or leaned and vice versa.
2. Unloading equipment to serve goods loading and unloading activities fromor to ships, in the field or buildup, and in or out of the port area.
3. Supporting installations for ships, goods, and passengers such as waste, water treatment.

In planning the maintenance and maintenance of loading and unloading equipment accompanied by an increase in good maintenance functions, the planner must know various maintenance and maintenance activities that will and must be carried out or needed to support the operational equipment, namely:

1. The availability of maintenance and maintenance workshop.
2. Beginning, end, and length of time of work.
3. Limited parts and technicians.
4. Completeness and tool kits and others.
5. Fuel storage and spare parts warehouse.
6. The skills and expertise of technicians or mechanics.
7. Maintenance of machines that can be done in the workshop.

Workers or Longshoremen

According to Law No. 13 of 2003 concerning Manpower is explained that a worker or laborer is any person who works for a wage or other forms of remuneration. Workers 'or workers' gang work productivity (output) is the number of hours tons of goods unloaded or loaded in one work hour by each gang (labor team) according to the type of cargo: general goods or general cargo (break bulk, bag cargo, unitized), liquid bulk, dry bulk,

containers. The work system of workers or laborers at the Jamrud terminal of Tanjung Perak port, Surabaya is a shift work system with the time for loading and unloading activities to be divided into 3 (three) shifts in 24 hours.

During the general cargo loading and unloading activities at the Jamrud terminal port of Tanjung Perak, Surabaya the researchers observed (observation) that sum of workers or longshormen was not the same as the demand of workers or longshormen to handle the general cargo loading and unloading activities. From observations that researchers observed the number of workers or longshormen that are not the same as the demand does not interfere with the general cargo loading and unloading activities at the Jamrud terminal of the port of Tanjung Perak, Surabaya, still running smoothly. The sum of workers does not occur continuously in 1 (one) shift to handle loading and unloading activities, because it is also adjusted to the conditions in the field.

Ship Service

Ship service operations include planning and implementing berths which are directed so that the use of berths can be adjusted to the type and type of vessel. The type of cargo to be unloaded or loaded, the use of loading and unloading equipment optimally and the selection of warehouses, and the field of stacking goods according to the needs and the smooth distribution of goods in order to produce ship-dispatch (GurningSaut, 2007). Port operational services start from the sea side (marine sevice) then continue to the land side (handling service / terminal operator) and are equipped with other supporting services (HidayatEdy, 2009). To find out how well a port can provide quality port services to its service users or customers (both ships and goods) by knowing the size of port performance indicators.

Conditions for ship operational service indicators:

1. Operational service performance
2. Operational service performance indicators
3. Operational service performance standards
4. Approach Time
5. Effective time
6. Idle time
7. The planned pause or stop time (not operation time).
8. Berth time
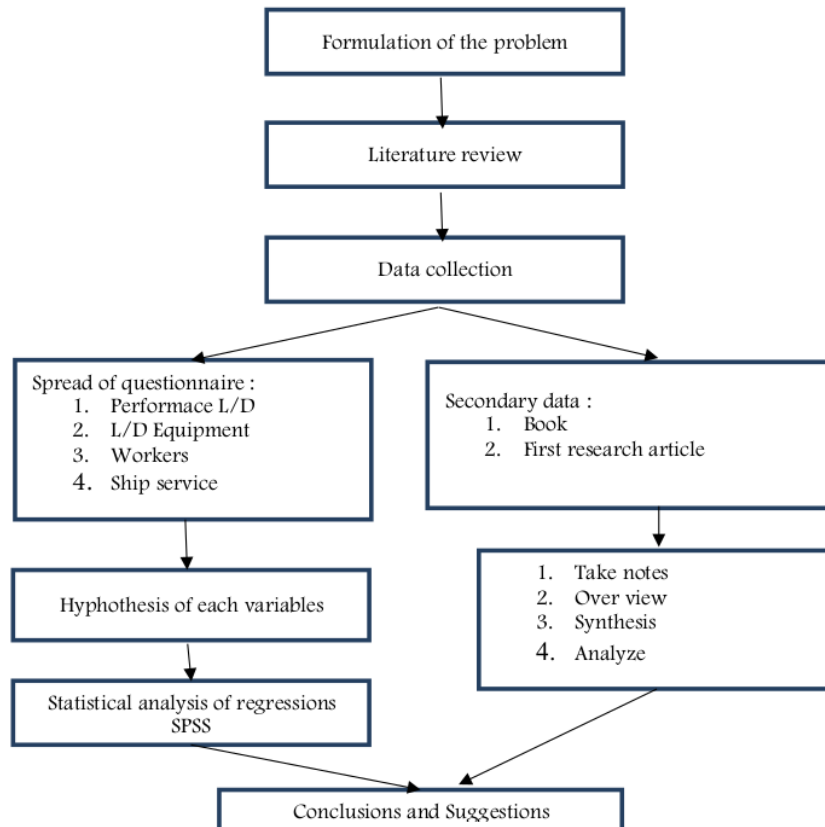9. The level of use of the pier or BOR (berth occupancy ratio).

Performance of Load and Unloading

An illustration of the ability and speed of carrying out the handling of goods that can be achieved for the activity of unloading goods from the ship to the warehouse or stacking field or vice versa for loading activities from the warehouse / stacking field to the ship (GurningSaut, 2007). The level of ability is indicated by several indicators i. e :
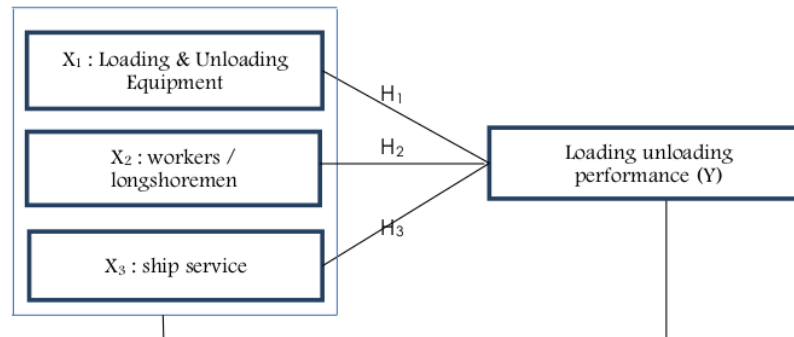
1. The average number of loading and unloading reached hourly and carrieout by 1 gang of workers (± 12 people) on a ship as measured in units of tons / aisle / hour
2. The average amount of loading and unloading of goods reached by the hourly and carried out by all the aisles on the ship while the ship is at the dock (BWT) as measured in units of tons / ships / hour
3. Berth Throughput (BTP) or berth then the pier is the number of goods in a certain time unit that passes each meter length of the pier or berth available (tons / meters / year).
4. Shed Throughput (STP), namely the amount of tonnage of goods that on average can be accommodated for each square meter of warehouse area for a certain period of time (tons / m2 / year).

Research Flow :


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┌────────────────────────────┐
│  Formulation of the problem │
└────────────────────────────┘
              │
              ▼
┌────────────────────────────┐
│      Literature review      │
└────────────────────────────┘
              │
              ▼
┌────────────────────────────┐
│       Data collection       │
└────────────────────────────┘
       ┌──────┴──────┐
       ▼             ▼
┌──────────────────┐  ┌──────────────────┐
│ Spread of        │  │ Secondary data : │
│ questionnaire :  │  │  1. Book         │
│  1. Performace   │  │  2. First        │
│     L/D          │  │     research     │
│  2. L/D          │  │     article      │
│     Equipment    │  └──────────────────┘
│  3. Workers      │             │
│  4. Ship service │             ▼
└──────────────────┘  ┌──────────────────┐
       │               │  1. Take notes   │
       ▼               │  2. Over view    │
┌──────────────────┐   │  3. Synthesis    │
│ Hyphothesis of   │   │  4. Analyze      │
│ each variables   │   └──────────────────┘
└──────────────────┘             │
       │                         │
       ▼                         │
┌──────────────────┐             │
│ Statistical      │             │
│ analysis of      │             │
│ regressions SPSS │             │
└──────────────────┘             │
       └────────┬────────────────┘
                ▼
   ┌──────────────────────────┐
   │ Conclusions and          │
   │ Suggestions              │
   └──────────────────────────┘
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HYPOTHESIS

H_1 : there is a partial effect between loading and unloading equipment on performanceunloading and loading.

H_2 : there is a partial effect between the workers/ longshormen on performance load and unloading

H_3 : there is a partial effect between the ship's service on performance unloading and loading

H_4 : there are simultaneous influences between loading and unloadingequipment, workers (longshormen),ship service on loading and unloading performance

Data Collection Methodology
1. Literature Study.
2. Observation.
3. questionnaire

In taking data for research conducted at the Jamrud terminal of Tanjung Perak port, Surabaya as a reference to determine the samples in the study drawn based on loading and unloading equipment to handle the general cargo loading and unloading activities, workers or longshoremen, and ship service and the performance of loading and unloading of existing general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya.

There are two data used in the study, namely primary data and secondary data. Primary data is data obtained from field surveys, in this case how the condition of existing facilities at the Tanjung Perak Port Jamrud terminal, Surabaya, workers or laborers, loading and unloading equipment, load intensity at the time of berth, and ship services while at the port.

Secondary data is data obtained from books, the internet, theses, dissertations, and previous research articles related to the research conducted so that the author can utilize all the information and thoughts relevant to his research. In addition to primary data obtained through direct observation to find out specific problems occurring in the field and secondary data, researchers also made a questionnaire to take samples (sampling) of the data used in quantitative calculations SPSS (Statistical Product and Service Solutions).

Variable Operations

Is a variable that is revealed in the operational, practical, and real concept definitions within the scope of the research object or object being studied. An operational definition is a definition given to a variable or construct by means of giving meaning, or specifying an activity, or providing an operation needed to measure the construct or variable (Nazir, 1999). The variables used in the research object as questionnaire data instrument items are:
1. Dependent Variable or Dependent Variable / Y

In this study the dependent variable or the dependent variable (Y) is the performance of loading and unloading general cargo at the Jamrud terminal of Tanjung Perak port, Surabaya.

2. Independent variable or independent variable (Independent Variable / X)

3. In this study the independent variable or independent variable (X), namely:
X_1 : Loading and unloading equipment.
X_2 : Workers or workers.
X_3 : Ship service.

The steps of data analysis are:
1. Preparation:
2. Tabulation:
3. Application of data in accordance with the research approach.

Data collection is required as follows:
1. The initial stages for data and information collection are port facilities, loading and unloading performance, loading and unloading equipment, workers or longshormen, General Cargo loading and unloading ship services at theJamrud terminal port of Tanjung Perak, Surabaya.

2. The data analysis and evaluation stage is carried out descriptively and quantitative regression analysis in determining loading and unloading equipment, workers or longshormen, and ship services on the performance of loading and unloading of General Cargo at the Jamrud Terminal.

3. The analytical tool used is regression analysis with the classic assumption test of multiple linear regression using SPSS software version 22 (Statistical Product and Service Solutions).

Results and Discussion

The statements presented in the questionnaire for each variable of loading and unloading equipment (X_1), workers or longshormen (X_2), ship service (X_3), and loading and unloading performance (Y) with linkert scale namely statements (qualitative data) are presented in numeric or numeric form (quantitative data), with a weight of values 1 - 5 in the criteria of very less, less, enough, good, and very good.

Processing and testing of primary questionnaire data using calculation techniques with the assumption that the sample data obtained came from populations that were normally distributed.

Table 1. Statistical Description Result
Statistics

		Y = Performace L/D	X1 = L/D Equipment	X2 = Workers	X3 = Ship_Service
N	Valid	50	50	50	50
	Missing	0	0	0	0
Mean		86,14	83,26	83,24	84,52
Std. Error of Mean		1,455	1,837	1,562	1,521
Median		86,00	81,50	81,50	86,00
Mode		88	76	73[a]	90
Std. Deviation		10,290	12,986	11,045	10,752
Range		48	56	54	50
Minimum		60	57	56	56
Maximum		108	113	110	106
Sum		4307	4163	4162	4226

Source : Primary data is processes with SPSS 22 (2019)

Test Validity and Reliability of Questionnaire Data Quality

1. Test Validity and Reliability of Load Unloading Equipment Variables (X_1)

   The loading and unloading equipment variable (X_1) consists of 23 statement items. With the help of SPSS 22 software, it can be seen through the input of 50 respondents from the questionnaire data, the significance level (α) of 5%, the r-count results are obtained as follows: With 50 respondents $\alpha = 0.05$, df = n-2 = 48 obtained r-table = 0.2787. The validity and reliability test results are as follows:

   a. The validity of the results of the questionnaire (questionnaire) showed that of the 23 statements, all items of the statement were valid.

   b. Reliability r Alpha = 0.952 thus from r Alpha> 0.600 (0.952> 0.600) it can be concluded that the statement is reliable (consistent).

   From the results of the validity and reliability of the item statement of the loading and unloading equipment variable questionnaire (X_1) can be used as research instruments.

2. Test Variable Validity of Workers or Laborers (X_2)

   The worker or longshormen variable (X_2) consists of 23 statement items. With the help of SPSS 22 software :

   a. The validity of the results of the questionnaire (questionnaire) showed that of the 23 statements, all items of the statement were valid.

   b. Reliability r Alpha = 0.941 thus from r Alpha> 0.600 (0.941> 0.600) it can be concluded that the statement is reliable (consistent).

From the results of the validity and reliability test the item statement questionnaire variable workers or laborers (X_2) can be used as research instruments.

3. Test Variable Validity Test of Vessel Services (X_3)

   The loading and unloading service variable (X_3) consists of 23 statement items. With the help of SPSS 22 software :

   a. The validity of the results of the questionnaire (questionnaire) showed that of the 23 statements, all items of the statement were valid.

   b. Reliability r Alpha = 0.927 thus from r Alpha> 0.600 (0.927> 0.600) it can be concluded that the statement is reliable (consistent).

   From the results of the validity and reliability test, the item statement of the ship service variable questionnaire (X3) can be used as an research instrument.

4. Test Variable Validity of Load Unloading Performance (Y)

   The loading and unloading performance variable (Y) consists of 23 statement items. With the help of SPSS 22 software :

   a. The validity of the results of the questionnaire (questionnaire) showed that of the 23 statements, all items of the statement were valid.

   b. Reliability r Alpha = 0.934 thus from r Alpha> 0.600 (0.934> 0.600) it can be concluded that the statement is reliable (consistent).

   From the results of the validity and reliability of the item statement of the loading and unloading equipment variable questionnaire (X1) can be used as research instruments.

Table 2. Validity and Reliability Result

No.	Aspect	Alpha Cronbach Reliability	Information
1.	Loading Unloading Equipment	0,952	Good
2.	Workers (Longshoremen)	0,941	Good
3.	Ship Service	0,927	Good
4.	Performance of Loading Unloading	0,934	Good

Classic assumption test
1. Linearity Test

Linearity test aims to determine whether two variables have a significant linear relationship or not. Good correlation should have a linear relationship between the independent variable or predictor (X) with the dependent variable or criterion (Y). Linearity Test Results :

Table 3. Linearity Test Result

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Performance_ BM* Equipment_ BM	Between Groups	(Combined)	4427,637	30	147,588	3,688	,002
		Linearity	2585,374	1	2585,374	64,602	,000
		Deviation From Linearity	1842,263	29	63,526	1,587	,148
	Within Groups		760,383	19	40,020		
	Total		5188,020	49			

Source: Primary data processed with SPSS 22 (2019)

Based on the significance value (Sig.): From the output above the Linearity Sig value is obtained.0,000 <0.05. It can be concluded that there is a significant linear relationship between the loading and unloading equipment variables (X_1) and the loading and unloading performance variables (Y).

Table 4. Linearity Test Result

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Performance_ BM* Workers	Between Groups	(Combined)	4497,520	30	149,917	4,125	,001
		Linearity	2113,592	1	2113,592	58,158	,000
	from	Deviation Linearity	2383,928	29	82,204	2,262	,034
	Within Groups		690,500	19	36,342		
	Total		5188,020	49			

Source: Primary data processed with SPSS 22 (2019)

Based on the significance value (Sig.): From the output above the Linearity Sig value is obtained.0,000 <0.05. It can be concluded that there is a significant linear relationship between the worker or laborer variable (X_2) and the loading and unloading performance variable (Y).

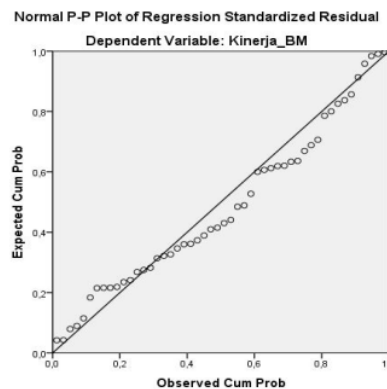**Table 5. Linearity Test Result**

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Performance_ BM* Ship Service	Between Groups	(Combined)	3995,487	28	121,267	1,421	,205
		Linearity	804,221	1	804,221	9,422	,006
	from	Deviation	2591,266	27	92,973	1,124	,396
		Linearity					
	Within Groups		1792,533	21	85,359		
	Total		5188,020	49			

Source: Primary data processed with SPSS 22 (2019)

Based on the significance value (Sig.): From the output above the Linearity Sig value is obtained.0,000 <0.05. Then it can be concluded that there is a significant linear relationship between the ship service variable (X_3) with the loading and unloading performance variable (Y).

2. Normality Test

From the PP plot plot above it can be seen that the data (points) are plotted spread around the diagonal line and spread in the same direction or follow the diagonal direction, meaning the regression model meets the normality assumption and is feasible to use to predict the dependent variable: loading and unloading performance (Y) based on variable input free: loading and unloading equipment (X_1), workers or longshormen (X_2), and ship service (X_3).

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Kinerja_BM

Source: Primary data processed with SPSS 22 (2019)

3. Multicollinearity Test

The results of multicollinearity test with tolerance values of each independent variable are tolerance values for loading and unloading equipment variables (X_1) 0.797> 0.1 and VIF value 1.255 <10, for workers or laborers variables (X_2) tolerance values 0.721> 0.1 and VIF value 1.386 <10, for the ship service variable (X_3) tolerance value 0.887> 0.1 and VIF value 1.128 <10 so that it can be concluded that in the regression test for this research data there are no

symptoms of multicollinearity between independent variables.
Multicollinearity Test.

Table 6. Multicollinearity Test Result

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	9,020	8,853		1,019	,314		
Peralatan_BM	,417	,076	,527	5,505	,000	,797	1,255
Pekerja	,309	,094	,331	3,294	,002	,721	1,386
Pelayanan_Kapal	,197	,087	,206	2,273	,028	,887	1,128

Source: Primary data processed with SPSS 22 (2019)

4. Heteroscedasticity Test
   Heteroscedasticity test results with scatterplot test does not form a specific pattern and the points spread above and below the zero (0) which means there are no symptoms of heteroscedasticity
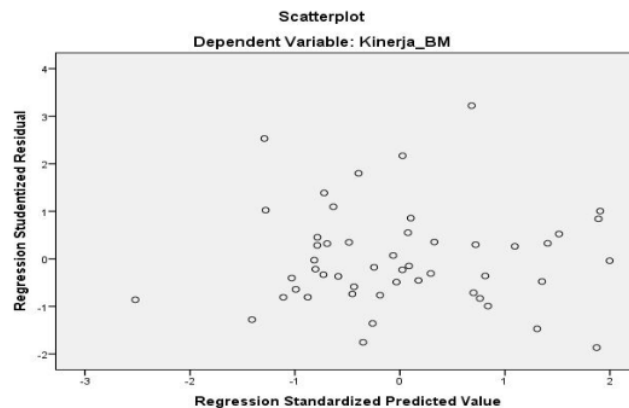
Source: Primary data processed with SPSS 22 (2019)

5. Autocorrelation Test
Durbin Watson's Autocorrelation Test Results

Model Summary:

Table 7. Autocorellation Test Result
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,815^a	,664	,643	6,151	,664	30,367	3	46	,000	1,750

Source: Primary data processed with SPSS 22 (2019)

The interpretation of the output of the autocorrelation test results with the Watson durbin test was 1,750. DL values 1.4206 and dU 1.6739 from the Durbin Watson table (n = 50, independent variable = 3, and level Sig = 5%). Value 4 - dw = 2.25, it can be concluded that there are no symptoms of autocorrelation in the regression of research data.

Test t (Partial)

T test was conducted to test the significance of partially (individually) of the influence of the independent variable loading and unloading equipment (X$_1$), workers or laborers (X$_2$), and ship service (X$_3$) on the dependent variable loading and

unloading performance (Y). The hypothesis in the t test is:

H$_0$: Variable loading and unloading equipment (X$_1$), workers or longshormen (X$_2$), and ship services(X$_3$) partially has no effect on the loading and unloading performance variable (Y).

H$_1$: Variable loading and unloading equipment (X$_1$), workers or longshormen (X$_2$), and ship servie (X$_3$) partially influences the loading and unloading performance variable (Y).

Basic decision making:
If t arithmetic <t table then H0 is accepted. If t arithmetic> T table H0 is rejected (H1 accepted).

Table 8. Test t Result
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9,020	8,853		1,019	,314
	Peralatan_BM	,417	,076	,527	5,505	,000
	Pekerja	,309	,094	,331	3,294	,002
	Pelayanan_Kapal	,197	,087	,206	2,273	,028

Source: Primary data processed with SPSS 22 (2019)

From the table above, the t test results for each independent variable the t value is:

1. T value for the loading and unloading equipment variable (X$_1$) 5.505>2.0129 then H$_0$ is rejected or H$_1$ is accepted which means that

the variable loading and unloading equipment (X$_1$) partially has asignificant effect on the loading and unloading performance variable (Y)

2. T value for the worker or laborer variable (X_2) 3.29> 2.0129 then H_0 is rejected or H_1 is accepted, which means that the worker or longshormen variable (X_2) partially has a significant influence on the loading and unloading performance variable (Y).

3. T value for the ship service variable (X_3) 2.273> 2.0129 then H_0 is rejected or H_1 is accepted which means that the ship service variable(X_3) partially has a significant influence on the loading and unloading performance variable (Y).

From the results of the analysis and t test above, it can be predicted the value of the dependent variable loading and unloading performance using the regression equation:

Y = 9,020 + 0,417X1 + 0,309X2 + 0,197X3 + e

From the results of the t test above, it is found that the coefficient value β is positive all that states that each increase of one value of loading and unloading equipment (X_1) will increase or increase the value of loading and unloading performance (Y) by 0.417 times. Every increase of one value of workers or longshormen (X_2) will increase or increase the value of loading and unloading performance by 0, 309 times, and each

increase of one value of ship service (X_3) will increase or increase the value of loading and unloading performance by 0.197 times plus the results of the value of e (error) outside the three independent variables.

F Test (Simultaneous)

The test is used to see how the influence of all independent variables, namely loading and unloading equipment (X_1), workers or longshormen (X_2), and ship service (X_3) simultaneously (simultaneously) has a significant effect on the dependent variable (dependent variable) loading and unloading performance (Y). The hypotheses for the F test are:

H_0: Variable loading and unloading equipment (X_1), workers or longshormen (X_2), and ship service(X_3) simultaneously has no effect on the loading and unloading performance variable (Y).

H_1: Variable loading and unloading equipment (X_1), workers or longshormen(X_2), and ship service(X_3) simultaneously influences the loading and unloading performance variable (Y).

Basic decision making:

If F arithmetic <F table then H0 is accepted.

If F arithmetic> F table H0 is rejected (H1 accepted).

Table 9. Test F Result

ANOVA Table

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	3447,351	3	1149,117	30,367	,000^b
Residual	1740,669	46	37,841		
Total	5188,020	49			

Source: Primary data processed with SPSS 22 (2019)

From the Anova table F test results above it was found that the loading and unloading equipment (X_1), workers or longshormen (X_2), and ship services (X_3) together (simultaneously) had a significant effect on

the performance of loading and unloading (Y). This is evidenced by the results of the F test above, that is, the significant F value of 30.376 is greater than the F table of 2.81 and the significance level (Sig. Value) of

the table above is 0.000 less than the significance value α (alpha) 0.05 (5%).

Correlation Coefficient (R) and Multiple Determination (Adjusted R Square)

Table 10. Calculation Results for R Coefficient Test and Adjusted R Square

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,815ᵃ	,664	,643	6,151

Source: Primary data processed with SPSS 22 (2019)

From the multiple linear analysis table above, it can be seen simultaneously from the three independent variables of loading and unloading equipment (X_1), workers or laborers (X_2), and ship service (X_3) that have a very strong positive correlation (correlation) of 81.5% on the dependent variable loading and unloading performance (Y). From the calculation of the multiple determination coefficient (R^2) the SPSS test results above the Adjusted R2 value of 0.643 or 64.3% which can be interpreted that the loading and unloading performance (Y) can be explained significantly simultaneously by the three independent variables namely loading and unloading equipment (X_1), workers or longshormen (X_2), and ship services (X_3) 64.3% and the remaining 35.7% are explained by other variable factors not included in this study for example cargo intencities, waiting time, ect.

Conclusıon

From the results of the analysis and discussion of the previous chapter regarding loading and unloading equipment, workers or longshormen, and ship services on the performance of loading and unloading general cargo at the Jamrud terminal of Tanjung Perak port, Surabaya, the conclusions that can be obtained in this study are as follows:

1. There is a partial influence of loading and unloading equipment on the performance of loading and unloading at the Jamrudterminal port of Tanjung Perak, Surabaya which is positive and significant. This is evidenced by the results of t count of 5.505 greater than t

table of 2.0129. Shows that loading and unloading equipment plays an important role in the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya.

2. There is a partial influence of workers or longshormen on the performance of loading and unloading at the Jamrud terminal port of Tanjung Perak, Surabayawhich is positive and significant. This is evidenced by the results of t count of 3.294 greater than t table of 2.0129. The influence of the skills and work methods of workers or longshormen on the performance of loading and unloading of general cargo at the Jamrud terminal of Tanjung Perak port, Surabaya shows the importance of workers in the performance of loading and unloading.

3. There is a partial influence of ship service on the loading and unloading performance on the Jamrud terminalport of Tanjung Perak, Surabaya which is positive and significant. This is evidenced by the results of t count of 2,273 greater than t table of 2,0129. Shows that ship service plays an important role in the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya.

4. There is a simultaneous (concurrent) effect of loading and unloading equipment, workers or longshormen, and ship service on the performance of loading and unloading at the Jamrud terminal port of Tanjung Perak, Surabaya. This is evidenced by the significant F value of 30.376 greater

than the F value of the table 2.81 and a significance level of 0.000 less than the 0.05 alpha. The influence of loading and unloading equipment, workers or longshormen, and ship services on the performance of loading and unloading shows that these three factors have an important role in the performance of loading and unloading. From the partial test t test variable loading and unloading equipment has a more significant / important influence on the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya.

Suggestions

1. To improve the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya, it is advised to the manager and related parties of PT. Pelindo III which handles activities in the Jamrud terminal to continue to be continuously in the maintenance and maintenance of loading and unloading equipment and pay special attention to the availability of spare parts for loading and unloading equipment, readiness, and technological development as well as regenerating (renewing) loading and unloading equipment that has already been exists for the efficient and effective loading and unloading of activities supported by all human resources in the application of loading and unloading equipment.

2. To improve the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya it is recommended to further improve the quality of human resources (HR) of workers or longshoremen through training or training in accordance with technological developments and times and to increase awareness and concern of workers/ longshoremen at work to improve loading and unloading performance to anticipate and reduce incidents or accidents in the field in accordance

with the loading and unloading work procedures. Improved coordination of loading and unloading workers/ longshoremen cooperatives and other related parties loading and unloading association. Loading & unloading associations as mediators and responsible workers/ longshoremen.

3. To improve the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya it is recommended to utilize technology facilities that have been used in serving loading and unloading activities for customer satisfaction, coordination with port administration to maintain and continue to improve efficiency and be more responsive in ship service from ships arrived in the anchored area until the ship finished an activity to leave the port in the use of facilities and equipment at the port to improve the performance of loading and unloading general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya.

4. To improve the performance of loading and unloading of general cargo at the Jamrud terminal port of Tanjung Perak, Surabaya, it is recommended to pay more overall attention to the factors of loading and unloading equipment, workers/ longshoremen, and ship services with integrated work program synergy while maintaining the consistency of all work programs according to standards operational procedures to continually evaluate deficiencies and improve the performance of loading and unloading general cargo at the Jamrud terminal of Tanjung Perak port, Surabaya in line with the times in the era of the industrial revolution 4.0 which is all digitizing.

5. For other researchers it is recommended for further research to explore the performance of loading and unloading can look for independent variables other than loading and unloading equipment, workers/ longshoremen, and ship services such

as: customer satisfaction, utilization of the loading and unloading planning application, working hours of loading and unloading equipment, and power hold or age loading and unloading equipment.

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