

# Effectiveness of HMC Equipment, Workload and Work Stress on Work Productivity of Jamrud Terminal Surabaya Employees

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## Abstract

Jamrud Surabaya Terminal must to continue monitor its work productivity factors. One of the factors that support work productivity in loading and unloading activities is loading and unloading equipment, workload, and employee work stress. The purpose of this study was to determine the relationship between the readiness of HMC equipment, workload and work stress on the work productivity of Surabaya Jamrud Terminal employees. The data used in this study is primary data obtained by distributing questionnaires to the employees of Terminal Jamrud Surabaya, totaling 48 employees. The data analysis technique used multiple linear regression analysis technique. The results showed that the readiness of the HMC tool had a significant relationship with work productivity with the t count of 6.877, which was greater than the t table of 2.01537 with a significance level of less than 0.05. Workload also has a significant relationship to work productivity with a calculated value of 16,381 greater than t table of 2,01537, with a significance level of less than 0.05 and work stress of 2,503 greater than t table of 2,01537, with the significance level is less than 0.05 so it can be concluded that work stress has a significant relationship to work productivity.

## Keywords

HMS equipment readiness, workload, work stress, work productivity.

## 1. Introduction

Jamrud Surabaya Terminal is one of the terminals that used for loading and unloading activities for both container and cargo ships, so that Jamrud Surabaya Terminal must continue to reduce work productivity factors. Productivity is a universal concept that aims to provide more goods and services that are used by many people by using fewer real resources (Sinungan, 2014: 17). One of the factors that support work productivity in loading and unloading is loading and unloading equipment. unloading equipment is a tool used for loading and unloading from ship to land and vice versa. The readiness of loading and unloading equipment greatly affects the loading and unloading process in terms of loading and unloading speed. The readiness of loading and unloading equipment can be seen from the readiness of mechanics, spare parts, and modes of transportation where these three things can affect the speed of loading and unloading. The reality in the Jamrud terminal field is that when loading and unloading ships often occur, which hampers the ship's exit cycle activity.

In addition to the readiness of the tools, the factor that affects work productivity is the workload. According to previous research results from Encep Saefullah (2017: 67) said that "workload has a significant effect on work productivity" According to Danang Sunyoto (2015: 64), "workload is one that causes too much of a person's self, causing stress". This can be caused by the level of expertise that may be too high, the work speed is too high, the work volume may be too much and so on. The third factor that affects the productivity of unloading activities is employee work stress. According to the results of research from Yohana T (2015: 76) shows that work stress affects work productivity. According to Handoko (2015: 200) stress is a condition that affects a person's emotions, thought processes and physical condition, while there is another understanding of work stress. can affect human physical health. Stress is our perception of a situation or condition in our own environment. Another understanding states that stress is a condition that affects emotions, thought processes,

and one's condition. If an employee experiences too much stress, it will interfere with that person's ability to deal with the environment and work, this opinion is quoted by Hariyono (2015: 193).

Jamrud Surabaya Terminal is the largest terminal in the Surabaya branch, therefore work productivity must be continuously monitored in its activities. Based on data on late employee delays at Jamrud Surabaya Terminal in July-December, it shows a high level of employee tardiness, especially those who work on shifts 2 and 3 at night. Therefore, research on the readiness of HMC equipment, workload and work stress on the work productivity of Surabaya Jamrud Terminal employees is important.

The formulation of the research problem is whether the readiness of the HMC tool, workload and work stress simultaneously and partially have a relationship with the work productivity of Surabaya Jamrud Terminal employees? The purpose of this study was to determine and analyze whether the readiness of HMC equipment, workload and work stress simultaneously (simultaneously), and partially had a relationship with the work productivity of Surabaya Jamrud Terminal employees.

## 2. Literature Review

### 2.1 Readiness of Equipment

According to Jamies Drever in Slameto (2010: 59) readiness is to respond or achieve, which means readiness is a willingness to respond or act, while according to Thorndike in Slameto (2010:114) readiness is a prerequisite for further learning. stage. According to Slameto (2010:113) readiness is the overall condition of a person who makes him ready to respond or answer in a certain way to a situation. Adjustment of conditions at one time will cause an effect or a tendency to respond, while according to Oemar Hamalik (2008:94) readiness is the level or condition that must be achieved in the process of individual development at the mental, physical, social level. and emotional growth.

Loading and unloading equipment is defined as a tool that can be used for loading and unloading goods from ships to land and vice versa. Loading and unloading equipment is divided into 2 groups, namely:

1. Loading and unloading equipment on general cargo ships

In the process of loading and unloading, the ship is equipped with several tools that work to assist in the work. These tools serve to facilitate loading and unloading activities, and also to complement the goods being transported. Some of the tools in question are as follows:

1. Ship Crane (Ship Equipment)

This tool is usually located in the section between the ship's hold, serves to lift cargo from the hold, then transferred to the dock. The arm of the crane fits into the size of the hold, so it can be moved from inside the ship to the dock. By using a system on ship cranes for loading and unloading of general cargo goods.

2. Ramp door

This tool is on a RORO (Roll On Roll Out) type ship, to transport various types of vehicles. The function of the Ramp Door is as a connecting bridge between the pier and the ship. Ramp Door is located on the bow or stern of the ship.

3. Crane Hook

The hook is located on the Boom Crane which ends by Wire Sling, and the pole on the load or.

4. Deployment Guide

Used to unload containers and general cargo and Clamp to unload and unload Pipes. But in essence, the use of spreaders must be adjusted to the SWL (Safe Working Load) on each ship and Mobile Crane.

5. Sling Mesh

Its function is to load goods in the form of bag cargo, box cargo, and so on. The nets are laid out then the cargo is placed on top of the nets, then the nets load on the Hook Crane.

6. Mobile Crane

Mobile Crane is an unloading tool that can move from one place to another. This tool can be used to carry out loading/unloading activities in the form of containers and cargo bags. The capacity of mobile cranes varies, some even reach 65 tons.

7. Harbour Mobile Crane

Loading and unloading equipment at the port that can move from place to place, has a lifting capacity of SWL 90 tons. Using wheels as a means of moving. This tool can be used for loading/unloading containers, bag cargo, or dry bulk (with the addition of certain tools).

8. Fixed Crane

This tool is used to move goods from one place to another both vertically and horizontally.

1. Equipment for loading and unloading containers:

There are several types of container loading/unloading equipment which include:

2. Gantry Crane (Container Crane)

The following is a special loading and unloading tool for container grips. By using a gantry crane, loading and unloading productivity is approximately 20 to 25 boxes per hour.

3. RTG (Gantry Rubber Tires)

The purpose of this tool is to move containers from Chassis Truck to Container Yard (CY).

3. Straddle Carrier

This tool is used to move containers from the dock to the Container Yard or from the Truck Chassis

## 2.2 Workload

According to Danang Sunyoto (2015: 64), too much workload can cause stress in a person. This can be caused by the level of expertise that may be too high, the work speed is too high, the work volume may be too much and so on. Marwansyah (2014: 65) says that the workload is to determine how many workers are needed to complete a job and how many workers are needed to complete a job and how much the right burden is delegated to one worker. Munandar (2014: 383), workload is a condition of work that must be completed to a certain extent. Workload can be further divided into quantitative overload or too little workload, which arises as a result of too many or too few tasks being assigned to the workforce to be completed within a certain time, and excessive or less qualitative workload, i.e. if people feel unable to perform a task, or the task does not use the skills and or potential of the workforce. In addition, excessive and qualitative workloads can lead to the need to work a large number of hours, which is an additional source of stress.

Workload Influenced by 2 factors, namely external factors and internal factors. According to Manuaba (2014: 2), the factors that affect the workload include:

1. External factors, namely loads that come from outside the worker's body, such as;

- a. Tasks of a physical nature, such as work stations, layout, workplace, work tools and facilities, working conditions, work attitudes, and psychological tasks, such as job adjustments, level of difficulty, job responsibilities.
- b. Work organization, such as working hours, rest periods, work shifts, night work, wage systems, structural models, delegation of tasks and authority.
- c. Work environment is a physical work environment, chemical environment, biological work environment and psychological work environment.

2. Internal factors are factors that come from within the body itself due to reactions to external workloads. Internal factors include somatic factors (genetic factors, age, body size, status, and health conditions) and psychological factors (motivation, perception, belief, desire and satisfaction).

In this study, the workload indicators used adopted the workload indicators proposed by Putra (2014: 22), which include:

- a. Targets to be Achieved Individual views on the amount of work targets given to complete the work, for example to design, print, and finish. A view of the work that must be completed within a certain period of time.
- b. Work Conditions Include views held by individuals regarding working conditions, for example making decisions quickly when working on goods and damage to production, as well as dealing with unexpected events such as doing extra work outside the allotted time.
- c. Standards of Work The impression that individuals have about work, for example feelings that arise about the workload that must be completed within a certain period of time.

Stress is a feeling of pressure experienced by employees in dealing with work, as stated by Mangkunegara (2016:157), while Vaithzal R (2014: 308) explains that stress is a work imbalance that causes important consequences for him. Setiyana (2013: 384) work stress is a construct that is very difficult to define, stress in work that happens to someone, where someone runs from problems, since some workers bring work levels to stress tendencies, while Sedarmayanti (2014: 76) states that stress as excess of needs over the individual's ability to meet needs. Problems that exist in the environment at or that have to do with other people, can cause an excessive burden.

Handoko (2015: 200) says that stress is a condition that affects one's emotions, thought processes and physical condition, while there is another about work stress. Stress is the ability to overcome challenges faced by mental, physical, emotional, and spiritual humans. one day can affect the physical health of the human being. Stress is our perception of a situation or condition in our own environment. Another understanding states that stress is a condition that affects emotions, thought processes, and one's condition. If an employee experiences too much

stress, it will interfere with a person's ability to deal with the environment and work, this opinion is quoted by Hariyono (2015: 193). Sunyoto (2015: 61), states that stress has different meanings for each individual. Different people have different abilities to cope with the amount, intensity, type and need of stress. People express more easily than stress. Stress is something that concerns the interaction between the individual and the environment, namely the interaction between stimulation and response, thus job stress is a consequence of actions and environmental situations that cause excessive physical and stress on a person.

Tarwaka (2015: 77) explains that different things into 6 groups of factors that cause stress are divided, among others:

1. Job intrinsic factors

There are several intrinsic factors in work which are very potential causes of stress and can lead to bad mental conditions. These factors include an uncomfortable physical working environment (noisy, dusty, smelly, hot and humid temperatures, etc.), non-ergonomic work stations, work shifts, long working hours, high-risk and dangerous work, excessive loading, adaptation to new types of work and others.

2. Individual role factor in work organization

Mental workloads and responsibilities of a job are more stressful than physical workloads. A study on work-related stress found that employees who have a higher psychological burden and are added to the authority to make decisions are at risk for coronary heart disease and higher blood pressure and have a tendency to smoke more than other employees.

3. Employment relationship factor

Good relations between employees in the workplace is a factor that has the potential to cause stress. Suspicion between, lack of communication, hard workers in doing work are signs of work stress. Task demands that require a worker to work in workplaces, so that they cannot communicate with other jobs are also a trigger for stress.

4. Career development factor

Career development factors that can trigger stress are job uncertainties such as company reorganization and job transfers, excessive or insufficient promotions, which are too fast or not in accordance with individual abilities.

5. Factors of organizational structure and work atmosphere

The causes of stress related to organizational structure and work atmosphere usually originate from the organizational culture and the management model used. Some of the factors that cause it include: lack of participatory approach, ineffective consultation, lack of communication and office. In addition, frequent selection and placement of employees in inappropriate positions can also cause stress.

6. Factors outside of work

A person's personality factor (extrovert or introvert) is very influential on the stressor received. Conflicts that are accepted by two people can result in different reactions to each other. Disputes between family members, neighbors and communities are also factors that cause stress, which is likely to be carried over in the work environment.

Robbins (2015:98) explains that the onset of stress is influenced by several factors, namely:

1. Organizational factors

Organizational factors also affect employee work stress where all activities within the company relate to employees. Like work demands or workloads that are too heavy, work that requires responsibility is very likely to result in high stress.

2. Environmental factor

The existence of a social environment that affects work stress on employees. Where social support plays a role in encouraging someone to work, if there are no supportive social environmental factors, the stress level of employees will be high.

3. Individual factor

The existence of individual factors also plays a role in influencing employee stress. In individual factors, a person is more influential on work stress on employees. Where someone determines that someone is easily stressed or not.

Siagian (2014: 301) classifies sources of stress based on their origin, first comes from work and second comes from outside work. Here are various things that can be a source of stress that comes from work:

- a) The workload is too heavy
- b) Time pressure
- c) Poor supervision
- d) Unsafe work climate
- e) Lack of information from feedback about work performance

- f) Imbalance between authority and responsibility
- g) Unclear roles and employees in the overall activities of the organization
- h) Frustration caused by the intervention of others inside and outside the work group
- i) The difference in values held by employees and those held by the organization
- j) Changes that occur in general do create a sense of uncertainty

While sources of stress that come from outside the work, are:

- a) Financial Problem.
- b) Negative behavior of children
- c) Family life that is not or less harmonious.
- d) Change residence.
- e) Number of family member that died.
- f) Accident.
- g) Have a serious illness

Work stress to a certain point is a triggering factor for increasing job satisfaction and employee performance, but if it passes the stress threshold, the presence of stress will trigger problems which of course will affect job satisfaction and then performance. Therefore it is necessary to make efforts to cope with work stress so that it does not have a negative impact. According to Sondang P. Siagian (2014: 302) various steps that can be taken by the personnel department to deal with the stress it faces are as follows:

- a) Formulate management to help employees deal with various stresses
- b) Communicate to all employees so they know who they can turn to for help and in what form if they encounter stress.
- c) Train managers with the aim that they are sensitive to the emergence of symptoms of stress among their subordinates and can take certain steps before stress has a negative impact on the work performance of their subordinates.
- d) Train employees to recognize and eliminate sources of stress
- e) Continuously open lines of communication with employees so that they are really included to deal with the stress they face.
- f) Continuously monitor the organization's activities so that conditions that can be a source of stress can be identified and eliminated early.
- g) Improving the design of tasks and the layout of the workspace in such a way that various sources of stress that come from working conditions can be avoided.
- h) provide assistance services for the employees concerned.

Work stress can be measured from various dimensions, but in this study work stress will be measured from 3 dimensions Siagian (2014: 302), namely:

a) Workload

There is a mismatch between the expected roles, the amount of time, and the resources available to fulfill these requirements. Workload with the number of tasks that must be carried out, the availability of time, and the availability of resources. If the proportion of the three is not balanced, most likely the task cannot be completed properly. This imbalance can cause a person to experience stress.

b) Role conflict

Role conflict Refers to the difference in concepts between the employee concerned and his boss regarding the tasks that need to be done. In general, conflict can be defined as the occurrence of two or more pressures simultaneously so that the fulfillment of one thing to be achieved can be defined. others are difficult.

c) Role ambiguity

Role ambiguity is related to the lack of clarity about the tasks that must be carried out by an employee. This happens partly because the job description is not clearly given by the supervisor, so the employee does not know what role he or she is doing and the goals to be achieved from these actions must be carried out.

### 2.3 Employee Work Productivity

According to Sinungan (2014:17) argues that productivity is a universal concept that aims to provide more goods and services that are used by many people, using fewer real resources, while according to Hasibuan (2009: 125) Productivity mental attitude that always holds that today's life must be better than yesterday and tomorrow is better than this result. According to Rachman (2016: 57) Productivity is an interdisciplinary approach to determining effective goals, making plans, applying productive ways to use resources efficiently. and maintain high quality. productivity includes the integrated utilization of human resources and skills, capital goods, technology, management, information, energy, and other resources towards the development and

improvement of living standards, while according to Tohardi in Sutrisno (2011: 100) reveals that work productivity is a mental attitude who is always looking for improvements to what is already there, a belief that one can do a better job than yesterday, and tomorrow better than today.

According to Simanjuntak in Sutrisno (2011:103) there are several factors that affect work productivity, including:

a. Training

Job training is intended to equip employees with the right skills and ways to use work equipment. For this reason, job training is not only a complement but at the same time to provide the basics of knowledge.

b. Mental and physical abilities of employees

The mental and physical state of employees is very important to be a concern for the organization, because the physical and mental state of employees has a close relationship with employee productivity.

c. The relationship between superiors and subordinates

superiors and subordinates will affect the relationship between daily activities. What is the superior's view of subordinates, the extent to which subordinates are included in the goals.

Productivity is indeed important for employees in the company. To measure work productivity, an indicator is needed. According to Sutrisno (2010:104), it is explained that the indicators of work productivity are:

a. Ability

Have the ability to carry out tasks. A person's ability is very dependent on the skills possessed and professionalism in work.

b. Increase results achieved

Strive to improve the results achieved. Efforts to take advantage of work productivity for each involved in a job.

c. Spirit at work

It can be seen from the work ethic and the results achieved in one day later compared to the previous day.

d. Self-development

Self-development can be done by looking at the challenges and expectations with what is being faced.

e. Quality

Always trying to improve the quality better than before. Quality is the result of work that can show the quality of employee work.

f. Efficiency

Comparison between the results achieved with the overall resources used. Inputs and outputs are aspects of productivity that have a significant influence.

Based on the study of theory and problem phenomena in the field, the hypotheses in this study are:

H1: It is suspected that the readiness of the HMC equipment has a significant relationship to the work productivity of the Surabaya Jamrud Terminal employees.

H2: It is suspected that workload has a significant relationship to the work productivity of Surabaya Jamrud Terminal employees.

H3: It is suspected that work stress has a significant relationship with the productivity of Jamrud Terminal Surabaya employees.

H4: It is suspected that the readiness of HMC equipment, workload and work stress together have a significant relationship to the work productivity of Surabaya Jamrud Terminal employees.

### 3. Methods

The variables in this study include:

Variabel dalam penelitian ini meliputi:

1. Independent variable (independent variable)

The independent variable (X) is a variable whose value affects other variables, or variables that cause the emergence or change of the dependent variable/influence variable (Sugiyono, 2015: 52). In this study included in the independent variables are:

1. Readiness of HMC tool (X1)

According to Jamies Dreyer in Slameto (2010: 59) readiness is readiness to respond or achieve which means readiness is the willingness for members to respond or act, while according to Thorndike in Slameto (2010: 114) readiness is preparation to learn to the next stage.

2. Workload (X2)

According to Danang Sunyoto (2015: 64), too much workload can cause stress in a person. This can be caused by the level of expertise that may be too high, the work speed is too high, the work volume may be too much and so on. With indicators:

- a. Targets to be achieved
  - b. Working Conditions
  - c. Job Standard
3. Work Stress (X3)

Stress is a balanced feeling experienced by employees in dealing with work, this was conveyed by Mangkunegara (2016:157), while Vaithzal R (2014: 308) explained that stress is work insecurity and the ability to fulfill it, causing important consequences for him. With indicators:

- a. Workload
- b. Role conflict
- c. The Role of Ambiguity

## 2. Dependend variable (bound variable)

The dependent variable (Y) is the variable that is influenced or becomes the result of the independent variable (Sugiyono, 2015: 52). In this study, the variables included are work productivity. According to Sinungan (2014: 17) suggests that productivity is a universal concept that aims to provide more goods and services that are used by many people, using real sources that increase slightly, while According to Hasibuan (2009: 125) Productivity mental attitude that always holds that today's life must be better than yesterday and tomorrow is better than today's results. The indicators are as follows:

- a. Ability
- b. Photo results achieved
- c. Spirit at work
- d. Self-development
- e. Together
- f. Efficiency

The population in this study were employees at Jamrud Terminal Surabaya, totaling 93 employees, while the research sample was 48 employees of Acceptl Jamrud Surabaya. The method of collecting data is through a questionnaire, namely by giving written questions or questions to respondents. With this questionnaire, respondents were asked to fill in the answers to each of the available questions with a measurement scale of 1 to 5. The measurement scale used a Likert scale with the following options: 1. Strongly Agree (SA) = 5. 2. Agree (A) = 4. 3. Disagree (D) = 3. 4. Medium Disagree (MD) = 2. 5. Strongly Disagree (SD) = 1.

Data analysis includes:

### 1. Test validity and reliability

Validity and reliability tests were used for item questionnaire analysis. A questionnaire is declared valid if the questionnaire questions are able to reveal employee performance. The significance test was carried out by comparing the calculated r value with the r table. If r count is greater than rtable, then the question is declared valid, otherwise if r count is less than rtable, the question is declared invalid. A construct or variable is said to be reliable if Cronbach's alpha value is > 0.6.

### 2. Normality test, multicollinearity test, and heteroscedasticity

The normality test to see whether the data has a normal distribution or not can use the Columagorov non-parametric statistical test. This test is used to test whether the residuals are normally distributed or not. If the significance level is above 0.05, it can be said that the data is normally distributed. Multicollinearity test if the Tolerance value is more than 0.100 or the VIF value is less than 10, then this indicates the existence of multicollinearity while the heteroscedasticity test is seen if the probability of 36 significance is above the 5% confidence level, it can be said that the regression model does not contain heteroscedasticity.

### 3. Multiple linear regression analysis

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Description :

- Y = Produktivitas Kerja  
 $\alpha$  = Constant coefficient  
 $\beta_1$  = HMC tool readiness regression coefficient  
 $\beta_2$  = Workload regression coefficient  
 $\beta_3$  = Work stress regression coefficient  
 $X_1$  = HMC Tool Readiness  
 $X_2$  = Workload  
 $X_3$  = Work Stress

e = error estimation

4. Partial test (t test)

The test used to test the significance of the relationship between the variables X and Y individually or partially. The test criteria with a significance level of 5% is if  $t_{count} < t_{table}$  then  $H_0$  is accepted, which means that the independent variable individually does not affect the dependent variable and otherwise  $H_0$  is rejected.

5. Analysis of the coefficient of determination ( $R^2$ )

The coefficient of determination ( $R^2$ ) is used to determine the level of accuracy in regression analysis, which is indicated by the magnitude of the coefficient ( $R^2$ ) between 0 - 1. If the coefficient of determination is getting closer to one, then the independent variable has an effect on the inhibiting variable. In addition, the coefficient of determination is used to determine the variables used which are caused by independent variables.

**4. Data Collection**

**4.1 Data Validity Test**

The results of the validity and reliability tests are as follows:

1. HMC Tool Readiness Validity Test

Table 1. HMC Tool Readiness Validity Test (X1)

Statement Item	r-count	r-table	Description
X1.1	0,637	0,2845	Valid
X1.2	0,645	0,2845	Valid
X1.3	0,728	0,2845	Valid
X1.4	0,676	0,2845	Valid
X1.5	0,637	0,2845	Valid
X1.6	0,645	0,2845	Valid

The HMC tool readiness variable consists of 6 statement items. The correlation of each statement item has a calculated r value greater than r table so that based on the validity test it shows that all items of the HMC readiness statement are valid and can be used as research instruments.

2. Workload Validity Test

Table 2. Workload Validity Test (X2)

Statement Item	r-count	r-table	Description
X2.1	0,662	0,2845	Valid
X2.2	0,585	0,2845	Valid
X2.3	0,660	0,2845	Valid
X2.4	0,706	0,2845	Valid
X2.5	0,716	0,2845	Valid
X2.6	0,682	0,2845	Valid

The workload variable consists of 6 statement items. The correlation of each statement item has a calculated r value greater than r table, so based on the validity test shows that all statement items on the workload variable are valid and can be used as research instruments.

3. Work Stress Validity Test

Table 3. Work Stress Validity Test (X3)

Statement Item	r-count	r-table	Description
X3.1	0,768	0,2845	Valid
X3.2	0,792	0,2845	Valid
X3.3	0,537	0,2845	Valid
X3.4	0,583	0,2845	Valid
X3.5	0,768	0,2845	Valid
X3.6	0,792	0,2845	Valid

The work stress variable consists of 10 statement items. The correlation of each statement item that has a calculated r value greater than r table there are 6 valid statement items and can be used as research instruments.

#### 4. Work Productivity Validity Test

Table 4. Work Productivity Validity Test (Y)

Statement Item	r-count	r-table	Description
Y.1	0,540	0,2845	Valid
Y.2	0,527	0,2845	Valid
Y.3	0,554	0,2845	Valid
Y.4	0,701	0,2845	Valid
Y.5	0,719	0,2845	Valid
Y.6	0,735	0,2845	Valid
Y.7	0,680	0,2845	Valid
Y.8	0,681	0,2845	Valid
Y.9	0,733	0,2845	Valid
Y.10	0,650	0,2845	Valid
Y.11	0,641	0,2845	Valid
Y.12	0,484	0,2845	Valid

The work productivity variable consists of 12 statement items. The correlation of each statement item has a value greater than rtable, so that based on the validity test shows that all statement items on the productivity variable are declared valid and can be used as research instruments.

#### Data Reliability Test

The research reliability test is to see the level of reliability of the instrument as an internal measuring tool, so that the research results will truly meet scientific standards and are not biased. To test this reliability instrument using Cronbach's Alpha reliability coefficient, the complete results can be seen in the table below:

Table 5. Measuring Instrument Reliability Test

Variable	Cronbach's Alpha	Criteria	Description
HMC Tool Readiness (X <sub>1</sub> )	0,851	0,6	Reliable
Workload (X <sub>2</sub> )	0,751	0,6	Reliable
Work Stress (X <sub>3</sub> )	0,801	0,6	Reliable
Work Productivity (Y)	0,865	0,6	Reliable

In the table it is known that the Cronbach's Alpha value of the HMC tool readiness variable (X<sub>1</sub>), workload (X<sub>2</sub>), work stress (X<sub>3</sub>) and based on work productivity (Y) is greater than 0.6 so it can be said that the data is reliable, which means that the questionnaire can used in research.

#### Multiple Linear Regression Test

The calculation results in the analysis using the SPSS for Windows release 22.0 program as listed above, can be explained in more detail as follows:

Table 6..SPSS Results from Multiple Linear Regression Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.964	1.785		-.540	.592
	X1	.473	.069	.273	6.877	.000
	X2	1.363	.083	.716	16.381	.000
	X3	.195	.078	.111	2.503	.016

Based on the table above, the regression equation formed is as follows:

$$Y = -0,964 + 0,473 X_1 + 1,363 X_2 + 0,195 X_3 + e$$

Description:

$X_1$	: HMC tool readiness
$\beta_1$	: The coefficient of the regression direction of the HMC tool readiness variable
$X_2$	: Workload
$\beta_2$	: Regression coefficient of variable Workload
$X_3$	: Work Stress
$\beta_3$	: Regression coefficient of variable Work stress
$Y$	: Work Productivity
$e$	: Residual Error of each variable

From the above equation can be explained as follows:

1. When the value of the variable consisting of HMC equipment readiness ( $X_1$ ), workload ( $X_2$ ), work stress ( $X_3$ ) has a value of zero, then the work productivity variable will remain at -0.964, because the constant value shows a value of -0.964
2. The coefficient value of HMC tool readiness ( $X_1$ ) is 0.473, indicating that the HMC tool readiness variable ( $X_1$ ) has a positive relationship to work productivity. This means that every 1% increase in the HMC tool readiness variable, there will be an increase of 0.473 in the work productivity variable.
3. The value of the workload coefficient ( $X_2$ ) of 1.363 indicates that the workload variable ( $X_2$ ) has a positive relationship to work productivity. This means that every 1% increase in the workload variable, there will be an increase of 1.363 in the work productivity variable.
4. The value of the work stress coefficient ( $X_3$ ) 0.195 indicates that the work stress variable ( $X_3$ ) has a positive relationship to work productivity. This means that every 1% increase in the work stress variable, there will be an increase of 0.195 in the work productivity variable.

The value of the coefficient of multiple determination R Square is 0.957 or 95.7%. This value shows work productivity which has a relationship with the variables of HMC tool readiness ( $X_1$ ), workload ( $X_2$ ), work stress ( $X_3$ ), and 4.3% is related to other variables such as tool operator skills and work discipline that is not done in the workplace. this research.

The results of the t-test in the study are as follows:

1. The calculated t-value of the HMC tool readiness variable ( $X_1$ ) is 6.877, which is greater than the t-table of 2.01537, with a significance level of less than 0.05. So it can be said that the HMC tool readiness variable has a significant relationship to the work productivity variable partially.
2. The calculated t value for the workload variable is 16,381 which is greater than the ttable of 2,01537, with a significance level less than 0.05. So it can be said that the workload variable has a significant effect on the work productivity variable partially.
3. The calculated t-value for the work stress variable is 2.503, which is greater than the t-table of 2.01537, with a significance level of less than 0.05. So it can be said that the work stress variable has a significant effect on the work productivity variable partially

## 5. Results and Discussion

### 5.1 Numerical Results

Productivity is a universal concept that aims to provide more goods and services that are used by many people, using few real resources, while according to Hasibuan (2009: 125) Productivity contains a mental attitude that always holds the view that life today must be better than yesterday and tomorrow better than today's results. Work productivity can be seen from the aspect of ability to carry out tasks, namely the skills possessed and professionalism in work, employee efforts in improving the achievement of results, morale, self-development, good work quality, and efficiency between the results achieved and the overall resources used. One of the factors that support work productivity in loading and unloading is loading and unloading equipment, workload, and employee work stress.

The readiness of loading and unloading equipment greatly affects the loading and unloading process in terms of loading and unloading speed. The readiness of loading and unloading equipment can be seen from the readiness of mechanics, spare parts, and modes of transportation where these three things can affect the speed of loading and unloading. The reality in the Jamrud terminal field is that when loading and unloading ships often occur, which hampers the ship's exit cycle activity. The results of this study do not contradict this concept. The readiness of HMC tools has a significant relationship to work productivity with the results of t count of 6.877 which is greater than t table of 2,01537, with a significance level of less than 0.05. Too much workload can

cause dependence in a person, causing stress (Sunyoto 2015: 64). This can be caused by the level of expertise that may be too high, the work speed is too high, the work volume may be too much and so on. The result of the relationship with workload also has a significant effect on work productivity with a t value of 16,381 which is greater than table of 2,01537, with a significance level of less than 0.05. The third factor that affects the productivity of unloading activities is employee work stress. According to the results of research from Yohana T (2015: 76) shows that work stress affects work productivity. According to Handoko (2015: 200) stress is a condition that affects a person's emotions, thought processes and physical condition, while there is another understanding of work stress. can affect human physical health. Stress is our perception of a situation or condition in our own environment. Another understanding states that stress is a condition that affects emotions, thought processes, and one's condition. If an employee experiences too much stress, it will interfere with a person's ability to deal with the environment and work, this opinion is quoted by Hariyono (2015: 193). The results of this study related to work stress have a t-count value of 2.503 which is greater than t-table of 2.01537, with a significance level of less than 0.05 so that it can be said that work stress has a significant relationship to work productivity.

## 6. Conclusion

Results Based on the research, the HMC tool readiness variable ( $X_1$ ), workload variable ( $X_2$ ), and work stress variable ( $X_3$ ) have a significant relationship to the work productivity ( $Y$ ) of Surabaya Jamrud Terminal employees. The readiness of the HMC tool affects the speed of unloading time and must have a significant relationship to work productivity with the result of t count of 6.877 more than t table of 2.01537, with a significance level of less than 0.05. Jamrud Surabaya Terminal employees must be fast in their work and must be prepared with a large volume of work. The workload of this study also has a significant relationship to their work productivity with a t value of 16,381 which is greater than ttable of 2,01537, with a significance level of less than 0.05. The third factor that affects the work productivity of Surabaya Jamrud Terminal employees is work stress. The results of this study related to work stress have a t-count value of 2.503 which is greater than t-table of 2.01537, with a significance level of less than 0.05 so that it can be said that work stress has a significant relationship to work productivity. The suggestions given in an effort to increase the work productivity of Surabaya Jamrud Terminal employees are as follows:

- a. Jamrud Surabaya Terminal must continue to unite the problem of HMC equipment readiness, workload and employee stress because it affects work productivity
- b. For researchers who will conduct further research, this research is expected to be used as a reference, support, guideline, comparison, and is expected to add other variables that can be used as indicators in further research. This is because there are still variables that have not been found by researchers that still have a relationship related to work productivity.

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