GROSTLOG 2022
Global Research on Sustainable Transport & Logistics

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

The Effect of Cargo Personnel Work Safety on the Performance of Loading-Unloading Activities

Wisnu Legowo[1], M Farras Gifran H[2], Rehani Fitriana[3], Otto Sugiarto Prakoso[4]

Institut Transportasi dan Logistik Trisakti, Jakarta, Indonesia

corresponding author: wisnulegowo1803@gmail.com

Abstract: The existence of a new Charlie apron, a part of the airside area, should be necessary to improve the supervision, personnel's knowledge, its security and other supporting facilities as an effort to work safety for all personnel at the Cargo Terminal. This study aims to determine the level of work safety, to know how important PPE (*Personnel Protective Equipment)* for cargo personnel, to determine the performance of personnel in loading-unloading activities, and to determine the effect of loading-unloading activities at the Cargo Terminal Juanda International Airport Surabaya to work safety. The method used in this study was a quantitative method. Data were obtained from spreading the questionnaires. The population of this study were the cargo, service users, and cargo management sections with the total of 100 persons in the cargo section of Juanda International Airport, Surabaya. The sampling technique used in this study was random sampling. The number of samples were 49 persons. The data were analyzed by using index analysis and simple linear regression analysis.(Maemunah et al. 2022). The results of this study based on the results of index analysis, show that; 1. the level of work safety of cargo personnel at the Surabaya Juanda International Airport cargo terminal is 67.91%; 2. the performance of cargo personnel in loading-unloading activities at the Surabaya Juanda International Airport cargo terminal is 75.62%; and the results of hypothesis testing show that the level of work safety of cargo personnel significantly influences loading-unloading activities at the cargo terminal Juanda International Airport Surabaya.

Keywords: Cargo Personnel Safety, PPE (*Personnel Protective Equipment),* Loading Unloading Activities, Juanda International Airport.

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

Introduction

Transportation in Indonesia consists of land, sea and air transportation. Compared to other transportations, air transportation have advantages in terms of travelling time which is quicker. The present air transportation mode plays a very important role as the facility for carrying passengers and goods or cargo from one place to another place. Juanda International Airport is the second busiest airport in Indonesia after the Soekarno-Hatta International Airport based on their flights and their aircraft passengers. Juanda International Airport serves the flight route from and to Surabaya, second largest city in Indonesia.

In line with the development of airport in Indonesia through the City Airport concept to Airport City, every airport includes Juanda International Airport, improves their service for the airport service user and their owned human resources. The effort in manifesting the qualified human resources needs to be balanced with the guarantee of the work safety/protection. Labor protection has some aspects such as safety protection which intends for the labor to work day-to-day safely, so that it can improve the productivity.(Olfebri et al. 2021)

Bangun (2012) stated that the work safety is the protection for work safety experienced by the worker both physical and mental in the work environment. Ramli (2010) stated that personal work safety on the available human resources in the company is adjusted to the work needs and environment, so that the arrangement of work safety and health program of every company is different. The maximum attention to the work safety will give possitive effect on the airport service as the service provider of air transportation.

In order to improve the service quality that reflects the orderliness, continuity, and convenience for the airport service users, Juanda International Airport improve their services for their users. The airport has the Cargo Terminal used for transmitting cargo through aircraft.

Cargo/goods transmitting service certainly needs the consumer support and cooperation as the owner of the goods. Generally, as the owners, they are

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

responsible to keep up with the information of cargo usage, have good faith in transacting, pay in accordance with the dealt price, and follow the legal dispute resolution of consumer protection (Susanto, 2008).

In the practice of the cargo/goods transmitting service, it is executed by using the terminal cargo loading-unloading system supported with Ground Support Equipment (hence forth will be abbreviated into GSE) such as Baggage Cart and Baggage Towing Tractor, both of the tools has one function to carrying consumer's goods from the cargo terminal to the apron to be put in the aircratf.

Hlavaty & Kraus (2017) stated that the system loading procedure is the early preparation for the cargo/goods before it is put in the aircraft cabin and unloading is moving the cargo/goods by making sure the compliance with all safety regulations.

Based on the early observation, while exercising On the Job Training, hence forth will be abbreviated into OJT, in unit of the cargo inspector terminal, in every shift, the cargo inspector terminal clerk has executed their job well. However, while inspecting the cargo inspector terminal, the authors found out some issues when the loading-unloading activities were being executed in the cargo terminal.

The issues were; first, the clerk of the cargo inspector terminal should be in charge of monitoring all of the loading-unloading activities, though the monitoring was only executed on the inspection time. Second, the lack of safety knowledge caused one of the other issues such as baggage cart was not arranged orderly and was put without the cart wheel locks, that would potentially be a hazard.

The importance of safety and orderliness as the main factor should be followed by optimal of cargo/goods loading-unloading activities, but in fact some checker clecks and porters did not wear the safety vest. It showed that the execution of the safety of the workers did not meet the criteria as written in the

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

Airside Safety Manual guidelines of 2016 PT Angkasa Pura namely the usage of safety vest as protective clothing.

Based on the background explained on the previous paragraph and in order to improve the standards that should be executed by Juanda International Airport in solving the issues for the sake of work safety for the personnel working on the airside of the cargo terminal, the author is hereby intended to write the final essay entitled "The Effect of the work safety of cargo personnel on the performance of loading-unloading activities"

Method

The method used in this study was descriptive quantitative. According to Nazir (1988) descriptive method is a method in researching the status of a group of humans, an object, a set of conditions, a system of thinking or the event class on the present.

This study was conducted by analysing the environmental condition to find out the urgency of the research. The design of this study was evaluative research. Eko Putro Widoyoko (2009) stated that there are 4 steps in conducting the procedure of evaluation namely; (1) preparation, (2) execution, (3) completion, and (4) reporting. The research steps can be seen in figure 1.

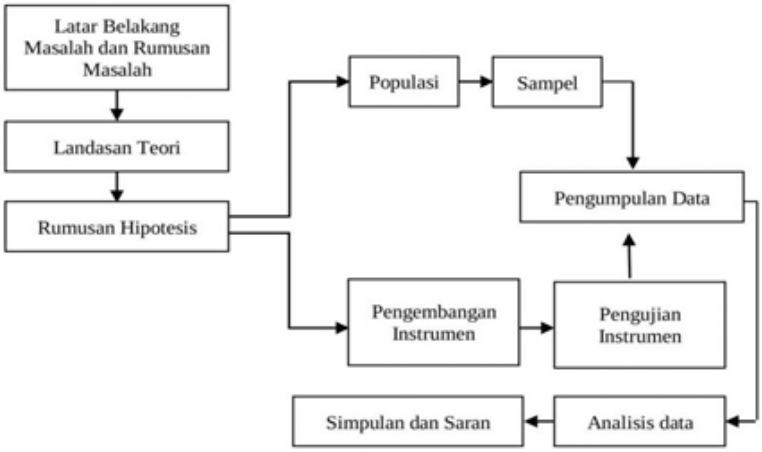

Figure 1. Research design (Sugiyono, 2017.)

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

In collecting the data, the authors used independent variable (variable X) namely the performance of cargo personnel safety and the dependent variable (variable Y) namely cargo loading-unloading activities. The points of variable X and Y were the main fundamental in the questionnaire making processes in form of statement questionnaire for collecting the information in this study.

The population of this study was all the related stakeholder on the cargo section, service user and cargo management with a total of 100 persons in the cargo terminal of Juanda International Airport, Surabaya.

The samples obtained in this study were the workers on the Cargo Terminal with a total of 49 samples. It is considered enough to represent the respondents because according to Sugiyono (2017), based on the normal distribution of the amount of the sample above, 30 is enough to describe the population and the analysis. The object of this study is the safety performance of cargo personnel on the cargo/goods loading-unloading activities of Juanda International Airport, Surabaya.

The data collection technique used in this study was by using questionnaire and observation. The data analysis techniques used in this study were instrument validity test, instrument reliability test, index analysis, and simple linear regression analysis. This study was conducted from May to September 2022 on Juanda International Airport, Surabaya.

Discussion and Result

Instrument Validity Test

According to Ghozali (2018), instrument validity test is used for measuring whether a questionnaire is valid. A questionnaire as research instrument is considered valid if the questions on the questionnaire is able to reveal something which will be calculated by the questionnaire.

In this study, the questionnaire validity test was assisted by using application namely Statistical Package for the Social Sciences, hence forth will be abbreviated into SPSS, with the version 25 and Minitab with the version 17.

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

The instrument can be considered valid if the obtained R count is ≥ 0.2816 on a 95% level of confidence with a 5% level of significance. The result of variable X validity test can be seen on the Table 1.

Table 1. The result of variable X validity test

Number of question	R Count		Diff	R table	Description	Conclusion
	Minitab	SPSS				
X1	0.649	0.649	0	0.2816	R Count>r table	Valid
X2	0.720	0.720	0	0.2816	R Count>r table	Valid
X3	0.550	0.550	0	0.2816	R Count>r table	Valid
X4	0.684	0.684	0	0.2816	R Count>r table	Valid
X5	0.698	0.698	0	0.2816	R Count>r table	Valid
X6	0.684	0.684	0	0.2816	R Count>r table	Valid
X7	0.751	0.751	0	0.2816	R Count>r table	Valid
X8	0.761	0.761	0	0.2816	R Count>r table	Valid
X9	0.678	0.678	0	0.2816	R Count>r table	Valid
X10	0.789	0.789	0	0.2816	R Count>r table	Valid
X11	0.569	0.569	0	0.2816	R Count>r table	Valid
X12	0.660	0.660	0	0.2816	R Count>r table	Valid
X13	0.715	0.715	0	0.2816	R Count>r table	Valid
X14	0.733	0.733	0	0.2816	R Count>r table	Valid
X15	0.797	0.797	0	0.2816	R Count>r table	Valid
X16	0.857	0.857	0	0.2816	R Count>r table	Valid
X17	0.697	0.697	0	0.2816	R Count>r table	Valid
X18	0.682	0.682	0	0.2816	R Count>r table	Valid
X19	0.603	0.603	0	0.2816	R Count>r table	Valid

Based on the analysis of the data of variable X which is assisted with SPSS and Minitab, the result obtained is equal to zero difference. The table above shows that each indicator variable resulted validity coefficient values or the value of R count which is more than 2.816 (R table value). Then, validity test is proceeded to variable Y on Table 2.

Table 2. result of validitiy test of variable Y

Number of Question	R Count		Diff	R table	Description	Conclusion
	Minitab	SPSS				
Y1	0.787	0.787	0	0.2816	R Count>r table	Valid
Y2	0.714	0.714	0	0.2816	R Count>r table	Valid
Y3	0.848	0.848	0	0.2816	R Count>r table	Valid
Y4	0.738	0.738	0	0.2816	R Count>r table	Valid
Y5	0.793	0.793	0	0.2816	R Count>r table	Valid
Y6	0.642	0.642	0	0.2816	R Count>r table	Valid
Y7	0.713	0.713	0	0.2816	R Count>r table	Valid
Y8	0.914	0.914	0	0.2816	R Count>r table	Valid
Y9	0.933	0.933	0	0.2816	R Count>r table	Valid

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

Number of Question	R Count		Diff	R table	Description	Conclusion
	Minitab	SPSS				
Y10	0.937	0.937	0	0.2816	R Count>r table	Valid
Y11	0.864	0.864	0	0.2816	R Count>r table	Valid
Y12	0.842	0.842	0	0.2816	R Count>r table	Valid
Y13	0.899	0.899	0	0.2816	R Count>r table	Valid
Y14	0.903	0.903	0	0.2816	R Count>r table	Valid
Y15	0.897	0.897	0	0.2816	R Count>r table	Valid
Y16	0.928	0.928	0	0.2816	R Count>r table	Valid
Y17	0.887	0.887	0	0.2816	R Count>r table	Valid
Y18	0.779	0.779	0	0.2816	R Count>r table	Valid
Y19	0.854	0.854	0	0.2816	R Count>r table	Valid
Y20	0.889	0.889	0	0.2816	R Count>r table	Valid
Y21	0.904	0.904	0	0.2816	R Count>r table	Valid
Y22	0.808	0.808	0	0.2816	R Count>r table	Valid
Y23	0.905	0.905	0	0.2816	R Count>r table	Valid
Y24	0.882	0.882	0	0.2816	R Count>r table	Valid
Y25	0.921	0.921	0	0.2816	R Count>r table	Valid
Y26	0.897	0.897	0	0.2816	R Count>r table	Valid
Y27	0.828	0.828	0	0.2816	R Count>r table	Valid
Y28	0.912	0.912	0	0.2816	R Count>r table	Valid
Y29	0.815	0.815	0	0.2816	R Count>r table	Valid
Y30	0.776	0.776	0	0.2816	R Count>r table	Valid
Y31	0.896	0.896	0	0.2816	R Count>r table	Valid
Y32	0.899	0.899	0	0.2816	R Count>r table	Valid
Y33	0.882	0.882	0	0.2816	R Count>r table	Valid
Y34	0.833	0.833	0	0.2816	R Count>r table	Valid
Y35	0.812	0.812	0	0.2816	R Count>r table	Valid

Based on the analysis of the data of variable Y which is assisted with SPSS and Minitab, the result obtained is equal to zero difference. The table above shows that each indicator variable resulted validity coefficient digits or the value of R count which is more than 2.816 (R table value). Both table of validity test of variable X and Y above show that all indicator items used for calculating each variable have the coefficient values bigger than 0.2815. It can be concluded that the indicator of variable X and Y is valid or accurate.

Instrument reliability test

A questionnaire is considered reliable if the persons answered the statement consistently or stably from time to time (Santoso, 2017). The reliability test was conducted by using *Cronbach Alpha* statistical test. The criteria is the

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

construct or variable considered reliable if the *Cronbach Alpha* value is > 0.70 (Ghozali, 2018). The reliability test result of variable X and Y can be seen on the Table 3.

Tabel 3. Reliability Test Result

Variable	Cronbach alpha Value	Description	Conclusion
The safety performance of Cargo Personnel (X)	0.939	>0.7	Reliable
Cargo *Loading-Unloading* activities (Y)	0.988	>0.7	Reliable

The table shows that all indicator items used for calculating the variables has the *cronbach's alpha* digits bigger than 0.7, therefore, the instrument used for collecting the data is considered reliable.

Index analysis

Based on the respondent answers, next it will be obtained one tendency or the said respondent's answer. In order to obtained the overall answers from all of the respondents, the questionnaires were being spread by using Likert scale. In order to interpret result, the highest score of (X) and the lowest score of (Y) need to be known for the assesment item with the formula as follows :

X = the highest *likert* score x respondent amount (highest score 5)

Y = the lowest *likert* score x respondent amount (lowest score 1)

Then after the total score is obtained, next is determining the assessment of respondents interpretation by using index % formula. The data from the estimation of the index amount above then will be put into the table of percentage of the value whether it will fit the table of higly agree or other scale parts.

From the index % formula, the value is known to be 67.91%. Based on the table of percentage interpretation, it can be concluded that the personnel safety is good, however, it is not maximal. Whereas from the index % formula, the value is known to be 75.62%. Based on the table of percentage interpretation, it can be concluded that the loading-unloading activities are good, however, it is not maximal.

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

Simple linear regression analysis

The result of research model test

Simple linear regression analysis is used for the situations in which an independent variable is hypothesized to affect the dependent variable (Sekaran and Bougie, 2017). The result of research model test is based on the output of SPSS 25 estimation on the Table 4.

Tabel 4 The result of research model test

Coefficients[a]

Model		*Unstandardized Coefficients*		*Standardized Coefficients*	t	Sig.
		B	Std. Error	Beta		
1	*(Constant)*	.074	.318		.234	.816
	Xtotal	1.093	.092	.866	11.874	.000

a. Dependent Variable: Y total

Based on the output results of SPSS, the result of the equation of regression for the variable of service quality on consumer satisfaction which every incerement of one unit of the safety performance of cargo personnel then will increase the cargo loading-unloading activities by 1.093 with the condition the other variable is constant.

The result of T-test (partial)

The T-test is used for testing partially the effect between independent variable and dependent variable by assuming that other variables considered constant.

The personnel safety is tested with T-test with the testing criteria if T count > T table on a (alpha) table is 0.05 or if the significant value T < a (alpha) (probability T value < 0.05) it means that there is significant effect between the personnel safety and loading-unloading activities. On the other hand, T count < T table on a (alpha) table is 0.05 or if the significant value T > a (alpha) (probability T value > 0.05) it means that there is no significant effect between

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

the personnel safety and loading-unloading activities. The result of T test can be seen on the Table 5.

Table 5 The result of T test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.074	.318		.234	.816
	Xtotal	1.093	.092	.866	11.874	.000

a. Dependent Variable: Ytotal

From the result of the estimation, T significant values is known to be (0.0000) < a (alpha) 0.05. It means that there is significant effect between personnel safety and loading-unloading activities.

The Result of Coefficient of Determination Test

The coefficient of determination (R^2) is used for calculating how far the ability of the model in explaining the variation of variables. The value of coefficient of determination is between zero and one. The low value of R2 means that the ability of the independent variables in explaining the variation of dependent variables is very limited. The value is close to 1 (One), it means the independent variables provide almost the needed information to predict the dependent variables (Ghozali, 2013). The result of coefficient of determination test can be seen from the Table 6.

Table 6. The result of coefficient of determination test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.866[a]	.750	.745	.40725

a. Predictors: (Constant), Xtotal

From the estimation of coefficient of determination test, the adjusted R square value is known to be 0,745, it means that The Performance of Cargo Personnel Safety on Cargo loading-unloading activities is by 74.5%. The rest of

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

25.5% is affected by other variables aside from personnel safety for instances motivation and personnel incentives.

The Result of Hypothesis Testing

Hypothesis testing is based on T test using a 0.95 level of confidence or a 0.05 level of significance. Hypothesis tester was set as follows:

1. If the T count is > T table then H_a is accepted and H_0 is rejected. Therefore, the personnel safety is significantly effective towards loading-unloading activities.
2. If the T count is < T table then H_a is rejected and H_0 is accepted. Therefore, the personnel safety is not significantly effective towards loading-unloading activities.

By using a 5% level of significance and *degree of freedom* (df) in order to test the effect of df = n – 2, it can be seen from the T table for testing 2 parties. Next, T Count Value is set. N value is known to be 49 respondents, then n df = 49 – 2 = 47 (T table is 2.0117), whereas T Count value based on the table 4 is 11.874. So, the T count > T table, then H_a is accepted and H_0 is rejected. Therefore, Personnel safety was significantly effective on loading-unloading activities.

Conclusion

Based on the discussion above, it can be concluded from this study as follows:

1. The result of Index analysis on every variable namely variable X and Y, by determining the assesment of respondent's interpretations and by using Index formula. Index analysis on variable X were obtained through questionnaires with 19 questions, with the total of 49 persons as the subjetct, and a 5 minimal score. The result shows that cargo personnel safety on Cargo Terminal of Juanda International Airport is by 67.91%.
2. Based on the result of Index analysis, it is known that the performance of personnel safety on loading-unloading activities on cargo terminal of Juanda

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

International Airport, Surabaya, is by 75.62%. Index analysis on variable Y were obtained through questionnaires with 35 questions, with the total of 39 persons as the subject, and a 5 minimal score.

3. Hypothesis testing is based on T test using the T test on a 0.95 level of confidence or a 0.05 level of significance. By using a 5% level of significance and *degree of freedom* (df) for testing the effect of df = n – 2. N value is known to be 49 respondents, then n df = 49 – 2 = 47 (T table is 2.0117), whereas T Count value based on the table 4 is 11.874. So, the T count > T table, then H_a is accepted and H_0 is rejected. Therefore, it can be concluded that personnel safety was significantly effective on loading-unloading activities on cargo terminal of Juanda International Airport, Surabaya.

References

Bangun, W. (2012). *Manajemen Sumber Daya Manusia*. Erlangga.

Daniel Hlavaty & Jakub Kraus (2017). *Safety of Cargo Aircraft Handling Procedure.* Faculty of Transportation Sciences Department of Air Transport, Czech Technical University in Prague.

Eko Putro Widoyoko, S. (2009). *Evaluasi Program Pembelajaran*. Yogyakarta: Pustaka Pelajar.

Ghozali, Imam. (2018). *Application of Multivariate analysis using the program of IBM SPSS 25*. Semarang: Badan Penerbit Universitas Diponegoro.

Nazir Muhammad (1988). *Metodologi Penelitian*, Jakarta : Ghalia Indonesia,

Maemunah, Siti, Apsada Juhri, Mudjiarjo, Lira Agusinta, and Yuliantin. 2022. "Prioritas Pengangkutan Komoditas Kargo Umum Di Divisi Ekspor Pengangkutan Udara- General Cargo Commodity Transport Priorities." *Jurnal Ilmiah Kedirgantaraan* 19(1):45–54.

Olfebri, Agus Suroso, Refius Pradipta Setyanto, and M. Elfan Kaukab. 2021. "Self-Awareness and Social Self-Supervision in Online Transportation Industry." *International Journal of Data and Network Science* 5(3):433–38. doi: 10.5267/j.ijdns.2021.5.001.