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Analysis of Ship Seaworthiness Factors, Health and Safety Culture, Oversight of Port Authority and Harbor Authority Offices on Shipping Safety

(Study at Tanjung Emas Class I Harbormaster and Port Authority Office)

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Abstract: *Shipping safety is still a problem faced by sea transportation. Empirical data collected in this study shows the number of transportation accidents and fatalities shows a fluctuating number. This means that shipping safety is still a problem faced by the marine transportation industry in Indonesia. To answer this problem, this research is aimed at knowing the effect of ship's seaworthiness, ship health and safety culture, and supervision of the Harbormaster Office and Port Authority on shipping safety performance which is carried out empirically. Every sailing ship must be in a seaworthy condition so as to ensure safety and security while the ship is sailing. Ship's seaworthiness is also assisted with shipping safety facilities and infrastructure. Occupational health is a state of physical, mental and social well-being that allows every worker to work in a healthy manner with optimal productivity without endangering himself, his family, society and the surrounding environment. Occupational health efforts are efforts to harmonize work capacity, workload and work environment so that every worker can work healthily without endangering himself or the surrounding community, in order to obtain optimal work productivity. The duties and responsibilities of a porter are very important in providing a ship's seaworthiness certificate, sailing permit, safety and security as well as all sea transportation shipping activities in Indonesian waters. Based on the results of research and multiple analysis, the following equations are produced:* ***Y = 1.957 + 0.762 X1 + 0.531 X2 + 0.244 X3 + μ,*** *shows that, Based on empirical data (the results of filling out the questionnaire) and the results of multiple linear regression, it shows that the Shipworthiness variable (X1) has a value* t_{count} *(10.260) >* t_{table} *(1.99045) then, H0 is rejected and Ha is accepted. The Health and Safety Culture Variable (X2) has a* t_{count} *(2.382) >* t_{table} *(1.99045), so H0 is rejected and Ha is accepted. The Port Authority and Port Authority Supervision Variable (X3) has a value of* t_{count} *(2.280) >* t_{table} *(1.99045), then H0 is rejected and Ha is accepted. Thus, the results of the study show that there is a positive and significant influence between Shipworthiness, Health and Safety Culture, Harbormaster Supervision and Port Authority on Shipping Safety.*

Keywords: *Shipworthiness, Health and Safety Culture, Supervision of the Harbormaster Office and Port Authority, shipping safety performance*

1. INTRODUCTION

Indonesia as the largest archipelagic country with 17 (seventeen) thousand islands can only be well connected with a multi-modal transportation system. Sea transportation is one of these modes of transportation, in addition to having a role as a means of transportation that nationally can reach all areas through waters so that it can support, encourage and drive the growth of regions that have large natural resource potential to increase and distribute development and its results. (Dedeh Suryani.et al 2018)

Safety and security of water transportation, namely the condition of fulfilling the requirements for ship seaworthiness and navigation. In the Law of the Republic of Indonesia, Number: 17 of 2008 concerning shipping it is stated that ship seaworthiness is the condition of the ship that meets the requirements for ship safety, prevention of water pollution from ships, manning, loading lines, loading, initial ship welfare and passenger

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welfare, ship legal status, management of safety and prevention of pollution from ships, and management of ship security for sailing in certain waters. Fulfillment of each ship's seaworthiness requirements is evidenced by certificates and ship certificates (Kuncowati and Mudiyanto, 2017).

Ships are the main means of transportation as inter-island goods carriers because when compared to other means of transportation the costs are much cheaper and the amount of goods that can be transported is far greater when compared to other means of transportation. At this time the development of the National and International strategic environment demands that shipping operators comply with science and technology, regional autonomy, and accountability of State administrators while still prioritizing shipping safety and security in national interests (Syaripah, 2018).

By looking at the incidents or cases of ship accidents that often occur at sea causing loss of life, property, and environmental pollution, the safety factor of ship shipping needs to be maintained and implemented so that shipping safety is guaranteed at any time. Based on data from 2011-2014, a lot has happened because the increasing world population automatically has an impact on increasing people's economic needs, including more and more transportation activities by land, air, and sea (Thamrin, 2015). Making a voyage required a means of transportation. Transportation plays a role as a support, driver, and movement for the growth of regions that have large natural resource potential (Santoso, et al, 2013).

The causes of ship accidents and casualties can be caused by human, technical, natural, and weather factors, as well as external factors, namely the passing of supervision and checking by the syahbandar. One of the efforts in enforcing the law at sea is monitoring ships sailing in Indonesian waters. The technical factor that causes a ship accident is the seaworthiness of the ship. Every ship that sails must be in a seaworthy condition to ensure safety and security while the ship is sailing. The ship's seaworthiness is also assisted by shipping safety facilities and infrastructure. If the matters concerned are ignored, the risk of a ship accident will be very high. Ships that meet seaworthy requirements that can sail in the sea area in Indonesia. In Article 1 number 33 of Law Number 17 of 2008 concerning Shipping, Ship Seaworthiness is the condition of the ship that meets the requirements for ship safety, prevention of water pollution from ships, manning, loading lines, loading, crew welfare, and passenger health, the legal status of the ship, management of safety and prevention of pollution from ships, and management of ship safety to sail in certain waters.

To carry out shipping activities, each sea transport (ship) requires a Sailing/Laying Approval Letter (SPB) issued by the harbor master so that it can sail or dock. To obtain SPB, ships that will sail must meet several requirements. Each Sailing Approval Letter can be given by a harbormaster to a ship user or owner if the ship fulfills several important conditions (Barus et al, 2017). One of the efforts in enforcing the law at sea is monitoring ships sailing in Indonesian waters. Ships that meet seaworthy requirements that can sail in the sea area in Indonesia. Article 1 point 33 Law Number: 17 of 2008 Concerning Shipping, Ship Seaworthiness explains that ship seaworthiness is the condition of the ship that meets the requirements for ship safety, prevention of water pollution from ships, manning, load lines, loading, crew welfare, and passenger health, the legal status of ships, management of safety and prevention of pollution from ships, and management of ship security to sail in certain waters.

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The importance of a Sailing Approval Letter (Port Clearance) is specifically regulated in Law Number 17 of 2008 concerning shipping. Even though there have been regulations governing Sailing Approval Letters, it is not uncommon to encounter several sea transportation accidents caused by negligence in granting shipping permits. Safety and security issues as well as all activities in shipping are the responsibility of the port. One of the biggest problems in ship accidents on voyages is a matter of a person's ability and expertise in carrying out his duties as harbormaster in providing ship seaworthiness certificates, sailing permits, shipping safety, and security, as well as all sea transport shipping activities in Indonesian waters.

Apart from supervision from the Harbor Masters Office and the Port Authority, there are other policies, namely ship manning. Ship manning is very important in shipping safety because people who work or are employed on ships to carry out tasks on board are following their positions listed in the Sijil book. Several factors need to be considered in manning the ship, such as the rights and obligations of the crew, the requirements for the crew that must meet standards, and the determination of load lines and procedures for compacting cargo. Ship manning which is applied to shipping safety is very important to do, sometimes there are still many cases that do not pay attention to ship manning. Law Number: 17 of 2008 concerning Shipping Article 135 states that each crew member must be manned by a crew member who meets qualification and compensation requirements by national and international regulations. Each ship according to its type and size must be equipped with stability information to enable the Master to determine all conditions of loading that are feasible for each condition of the ship. The welfare of the crew is an important point, considering several case findings in the field, elements of ship seaworthiness related to the welfare of the crew have not been properly fulfilled, as there are still crew members with the lowest positions who earn salaries below the minimum wage provisions. Fulfillment of ship seaworthiness is a matter of employment social security in which the majority of entrepreneurs in the shipping sector have not or have not included their crew members employed on their ships to be included in the Employment BPJS membership program which includes work accident insurance, death security, old age insurance, and pension security. Where this is the obligation of the entrepreneur as the employer by the provisions.

2. LITERATURE REVIEW

Port Authority and Harbormaster Office

The port authority and port authority office (KSOP) is a technical implementation unit within the Ministry of Transportation which is under and responsible to the Director General of Sea Transportation (Barus et al, 2017). Arrangements regarding the harbor and port authority offices are listed in the Minister of Transportation Regulation Number: PM 36 of 2012 concerning the Organization and Work Procedures of the Harbor master's and Port Authority Offices.

Sailing Safety

Shipping safety is everything that exists and can be developed about accident prevention measures when carrying out work in the shipping sector. In Law Number 17 of 2008 concerning Shipping, article 1 point 32 states that shipping safety and security is a condition of fulfilling safety and security requirements relating to transportation in waters, ports, and the maritime environment. Article 1 point 33 states that ship worthiness is the condition of the ship that meets the requirements for ship

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safety, prevention of water pollution from ships, manning, loading lines, loading, crew welfare, and passenger health, ship legal status, safety management and prevention of pollution from ships, and ship security management to sail in certain waters.

Ship Seaworthiness

Ship seaworthiness is closely related to shipping safety. Every ship that sails must be in a seaworthy condition to ensure safety and security while the ship is sailing. The ship's seaworthiness is also assisted by shipping safety facilities and infrastructure. If the matters concerned are ignored, the risk of a ship accident will be very high. To carry out shipping activities, each sea transport (ship) requires a Sailing/Laying Approval Letter (SPB) issued by the harbor master so that it can sail or dock. To obtain SPB, ships that will sail must meet several requirements. Each Sailing Approval Letter can be given by a harbormaster to a ship user or owner if the ship fulfills several important conditions. (Barus et al, 2017)

Health and Safety Culture

The world of shipping always faces the risk of loss of life, property, and environmental pollution. It is hoped that in any condition the ship will survive (and still be able to operate). One of the most dangerous conditions for ships is during bad weather, several ways have been studied to deal with this, including by analyzing static stability (IMO, 2008) and by analyzing the possibility of capsizing ships in bad weather (Andry & Yuliani, 2014). Occupational health is a state of well-being of body, soul, and social life that enables every worker to work healthily with optimal productivity without endangering themselves, their families, the community, and the surrounding environment. Occupational health efforts are efforts to harmonize work capacity, workload, and work environment so that every worker can work healthily without endangering himself or the surrounding community, to obtain optimal work productivity (Hendrawan, 2018b).

Supervision of Harbor master's and Port Authorities

According to Hadibroto in Fahmi (2016) said that supervision is an activity of assessing organizations/activities with the aim that these organizations/activities carry out their functions properly and can fulfill the goals that have been set. In the same source, Brantas in Fahmi (2016) suggests that supervision is the process of monitoring, evaluating, and reporting plans for achieving the goals set for corrective action for further improvement. Looking at the two opinions, there is a similarity in that supervision is related to the assessment and monitoring of an activity that is oriented to the goals to be achieved as previously determined.

3. RESEARCH METHODOLOGY

According to Sugiyono (2016: 2), the research method is a scientific way to obtain data with specific purposes and uses. Based on this, four keywords need attention, namely the scientific method, data, purpose, and usability. The scientific method means that research activities are based on scientific characteristics, namely rational, empirical, and systematic. Rational means that research activities are carried out in ways that make sense so that human reasoning can reach them. Empirical means that the ways that are done can be observed by the human senses so that other people can observe them. Systematic means that the process carried out in the research uses certain logical steps.

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In conducting this research, the number of ship agents and crew members at Tanjung Emas Port, Semarang, was 105.

4. RESULTS AND DISCUSSION

Validity and Reliability Test

a. Validity test

Validity is used to measure the legitimacy or validity of a questionnaire (Ghozali, 2018). The method is to correlate the score obtained on each item answering the question with the individual's total score.

Validity testing was carried out using the SPSS for Windows Version 26 program. Validity testing indicates the extent to which a measuring instrument is valid or legitimate.

Terms of validity test and how to find r table:

1) If r counts> r table, then the question item is valid.
2) If r count <r table, then the question item is invalid.

Validity Test Results

No	Indicator	r hitung	r table	Conclution
X.1 Ship Seaworthiness				
X1.1	Staffing	0,736	0,2813	Valid
X1.2	Load	0,896	0,2813	Valid
X1.3	Ship Status	0,690	0,2813	Valid
X.2 Health and Safety Culture				
X2.1	Counseling	0,881	0,2813	Valid
X2.2	Training	0,748	0,2813	Valid
X2.3	Medical examination	0,790	0,2813	Valid
X2.4	Alat Pelindung Diri	0,634	0,2813	Valid
X.3 KSOP Supervision				
X3.1	Supervise Ship Seaworthiness	0,881	0,2813	Valid
X3.2	Oversee Loading and Unloading	0, 881	0,2813	Valid
X3.3	Oversee Traffic Order	0, 795	0,2813	Valid
Y. Navigation Safety				
Y1	Ship Safety and Security	0,896	0,2813	Valid
Y2	City Order	0,736	0,2813	Valid
Y3	City equipment	0,518	0,2813	Valid

Source: Primary data processed in 2022

Based on table 4.17 above, the table above shows that all the indicators used to measure the variables used in this study have a correlation coefficient that is greater than the r table, with the value of r table for a degree of freedom (df) = n-2, the sum sample n = 83 and df = 83-2 = 81 and the value of r table = 0.2813, with a significance level of 0.01, so that all of these indicators are valid.

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b. Reliability Test

A reliability test is a tool for measuring a questionnaire which is an indicator of a variable or construct. A questionnaire is declared reliable or reliable if a person's answers to statements are consistent or stable from time to time (Ghozali, 2018).

To find out if the questionnaire is reliable, a questionnaire reliability test will be carried out with the help of the SPSS program computer. The reliability test assessment criteria are as follows:

1) If the results of the alpha coefficient are greater than the significance level of 0.70 then the questionnaire is reliable.
2) If the results of the alpha coefficient are less than the significance level of 0.70 then the questionnaire is not reliable.

The calculation results for each variable are presented in the following table:

Reliability Test Results

Variabel	*Cronbach's Alpha*	*Alpha Standard*	Conclution
Ship Seaworthiness	0,783	0,70	*Reliabel*
Health and Safety Culture	0,824	0,70	*Reliabel*
KSOP Supervision	0,876	0,70	*Reliabel*
Navigation Safety	0,715	0,70	*Reliabel*

Source: Primary data processed in 2022

From the results of the reliability test in Table 4.18 above, it can be seen that the Cronbach alpha value of each variable, both the independent variable (Ship Maritime Affairs, Ship Health, and Safety Culture, Supervision of the Kesyahbadaraan Office and Port Authority) and the dependent variable (Sailing Safety) have a value (α) > 0.70. According to the criteria (Imam Ghozali) this can be said to be reliable or reliable so that the research variables are worthy of being tested for further hypothesis testing.

Classic assumption test

a. Normality test

The Normality Test aims to test whether the data to be used in the dependent variable and independent variable regression models are both normally distributed or not (Imam Ghozali, 2016). A good regression model has normally distributed residual values. Detect whether the data is normal or not can be done in two ways:

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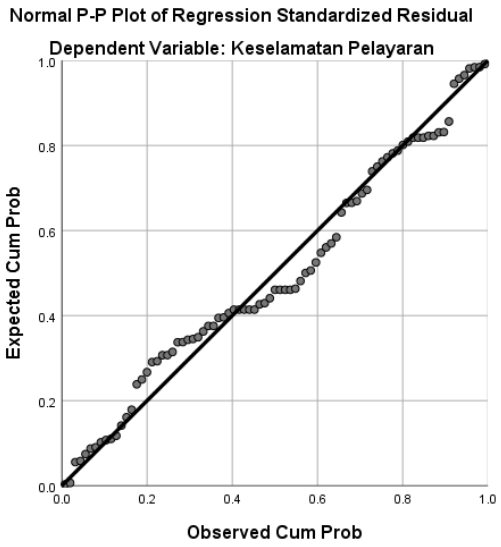

Source: Primary data processed in 2022
Gambar 1. Grafik Uji

The picture above is the result of the P-P normality test. The regression standardizer plot of the residuals shows the dots coincide around the diagonal line and this shows that the residuals are normally distributed.

b. Multicollinearity Test

The multicollinearity test aims to test whether the regression model found a correlation between independent (independent) variables. A good regression model should not correlate with the independent (independent) variables. A good regression model should not correlate with the independent (independent) variables.

The results of the multicollinearity test are as follows:

Correlation Matrix Multicollinearity Test between Independent Variables

Model			KSOP Supervision	Ship Seaworthiness	Health and Safety Culture
1	Correlations	KSOP Supervision	1.000	-.263	-.814
		Ship Seaworthiness	-.263	1.000	-.234
		Health and Safety Culture	-.814	-.234	1.000
	Covariances	KSOP Supervision	.011	-.002	-.008
		Ship Seaworthiness	-.002	.006	-.002
		Health and Safety Culture	-.008	-.002	.009

a. Dependent Variable: Navigation Safety

Source: Primary data processed in 2022

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Based on the table above, shows that the correlation between accident prevention variables (X3) and public services (X2) = 0.009; a correlation between accident prevention and performance = - 0.278; performance with public services = - 0.752. By the provisions of the multicollinearity test, all independent variables have a value of more than 0.90. So it can be concluded that all correlation values between independent variables do not occur multicollinearity in this study.

To detect whether there is multicollinearity by looking at the VIF value. If the VIF value < 10 and Tolerance > 0.10 then the model is free from multicollinearity (Ghozali, 2018: 107).

Multicollinearity Test of Tolerance and VIF Values

Research Variabel	*Tolerance*	VIF Value	Description
Ship Seaworthiness	0.335	2.989	Multicollinearity does not occur
Health and Safety Culture	0.121	8.265	Multicollinearity does not occur
KSOP Supervision	0.119	8.390	Multicollinearity does not occur

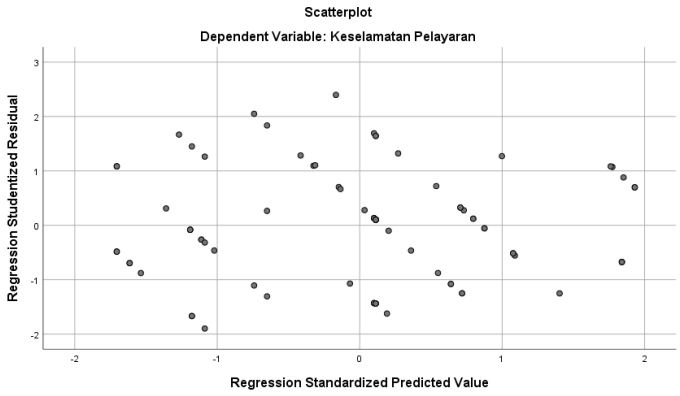
c. Heteroscedasticity Test

The heteroscedasticity test aims to test whether, in the regression model, there is an inequality of variance from one residual observation to another. If the variance from one residual observation to another observation remains, then it is called homoscedasticity and if it is different, it is called heteroscedasticity (Ghozali, 2016).

The results of the heteroscedasticity test are as follows:

1) Graph Analysis (Scatterplot)

Graph of Scatterplot Heteroscedasticity Test



Source: Primary data processed in 2022

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The image above has random dots and does not form a particular wave or shape. Based on these figures, it can be concluded that the regression model is free from the presence of heteroscedasticity symptoms so that it can be used for further analysis.

2) Statistical Analysis (Spearman's Rho)

Spherman's Rho test

			Ship Seaworthiness	Health and Safety Culture	KSOP Supervision	Navigation Safety
Spearman's rho	Ship Seaworthiness	*Correlation Coefficient*	1.000	.801**	.799**	.880**
		Sig. (2-tailed)	.	.000	.000	.000
		N	83	83	83	83
	Health and Safety Culture	*Correlation Coefficient*	.801**	1.000	.939**	.741**
		Sig. (2-tailed)	.000	.	.000	.000
		N	83	83	83	83
	KSOP Supervision	*Correlation Coefficient*	.799**	.939**	1.000	.774**
		Sig. (2-tailed)	.000	.000	.	.000
		N	83	83	83	83
	Navigation Safety	*Correlation Coefficient*	.880**	.741**	.774**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	83	83	83	83

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data processed in 2022

It can be seen in the table above that all independent variables have a significance value of more than 0.05. It can be concluded that the regression model has no symptoms of heteroscedasticity

Multiple Linear Regression Analysis

Multiple linear regression analysis is used to analyze whether there is an influence of ship seaworthiness variables (X1), health and safety culture (X2) supervision of harbor and port authority offices (X3), partially on the dependent variable namely shipping safety (Y).

Coefficients[a]

Model		*Unstandardized Coefficients*		*Standardized Coefficients*		
		B	Std. Error	Beta	*T*	*Sig.*
1	(Constant)	1.957	.588		3.328	.001
	Ship Seaworthiness	.762	.074	.810	10.260	.000

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	Health and Safety Culture	.531	.095	.181	2.382	.000
	KSOP Supervision	.244	.107	.302	2.280	.000

a. *Dependent Variable:* Y

Source: Primary data processed in 2022

The results of the linear regression analysis above, it can be seen that the multiple linear regression equation with the equation:

$Y = a + b1X1 + b2X2 + b3X3 + \mu$

Judging from 4.26 above shows, we get multiple linear equations that can be seen from the unstandardized coefficients with the mathematical equation:

$Y = 1.957 + 0.762\ X1 + 0.531\ X2 + 0.244\ X3 + \mu$

Hypothesis testing

The t-test is used to determine how far the influence of an independent variable on the dependent variable. To be able to see how far the independent variables (ship seaworthiness, health and safety culture, harbor control, and port authorities) individually affect the dependent variable (Sailing Safety).

Looking for t table :

Number of respondents (n) = 83 people

Significance rate ά = 5%\

Degree of freedom (df) = n – k – 1 = 83 – 3 – 1 = 79

t table = 1.99045

Hypothesis:

Ho: Ho is accepted, meaning that there is no positive influence between Ship Seaworthiness (X1), Health and Safety Culture (X2), Harbormaster, and Port Authority Supervision (X3) on Shipping Safety (Y).
Ha: Ha is accepted, meaning that there is a positive influence between Ship Seaworthiness (X1), Health and Safety Culture (X2), Harbormaster, and Port Authority Supervision (X3) on Shipping Safety (Y).

The basis for decision-making:
If the t statistic <t table, then H0 is rejected.
If the statistic t count > t table, then Ha is accepted.

Partial Hypothesis Testing (T-Test)

Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*
		B	Std. Error	Beta		
1	*(Constant)*	1.957	.588		3.328	.001
	Ship Seaworthiness	.762	.074	.810	10.260	.000

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	Health and Safety Culture	.531	.095	.181	2.382	.000
	KSOP Supervision	.244	.107	.302	2.280	.000
a. Dependent Variable: Y						

Source: Primary data processed in 2022

From the results of the t test table above it can be explained as follows:

a. Effect of the independent variable Seaworthiness of the Ship (X1) on the dependent variable of Sailing Safety (Y)

The results of testing the price variable (X1) on customer satisfaction yield a t-count value of 10.260 and a t-table value of 1.99045. Where the value of t count > t table and a significance value of 0.000 <0.05 (5%) thus the first hypothesis (H1) is accepted that the independent variable Airworthiness of the Ship (X1) has a positive and partial (Individual) effect on the dependent variable Safety Sailing (Y)

b. The influence of the independent variable Health and Safety Culture (X2) on the dependent variable Sailing Safety (Y)

The results of testing the variable Health and Safety Culture (X2) on Sailing Safety yielded a t-count value of 2.382 and a t-table value of 1.99045. Where the value of t count > t table. and a significance value of 0.00 <0.05 (5%). Thus, the second hypothesis (H2) is accepted that the independent variable Health and Safety Culture (X2) has a partial positive influence (Individual) on the dependent variable Sailing Safety (Y).

c. Effect of Independent Variable Supervision of Harbormaster Office and Port Authority (X3) on the dependent variable Shipping Safety (Y)

The results of testing the transportation innovation variable (X3) on customer satisfaction yielded a t-count value of 2.280 and a t-table value of 1.99045. Where the value of t count > t table. and a significance value of 0.00 <0.05 (5%) Thus the third hypothesis (H3) is accepted that the independent variable Supervision of the Harbor master's Office and Port Authority (X3) has a partial positive effect (Individual) on the dependent variable Shipping Safety (Y).

Based on the results of the t-test for each independent variable (ship seaworthiness, health and safety culture, port authority supervision) it is known that t count > t table, then H0 is rejected and Ha is accepted, meaning that individually there is a positive and significant influence between the independent variables (Seaworthiness of Ships, Health and Safety Culture, Supervision of Harbormaster and Port Authorities) on the dependent variable (Shipping Safety) at the Port of Tanjung Emas Semarang.

Coefficient of Determination

The coefficient of determination aims to determine how much influence the independent variables have on the dependent variable. By using the help of the SPSS ver 26 programs, the results obtained are as follows:

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Determination Coefficient Test Results

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.914[a]	.835	.829	.653

a. *Predictors: (Constant)*, Supervision of KSOP, Ship Airworthiness, Health and Safety Culture

b. *Dependent Variable*: Navigation Safety

Source: Primary data processed in 2022

From the display of the SPSS output above the summary model, the amount of adjusted R−2 is 0.829. This means that the variables of Ship Seaworthiness (X1), Health and Safety Culture (X2) and Supervision of Harbor master's and Port Authority Offices (X3) have a contribution of 82.9% in affect shipping safety (Y). While other factors that influence shipping safety are (100% - 82.9%) = 17.1%. That is, the remaining 17.1% is another variable that is not proposed in this study. Such as Vessel Manning and Port Clearance.

5. CONCLUSION

Based on the results of the research and discussion, the following conclusions can be drawn: Multiple linear regression equation Y = 1.957 + 0.762 X1 + 0.531 X2 + 0.244 X3 + μ

a. The results of statistical tests with multiple linear regression equations are Ship Seaworthiness (X1) of 0.762 meaning that if the other independent variables (constant) have a fixed value and Ship Airworthiness (X1) is increased by one unit, then the level of the Sailing Safety variable (Y) has increased by 0.762. And it was found that the variable Airworthiness of the Ship (X1) partially had a positive and significant influence on the Maritime Safety variable (Y).) which means that the ship's seaworthiness has a positive and significant effect on shipping safety.
b. The results of statistical tests with multiple linear regression equations are Safety and Health Culture (X2) of 0.531 meaning that if the other independent variables (constant) have a fixed value and Safety and Health Culture (X2) are increased by one unit, then the level of the Maritime Safety variable (Y) has increased of 0.531. And it was found that the variable Safety and Health Culture (X2) partially had a positive and significant influence on the Sailing Safety variable (Y), this was evidenced by the t-count value of the Safety and Health Culture variable which was 2,382 explained by the t-value (2,382) > t table (1.99045) which means Safety and Health Culture has a positive and significant effect on Sailing Safety is accepted.
c. The results of statistical tests with multiple linear regression equations are the Supervision of the Harbor Masters Office and Port Authority (X3) of 0.244 meaning that if the other independent variables (constant) have a fixed value and the Supervision of the Harbor Masters Office and Port Authority (X3) is increased by one unit, then the level of the Sailing Safety variable (Y) increased by 0.244. And it was found that the variable Supervision of the Harbor Masters Office and

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Port Authority (X3) partially had a positive and significant influence on the Sailing Safety variable (Y), this was evidenced by the t value of the variable Supervision of the Harbor Masters Office and Port Authority which was 2,280 explained by the t value calculated (2.280) > t table (1.99045) which means that Supervision of Harbormaster and Port Authority has a positive and significant effect on Shipping Safety is accepted.

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