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Analysis of the Competency of People's Shipping Ship Crews in Determining the Position of the Ship (Case Study: Pelra Ship at Maccini Baji' Harbor, Pangkajene Regency and the Islands and Paotere-Makassar People's Harbor)

Subehana Rachman[1*], Haerani Asri[2], Meti Kendek[3], Adi Suriadi[4]
[1]Politeknik Ilmu Pelayaran Makasar, Sulawesi Selatan, Indonesia, subehana@pipmakassar.ac.id
[2]Politeknik Ilmu Pelayaran Makasar, Sulawesi Selatan, Indonesia, haerani.asri@yahoo.com
[3]Politeknik Pelayaran Sorong, Papua Barat Daya, Indonesia, metikendek22@gmail.com
[4]Universitas Islam Makassar, Makassar, Indonesia, adisuriadi.dty@uim-makassar.ac.id

[*]Corresponding Author: subehana@pipmakassar.ac.id

Abstract: This research aims to identify Pelra human resources with GT 35-250 Tonnage in navigating, especially determining the position of the ship during shipping and to determine the implementation of regulatory standards related to the competency of Pelra HR with GT 35-250 Tonnage in carrying out manning on board. The data analysis technique used in this research is a quantitative descriptive analysis technique using a reliable questionnaire. This technique uses a percentage of qualitative data that is quantitative to make it easier to obtain final results from two or more variables and then the data is qualitative again. The data analysis technique used is multiple linear analysis with SPSS 26.0 software. Based on the results of the data analysis above, Pelra's resources with GT 35-250 Tonnage in navigating to determine the position of the ship on the voyage, viewed from the results of the data analysis above, show that the human resources of people's shipping in carrying out navigation when determining the position of the ship are said to be good and need to be improved several times. so that human resources can be maximized in navigation when determining the position of the ship, while the implementation of regulatory standards related to the competency of Pelra's HR with GT 35-250 Tonnage in carrying out manning on board, based on research results, is said to be good, but it is still necessary to improve the competency of HR according to regulatory standards in carrying out manning on board the ship in order to reduce risks and dangers when determining the position of the ship.

Keywords: Ship Crew Competency, Determining The Position Of The Ship, Shipping Safety.

INTRODUCTION

Sea transportation is effective as a connecting medium for all islands so that mass transportation via water is more profitable, but in reality, there are still many areas in Indonesia that are not yet reached by ships, especially disadvantaged, underdeveloped,

isolated, and border areas (3TP). This is caused by an uneven goods distribution system, and from an economic aspect it is not yet profitable for commercial ships to visit, especially in the Eastern Region of Indonesia (KTI) (Jhoni Mahlisan, 2017).

So the role of people's shipping in connecting regions, especially remote areas, is very important, which is very influential and quite important for industrial companies, factories, and shops. Middle economic level players are customers who generally hope that service and performance will improve, but several things need to be addressed which, although they seem small, have a big impact on People's Shipping Companies, Sea Freight Expeditions, and customers. The existence of people's shipping transportation, which is a mode of sea transportation, is increasingly needed to support community mobility in archipelagic areas. Where island communities carry out socio-economic and cultural activities by moving from the mainland to the islands on a regular and regular basis overtime over a distance of more than 100 to 500 nautical miles, with a shipping frequency of at least once a day and week with priority in passenger transportation and superior goods or commodities in the archipelagic region.

The results of the study illustrate that the obstacles in developing Pelra include the cargo aspect, fleet rejuvenation aspect, capital/financing aspect, management aspect and Human Resources (Syafril K.A 2018). Through Presidential Regulation No. 74 of 2010, giving special attention aimed at empowering the people's economy on an SME scale, increasing the resilience of connectivity and services to the interior and/or waters, preserving the nation's cultural heritage, and supporting the program for implementing public service obligations for goods and passenger transport at sea by considering safety and security, as well as the capabilities and capacity of Pelra ships. Then this empowerment will also include developing human resources, ship fleets, building ship terminals, increasing business management capacity, and maximizing the availability of cargo for people's shipping vessels.

However, people's shipping is a community business in South Sulawesi, with management that is still traditional and has its own characteristics so it is deemed necessary to provide better managerial capabilities in management, ships and human resources. In order to empower the economy of coastal people on a small and medium scale, affirmative policies are needed for all people's shipping activities, but still prioritize the safety aspects of crew and vessels. Thus, it is necessary to efficiently manage renewable sea transportation in order to achieve higher commodity distribution, capital mobility and business competition. Efficiency in distribution and logistics systems in national and international trade systems can be achieved through the development of integrated inter-modal transportation system technology (Jinca M.Y et.al., 2011).

Based on facts from the Sea Transportation report (quoted from the report of Capt. Antoni, 2023 in the Ministry of Transportation of the Republic of Indonesia) there has been an increase in sea transportation accidents since 2020 with 87 accident cases, 2021 with 100 cases and 2022 with 108 accident cases, from the facts and data provided It can be said that maritime transportation accidents have claimed many lives and lost quite a lot of property. Then the accident can happen anywhere, at any time and will happen to anyone. From year to year, shipping accidents in Indonesia have never decreased, and tend to increase. Tragically, the causes of maritime transportation accidents always involve the same problem, namely repeated errors, namely accidents caused by negligence and human resource capabilities (incompetence), bad/natural weather, overloading, or ships that no longer meet seaworthiness standards.

In fact, in the 2015–2020 period there were 880 ship accidents in Indonesia, and 9% of them were Pelra ships (Ditjenhubla, 2021). Pelra ship accidents predominantly occur in the seas of Eastern Indonesia. The size of ships that experience accidents is dominated by ships under 150 GT at 82.95% (Malisan, 2013).

In the context of international law, rules regarding ship safety have been regulated in the 1974 SOLAS convention, MARPOL, LLC 1966, Collreg 1972, STCW 1987, but their application does not apply to PELRA transportation. Based on these conditions, the Government, in this case the Ministry of Transportation, enforces Ministerial Regulation no. KM 65/2009 concerning Standards for Non-Convention Vessels (NCVS) with the Indonesian Flag, which was later included in the Directorate General of Transportation Decree No. UM 008/9/20/DJPL-12 of 2012 concerning the implementation of standards and technical instructions for ship implementation.

As an initial investigation, the research team observed the visits of Pelra ships to the two public ports where the level of shipping mobility was very high by carrying out national logistics transportation for various needs of the island community. Pelra ships sail on various national routes, as sea highways and also as inter-island shipping routes in the Pangkajene Islands sub-district. The crew recruitment system does not yet use standard competency standards as a minimum requirement because it is still managed by family and kinship management between the owners and crew of Pelra ships. However, for certain gross tonnage, several crew members already have adequate competency certificates.

The following is data on public shipping vessels carrying out loading and unloading activities at Paotere Port, Makassar, from all corners of the archipelago in eastern Indonesia, carrying superior commodities from the fisheries, mining and agricultural sectors.

Table 1. Data on People's Shipping Ships at Paotere People's Harbor, Makassar

No.	Name of the Pelra Ship	Number of Ship Crew	GT Ship (Tonnage)	Ship Length (Meters)	Load Amount (Tonnage)
1	KLM. Bina Harapan Indah	9	174	50	400
2	KLM. Citra Makmur	10	250	-	600
3	KLM. Cahaya Akbar 5	5	114	25	275
4	KLM. Mega Dua Tujuh	9	261	± 35	400
5	KLM. Berkat Buana Rahman	5	99	35	260
6	KLM. Marlina Jaya 02	5	34	15	150
7	KLM. Sadulang Expres	3	19.	12	9
8	KLM. Cahaya Ulfiah	3	-	12	9
9	KLM Surya Jati	3	21	27	30
10	KL M .Cahaya Indah	4	45	25	80

So, in this research, to identify Pelra human resources with GT 35-250 Tonnage in navigating, especially determining the position of the ship on the voyage. To find out the implementation of regulatory standards related to the competency of Pelra HR with GT 35-250 Tonnage in carrying out manning on board.

Indonesia is a member of the International Maritime Organization (IMO) and is obliged to comply with international provisions, one of which is the 2010 Standards for Training, Certification and Watch Service for Seafarers in Manila. There are many regulations related to maritime affairs, including seafarer skills training. The training process is known as skills certification, because the results of the training are issued competency certificates and expertise certificates for training participants who meet the requirements. Seafarer certification according to ILO convention no. 185 of 2003, has been revised into MLC 2006 and STCW 2010 which is implemented through Law no. 21 of 1992 concerning shipping, Government Regulation Number 7 of 2000 concerning the regulation of seafarers, and Ministerial Decree No. km.18/1997 concerning education and training (Rudianto et al., in Ivan Potto et al 2022).

According to Safriady Saleh in Rifaldy (2024) Positioning is a way to determine where a ship is at a certain time expressed in latitude and longitude or bearing and the distance from a reference point is calculated based on positioning methods.

According to Iwan Weda (2022) Shipping safety is very important in the world of shipping. Shipping includes characteristics regarding attitudes, values, fulfillment of safety and security requirements relating to transportation in waters and ports. This low level of shipping safety can be caused by weak human resource management including education, competence, working conditions, working hours and process management, resulting in increased economic costs and medical costs, inefficient use of energy and pollution (Suryani, et al, 2018).

Accidents in maritime transportation still occur frequently, resulting in disruption of economic activities in an area. This is caused by the weakness of sectors that have a major contribution to shipping safety, namely service users, regulations and laws as well as workers in the field (Wiji Santoso, et al, 2013). Shipping safety is everything that exists and can be developed in relation to accident prevention measures when carrying out work in the shipping sector. In Law no. 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.

METHOD

The analysis used is comprehensive, with a good quantitative descriptive approach, which is supported by primary data from measurements, observations, and interviews as well as secondary data in the form of literature and statutory regulations that apply specifically to people's shipping. This research is descriptive research with a field survey method and data collection techniques using questionnaires which are realized in the form of statements and given to respondents to be filled in according to the actual situation.

The population of this research is all crew members of public shipping vessels who are found at public ports. Then what will be purposive sampling is determining a sample that is randomly selected from the total population. According to Ali Mahsum (2012:29), a Variable is a concept that has variability in diversity which is the focus of research. The dependent variable in this research is the competency of the Pelra crew which uses two independent variables, namely the quality of the Pelra crew as variable safety of the ship during its voyage.

The data analysis technique used in this research is a quantitative descriptive analysis technique using a reliable questionnaire. This technique uses a percentage of qualitative data that is quantitative to make it easier to obtain final results from two or more variables and then the data is qualitative again. The data analysis technique used is multiple linear analysis with SPSS 26.0 software.

In the framework of the flow of thought, the research team created a technical flow for solving the problem, namely analyzing the competence of the Pelra crew in determining the position of the ship during the voyage. In several regulations, the government has given a lot of room to take sides in the people's shipping transportation sub-system, and Presidential Regulation no. 74 OF 2021 concerning the Empowerment of People's Maritime Transport has detailed its objectives, namely empowering the people's economy on an SME scale, increasing the resilience of connectivity and services to the interior and/or waters, maintaining the nation's cultural heritage, and supporting the program for implementing public service obligations for goods and passenger transport in the sea by considering safety and security, as well as the capability and capacity of pelra ships.

Then this empowerment will also include the development of human resources/pelra ship crew who have competency standards with adequate knowledge, skills, and experience. With basic knowledge, Pelra crew members can sail their ships at a distance of 100-500 NM safely from navigational hazards. It is hoped that this research will make a real contribution in providing basic knowledge in determining ship positions and using electronic navigation

correctly.

RESULT AND DISCUSSION

Research Result

a. Validity Test

The validity test is used to see whether each instrument is valid in terms of ship crew competency, ship position determination, and shipping safety. The r table value of this test is 0.2632 with DF=N-2 significance level of 0.05 (5%). The instrument is declared valid if the correlation coefficient figure obtained is greater than the r table value. The results of the validity test in this test for each variable are as follows:

Table 2. Percentage of Answers from Questionnaire Distribution Results Based on Variables

Variable	Item	Correlation Coefficient	r table	Information
X	X.1	0,396	0,2632	Valid
	X.2	0,526	0,2632	Valid
	X.3	0,573	0,2632	Valid
	X.4	0,468	0,2632	Valid
	X.5	0,512	0,2632	Valid
	X.6	0,405	0,2632	Valid
	X.7	0,511	0,2632	Valid
	X.8	0,476	0,2632	Valid
	X.9	0,500	0,2632	Valid
	X.10	0,567	0,2632	Valid
	X.11	0,531	0,2632	Valid
	X.12	0,439	0,2632	Valid
	X.13	0,479	0,2632	Valid
Y1	Y1.1	0,523	0,2632	Valid
	Y1.2	0,588	0,2632	Valid
	Y1.3	0,645	0,2632	Valid
	Y1.4	0,598	0,2632	Valid
	Y1.5	0,623	0,2632	Valid
	Y1.6	0,411	0,2632	Valid
	Y1.7	0,457	0,2632	Valid
	Y1.8	0,302	0,2632	Valid
	Y1.9	0,564	0,2632	Valid
	Y1.10	0,642	0,2632	Valid
Y2	Y2.1	0,421	0,2632	Valid
	Y2.2	0,488	0,2632	Valid
	Y2.3	0,525	0,2632	Valid
	Y2.4	0,492	0,2632	Valid
	Y2.5	0,532	0,2632	Valid
	Y2.6	0,522	0,2632	Valid
	Y2.7	0,419	0,2632	Valid
	Y2.8	0,397	0,2632	Valid
	Y2.9	0,401	0,2632	Valid
	Y2.10	0,476	0,2632	Valid

Source: processed data, 2024

From the table above it can be concluded that the variable for determining the position of the ship shows valid results. This is proven that the coefficient value is greater than the r table value at the 5% significance level. Thus, all instruments from the variables of ship crew competency, ship positioning, and ship safety during shipping used in this research can be used to explain ship crew competency, ship positioning, and ship safety during shipping.

b. Reliability Test

The reliability test is used to determine whether the indicator instrument used is reliable and remains consistent if the measurement is repeated. Reliability testing uses Cronrach's Alpha method.

Table 3. Reliability Test

Item	Reliability Coefficient	Test Results
Ship Crew Competency	0,780	Reliable
Determining the position of the ship	0,883	Reliable
Shipping Safety	0,834	Reliable

Source: Processed data, 2024

Based on the results of the reliability test, it can be concluded that all the variables used in this research are reliable. This is because the Cronbach's Alpha coefficient is above 0.6. Based on the results of the analysis, it can be concluded that all instruments in this research, even if tested repeatedly, can produce the same results so that the questionnaire can be used to carry out further testing.

c. Path Analysis

This analysis is used to determine the level of influence of the independent variable partially on the dependent variable. Path analysis is used to answer the first to second hypotheses by looking at the research tcount value, if tcount > ttable then the hypothesis is accepted, whereas if tcount < ttable then the hypothesis is rejected. The significance level used in this research is 5% (0.05), this shows that the error rate in this research is 5% or a confidence level of 95%. The value of each regression coefficient can be determined through the results of path analysis calculations using the SPSS 16.00 for Windows program to obtain the following results:

1. Regression Analysis Results for the first model regression (Ship Crew Competency (x) in determining the position of the ship (y1).

Table 4. Model Path Table I

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.501[a]	.393	.366	1.142721

Predictors: (Constant),Ship Crew Competency

From the results of the table in the model summary table, it shows that the amount of R2 or R Square is 0.366, it is known that the coefficient of determination is 36.6%. This shows that the contribution or influence of Ship Crew Competency (x) on determining the position of the ship (y1) is 36.6% while the remaining 63.4% is the contribution of other variables.

2. Regression analysis results for the first model regression (ship crew competency (x) shipping safety (y2).

Table 5. Model Path Table II

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.421[a]	.441	.482	1.153411

Predictors: (Constant), Ship Crew Competency

From the results of the table in the model summary table, it shows that the amount of R2 or R Square is 0.482, it is known that the coefficient of determination is 48.2%. This shows that the contribution or influence of Ship Crew Competency (x) on shipping safety (y1) is 48.2% while the remaining 51.8% is the contribution of other variables.

d. Hypothesis Testing

1) F Test

Hypothesis testing is determined using the F test. This test is carried out to determine the significant influence of the independent variables simultaneously on the dependent variable. This test will compare the significant value of the data test results by comparing the significant value that has been set at 0.05 (5%)

Table 6. F-Test Table

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	121.778	1	20.441	26.534	.000[b]
	Residual	36.000	55	.318		
	Total	157.778	56			

a. Dependent Variable: Shipping Safety (y1) Estimated Ship Arrival Time (y2)

b. Predictors: (Constant), Ship Crew Competency (X),

Based on the regression output of model II in the ANOVA table section, it can be seen that the significant value of the influence of the independent variables simultaneously on the dependent variable is the F value of 20.441 which is greater than the F table value of 3,170. The results of this research provide the conclusion that model II regression, namely the crew competency variable simultaneously has a significant effect on determining ship position and shipping safety.

2) T-Test

To determine the partial significance level between each independent variable and the dependent variable, the hypothesis must be tested with a t-test at a significance level of α = 5% in both directions.

a) Analysis of the influence of competence on determining the position of the ship**Coefficients[a]**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.455	3.040		1.402	.126
	Ship Crew Competency (X)	.169	.071	.150	2.042	.022

a. Dependent Variable: Shipping Safety (y1)

Analysis of the influence of crew competency on determining the position of the ship. From the above analysis, the significance value of crew competency (X) is 0.022 < 0.05, so it can be concluded that there is a direct significant influence of crew competency on determining the position of the ship.

b) Analysis of the influence of ship crew competency on shipping safety

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	4.433	3.130		1.301	.147
	Ship Crew Competency (X)	.176	.083	.200	2.081	.001

a. Dependent Variable: Estimated Ship Arrival Time (y2)

Analysis of the influence of ship crew competency on shipping safety. From the above analysis, the significance value of ship crew competency (X) is 0.001 < 0.05, so it can be concluded that there is a direct significant influence of ship crew competency on shipping safety.

Discussion

How do Pelra HR with GT 35-250 Tonnage navigate, especially determining the position of the ship during the voyage?

From the results of observations in several Based on the results of data analysis above, Pelra's resources with GT 35-250 Tonnage in navigating determine the position of the ship on the voyage. classified as good, because it can be seen from the answers given by respondents which were dominated by agreed answers. So it can be said that the human resources for shipping with GT 35-250 Tonasa in navigation, especially determining the position of a shipping vessel, are said to be good, because it can be seen from the competency indicators of the crew starting from understanding the basic concepts of navigation, knowledge of basic procedures for determining the position of the ship, the use of navigation tools such as GPS, and other supporting equipment such as avionics, dominant with an affirmative answer because as a ship's crew, the duties and responsibilities of human resources at sea are to sail the ship safely and securely per national and international regulations regarding the use of the five senses and navigational aids on board ships.

Human resources who are on guard duty on a ship are very important so that the voyage runs safely and avoids the danger of collision if when the ship determines its position while sailing, this is based on research results. There are still crew members whose competence is lacking in determining the position of the sailing vessel, so this needs to be addressed by increasing the competency of human resources, in the task of carrying out special navigation in determining the position of shipping vessels so that the shipping process runs smoothly to the destination.

Per what the author obtained after carrying out research related to the analysis of the influence of crew competency on determining the position of the ship, from the analysis the significance value of crew competency (X) was obtained at 0.022 < 0.05, so it can be concluded that there is a direct significant influence on crew competency. ship to determine the position of the ship.

An analysis of the influence of crew competency on shipping safety, from the above analysis, the significance value of crew competency (X) is 0.001 < 0.05, so it can be concluded that there is a direct significant influence of crew competency on shipping safety.

Based on the regression output of model II in the anova table section, it can be seen that the significant value of the influence of the independent variables simultaneously on the dependent variable is the F value of 20.441 which is greater than the F table value of 3,170. The results of this research provide the conclusion that model II regression, namely the crew competency variable, simultaneously has a significant effect on shipping safety and estimated ship arrival time.

So the results of the data analysis above indicate that Pelra's human resources with GT 35-250 Tonnage in navigating to determine the position of the ship on the voyage, judging from the results of the data analysis above, show that the human resources of people's shipping in carrying out navigation when determining the position of the ship are said to be good and need to be improved several times. so that human resources can be maximized in navigation when determining the position of the ship. This is in line with the theory of Indriastiwi et al. (2011) stated that the government must take firm steps in fulfilling human resource competency needs in accordance with the required qualifications both through formal and informal training. Wahyu P. Anggrahini (2010), states that shipping companies should provide competent human resources (HR) with appropriate expertise and skills. Improving HR skills can be done through formal or informal training.

How do regulatory standards apply regarding the competency of Pelra's human resources with GT 35-250 Tonnage in carrying out manning on ships?

Sea transportation companies or companies recruiting and placing crew members are required to have documentation and data regarding seafarers employed on ships, guarantee that each seafarer who is certified on board the ship has a seamanship certificate that meets national or international regulations and guarantee that each seafarer who is certified on board the ship having documents relating to the work experience and competence of the ship's crew simultaneously has a significant effect on determining the position of the ship and shipping safety.

The application of regulatory standards regarding the competency of Pelra's human resources with GT 35-250 Tonnage in carrying out manning on ships, based on research results, is said to be good, but it is still necessary to improve the competency of human resources according to regulatory standards in carrying out manning on ships to reduce risks and dangers when determining position. boat. This is in line with the theory of Muhamad Ainul Huda et al. (2012) stated that the solution to achieve optimization of the implementation of national regulations related to fishing vessel safety is the conformity of requirements with aspects of technical considerations, then the firmness of the rules taking into account legal aspects and the seriousness of the relevant institutions in enforcing the rules that have been made.

CONCLUSION

1. The analysis of the data results above shows that the human resources of Pelra with GT 35-250 Tonnage in navigating to determine the position of the ship on the voyage, viewed from the results of the data analysis above, show that the human resources of people's shipping in carrying out navigation determining the position of the ship are said to be good and needs to be increased several times so that human resources can be maximized in ship navigation when determining position.
2. The implementation of standard regulations regarding the competency of Pelra's human resources with GT 35-250 Tonnage in carrying out manning on board ships, based on the research results, is said to be good, but it is still necessary to improve the competency of human resources according to regulatory standards in carrying out manning on ships in order to reduce risks and dangers during determine the position of the ship.

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