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Analysis of the Replacement Crew Mechanism on the Performance of the Crewing Department at PT Jasindo Duta Segara

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Abstract: Era of globalization, sea transportation gave rise to crewing companies to look for ship crew resources to perform crew replacements order to get quality crews to work on ships. To expedite these activities, the company has taken every step to ensure replacement crew activities run well and optimally. This study uses descriptive quantitative methods, with data collection using questionnaires, observations, literature studies, and documentation so the data can be processed using quantitative descriptive data analysis. The results showed the cause of declining crewing department performance was due the non-optimal replacement of ship's crew, and how to deal with it was evaluated for each implementation. Crew changes must be made according to the position and experience of the crew itself.

Keywords: Mechanism, Replacment Crew, Performance, Crewing, Department

INTRODUCTION

Indonesia is a maritime country located in a very wide marine territorial area which has many islands and is surrounded by sea and water areas. Of course, relying heavily on sea transportation as a means to make it easier for people to travel between islands. Sea transportation is an important transportation that cannot be carried out by other types of transportation, both for the purpose of transporting people and goods. This type of transportation is capable of carrying up to thousands of passengers and hundreds of thousands of cargo. It is important for Indonesia, which is the world's largest archipelagic country, for economic equality and the socio-cultural development of the archipelago.

The potential and role of sea transportation has not been fully supported by a conducive safety and security system and adequate facilities and infrastructure. Various difficulties arise in efforts to improve the quality of service coverage, improve facilities and infrastructure, including maintaining and improving the safety of transportation service users. Obstacles in improving the performance of transportation services have been recognized and the government still has a lot to do. Therefore, the government through its work program continues to strive to meet the level of deficiency, level of reliability, safety and satisfaction

of service users, both through the development of human resources (crew), fleet feasibility, technical conditions both facilities and infrastructure, operational management and the quality of law enforcement. in the field of sea transportation.

PT Jasindo Duta Segara, is one of the companies engaged in agency crews or can also be called crew manning agencies. Crew manning agency is a company that only takes care of manning ships for ship owners abroad. PT Jasindo Duta Segara is an example of a manning service company that cooperates with several foreign companies, namely companies from countries in Asia such as Korea, Japan, Singapore and Taiwan. The growing world of shipping, there is a shift in developed countries where they do not want to become seafarers and choose to become business actors. Quality ship crew resources are needed by shipping companies in facing the era of globalization which is marked by advances in marine transportation and shipping technology.

From here, companies in developed countries look for Human Resources (HR) for seafarers to developing countries that have many seafarers, one of them is Indonesia. The large number of requests for Human Resources (HR) for seafarers in developing countries has even led to the emergence of crew manning agency companies such as PT Jasindo Duta Segara as representatives of foreign companies in Indonesia to find seafarers. They need good quality crew members to be employed on their ships. Replacement crew on board is a very important activity at PT Jasindo Duta Segara. This activity is the process of replacing the crew on board with a new crew who will be employed on the ship based on a plan or schedule determined by the shipping company,

According to company data in August 2021, PT Jasindo Duta immediately placed 1000 crew members from Indonesia on ships owned by the ship owner consisting of officers (deck and engine), rating. This number has not been added to the stand-by crew who are resting after getting off the ship, which is held by PT Jasindo Duta Segara, totaling approximately 111 crew members from the ship's officer position or rating. The increasing number of ships manned by PT Jasindo Duta Segara has made the company's ship crew replacement activities very large, meaning that about 30 ships manned by PT Jasindo Duta Segara carry out ship crew replacement activities within a period of 1 month with a total crew of 100 people. So therefore,

The implementation of the replacement crew mechanism at PT Jasindo Duta Segara is still not going well, so improvements are needed. The company has tried to provide improvements related to these obstacles, but has not provided effective results and improvements are still needed. So the researchers are interested in making research with the title: "Analysis of replacement crew mechanism on crewing department performance at pt jasindo duta segara"

RESEARCH METHOD

PT Jasindo Duta Segara, Plaza Kelapa Gading Rukan Block C No. 55, Jl. Raya Boulevard Barat, Kelapa Gading, RT.2/RW.9, Kelapa Gading Barat, Kelapa Gading, City of North Jakarta, Special Capital Region of Jakarta 14240. Methods/techniques of analysis using quantitative descriptive analysis techniques. According to Sugiyono (2015: 203) observation is a more specific data collection technique when compared to others because observation is not limited. In conducting observations, the researcher selects the things that are observed and notes things related to the research. Observations in this study by making direct observations at the research location, namely at PT Jasindo Duta Segara.

The questionnaire is a data collection method that is carried out by asking questions to respondents and asking them to answer by filling out a form, this is efficient as long as the researcher is sure about the variables being tested and what respondents expect (Sugiyono, 2015:199).

Documentation is a data collection technique by means of photo evidence or data to support the data and information that has been presented by the author to complete this thesis, including the crew departure process and also the crew list on land at PT Jasindo Duta Segara.

Reading, viewing, researching, quoting from books or references offered, input or considerations, and comparisons of what can be seen from existing theories are examples of literature studies. This literature study has the aim of getting the basics of theory with the problems to be discussed.

Sugiyono (2015:117) suggests that population is a generalization consisting of various objects and subjects with certain characteristics and qualities that researchers choose to study and draw conclusions from. So the population in this study were employees of the PT Jasindo Duta Segara office as many as 38 people.

According to Sugiyono (2015:118) the sample is part of the number and characteristics possessed by the population. Meanwhile, according to Suharsimi Arikunto (2010:112) if the research subject is less than 100, then it is better to take it as a whole, but if the population is greater than 100 people, then 10-15% or 20-25% of the total population can be taken.

According to Sugiyono (2017:130) states that the reliability test is the extent to which the measurement results using the same object will produce the same data.

$$r_{AB} = \frac{(n\sum AB) - (\sum A\sum B)}{\sqrt{[n(\sum A^2) - (\sum A)^2][n(\sum B)^2 - (\sum B)^2]}}$$

Information:

- ☐ = Correlation Pearson Product Moment
- A = Total number of odd hemisphere scores
- B = The total number of even hemisphere scores
- A² = Sum of squares of odd hemisphere scores
- B² = Sum of the squares of even hemisphere scores
- AB = The number of multiplication scores of odd and even hemisphere answers

The instrument can be declared valid, meaning that the measuring instrument used to obtain the data is valid or can be used to measure what should be measured (Sugiyono, 2013:121). :

$$r = \frac{n(\sum XY) - (\sum X \cdot \sum Y)}{\sqrt{[n(\sum X)^2 - (\sum X)^2] \cdot \sqrt{[n(\sum Y)^2 - (\sum Y)^2]}}$$

Information:

- r = Correlation coefficient n
- = Number of respondents X
- = Total score items
- instrument
- Y = Total number of answer scores
- X² = Sum of the squares of the score items
- Y² = Sum of the squares of the total score of answers
- XY = The number of multiplication scores of an answer item with total score

The validity test is carried out using SPSS by comparing the value of rcount with rtable for degree of freedom (df) = n-2 where n is the number of samples. The data is said to be valid if rcount is more than rtable. Item analysis was used to test the validity of this study.

Decision-making:
 1) If rcount is positive and rcount > rtable, then the research statement is declared valid.

2) If rcount is negative and rcount < rtable, then the research statement is said to be invalid.

Simple regression analysis is used to determine whether there is a linear influence of the independent variable on the dependent variable. This test uses linear regression (Riduwan, 2005:145) as follows:

$$= a + bX$$

Where:

- = Subjects in the predicted dependent variable
- a = Price Y when X = 0 (constant price)
- b = Directional number or regression coefficient, indicating the rate of increase or a decrease in the dependent variable based on the variable independent. If b (+) then it increases, and if b (-) it decreases.
- X = Subject on the independent variable that has a certain value.

In addition, the prices of a and b can be found with the following formula:

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} \quad \text{and} \quad a = \frac{(\sum Y) - b(\sum X)}{n}$$

$$r = \frac{n (\sum X \cdot Y) - (\sum X) \cdot (\sum Y)}{\sqrt{n \sum X^2 - (\sum X)^2 \cdot n \sum Y^2 - (\sum Y)^2}}$$

Where:

- R : correlation coefficient, the magnitude of the relationship between the variables x and y
- X : the independent variable is the mechanism replacement crew
- Y : dependent variable is performance crewing department

The magnitude of r can be expressed from -1 < r > 1, meaning:

- 1) If r = -1 or close to -1, there is a relationship between variable X and variable Y, where the relationship is very strong and negative.
- 2) If r = +1 or close to 1, there is a relationship between variable X and variable Y, where the relationship is very strong and positive.
- 3) If r = 0, there is no relationship between variable X and variable Y, in other words, the relationship is very weak.

This test is carried out to find out how much relationship or influence is given between the two variables that will be used in the analysis of the coefficient of determination. The formula used in the coefficient of determination test is:

$$KD = r^2 \times 100\%$$

Information:

- KD = Coefficient of Determination
- R2 = Correlation coefficient X and Y

The t-statistical test basically shows how far the influence of the explanatory/independent variables individually in explaining the variation of the dependent variables (Ghozali, 2013:98). This test is carried out by comparing the t significance level of the test results with the alpha (α) value used in this study is 5% (0.05).

FINDINGS AND DISCUSSION

Data Description

Characteristics of Respondents

Table 1. Gender

| Gender | Number of Respondents | Percentage (%) |
|--------|-----------------------|----------------|
| Man | 23 | 60.5% |
| Woman | 15 | 39.5% |
| Total | 38 | 100% |

Source: data from processed questionnaires

Based on the table above, from the results of the questionnaire as many as 38 respondents, who filled out the male gender questionnaire as many as 23 people with a percentage of 60.5%, while the female sex as many as 15 people with a percentage of 39.5%. It can be concluded that the sample based on gender is more male.

Table 2. Education

| Last Education | Number of Respondents | Percentage (%) |
|--------------------|-----------------------|----------------|
| SENIOR HIGH SCHOOL | 6 | 15.8% |
| SMK | 10 | 26.3% |
| DIPLOMA | 13 | 34.2% |
| S1 | 9 | 23.7% |
| S2 | 0 | 0% |
| Total | 38 | 100% |

Source: data from processed questionnaires

Based on the table above, the last education of the largest respondent is Diploma with a total of 13 respondents and a percentage of 34.2%, while the other last education is SMK as many as 10 people with a percentage of 26.3%, S1 as many as 9 people with a percentage of 23.7%, and SMA as many as 6 people with a percentage of 15.8%. It can be concluded that most of the respondents have the latest education, namely Diploma.

Table 3. Age

| Age | Number of Respondents | Percentage (%) |
|-------------|-----------------------|----------------|
| 20-30 Years | 28 | 73.7% |
| 30-40 Years | 8 | 21.1% |
| 40-50 Years | 2 | 5.3% |
| Total | 38 | 100% |

Source: data from processed questionnaires

Based on the table above, the largest respondent's age is 20-30 years with a total of 28 respondents and a percentage of 73.7%, while those aged 30-40 years are 8 people with a percentage of 21.1% and aged 40-50 years are 2 people with percentage 5.3%. It can be concluded that most of the respondents are 20-30 years old.

Data analysis

Validity Test

Table 4. Validity test

| Statement | Rcount | Rtable Value | Information |
|----------------------------|--------|--------------|-------------|
| Replacement crew mechanism | | | |
| statement 1 | 0.630 | 0.320 | valid |
| statement 2 | 0.519 | 0.320 | valid |

| | | | |
|--------------------------------|-------|-------|-------|
| statement 3 | 0.541 | 0.320 | valid |
| statement 4 | 0.538 | 0.320 | valid |
| statement 5 | 0.373 | 0.320 | valid |
| statement 6 | 0.488 | 0.320 | valid |
| statement 7 | 0.436 | 0.320 | valid |
| statement 8 | 0.393 | 0.320 | valid |
| statement 9 | 0.784 | 0.320 | valid |
| statement 10 | 0.733 | 0.320 | valid |
| crewing department performance | | | |
| statement 1 | 0.670 | 0.320 | valid |
| statement 2 | 0.579 | 0.320 | valid |
| statement 3 | 0.472 | 0.320 | valid |
| statement 4 | 0.611 | 0.320 | valid |
| statement 5 | 0.495 | 0.320 | valid |
| statement 6 | 0.608 | 0.320 | valid |
| statement 7 | 0.532 | 0.320 | valid |
| statement 8 | 0.538 | 0.320 | valid |
| statement 9 | 0.661 | 0.320 | valid |
| statement 10 | 0.564 | 0.320 | valid |

Source: SPSS data that has been processed

Based on the table above, it can be seen that all questions regarding the replacement crew mechanism variable (X) are all valid. And for the statement of the crewing department performance variable (Y) it is declared valid because the value of $r_{count} > r_{table}$ 0.320 and valid questionnaire items can be used as a reference for further research.

Reliability Test

Table 5. Reliability test

| No. | Variable | Cronbach Alpha | Critical Value | Decision |
|-----|-----------------------------|----------------|----------------|----------|
| 1 | Replacement Crew Mechanism | 0.731 | 0.70 | Reliable |
| 2 | Crew Department Performance | 0.771 | 0.70 | Reliable |

Source: SPSS data that has been processed

Based on the table above, it can be seen that the variable crew replacement mechanism has a cronbach alpha value of $0.731 > 0.70$ and the crewing department performance has a cronbach alpha value of $0.771 > 0.70$. Thus, the results of the reliability test on the variable crew replacement mechanism and crewing department performance have a good level of reliability and can be used for further analysis.

Correlation coefficient

Table 6. Correlation coefficient

| Model Summary ^b | | | | |
|----------------------------|-------|----------|-------------------|----------------------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .882a | .779 | .772 | 2.222 |

a. Predictors: (Constant), replacement mechanism
 b. Dependent Variable: crewing performance

From the results of the calculation above using SPSS (Statistical Package for the Social Sciences) from the output, it can be seen that the correlation coefficient above can explain how much the correlation/relationship value (R) is 0.882, meaning a strong correlation. The quality of crew turnover has a high relationship with employee performance and is positive, meaning that if the quality of the replacement crew is getting better, the employee's performance will be higher or vice versa.

Simple Linear Regression

Table 7. Linear Regression

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-----------------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| | (Constant) | 2.253 | 3.372 | | |
| replacement mechanism | .954 | .085 | .882 | 11.251 | .000 |

a. Dependent Variable: crewing performance

From the table, it is known that the constant (a) value is 2.253 while the total crewing department performance value (b/regression coefficient) is 0.954. The constant coefficient is 2.253. It means that the consistent value of the crewing department performance variable is 0.954. The coefficient of the replacement crew mechanism means that the crewing department's performance is 0.954. The regression coefficient is positive, so it can be concluded that the direction of the influence of the variable X on Y is positive. So, the coefficients X and Y are directly proportional, that is, if the quality of the crew replacement mechanism increases, the crewing department's performance process will increase.

Coefficient of Determination

Table 8. Coefficient of Determination

| Model | Model Summary ^b | | | |
|-------|----------------------------|----------|-------------------|----------------------------|
| | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .882 ^a | .779 | .772 | 2.222 |

a. Predictors: (Constant), replacement mechanism

b. Dependent Variable: crewing performance

$$\begin{aligned}
 KP &= r^2 \times 100\% \\
 KP &= 0.882 \times 100\% \\
 KP &= 0.779 \times 100\% \\
 KP &= 77.9\%
 \end{aligned}$$

The calculation results above can explain how much the value of correlation (r) is equal to 0.882 and it can be explained that the percentage of the influence of the independent variable on the dependent variable is known as the coefficient of determination. The coefficient of determination is the result of squaring r. From the calculation above, it can be seen that the coefficient of determination is 0.779, which means that the effect of the independent variable (crew replacement mechanism) on the dependent variable (creating department performance) is 77.9% while the remaining 22.1% is influenced by other variables..

Hypothesis test

Table 9. Hypothesis test

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-----------------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| | (Constant) | 2.253 | 3.372 | | |
| replacement mechanism | .954 | .085 | .882 | 11.251 | .000 |

| | B | Std. Error | Beta | | |
|-----------------------|-------|------------|------|--------|------|
| (Constant) | 2.253 | 3.372 | | .668 | .508 |
| replacement mechanism | .954 | .085 | .882 | 11.251 | .000 |

a. Dependent Variable: crewing performance

The results of the coefficients through data processing in the table above can be seen that the significant value of the influence of replacement crew competence (X) on crewing department performance (Y) is $0.000 < 0.05$ and the value of $t_{count} > t_{table}$ $11.251 > 2.03011$ then H_0 is rejected and H_a is accepted. So there is a strong relationship between the replacement crew (variable X) on the performance of the crewing department (variable Y).

Fixers

Problem solving is a solution used to solve a problem. In this case, it can also be tested by doing the best problem solving by trying an effective alternative to be able to implement the crew replacement mechanism so that it can improve the performance of the crewing department at PT Jasindo Duta Segara. In general, decision making uses judgment, knowledge and experience to decide which alternative is effective to use as problem solving. Then the author makes alternative problem solving decisions, including:

Optimizing crew replacement mechanism on crewing department performance. Optimizing the crew replacement mechanism can be done by increasing the number of more efficient crew replacements. In the results of the t test, the significant value is $0.000 < 0.05$ and the t_{count} is $11.251 > t_{table} 2.03011$ so it can be concluded that the results of H_a can be accepted well, which means the effect of the replacement crew mechanism (X) on the performance of the crewing department (Y). This activity must continue to develop and always evaluate each activity, its implementation must also be in accordance with the replacement crew mechanism that has been set by the standards provided by the company itself.

To improve the quality of the crewing department's own performance. Companies must provide information about the evaluation of skills that must be mastered by office employees that the importance of performance evaluation is on how they perform when working in the office. This can be used as a reference for an increase in employee salaries, given bonuses for their work and it is possible to increase the position of the employees themselves.

To anticipate the lack of crew who stand by to work on the ship, the ship owner can notify at least 1 month or 2 months before the crew change process. This process is so that during the crew replacement process, the company can prepare the crew to be more optimal and can also improve the quality of the search for nominated ship crews. Because, at the time of the nomination process can be prepared as well as possible.

CONCLUSION AND SUGGESTION

Conclusion

The analysis conducted by the author on how the effect of the replacement crew mechanism (X) on the performance of the crewing department (Y) at PT Jasindo Duta Segara, so in this section the author will try to provide conclusions which will be described as follows:

The results of the analysis on the effect of the replacement crew mechanism (X) on the performance of the crewing department (Y) at PT Jasindo Duta Segara with correlation analysis showed the value of $r = 0.882$. In this case, it can be proven that the effect of the crew replacement mechanism has a strong and positive relationship to the performance of the crewing department at PT Jasindo Duta Segara. And for the results using the regression coefficient, a simple linear regression equation is obtained, namely $Y = 2.253 + 0.954 X$

where if there is an increase in the quality of the crew replacement mechanism, there will also be an increase in the performance of the crewing department at PT Jasindo Duta Segara.

From hypothesis testing with an error rate of 5% for all sample data taken, the crew replacement mechanism is proven to be positive and significant to the crewing department performance, the number $t_{count} 11.251 > t_{table} 2.03011$ means that there is a significant relationship between the crew replacement mechanism and the crewing department performance.

Suggestion

In this last chapter, the author will provide suggestions based on the results of the research that has been submitted as follows:

It is advisable that the replacement crew mechanism should continue to be considered further because it is a vital object in the process of changing crew members and must always be evaluated for each implementation. Some important things in this activity must also be adjusted to the conditions of the crew's own experience and also from the type of ship. Therefore, it is necessary to improve the performance of the crewing department so that it can be more optimal in the process of changing crew members.

For the stand by crew list itself, it must be considered because if there is no crew in the process of changing the crew later it can hamper the replacement process. Therefore, the company is obliged to look for crews who are willing to join at least 1 month before sailing on the company's ship so that the nomination can experience better and more effective performance improvements.

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