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The Impact of the Ship Spare Parts Supply Delays to the Cancelation of Ships Departure at Humolco Trans Inc Jakarta

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ABSTRACT

The departure of ships are canceled might be cause of various problems, how ever, if departure of the ships are canceled due to the late of incoming spare parts, it will be bad presedence, since this event will not only make disadvantages to the ships operator but also to the shipper where as the cargo is carried by that ships. The 22 times (66%) delay of ship departure from 36 voyage have happened to the ships which is operated by Humolco Trans Inc- Jakarta. The data showed that the canceled occured because of the delay of the existence of spare parts which are ordered by the ships. This events show that miss management of spare parts have happend. That could be happened at ships or operators management, or the suplliers which is without realized will breach and disturbing other activities regarding the operation of the ships including the images of the shippers. The result of this research shows that there is strong positif correlation (94%) between the delay of spare parts existence and the cancelled of ship voyages, there are 89% the influence of the spare parts existence to the cancelled of ships departures. Therefore, to the future this condition should be able to overcome by those who involved in the management of spare parts.

Keywords: Spare Parts, Ships, Departure Cancelled
JEL Clasifications: L62, R41, R42

1. INTRODUCTUION

In the industry that use heavy duty equipments and machinery like mining indusries, oil and gas industries, land, air and sea transportation industries, adequacy of spare parts to be very important (Wagner, 2008).

This condition is also apply to the availability spareparts on the vessels owned by Humolco Trans Inc Jakarta. It should therefore, the supply of spareparts should be taken into account properly, so that the availability spareparts will not be disturber to the operation of vessels that might effect to disadvantage, not only to their user but also to the shipping company it self (Vujović, 2015).

However, the delays of spareparts supply that still happened in the "Humolco Trans Inc" Jakarta shipping company, it is show that the management is not realize yet how important the role of spareparts for the vessels that they owned (Azizah, 2018).

On the otherhand, the ships operated by "Humolco Trans Inc" Jakarta shipping company should not need to canceled their voyage caused the late of spareparts. In fact, the causes of ships departure delays or canceled are many, it could be the late of cargoes or because of the ship in the unseaworthiness condition (Azizah, 2018).

The ships that are in the unseaworthiness condition and the have to cancel their voyage not only will able to make the damage of contracts of afreightment which is already settled, but also will make disadvantaged for the two party that are carrier and shipper (Perera & Soares, 2017).

The unseaworthiness of ships could be caused by the condition of main engine or auxilary engine which not ready to operated.

And this situation might caused by the delays of engine spareparts supply. The information show that from the thirty six (36) voyages of ships operated by "Humolco Trans Inc" Jakarta were hapened cancelation to the ships departure up to twenty two (22) times or equal to 66% ships voyages.

The time of cancellation in fact, happened at the sametime with the procurement of spare parts, so it is to be expected that the delays are caused by the late of the spare partsavailability. From the description mention above, the researcher team interested to research about "The impact of the ship spare parts supply delays to the cancelation of ships departure at Humolco Trans Inc shipping company Jakarta" (Wu & Lin, 2015).

Based to the problems identification explained above, it is known that discussion is so wide. Therefore, the teams make scope of problems only at the delays of ships spareparts procurement and the cancelation of ships departure.

2. LITERATURE REVIEW

2.1. The Procurement of Ships Spareparts

In order to the maintainance heavy duty equipments, spareparts availabitity should able to support the operation of ships as fleet owned by a shipping company. The discuss about the operation of a shipping company, their ships are the fleet that is operated which is should supported by adequte spareparts in order to ensure operational goal conditions. In the some big industries, spare parts which is expensive need to stocked in order to maintain that the operation of fleet is running well (Kotabe & Murray, 2004).

Generally, the spareparts are clasified to be the repairable spareparts and non- repairable spareparts. The repairable spareparts are the spareparts when could not be used for operational reason in order to preventive maintenance or because of damage, still able to repaired or sent to the recondition facilities and the spareparts can be used again. Meanwhile, non repairable spareparts should be liquidated when those sparepart damage or expired.

"The "lost sales"rule that is common in final product inventory problems is regularly not applicable to the spare parts area, because if no spares are available, extended equipment downtime is generated" (Matsa, 2011).

"The lost sales" that usually is happened in the last product of spareparts stock have similar meaning with the delays of spareparts because of the late of supllier to deliver the spareparts to the buyer.

According to (Barnhart et al., 2003) *"Spare part inventories can be very high when poor inventory systems are used"* which mean that the availability of spareparts will be over suplly when spareparts inventory is managed very bad. On the other hand, high costs also will appearwhen a sparepart is not available when is needed. Because of that, the balance between the arrangement financial sparepart procurement and the loss of finance caused by inventory dan the loss caused by unavailabity of spareparts should be taken into account properly (Kotabe & Murray, 2004).

Therefore, the definition operational of spare parts supply delays is the unavailabilty of the spareparts when the spareparts id needed, that causefluency of the vessel operation is disturbed.

2.2. The Disturbance of Fluently Ships Voyage Departure

"The vessel must be seaworthy at the commencement of the voyage" (Wardley, 2008). The main objective of the shipping company operated their owned vessel is to get finance benefits as much as possible. Because of that, the vessel which is operated (Perera & Soares, 2017), should not be constrained by situation that make the vessel to be unseaworthiness. explain that the seaworthinnes of a ship is, if that ship able to follow the regulation for the safety of a ship, including the hull of the ship, safety equipments, passanger certificates, radio safety certificates, radio telegraf certificates and the cargo safety equipments.

The ship condition wich is not seaworthiness wil make the cancelation of her voyage that will make harm to both of then, the ship owner and the shipper (Wang & Lutsey, 2014).

When a ship temporary in the condition of unseaworthiness but it is still on going operation and the operator able to make the ship to be worthiness on voyage, this condition is allowed and not disturb the agreement between the shipper and the ship operator (Wardley, 2008).

Howerver, if clearly known that the ship is not worthy but the operator forced to operates the ship, then such a thing will consider breach the agreement in the contract of afrightment between the operator and the shipper (Wang, 2009).

Basically, things that make the ship canceled her departures could happen caused by

2.2.1. The ship coditions

Hull of ship that have already un-seaworthiness could make the danger to the ship and her cargoes. There is possibility of hull leakage that will make disturbance to ship stability which is bring finally the ship is sink.

Incomplete safety equipments le fire exthinguiser which is not work properly, and some of sea survival equipments that not work properly is also consider un-seaworthiness (Goltz, 2010).

Besides, the ship engines also could make the ship to be un-seaworthiness. The damage of main engine and auxilary engines, the unavailable spareparts on time that make the damage is not able repaired as fast as posible, will make the ship could not operated or late operated (Carlsson et al., 2006).

2.2.2. The ports condition

The ship could be detained at ports caused by port that not properly managed. Bad port management system could make high congestion. High congestion could make queuing incoming and outgoing vessel at a port and finally will hold up the vessels to get the quay. The loading and discharging cargo equipments condition and low skill labours cause loading and discharging proses goes

very slow. Besides, beuraucracyand the complcated procedures in the documents arrangement also make the departure of the ship could cancelled (Li et al., 2014).

2.2.3. The crew condition

The ship crews, from officers to supporting levels should have certificate of competence and certificates of proficiency according to the vessel that will operated. The non conformities of crews certificates make te vessel to be unseworthiness. The consequence is that the vesel will not allowed to operated because of the detention by harbour master. This condition make the operator and the shipper will have disadvantages (Celik et al., 2009).

2.2.4. The weather condition

Bad weather also could be a reason why the ship is not able to do their voyage. In order to prevent vessel accident, the harbour master could not give permission to the vessel to sail (Perera & Soares, 2017).

2.2.5. Shipping company condition

Shipping company that might have financial difficulties, could make their vessels as guaranty to borrow money to the banks. Consequenly, when the company is not able to pay the debt on time that already agreed, the vessel could be detained and will not able to operated (Azizah, 2018).

From the description mention above, the cancelation of ships departure is the cancelation of ship go to sail because of ship spareparts is not available, in this condition might cause disadvantages not only to the ship operator but also to the shipper.

3. METHODOLOGY

This research is hypotectical test and descriptive. Basically, descriptive research is a research with have main objective to get the description of the variables specific. The character of this research also verificative where as the researcher team want to verify the validity of its hypotectical which is done through collected data in the field. Moreover, in this research the team going to verify whether the delays of sparepart procurements have direct influences to the cancelation of vessels departure of ships that owned by Humolco Trans Inc–Jakarta shipping company.

4. RESULTS AND DISSCUSSION

4.1. Result

4.1.1. Analysis coeffition corelation

To find out the strength or weakness of the relationship between variables X and variable Y then with this analysis will be known the value of r (correlation coefficient).

By using correlation formula, the results obtained that the regression value between variables X and variable Y = 0.946598 or equivalent to 0.95.

From these calculations that r (correlation) is 0.95, this means that there is a very strong relationship between delays in the procurement of spare parts of ships and delays in the departure of ship trips in the June 2010 period. May 2011. With the results of a positive correlation, the relationship between the delay in procuring ship parts and the time of departure of the ship, is positive and can be interpreted if the longer the ship's spare parts are delayed, the longer the ship's departure time will be.

4.1.2. Analysis of determinant coefficient and determination

To be able to find out the magnitude of the contribution of the variable X factor to changes in variable Y can be known by using the coefficient of determination (r^2): 90%. This means that the delay in the procurement of spare parts for ships has a 90% influence on delays in the departure of ship trips in the June 2016 period. May 2017.

Other factors that affect the delay in the departure of ship trips include:

a. Crew condition
b. Port condition
c. Natural condition
d. Company condition.

4.1.3. Hypothesis testing

Hypothesis testing used by the author is as follows:

1. Ho: t = 0 means that there is no relationship between delays in procuring spare parts for ships and delays in the departure of a ship
2. Ho: t> 0 means that there is a relationship between the delay in procuring spare parts of the ship and the delay in the departure of the ship
3. Ho: t <0 means that there is a strong negative relationship between delays in the procurement of spare parts of the ship with delays in the departure of the ship.

The formula for finding t count is to enter the value r into the formula, the value of n (number of events), then compared with t table at the error rate α = 0.05; df = n - 2. If the calculation is:

t count > t table means having a significant relationship

t count <t table means it does not have a significant relationshipThe number of 23 (twenty three) events in the data analysis with t table at the error rate α = 0.05; df = n - 2 is 2.831.

Based on the above calculation, it can be seen that the t count is 14.35 and t table is 1.895, the conclusion is t count <0 (zero) or (18.75) <0 (zero) Ho is rejected, and Ha is accepted. This means that there is a significant positive relationship between delays in the procurement of spare parts of ships and delays in the departure of ship trips in the June 2016 period May 2017.

4.2. Discussion

4.2.1. Procurement of spare parts

"Insufficient spare part stocks affect overall performance of physical assets, as lack of spares may result in gross penalties, lower availability or increased operational risks" (Kotabe & Murray, 2004). Insufficient supply of spare parts will affect the overall performance of the resource assets, a lack of spare

parts inventory can result in losses, low availability or increased operating risk. On the other hand, excessive supply of spare parts will cause inefficient use of capital and will have wasteful implications (Corner & Randall, 2011).

In the past, many companies chose to have a large supply of spare parts, but at present there is a tendency for suppliers to use parts that have good transportation as a place to store spare parts. However, it is very important to select the parts needed for maintenance. The lack of spare parts inventory will extend the time the equipment cannot be used (equipment down time), so the ship must be clever. The type and amount of spare parts that must be stored optimally (Crainic, 2005).

In the procurement of spare parts, several things that must be considered are:

4.2.1.1. To stock or not to stock an item

The ship should have a list of spare parts that must always be available in the warehouse. In general, the spare parts that must be available are if you get sustainable benefits for smooth operation and very high utilization. Storing spare parts that use very long (slow moving parts) is a wrong decision, given the spare parts for long time usage, usually the life time has been set by the manufacturer. So that the storage and procurement of this type of spare parts can be stored before the usage deadline.

Furthermore, the ship can arrange the spare parts requirements by classifying the spare parts requirements as follows (Kozan & Liu, 2012):

1. High importance/vital (vital)
2. Intermediate interests (essential)
3. Low interest (low).

4.2.1.2. How many to order at once

When the decision to store spare parts has been made, then the ship must determine how many parts each of the spare parts must be stored (Filipe et al., 2017).

To determine the number of orders optimally, it can be seen from the supervision of the use of each of the existing spare parts so that in the future it will get an economical order quantity (economic order quantity/EOQ).

4.2.1.3. When to release a new order?

The time to order parts is usually called a re-order point. This booking time is very important considering the time uncertainty of the supplier (supllier) to deliver spare parts ordered. Error ordering time can result in delays in the arrival of spare parts. And this is a big possibility that the company Humolco Trans Inc. Shipping company calculation of the minimum inventory of spare parts and expire date of spare parts is not done carefully. Additional costs are needed because a wrong decision when determining the storage amount and type of spare parts is high. Keeping too many types and quantities of spare parts will result in high holding costs. On the other hand the lack of spare parts inventory will result in high costs of losses that must be borne (Azizah, 2018).

4.2.1.4. How to cope with penalty values?

The lack of inventory is based on financing efficiency. The cost of loss is important in storing spare parts. When the cost of spare parts inventory is known, then the data can be used as a balance of costs in calculating all costs (total costs) of ship operations. Thus if there is a delay in the procurement of spare parts, the cost of the costs is still closed from the total cost (Aulia, 2016).

From the explanation above, the problem of delays in spare parts can be overcome by arranging the management of spare parts properly. Each vessel that is operated is required to always carry out spare parts procurement planning by taking into account the type and amount and classification of spare parts in accordance with the level of importance (urgency). In addition, each vessel must always monitor (control) available spare parts and place orders on time (Akyuz, 2017).

4.2.2. Delay of ship's arrival

a. Ship delays that occur due to late replacement parts can be caused by several parties. These parties are the ship, ship operator management and suppliers (Kandakoglu, 2009).
b. Delay cause by Ship Parties: Delays cause by Ship Parties can be caused by weak supervision (control) of spare parts inventory. Because of poor control, when ordering spare parts should be ordered, the time the order is overlooked. The lack of discipline of the ship against the time resulted in spare parts ordering being late. This will result in the arrival of the required parts to be late and result in the ship being delayed. In addition, the ship also does not classify parts according to its urgency, so that all parts are considered to have the same urgency. In fact, this should not be the case, therefore the ship must be able to classify parts according to its interests including the number of needs and always maintain its existence (Wu & Lin, 2015).
c. Delays cause by management operator (humolco trans inc. shipping company): The limited ability of the operator's management in understanding the level of importance of spare parts greatly influences the procurement of spare parts as needed. Management usually tends to see storage of spare parts from an economic standpoint. Because in principle, storing spare parts is to stop capital that should be able to be driven for other activities. Therefore not all orders made by ships are always served. But when the decision was made wrong, the consequence was a loss to the ship operator. Because ship operations can be delayed and this can make the cargo owner less interested in using or renting the vessel's cargo space (BCG, 2015).
d. Supplier delays: The selection of spare parts suppliers must be done carefully. Because suppliers who do not qualify according to the requirements can cause losses to the ship and the ship operator company. The ship operator company must be able to convince the supplier to always be able to submit orders in addition to the exact specifications in time so that there will be no rejection of the parts being shipped. Because if there is a rejection of spare parts that are very necessary because the specifications are not suitable means the delay in the departure of the ship will be back again (O'Cass & Ngo, 2012).

5. CONCLUSION

Based on an analysis of the relationship between delays in procurement of tribal tribes against delays in the departure of ship trips from June 2010 to May 2011 on Humolco Trans Inc. Shipping Company obtained the following conclusions:

5.1. Conclusion of Data Analysis

Correlation analysis showed (r) = 0.99. It means that there is a very strong relationship between the procurement of tribal groups and the delay in the departure of ship trips and is positive.

Other factors that affect the delay in the departure of a ship:

a. Crew condition
b. Port Conditions
c. Natural conditions
d. Company conditions.

5.2. Conclusion of Procurement of Spare Parts (X)

The hypothesis test of the correlation coefficient on the population that has been described, obtained the results of t count 18.75 and t table 1.895, the conclusion is t_{count} <0 (zero) or (18.75), 0 (zero) Ho is rejected, and Ha is accepted. This means that there is a significant and positive relationship between the procurement of spare parts for delays in the departure of the ship.

The delay in procurement of spare parts will result in the delay in the departure time of the ship due to having to wait in the port area after loading. Therefore, for the existence of spare parts must always be arranged so that there is always a security stock (safety stock) and set the order time that is organized, programmed and planned early in a way commonly called EOQ.

5.3. Conclusion of Ship Trip Departure Delay (Y)

Determination coefficient analysis obtained r^2 value = 0.99, indicating that there is an effect of spare parts procurement on delays in the departure of the ship by 99% approaching the whole.

Therefore all parties, namely the ship, the company and supplliers must always coordinate well so that there are no delays due to slow orders, wrong procurement decisions and due to inappropriate parts specifications.

5.4. Spare Parts Procurement

To prevent delays in the availability of spare parts, the ship is advised to compile a list of spare parts based on the classification of spare parts interests at a high level of importance/vitality (vital); medium (essential) and Low (Low) of interest. In addition, the ship is also advised to order spare parts taking into account the time between the order and delivery of spare parts. By paying attention to which parts need to be stored, how many spare parts are needed in one order, when to order parts.

5.5. Ship Trip Departure Delay

To overcome delays in ship departures due to spare parts that are not available, it is recommended that the ship always supervise spare parts inventory carefully, improve the ability of the operator's management, especially in purchasing and logistics in understanding the importance of spare parts, and carefully selecting supllier and always coordinate with the ship and partners related to the time of delivery of orders and order specifications.

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