



## Research Article

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# PT Pelindo Marine Service: An Alternative Strategy for Maintenance of the Indonesian Navy's Warships

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## Abstract

The sea defense strategy, and concepts related to maritime strategy, relating to the overall strategy for achieving victory at sea. In securing the sea, the navy is very dependent on the main weapons system, especially warships. The Indonesian Navy in carrying out its duties rests on the strength of the IFWS (Integrated Fleet Weapons System): Warship, Aircraft, Marines, and Base. The four components of the IFWS are always maintained in combat readiness. One of the ship maintenance facilities in Surabaya that has the potential to be able to carry out maintenance of Navy ships is PT Pelindo Marine Service in Surabaya. This research uses descriptive qualitative approach. Logistics management theory and SWOT analysis are used by researchers as an analysis tool. The results of this study are the logistics management of PT PMS has ability to maintain Navy ships to support sea defense. Constraints faced by PT PMS include: (1) High sedimentation; (2) Inlet flow is crowded, narrow and shallow; and (4) Small dock capacity. The strategies developed by PT PMS to overcome obstacles in the maintenance of the navy's ships: (1) Implement efficiency in HR, methods, budgets, and infrastructure to maximize profits; (2) Cooperation with similar companies; (3) Investing: dredging, increasing the capacity of the dockyard, and firefighting equipment, and damage control (controlling losses) so it does not get worse than expected.

**Keywords:** Indonesian navy's ships, logistics management, maintenance

## 1. Introduction

The sea defense strategy, and concepts related to maritime strategy, relating to the overall strategy for achieving victory at sea. Naval tactics are concerned with executing plans and maneuvering naval fleets in battle. A naval force is a strong sea command so the enemy cannot attack directly. Command of the sea is also called control of the sea, this dominance may apply to surround waters (ie coastal) or can extend far into the ocean, which means the country has a navy equivalent to air superiority. With sea control, a country (or alliance) can ensure that military ships and merchant ships can move freely, while their enemies are forced to stay in port or avoid territory. The dominance of the ocean by the great maritime power in the economy and political stability has resulted in protracted periods that appear to be "peaceful."

Julian S. Corbett in the "Principles of Maritime Strategy" (2012: 63) states that "naval warfare objects must always directly or indirectly secure the command of the sea or prevent enemies from securing it." In securing the sea, the navy is very dependent on defense equipment, the main tool of the weapons system, especially warships. The Indonesian Navy in carrying out its duties relies on the

strength of the IFWS (Integrated Fleet Weapon System) which includes: Warship, Aircraft, Marines, and Base. Therefore, the four components of the IFWS are always maintained in combat readiness.

The Warship maintenance system is implemented in three levels, namely organic, intermediate, and Depo level maintenance. Maintenance at the organic level is carried out by ship's men by following the Planned Maintenance System (PMS) on the ship. Whereas the middle level and depo maintenance are conducted by units at Main Command and Indonesian Navy Headquarters level, involving third parties. One of the agencies as a third party that can conduct the maintenance of Navy ships is PT Pelindo Marine Service (PMS) in Surabaya.

Quoted from pelindomarine.com, PT PMS has been operated as a corporate entity since 1 January 2012, headquartered in Surabaya, located on Jl. Prapat Kurung Utara no 58 Surabaya. Business lines at PT PMS: (1) Government Marine Services; (2) Oil & Gas Services; (3) Dredging & Channel Services; (4) Shipbroking; (5) International & NG Marine Services; (6) Logistic Services; (7) Port Utility & Offshore; (8) Waste Management.

As a company, PT PMS does business in the field of sea transportation, shipping, and other maritime industries. In running the company PT PMS is inseparable from the management of logistics operations, ranging from planning, organizing, implementing, and controlling in every logistical function which includes: logistics planning, warehousing, material distribution, and control. From the logistical operations management side, the researcher is interested in analyzing the extent to which PT PMS has the ability to carry out maintenance of Navy ships at the depo level.

The purpose of this study is to analyze how the ability of PT PMS in the maintenance of the Indonesian Navy ships. This research is useful to reduce the dependence of maintaining Navy's warships on the dock space workshop that is already available.

## **2. Literature Review**

### *2.1 Definition of Management*

Management according to Parker (in Stoner and Freeman, 2000) is the art of carrying out work through people. While logistics can be defined as a strategic management process for the transfer and storage of goods, spare parts, and finished goods from suppliers among organizational facilities and to customers (Donald J. Bowersox, 2002).

The purpose of logistics is to deliver the finished goods from the point of origin to the consumer in the right amount, at the right time, under conditions that can be used, to the right location, and at the lowest total cost. Implementation of logistics provides the use of time and place. These uses are an important aspect of the organization's operations, both private and public organizations. All forms of organized behavior require logistical support. Value in terms of availability of goods in time is the result of the logistics process.

Logistics management defines as designing and managing a system to oversee the flow and strategic storage of materials, parts, and finished goods in order to obtain maximum benefits for the organization (Donald J Bowersox, 2002). The main responsibility of the logistics manager is to plan and manage an operating system that is able to achieve the goal of maximum benefit to the organization with the lowest total cost.

### *2.2 Definition of Logistics*

Many different logistical definitions can be found. The most famous are as follows: (a) Logistics is the management of all activities that facilitate the movement and coordination of supply and demand in the creation of time and place utilities (Heskett, Glaskowsky, & Ivie, 1973); (b) Logistics management is the planning, implementation, and control of flow, storage of goods, services and related information, between points of origin and points of consumption that are efficient, forward and backward efficiently, effectively to meet customer needs (Council of Supply Chain Management

Professionals, 2006); (c) Logistics is the determination of the position of resources at the right time, in the right place, at the right cost, and at the right quality (Chartered Institute of Logistics and Transport, UK, 2005); and (d) In civil organizations, logistical problems are encountered in companies that produce and distribute physical goods (G. Ghiani, G. Laporte, & R. Musmanno, 2004).

The entire logistics process, which deals with moving material into, through and out of a company: (1) Incoming logistics: the movement and storage of materials received from suppliers; (2) Material management: the storage and flow of materials in a company; and (3) Exit logistics or physical distribution: the movement and storage of products from the final point of production to the customer (Johnson et al., 1999).

Physical flow involves the entire process and activities of the logistics system. But to explore the concept of physical flow systematically, the main components of the logistics system are categorized by Ailawadi (2005) into five functional areas, namely: (1) Network design; (2) Information; (3) Transportation; (4) Inventory; and (5) Warehousing, material handling, and packaging.

### 2.3 Logistics Strategy

Logistics strategy is a guiding principle, driving force, and attitude belief to coordinate goals, plans, and policies within and between partners throughout the network (Harrison & Remko, 2008).

To establish logistical strategies, companies should make strategic decisions for the long term and the short term. Donald Waters (2003: 60) classifies decisions as: (1) Strategic decisions are the most important in determining the overall direction of the organization. This decision has an effect, in the long run, involves many resources, and is most risky; (2) Tactical decisions related to the implementation of strategies in the medium term. This decision looks in more detail, involving fewer resources and some risks; and (3) Operational decisions are the most detailed activities and concerns in the short term. This decision involves a few resources and little risk.

Basically, a higher strategy for setting general goals and organizational direction. And functional strategies show you how to achieve them. So the business strategy defines what needs to be done, and the logistics strategy lays out how the supply chain will achieve it. If the business strategy is to provide the lowest cost product, the logistics strategy seeks to reduce logistics costs to the minimum. If the organization determines product delivery times must be fast to the customer, then the logistics strategy determines the policies taken to make it happen (Donald Waters, 2003).

### 2.4 Logistics Management

Supply chain management is organized by logistics management where its activities include planning, implementing, and controlling the flow and storage of goods from the point of origin to reaching consumers efficiently. (Farahani et al., 2011: 11).

The Council of Logistics Management (1998) stipulates that Logistics Management is a Supply Chain process for planning, implementing, and controlling the flow and storage of goods, services, and information effectively and efficiently from the point of origin to the point of consumption to meet customer needs.

According to Bowersox (2002: 13), logistics management is unique because it is one of the oldest but also the youngest corporate activities. Logistics activities (location of facilities, transportation, inventory, communication, and management and storage) have been carried out since the beginning of commercial specialization.

### 2.5 Definition of Maintenance

The word nurture is taken from the Greek "terein" which means to care for, preserve, and maintain. Maintenance is a combination of various actions taken to keep an item in, or repair it to, an acceptable condition. In general, a product produced by humans, nothing is not likely to be damaged,

but the life of its use can be extended by carrying out repairs known as maintenance (Corder, Antony, K. Hadi, 1992).

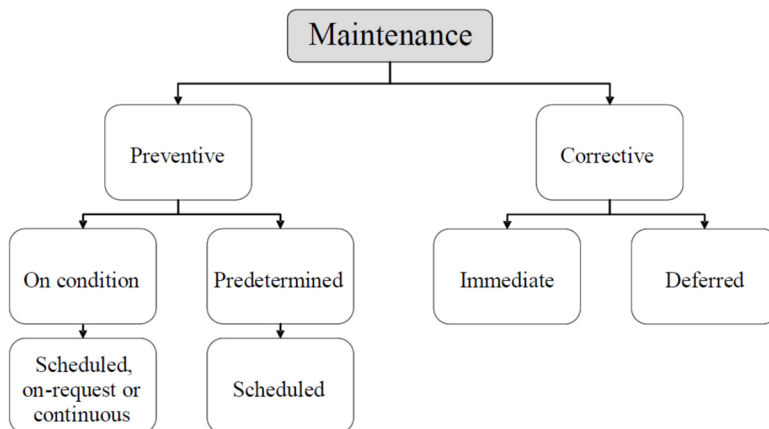
Therefore, maintenance activities are needed for production machines to maintain good performance in the production process. Maintenance is the act of caring for factory machinery or equipment by updating the service life and failure/damage to the machine (Setiawan F.D, 2008).

The British Standards Institution (1984) defines maintenance: A combination of all technical and associated administrative activities required to keep equipment, installation, and other physical assets in a condition ready for operation or repair it for operational readiness.

The purpose of maintenance is to: (1) ensure the functioning of the system (availability, efficiency, and quality of the product), (2) ensure the system or plant life, (3) ensure human well-being, and (4) ensure safety (Dekker, 1996).

## 2.6 Maintenance Management

Maintenance Management is all management activities to determine maintenance goals and priorities, strategies, and responsibilities as well as their implementation which include maintenance planning, maintenance control and supervision, and several methods of improvement including economic aspects in the organization (Adolfo Crespo Márquez, 2007).



**Figure 1.** Maintenance types

**Source:** Márquez, Adolfo, Crespo, (2007: 70).

Márquez (2007) divides maintenance into two types: preventive and corrective. Preventive maintenance is maintenance conducted at predetermined intervals or in accordance with specified criteria and intended to prevent the possibility of failure or degradation of equipment functions. Corrective maintenance is maintenance conducted after an error is found and is intended to correct the equipment according to its function.

## 2.7 SWOT Analysis

Using a framework of internal strengths and weaknesses, and external opportunities and threats, this instrument is a simple way to make the best strategy in developing a company.

In the qualitative SWOT matrix, there are eight boxes: the top two are external factor boxes (Opportunities and Challenges) while the two left boxes are internal factors boxes (Strengths and

Weaknesses). The other four boxes are boxes of strategic issues that arise as a result of the meeting point between internal and external factors.

**Tabel 1.** Matriks SWOT Kearns

	EXTERNAL	OPPORTUNITY	THREAT
INTERNAL			
STRENGTH		<i>Comparative Advantage</i>	<i>Mobilization</i>
WEAKNESS		<i>Divestment/Investment</i>	<i>Damage Control</i>

**Source:** Hisyam, 1998

Cell A: Comparative Advantages. This cell is a cross between two elements of strength and opportunity that enables an organization to develop faster.

Cell B: Mobilization. This cell is an interaction between threat and strength. The strategy carried out in this box is to mobilize resources that are the strength of the organization to deal with external threats, even then turning those threats into opportunities.

Cell C: Divestment / Investment. This cell is an interaction between organizational weaknesses and outside opportunities. Situations such as these provide a choice in vague situations. The available opportunities are very convincing but cannot be utilized because the available strength is not enough to work on them. The decision choices taken are (releasing existing opportunities to be used by other organizations) or forcing to work on those opportunities (investment).

Cell D: Damage Control. This cell is an interaction between organizational weaknesses and external threats. Among all cells, this cell is the weakest condition of the organization. Therefore requires special attention, and a wrong decision will bring great disaster to the organization. The strategy that must be taken is Damage Control (controlling losses) so it does not become worse than expected.

### 3. Methodology

This research will take a lot of data in the form of words and activities of people or groups of people, as well as supporting documents in the form of notes, administrative documents, photos, and others as supporting data. So, the research method used is using qualitative research methods. Researchers will carefully investigate a learning program, event, activity, process, or group of individuals within a specified time and area. So that in this study researchers will use a case study approach (Creswell, 2013).

Data analysis in this study uses data analysis models from Miles and Huberman et al. (2014), called Interactive Data Analysis Models, which include data collection, data condensation, data display, and drawing conclusions or verification (conclusion / verifying).

### 4. Discussion

#### 4.1 Logistic

Logistics activities are conducted systematically by the management of PT PMS in this case the Goods & Services Procurement Manager. Job offers are publicly announced on the website <http://www.pelindomarine.com/> so that all parties can submit offers for goods and services in accordance with predetermined technical specifications. To meet customer needs, the planning of flow, storage of goods, services, and information from the point of origin and point of consumption is carried out strictly on the principle of "just in time".

The management of PT PMS also implements the "Occupational Health and Safety

Management System” (OHSMS) based on Government Regulation No.50 of 2012, where the government requires that every contractor company in Indonesia must implement OHSMS in its company. This obligation applies to companies that employ at least 100 (one hundred) workers or have a high level of potential danger. OHSMS is a standardization adopted from the AS4801 Australian standard. OHSMS is the same as the “Occupational Health and Safety Assessment Series” (OHSAS) 18001.

Even so, problems in the field are often encountered in relation to work safety. Problems in the field that often occur are: workers forget not to wear helmets, do not use safety tools when working, especially welding. Customers who visit ships often do not use the safety apparatus according to company rules.

#### 4.2 PT PMS Logistics Operations

Management according to Parker (in Stoner and Freeman, 2000) is the art of carrying out work through people. While logistics can be defined as a strategic management process for the transfer and storage of goods, spare parts, and finished goods from suppliers among organizational facilities and to customers (Donald J. Bowersox, 2002).

PT PMS manages the supply of raw materials from suppliers by applying the principle of “just in time”, where raw materials supplied directly enter the production process in the right amount, quality, and time. The raw material is through a quality control process to maintain the specified quality standards. The production unit has the authority to supervise and control the flow of the reception, storage, and use of raw materials. The customer's ship that has been repaired is handed over to the customer. The Satisfaction Note is made and signed jointly by both parties, PT PMS, and the customer to ensure customer satisfaction.

Implementation of customer ship repair so far is in accordance with the specified schedule. If there is a delay in submission, it is due to additional repair work. Additional work occurred because of unexpected ship damage so it was not included in the repair list that was made at the beginning before the ship repair work began. The additional work is at the request of the customer so that the late delivery of the ship is not complained of by the customer. PT PMS carries out repairs by adhering to quality standards in accordance with ISO9000: 2015. The cost of repairing ships at PT PMS is very competitive compared to other similar companies.

#### 4.3 Logistics Strategy

Decision making is very important for an organization because the decision will be felt for years. Other decisions that are less important may be felt for days or even hours.

PT PMS management classifies the decisions into several categories, namely: (1) Strategic decisions. This decision is the most important in determining the overall direction of the organization. This decision has an effect, in the long run, involves a lot of resources, and is most risky. This decision was stated in the mission of PT PMS, which is to provide and provide high-quality and highly competitive shipping services; creating operations/production management based on modern technology; provide competent and reliable human resources, and; create economic added value for stakeholders through the provision of facility services and shipping services, and other services taking into account good business ethics. Strategic decisions are made by the commissioners of PT PMS; (2) Tactical decisions related to the implementation of strategies in the medium term. This decision was taken by looking in more detail, involving fewer resources and some risks. This tactical decision was formulated by the directors of PT PMS, and; (3) Operational decisions are the most detailed activities and concerns in the short term. This decision involves a few resources and little risk. This operational decision was taken by the managers of PT PMS.

Dimensions of logistics strategic decisions: (1) Make or buy. The raw materials needed in ship repair activities are the majority of steel plates, sandblasting, and paint, where PT PMS decided to

buy all of the raw materials; (2) Rules for supplier selection and evaluation. The management of PT PMS has a Company Partner List (CPL) as a supplier of raw materials. All raw materials must comply with quality standards. The vendor selection is carried out according to the procedure and is evaluated every 6 months or once a year by an external audit namely the Lloyd register.

Key aspects of the scope of supply decisions in the purchase and delivery of materials and raw materials. The procurement policy instruments: product policy, contract policy, communication policy, and purchasing policy.

#### 4.4 Maintenance

Maintenance is a combination of various actions taken to keep an item in, or repair it to, an acceptable condition. In general, a product produced by humans, nothing is not likely to be damaged, but the life of its use can be extended by carrying out repairs known as maintenance. (Corder, Antony, K. Hadi, 1992).

PT PMS carries out maintenance of production equipment using the Plan Maintenance System. Maintenance of ships using a planned maintenance system. Maintenance of production equipment is carried out routinely and periodically to ensure the guaranteed quality of work, meet certification standards, and operational services.

Planned Maintenance System is a ship maintenance and repair activity carried out by itself or other parties both during the operation period or outside the operating period of the ship, in order to maintain the feasibility of the ship so that it can operate optimally.

#### 4.5 Product quality

In pursuit of product quality, PT PMS management is guided by the international standard ISO9000: 2015. This is to ensure the quality of the company's management that effectively documents the elements of the quality system that are applied.

Production failures are minimized by a management system that has been implemented namely ISO 9000 to guarantee the quality, ISO 905 for the environment. The management of PT PMS developed a business system that was in accordance with the criteria for environmentally friendly and OHS (Occupational Health and Safety), OHSMS (Occupational Health and Safety Management System), OHSAS (Occupational Health and Safety Assessment Series), and SM Code for shipyards, offices, and ships. OHS seems ambiguous when it is called occupational safety and health is a field related to health, safety, and human welfare working in an institution or project location. The purpose of OHS is to maintain the health and safety of the work environment.

Product quality is first for PT PMS management and is one of the main market positioning facilities. Product quality has a direct impact on product or service performance; therefore, quality is closely related to customer value. In a narrow sense, quality can be defined as free from damage. In other words, the quality of the product is measured to what extent the product can satisfy its customers. In addition, products can also be defined as customer perceptions described by producers through their production results. In more detail, the total product concept includes goods, brand packaging, labels, services, and guarantees.

The factors causing the following product failures are greatly avoided by PT PMS management, namely: inadequate design, improper use, poor manufacturing, improper storage, inadequate protection during shipment, inadequate test coverage, and poor maintenance. A product can fail even if accidentally.

#### 4.6 Dock Space Needs

At ship depot maintenance, shipyard facilities are required for underwater works. The work included sandblasting, painting the hull, repairing the rudder, and repairing the ship's propeller. So far, the



Indonesian Navy, especially the Fleet Command II, whose base is in Surabaya, has relied on shipyard facilities in Surabaya, especially PT. PAL Indonesia, and PT Dok dan Perkapalan Surabaya.

The need for dock space for Indonesian Navy ships is very high but cannot be fulfilled by the two shipyard facilities, causing disruption to ship's maintenance schedules. In fact, to meet maintenance schedules, the Navy utilizes a shipyard in Semarang. Even so until now, the need for dock space is still not met.

#### 4.7 The ability of PT PMS Shipyard to maintain Navy ships

PT PMS has three graving dock type shipbuilding facilities. Each shipyard has slightly different maintenance capabilities, especially in terms of the dimensions of the shipyard.

**Graving Dock I:** (1) Dimensions: Length 45 Meters, Width 12 Meters, and Depth of 6 Meters; (2) Maximum Draft  $\pm$  4.2 Meters; (3) Capacity  $\pm$  400 GT; (4) Wall Construction: Reinforced concrete; Floor: K-350 Reinforced Concrete; (4) Keel Block: K-500 Reinforced Concrete 1.5x0,5x0.5 Meters; and (5) Side Block of Ironwood / Ironwood.

**Graving Dock II:** (1) Dimensions: Length of 45 Meters, Width of 15 Meters, and Depth of 6 Meters; (2) Maximum Draft  $\pm$  4.2 Meters; (3) Capacity  $\pm$  400 GT; (4) Wall Construction: Reinforced concrete; Floor: K-350 Reinforced Concrete; (5) Keel Block of K-500 Reinforced Concrete 1.5x0,5x0.5 Meters; and Side Blocks of Ironwood / Ironwood.

**Graving Dock III:** (1) Dimensions: Length of 45 Meters, Width of 15 Meters, and Depth of 6 Meters; (2) Maximum Draft  $\pm$  4.2 Meters; (3) Capacity  $\pm$  400 GT; (4) Wall Construction; Reinforced concrete; Floor: K-350 Reinforced Concrete; (5) Keel Block: K-500 Reinforced Concrete 1.5x0,5x0.5 Meters; and (6) Side Block: Ironwood / Ironwood.

Dock facilities are equipped with supporting equipment: Pump dock; OHC (Over Head Crane): 5 tons; Freshwater: 5 tons; Fuel Tank: 5-ton x 3; Workshop: 1650 square meters; B<sub>3</sub> waste collection: an area of 120 square meters; Floating repair area: width 6.5 m, length of 84.5 m; and generator sets.

From the graving dock technical data operated by PT PMS, the maintenance capability is in accordance with KRI type PC 40 and KAL (Navy Ship).

#### 4.8 Obstacles

Possible obstacles in maintaining Indonesian Navy ships by PT PMS are technical, policy, and procedural problems. So far, PT PMS prioritizes serving maintenance for vessels owned by PT Pelindo Surabaya. This is in accordance with the objective of establishing PT PMS by PT Pelindo II Surabaya. In terms of market potential, PT PMS overloaded jobs and often refused customers due to the long queue list. The technical problems faced by PT PMS include: (1) High sedimentation (often cleaning mud after docking is done and done by people); (2) Dredging has not been carried out according to schedule due to high customer queues; (3) The flow of silver times (fire warehouse) is busy, narrow and shallow (1 meter, waiting for the 4-meter draft tide) so that it needs a guide; (4) If it rains, a dredging operation cannot be carried out; (5) Small dock capacity; (6) Fire control is minimal; and (7) Towing ships are required to enter the PT PMS dock (fees increased).

The format of cooperation between PT PMS and the Navy, which in this case could be through the business of the Indonesian Navy Cooperative, can be implemented to overcome the problems of procedures and bureaucracy. With this collaboration, it is expected to reduce the Navy's dependence on the provision of dock space by PT PAL Surabaya and PT Dok and Shipping Surabaya.

#### 4.9 SWOT Analysis

The qualitative SWOT matrix approach has eight boxes, namely the top two are external factor boxes (Opportunities and Challenges) while the two left boxes are internal factors (Strengths and Weaknesses). The other four boxes are boxes of strategic issues that arise as a result of the meeting



point between internal and external factors. The SWOT analysis for PT PMS is described as follows:

**Table 2.** Matriks SWOT Kearns

	EXTERNAL	OPPORTUNITY	THREAT
<b>INTERNAL</b>		Very large market potential (often rejecting customers)	Competitors (3 similar Documents: Dumas, Surabaya Shipping and Dock, Najatim, Pelni Doc)
<b>STRENGTH</b> 1. Strategic business 2. Shipyard facilities 3. Integrated management system certification, ISO 900, ISO 905, OHS, OHSMS, OHSAS, and SM Code for shipyards, offices and ships. 4. E-procurement based procurement 5. Meet customer satisfaction.		<i>Comparative Advantage</i>  Strategy: Implement efficiency in HR, methods, budget, and infrastructure to maximize profits.	<i>Mobilization</i>  Strategy: - Mobilizing resources effectively. - Cooperation with similar companies.
<b>WEAKNESS</b> 1. High sedimentation (often cleaning mud every time after docking and done with labor) 2. Dredging has not been carried out according to schedule due to high customer queues. 3. The flow of silver times (fire warehouse) is crowded, narrow, and shallow (1 meter, waiting for the tide 4 meters draft) so it requires a guide. 4. If it rains, a dredging operation cannot be carried out. 5. Small dock capacity. 6. Fire control is minimal. 7. Need a towing ship to enter the PT PMS dock (increased costs).		<i>Divestment/Investment</i>  Strategy: Invest in: - Dredging - Dockyard capacity increases. - Firefighting equipment.	<i>Damage Control</i>  The strategy that must be taken is Damage Control so that it does not become worse than expected.

Cell A: Comparative Advantages. Strategy: Implement efficiency in human resources, methods, budget, and infrastructure to maximize profits.

Cell B: Mobilization. Strategy: Mobilize resources effectively; and cooperation with similar companies.

Cell C: Divestment / Investment. Strategy: Invest in: dredging, dockyard capacity building, and firefighting equipment.

Cell D: Damage Control. The strategy that must be taken is Damage Control so that it does not become worse than expected.

## 5. Conclusion

Logistics management of PT PMS has the ability to maintain Navy ships to support sea defense. This capability meets the quality requirements. That is because PT PMS uses ISO 9000 standards for quality assurance.

Constraints faced by PT PMS include: (1) High sedimentation (often cleaning mud after docking is done and done by people); (2) Dredging has not been carried out according to schedule due to high customer queues; (3) The flow of silver times (fire warehouse) is crowded, narrow and shallow (1 meter, waiting for the 4-meter draft tide) so it needs a guide; (4) If it rains, a dredging operation cannot be carried out; (5) Small dock capacity; (6) Fire control is minimal; and (7) Need a towing ship to enter the PT PMS dock (increased costs).

The strategies developed by PT PMS to overcome obstacles in the maintenance of KRI are: (1)

Implement efficiency in HR, methods, budget, and infrastructure to maximize profits; (2) Mobilizing resources effectively; (3) Cooperation with similar companies; (4) Invest: dredging, increasing the capacity of the dockyard, and firefighting equipment; and damage Control (controlling losses) so it does not get worse than expected.

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