



ANALYSIS OF DELAYS IN COAL DELIVERY ACTIVITIES AT PT PILAR PUTRA MAHAKAM

Budi Purnomo^{1*}, Yollanda Octavitri², Pramudyasari Nur Bintari³, Moudyna Aisyah Wiliz⁴

¹²³⁴Banten Merchant Marine Polytechnic, Indonesia

Correspondent email: budipurnomo3410@gmail.com¹

Abstract

One of the shipping activities frequently carried out in the Indonesian shipping industry is coal shipping. Indonesia is one of the world's leading coal mining countries, and the island of Kalimantan is the largest coal producer in Indonesia. Kalimantan Island is one of Indonesia's mining production areas. One of the shipping activities frequently carried out in the Indonesian shipping industry is coal shipping. PT Pilar Putra Mahakam participates in supporting the timely delivery of coal from Senyur to the North Sulawesi 1 Steam Power Plant. The purpose of this study was to determine the factors causing delays in coal deliveries by the Tugboat Nunukan 1. This study was conducted at PT Pilar Putra Mahakam from August 1, 2024, to July 31, 2025. This study used a descriptive qualitative method with data collection techniques of observation, interviews, and documentation. Data were sourced from primary and secondary sources. The results of this study explain the factors influencing delays in coal deliveries by the Tugboat Nunukan 1 from Senyur Jetty to PLTU 1, including technical damage to the vessel, inaccurate surveyors during the ship's seaworthiness survey before chartering, and traffic congestion.

Keywords: Coal, tugboat, shipping, time efficiency

INTRODUCTION

PT Pilar Putra Mahakam or abbreviated as PPM is a company that provides coal supply services (Shipper) and strives to realize fast and timely coal delivery and in coal delivery activities PT Pilar Putra Mahakam in addition to having its own ships also has to charter boats from other companies to meet coal delivery requests and then for fleet replenishment is carried out by PT Pilar Putra Mahakam. One of the challenges faced by PT PPM is increasing the efficiency of coal delivery time. The efficiency of coal delivery by tugboats has a significant impact on the sustainability and profitability of PT PPM. Delays in coal delivery can cause negative consequences such as instability of coal supply, industrial productivity, and operational costs in transportation. In accordance with the criteria of the Republic of Indonesia Law Number 17 of 2008, article 5 paragraph 6a, which reads "Smoothing the flow of people and/or goods in bulk through waters safely, securely, quickly, smoothly, orderly and regularly, comfortably, and efficiently, at a cost affordable to the purchasing power of the community." One of the tugboats that is of concern to the author is the Tugboat Nunukan 01. In its delivery, there are still obstacles that affect the efficiency of coal delivery time by the tugboat Nunukan 01. The longer the time used by the tugboat Nunukan 01 to make deliveries, the fewer trips the tugboat Nunukan 01 gets. Therefore, this study aims to identify delays in coal delivery by Tugboats chartered by PT Pilar Putra Mahakam.

METHOD

This study employed a qualitative descriptive approach. Descriptive research is conducted to determine the value of one or more variables without making comparisons or connections with other variables. According to Indrianto and Supomo (2012:26), descriptive research is the study of problems in the form of current facts from a population.

According to Sugiyono (2019:9), qualitative research methods are often referred to as naturalistic research methods because the research is conducted in natural settings. Qualitative research methods are based on the philosophy of postpositivism and are used to research natural objects. The researcher serves as the key instrument, data collection techniques are triangulated (combined), data analysis is inductive/qualitative, and qualitative research results emphasize meaning over generalization. The true meaning of the data is the definitive data, which represents the value behind the visible data.

According to Moleong (2017:6), qualitative research aims to understand phenomena experienced by research subjects, such as behavior, perception, motivation, actions, and so on, holistically and through descriptive words and language, within a specific, natural context, utilizing various natural methods.

Qualitative research emphasizes quality over quantity, and the data collected is derived not from questionnaires but from interviews, direct observation, and other relevant official documents. Qualitative research also prioritizes the process over the results. Because the relationships between the components being studied become much clearer when observed in action.

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Data Sources/Research Subjects

Data sources in research are the subjects from whom data is obtained. If the researcher uses data collection, the data sources are called respondents (people who answer the researcher's questions, either written or oral). If the researcher uses documentation, the documents or records serve as the data sources. The types of data used in this research are as follows:

1. Primary Data

Primary data is data obtained directly from the source, through observations and interviews with people directly involved in the event.

2. Secondary Data

Secondary data is data obtained directly from previous research conducted by others. Secondary data is obtained from indirect sources, which can include official archives or documentation. Secondary data is obtained through reference books, research journals, and data from the internet.

Data Collection Methods And Techniques

Data collection techniques are the methods used to obtain data in research. This study is qualitative, so the data obtained must be clear and specific. Qualitative data collection is obtained from observations, interviews, documentation studies, and questionnaires.

1. Observation

Observation is a technique used to investigate nonverbal behavior. According to Sugiyono (2018:229), observation is a data collection technique that has specific characteristics compared to other techniques. Observation is not limited to people but also includes other natural objects. Through observation, researchers can learn about behavior and the meaning of that behavior. Observation in this study involves direct observation in the field to determine actual conditions.

According to Sugiyono (2019:297), observation is the foundation of all science. Through observation, researchers learn about behavior and the meaning of that behavior. This method was used to directly observe events related to the Implementation of Supervision at the Main Harbormaster's Office.

From the definition above, observation is the direct observation and study of behavior and the meaning of that behavior. Observation is an unlimited data collection technique to understand the actual situation in the field.

2. Interviews

According to Sugiyono (2018:140), an interview is a purposeful conversation conducted by two parties: the interviewer who asks questions and the interviewee who provides answers to the questions.

According to Kriyantono (2020:289), an interview is a conversation between a researcher (someone seeking information) and an informant (someone deemed to have important information about an object). Interviews in qualitative research can also be referred to as in-depth interviews or intensive interviews and are mostly unstructured. Interviews in qualitative research are conducted with the aim of obtaining in-depth qualitative data. From the definitions above, it can be concluded that an interview is a conversation between a researcher and an informant who is considered to have information about something the researcher is studying, to achieve a specific goal.

3. Documentation Study

According to Sugiyono (2018:476), documentation is a method used to obtain data and information in the form of books, archives, documents, written figures, and images, in the form of reports and explanations that can support research. Documentary studies complement the use of observation and interview methods in qualitative research. Research findings using observation or interviews will be more credible if supported by photographs or existing academic papers.

Data Analysis Techniques

According to Sugiyono (2019:480-492), data analysis is the process of systematically searching for and organizing data obtained from interviews, field notes, and documentation. This process involves organizing the data into categories, breaking them down into units, synthesizing them, organizing them into patterns, selecting what is essential and what will be studied, and drawing conclusions so that they are easily understood by both the researcher and others. In this paper, the researcher used three data analysis methods:

1. Data Presentation

Data presentation is one of the activities in preparing a research report so that it can be understood and analyzed according to the desired objectives. The data presented should be simple for easy reading.

2. Data Reduction

Data reduction is the process of transforming recorded data into patterns, focuses, categories, or specific issues after the data is collected. The collected data, recorded in various notes during the fieldwork, are then summarized and selected.

3. Drawing Conclusions

Concluding is the ability of a writer to summarize various data findings obtained during research.

The data analysis technique used in this applied scientific paper is qualitative with a descriptive approach. The steps taken include collecting data obtained from the field that is the object of the research.

RESULTS AND DISCUSSION

This study will discuss and describe the results of observations and interviews regarding the time efficiency of coal deliveries by tugboats chartered by PT PPM. The coal will be delivered to fulfill coal orders from the North Sulawesi 1 Power Plant (PLTU Sulut 1). Based on the results of onshore practice at PT PPM, relevant data was obtained. One of the tugboats chartered by PT PPM that was the subject of this study was the TB.Nunukan 01.



Figure 1. Tugboat Nunukan 1

Source: Operational Staff of PT Pilar Putra Mahakam

The Nunukan 1 tugboat crew consists of 10 people, as stated in the ship's safety certificate:

1. Captain
2. First Officer
3. Second Officer
4. Crew Member
5. Second Engineer
6. Third Engineer
7. First Helmsman
8. Second Helmsman
9. Third Helmsman
10. Oiler

Every ship that has been completed and is ready for operation will be issued a ship-specific document. This document contains detailed data about the ship. Following is the particular ship Tugboat Nunukan 1:

Tug Nunukan 1

Name : NUNUKAN 1
Vessel Type : Tugboat
Flag : Indonesia
Port Of Registry : Batam
Year Of Built : 2012
Call Sign : YDA 3152
GT/NT : 263 T / 79 T
Main Engine : Mitsubishi 2 x 1032 HP
Auxiliary Engine : Cummins 2 x 82 HP
Gearbox : Reintjes WAF 5051:1
Overall length : 30.20 m
Length B.P : 27.73 m
Breath : 8.60 m
Depth : 4.20 m
Anchor : 2 x 405 kg
Class : BKI
Navigation : As per SOLAS Requirement
No. Crew : 10 pax (Indonesia)
Speed : Approx 10 Knots Free Tow

Barge Amb Theodore 01

Name	: AMB Theodorus 01
Vessel Type	: Deck Cargo Barge
Size	: 300 FT
Flag	: Indonesia
Port Of Registry	: Batam
Year Of Built	: 2011
Construction	: Steel
Sideboard	: Available
Ramp Door	: Not Available
Class	: BKI
GRT/NT	: 3186 Tons / 956 Tons
Overall length	: 91.44 m
Length B.P	: 87.78 m
Breath	: 24.38 m
Depth	: 4, 192 m
Anchor	: 1 x 1445 kg
Windlas	: Available
Register Number	: GT. 3186 No. 3024/PPM
Deck Car	: + 7500 MT
Side Board gate	: 3 Nos

PT Pilar Putra Mahakam appoints an agent at the port as the party responsible for handling all administrative and operational needs when the ship docks. The appointment of this agent aims to ensure the process of docking, loading and unloading, and document management runs smoothly in accordance with port procedures and applicable regulations. The port agent is responsible for coordinating with port authorities, harbor masters, and other related parties, including processing berthing permits, dock scheduling, providing pilotage and tug services, and facilities needed by the ship while in port. With an officially appointed agent, PT Pilar Putra Mahakam can minimize the potential for operational delays and optimize coal loading and unloading time at the destination port. Coal shipping activities using the Tugboat Nunukan 1 and Barge AMB Theodorus 01 begin with the issuance of Shipping Instructions by the cargo owner or Shipper, Shipper PT. PLNBBN.

This Shipping Instruction contains the name of the cargo owner, the name of the consignee, the type of cargo, the estimated weight of the cargo, the name and gross tonnage of the vessel carrying the cargo, and the name of the jetty for unloading. This document is a shipping document or instruction document that serves to appoint a shipping company, in this study, PT Pilar Putra Mahakam, to carry the coal cargo. After receiving the letter of appointment, the Tugboat Nunukan 1 is then instructed to

proceed to the port to load the coal. Upon arrival at the loading jetty, if there are no obstacles, the Tugboat Nunukan 1 can immediately moor its barge and drop anchor at the Senyieur jetty in East Kalimantan to begin loading.

However, if there is a queue, the Tugboat Nunukan must wait in the berthing area until the queue for loading is reached. After completing the coal loading operation on the barge, the ship will move to the berthing area to await the necessary documents. Once the documents are issued by the harbor master and the ship is on board, the boat will sail to the port for unloading, which will be the North Sulawesi 1 Coal Power Plant (PLTU Sulut 1). Upon arrival at the unloading jetty area, if there is no queue, the Nunukan 1 Tugboat can immediately dock the barge and carry out unloading activities.

During the research, observations were obtained through daily ship captain reports and viewing the ship tracking application using the Mitsui Orb.com website provided by the Ship Owner. The observation results were formatted using Microsoft Excel to clarify the ship's activity time. Starting when the Tugboat Nunukan 1 was still at the Senyieur Jetty heading to the North Sulawesi 1 Steam Power Plant (PLTU) and returning to the Senyieur Jetty. For 6 months, researchers observed that the Tugboat Nunukan 1 could carry out shipments twice a month. The average coal demand from the North Sulawesi 1 Steam Power Plant is in the range of 20,000–25,000 tons per month, depending on the operational load level of the power plant. PT Pilar Putra Mahakam, as a supplier, has sufficient production capacity and inventory, with coal stocks in the stockpile ranging from 30,000 to 35,000 tons per month.

This amount includes strategic reserves to anticipate bad weather or distribution disruptions. To meet this demand, shipments are made by sea from Senyieur Jetty using a 300 ft barge with a loading capacity of 18,000–20,000 tons per trip, towed by a tugboat. With this capacity, under normal conditions, shipments can only be made 1–2 times per month to meet monthly demand. Careful logistics planning is key to ensuring uninterrupted shipping schedules, especially when facing extreme weather or queues at the destination port. However, in November 2024, an incident occurred on the ship that caused a delay in cargo delivery. When the ship had cast off from Senyieur Jetty to PLTU Sulut 1 for unloading, the vessel experienced an incident on November 18, 2024, so it had to moor in Jembayan to carry out damage repairs until November 30, 2024. Much sailing time was wasted on making repairs that should have been on target, with a distance of 622 NM traveled at a speed of 3 Knots. The total time taken from Port of Loading – Port of Discharge is 207.33 hours.

In this incident, it is undoubtedly detrimental to the charterer (Pilar Putra Mahakam), who should have been able to get 2 Shipments in 1 month, but only got half a Shipment in November 2024. Of course, this will be submitted for operational costs, there are mooring costs at the agency that we appointed at the port to oversee ship operations in the Jembayan mooring area and downtime claims to the Ship Owner to compensate for the loss of time that has been used for repairs at the

Jembayan mooring and also fuel oil consumption that has been wasted during repairs at the Jembayan mooring.

Through in-depth interviews with selected sources, the following research findings were obtained: Research conducted during the research at PT Pilar Putra Mahakam revealed several factors hindering the sailing speed of the Nunukan 1 tugboat from Senyur to the North Sulawesi 1 PLTU, as follows:

1. Ship Technical Issues

Damage to coal-carrying barges, such as grounding and leaking, stranding or sinking due to crew negligence, lack of supervision, inadequate lighting, damaged navigational aids, and fires that can easily occur on the barge deck, can cause delays in coal delivery.

For the Nunukan 1 tugboat, a grounding occurred in November, causing leaks in tanks No. 7 and No. 8. This required the Nunukan 1 tugboat and the AMB Theodorus 01 barge to halt operations for inspection and investigation temporarily. It was followed by the extraction of water from the tanks and the diving process to repair the leaks.

2. Surveyor's Inadequate Care During the On-Hire Survey of Vessel Seaworthiness Before Chartering

During the on-hire survey, the surveyor plays a crucial role in ensuring the vessel is fit for charter and meets the terms agreed upon between the shipowner and charterer. An independent surveyor conducts a thorough inspection of the vessel's condition, equipment, and systems to verify compliance with applicable standards and to prevent future disputes.

3. Heavy Vessel Traffic

Heavy vessel traffic on shipping lanes can be a bottleneck because tugboats must queue to enter or exit the port area. If too many vessels enter the port at the same time and the number of jetties is limited, the Nunukan 1 Tugboat must compete with other vessels for access to the destination port and wait its turn to unload. Long queues can hinder the vessel's ability to reach its destination quickly.

Delays hurt PT Pilar Putra Mahakam as follows:

1. Increased Operational Costs

Delayed deliveries cause PT Pilar Putra Mahakam to incur higher operational costs.

a. Fuel Costs

If deliveries are delayed, the vessel must sail longer than planned. It means the ship will consume more fuel for longer voyages, which will increase operational costs.

b. Maintenance and Repair Costs

If the Tugboat Nunukan 1 experiences technical problems during the delay in delivery, PT Pilar Putra Mahakam will have to incur additional costs for maintenance and repairs outside of the maintenance schedule.

c. Crew Costs

If the ship must sail longer, PT Pilar Putra Mahakam must cover the costs of accommodation, food, and daily necessities for the crew while they are on board.

2. Less Profit

PT Pilar Putra Mahakam will profit when the Tugboat Nunukan 1 ships coal from the Senyur jetty to the North Sulawesi 1 PLTU. The more frequent and numerous voyages the Tugboat Nunukan 1 can make, the greater the profit for PT Pilar Putra Mahakam. However, if obstacles and delays occur, the voyages will become less frequent, resulting in PT Pilar Putra Mahakam's profits not being maximized.

3. Decreased Customer Trust

Delays can lead to a decline in customer trust in PT Pilar Putra Mahakam. Late coal deliveries can disrupt the supply chain and hinder customers' coal production or operations. It can lead to dissatisfaction among customers using the Tugboat Nunukan 1 chartered by PT Pilar Putra Mahakam, potentially leading to customer losses.

To prevent delays and improve coal delivery efficiency by the Tugboat Nunukan 1, PT Pilar Putra Mahakam implemented the following steps:

1. Ensuring vessel readiness before sailing, including conducting routine checks and maintenance.

Before sailing, tugboats and barges must ensure that all systems and equipment are functioning correctly. PT Pilar Putra Mahakam's operational management, along with the Tugboat Nunukan 1 crew, collaborate to maintain vessel performance by conducting routine checks and maintenance.

Conducting regular checks and maintenance on the vessel's machinery and equipment is crucial for preventing damage. Conducting checks allows for identification and analysis of potential damage and appropriate repairs before damage becomes more serious, preventing recurrence of similar problems. Crew-based maintenance includes checking mooring lines, checking pump systems, checking the vessel's hull, cleaning the hull and engine, checking navigational instruments, and replacing damaged components.

2. Surveyors conduct more thorough vessel surveys before chartering a vessel.

Conducting a vessel survey before chartering is essential to ensure the vessel's condition complies with the charter agreement, protects the charterer's interests, and avoids future problems. This survey includes a thorough inspection of various aspects of the vessel, including its physical condition, machinery, navigation systems, and safety equipment.

Here are some reasons why a vessel survey before chartering is crucial:

a. Ensuring Conformity:

A survey helps ensure that the vessel is in good condition and meets the requirements stated in the charter party.

b. Protecting the Charterer's Interests:

A survey can identify existing problems or damage before the charterer takes possession of the vessel, preventing the charterer from being liable for existing damage.

c. Preventing Disputes:

A detailed survey report serves as crucial evidence in the event of a dispute or claim regarding the vessel's condition.

d. Identifying Safety Issues:

A survey can uncover potential safety hazards or mechanical problems that may be invisible to the untrained eye, allowing the shipowner to make necessary repairs.

e. Basis for Negotiation:

The survey results can form the basis for negotiating the rental price or other terms of the charter agreement.

f. Meeting Insurance Requirements:

Some insurance companies may require a vessel survey as part of the underwriting process.

g. Ensuring Operational Readiness:

The survey helps ensure that the vessel is ready to operate for its intended purpose and meets applicable safety standards.

By conducting a thorough vessel survey, charterers can be protected from potential financial and operational losses caused by vessel conditions that do not comply with the agreement.

3. Improving understanding of sea conditions and the environment around the shipping route

PT Pilar Putra Mahakam and the crew of the Tugboat Nunukan 1 jointly understand the shipping route from Senyur to North Sulawesi. When the vessel is en route and encounters bad weather, the captain and crew can consider stopping and taking shelter on the nearest island off the designated shipping route. It minimizes the risk of damage to the vessel due to large waves and ensures the safety of the crew.

4. Effective Communication

To ensure smooth coal shipments and avoid other issues, communication between PT Pilar Putra Mahakam's management and internal and external parties is crucial.

a. Internal Communication

Communication, such as between operational management and the crew of the Tugboat Nunukan 1, must be effective. Management must provide clear directions regarding the delivery schedule, and the crew must provide information regarding the vessel's condition, crew requirements, and other operational issues.

b. External Communication

Good communication with customers, port authorities, agents handling the vessel at the destination port, and other relevant parties is also crucial. PT Pilar Putra Mahakam maintains good relationships with customers and provides accurate information on delivery schedules,

vessel locations, potential changes, and weather conditions that could impact delivery. Communication with port authorities and agents helps PT Pilar Putra Mahakam obtain information about schedule changes, conditions at the destination port, or other logistical issues that could impact delivery.

5. Crew Selection

The crew selected by PT Pilar Putra Mahakam management to pilot and operate the Tugboat Nunukan 1 has been carefully chosen according to the management's desired criteria. In addition to qualifications and experience, the crew chosen must possess the necessary licenses and certificates in accordance with maritime regulations. Crew members must also have adequate technical expertise consistent with their assigned duties and responsibilities. PT Pilar Putra Mahakam's operational management also monitors crew communication with fellow crew members and ensures that they work as a solid team and collaborate effectively. Crew members must also be able to communicate effectively with other parties, such as customers, port authorities, ship handling agents, and other relevant parties. The captain and officers of Tugboat Nunukan 1 must possess strong leadership and managerial skills to manage the crew and make sound decisions in emergencies effectively.

CONCLUSION

This qualitative study, employing a narrative approach, seeks to identify the key factors contributing to the delay in coal deliveries from Senyuir Jetty to PLTU Sulut 1, which led to inefficiency and extended shipping durations during the November 2024 voyage. The investigation revealed several causes behind the delay experienced by Tugboat *Nunukan 1*. These include technical issues with the vessel, inaccuracies by surveyors during the seaworthiness assessment prior to chartering, and traffic congestion along the shipping route.

The delays in coal transportation have had a considerable impact on PT Pilar Putra Mahakam's operations. The company faced increased operational costs due to prolonged voyage times, which consequently reduced profitability and led to financial losses. Moreover, these inefficiencies contributed to a decline in customer trust, posing challenges to the company's credibility and long-term partnerships.

To mitigate the recurrence of such problems and enhance delivery performance, PT Pilar Putra Mahakam has taken several corrective actions. The company now ensures vessel readiness before departure by conducting comprehensive equipment checks, regular maintenance, and reinforcing crew awareness of sea and environmental conditions. Furthermore, it has instructed surveyors to perform more thorough inspections before vessel chartering to prevent technical failures at sea. Strengthening

communication between PT Pilar Putra Mahakam and all relevant stakeholders has also become a priority, alongside the careful selection of highly competent crew members. Through these proactive measures, the company aims to optimize operational efficiency, ensure timely coal deliveries, and restore client confidence in future shipping operations.

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