

INVESTIGATING THE IMPACT OF INNOVATION TECHNOLOGIES IN LOGISTICS (CROSSING TRANSPORTATION MODEL: CASE STUDY OF THE LANGARA - KENDARI ROUTE)

Muhammad Sya'ban Shibawaihi Siddiq^{1*}, Fitri Hardiyanti¹ and I Gusti Ngurah Sumanta Buana¹

¹Department of Marine Transportation Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

E-mail: sabansiddiq@gmail.com

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ABSTRACT

Konawe Islands is a regency in the Southeast Sulawesi Province. This area heavily relies on Kendari City, the provincial capital, to support daily necessities, recreational activities, and higher education pursuits for the people of Konawe Islands. Wooden boats and ferries serve as the primary means of transportation for the locals. However, during harsh weather, only ferries is operational. Yet, there have been loading violations on ferries, increasing the risk to maritime safety. This research aims to formulate ways to address loading issues on ro-ro ferries along the Langara-Kendari route, ensuring compliance with laws and facilitating smooth cargo distribution. The distribution system is structured based on the method persona user and empathy mapping. Research findings indicate that distribution service users require a freight forwarder for large-scale cargo and consolidation for smaller-scale loads. Therefore, the author recommends the use of applications like Uber, Grab, and Uber to resolve this issue.

Keyword: Advance Cargo Handling, Shipping and Port, Innovation Application

Introduction

Indonesia, being the world's largest archipelagic nation, requires a robust maritime transportation infrastructure to bolster economic advancement and facilitate regional integration. This happens in the Konawe Islands Regency, Southeast Sulawesi Province. Most people in this regency relies very much on Kendari, the capital city of the province for fulfilling daily needs. This city is also center for academic and entertainment. Besides, in many cases, the residents intending to go to nearby islands, such as Muna Island, have to travel through this city due to the absence of direct connection.

Primary commodities of the regency are mainly imported from Kendari as well, by using several types of sea transportation mode, either small boats or large vessels. Logistical operations within this region are significantly reliant on the presence of community ports and local maritime transportation. Small wooden boats, known as 'kapal rakyat,' are mostly used, capable of transporting up to 12 tons of cargo and approximately 40 passengers. These boats

transport mainly basic needs and agricultural products to all district located in the regency. These means that such boats operate directly to the existing local ports in each district for regularly. This is of liner service [1].

There are two types of large vessels, namely, of ferry ro-ro and pioneer ships. The first one serves on a regular schedule connecting Kendari Port and Langara Port, Located on the northwest of the regency. Likewise, the second type of vessel is scheduled to call at Langara Port from several origins, such as, West Nusa Tenggara, Buton Island and Wakotobi Islands. However, the scheduled of this ship is unpredictable.

Under normal weather conditions, wooden boats can operate daily. However, adverse weather prevents them from operating, particularly from April to October. The primary reason of stopping the operation is because the boats cannot stand the waves ranging from 0.25 to 3.0 meters high. This weather pattern is attributed to the location of the East Banda Sea to the east of Konawe Regency. Konawe also experiences strong winds from the southeast [2,3] reported that the adverse weather can

reach Beaufort scale of 7 to 8. During this time, all wooden boats have to stay in the port. This means that poor weather can affect a ship's maneuverability and may lead to maritime accidents [4]. Beside weather, the boats sometimes cannot set sail due to inadequate cargo volume.

Therefore, the only ship that can still operate is a 628 GT ferry ro-ro owned and operated by PT ASDP. The ship, KMP Bahtheramas, can carry up to 50 motorcycles, 10-12 units of minibus, 8 trucks and 1 big size truck. In this case, people must go to Langara Port using land transportation mode, such as small truck, from all places in the island. This process takes time especially for places located on the south and east part of the island due to the inadequate condition of the road. Figure 1 shows routes in which both types of vessels, i.e., wooden boat and ro-ro ferry, are put in operation. The yellow line is for ferry ro-ro, while the red ones are for wooden boats.



Figure 1. Ships route [5]

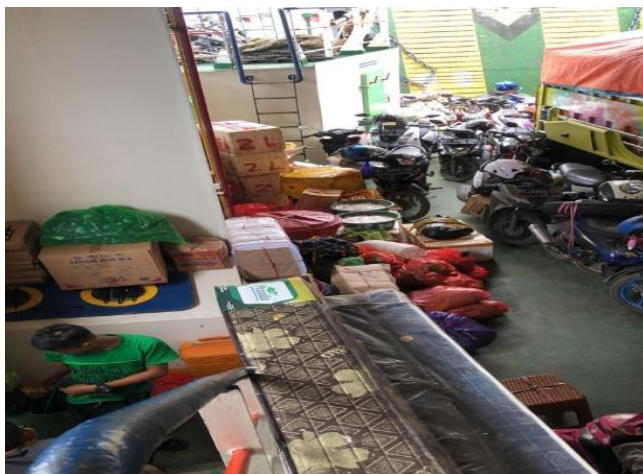


Figure 2. Loading goods into the ship's hatch.

People, cargo owners, have to arrange the truck by themselves. This leads to uncoordinated shipment, which makes the trucks most of the time not fully loaded. These circumstances will cause the cost of transportation to be high. Cargo can go either directly to the ro-ro vessel or be unloaded in the port before moving to the car deck of the vessel. Cargo not loaded to the truck is stored on the car deck.

The last case causes problems because the cargo is not lashed properly. The unlashed cargo can collapse and affect ship stability. The most important thing is that the cargo can be damaged. This activity also violates the provisions of Article 22 where there is no cargo should be placed on the car deck [6].

The purpose of this research is to investigate, identify the aforementioned problem, and propose possible solutions using persona users and empathy map. This method is selected because it can recognize the needs and the will of transportation users [7].

Methodology

This research utilizes a qualitative research method that encompasses the search, collection, and analysis of non-numeric data. It is expected that the use of a qualitative method will provide a deeper understanding of this issue. The research also employs methods used in design thinking, such as the persona method and empathy map method. These methods are used to understand the logistics users and empathize with them to formulate the best solutions that support the use of innovation in addressing this issue.

In this context, the writer uses the cross-sea transport in Konawe Islands, the Langara-Kendari route, as the subject of analysis. The author conducts a literature review of similar cases in Indonesia, aiming to find relevant publications for their research. As a result, the focus is primarily on secondary materials, such as journal articles, government reports, organizational reports, and online articles. The author then proceeded to take several steps in formulating this research. First, writer collected various data and information from various sources related to the research topic. Second, the author analyzed similar issues that have occurred. Important and interesting findings were noted, while findings that were not relevant were excluded from the research references. Third, the author used empathy maps and user personas to formulate what is desired and expected from the parties involved. They also developed conclusions and made recommendations for policymakers and future research.

Result and Discussion

Unaccompanied Cargo

Cargo on a ferry refers to vehicles or goods loaded on top of vehicles.

Table 1. Persona User

Number/ Name	Age	Addresses	Occupation	Goals	Pain Point	Gain Point
1. Yusuf	29	Kendari	Owner and Truck driver	I am willing to be an expedition on the Langara-Kendari route, but I don't know if there are any cargoes available for that.	Less Information	Have a fleet
2. Refni	24	Kendari and Konawe Islands	Konawe Islands regional government employee	I have a car that I take to make the crossing, I am willing to transport other people's belongings in my minibus	N/A	Willing to carry other people belongings
3. Ari	27	Konawe Islands	Copra Farmers	I hope to be able to send agricultural produce to KMP. Bahteramas cheaply	lack of information about freight forwarder	N/A
4. Mukhlis	32	Konawe Islands	Civil Servant at Konawe Islands Regency	I usually shop for my monthly needs in Kendari city, it would be nice if someone could transport my monthly shopping to Konawe Islands at a low cost	hassle of sending luggage	N/A



Figure 1. Yusuf



Figure 4. Refni



Figure 5. Ari



Figure 6. Mukhlis

Table 2. Empathy Map

Name	Says	Thinks	Does	Feels
Yusuf	I hope to increase my income	There should be information regarding the amount of load	Waiting for information	Patiently waiting
Refni	I am willing to carriage other people belongings if they pay me	It will help me to pay the ticket for my car since empty and loaded cars cost the same	Nothing	Excited
Ari	I hope there is a freight forwarder with low cost to deliver my harvest In Kendari City	I hope there is a freight forwarder with low cost to deliver my harvest In Kendari City	Send goods to KMP. Bahteramas Even though Bahteramas broke the rules	hope for better service
Mukhlis	I hope someone can carry my belongings for low cost, because I am overwhelmed to bring it by myself	I hope someone can carry my belongings for low cost, because I am overwhelmed to bring it by myself	Bring his personal belongings alone	Overwhelmed to bring personal cargo

Unaccompanied cargo on a ferry means to items or freight transported without being placed in a specific container or special packaging. This includes goods carried directly without additional protection, which typically occurs when the items are not loaded into a specific container or specialized packaging.

Sometimes unaccompanied cargo plays a crucial part in the local economy and logistical operations. It aids in the transportation of a wide array of items, spanning from food supplies to consumer products and industrial machinery.

A deeper understanding of the concept of unaccompanied cargo in ferry transportation is pivotal to comprehending the dynamics of maritime operations, maximizing the benefits of this service, and enhancing economic connectivity in regions reliant on maritime transportation.

According to [8] unaccompanied cargo refers to goods not transported atop vehicles. The specific classification of items falling under this category is delineated in the provisions on ferry transportation. These classified items include staple goods and the like:

1. Construction materials.
2. Machinery and related items.
3. Agricultural and farm produce.
4. Household furniture.
5. Marine produce and
6. Animals.

In cases where there is a lack of freight transport vehicles within an area or the absence of transportation means to reach a ship, the transport of unaccompanied cargo is permitted.

Identification Problems

The practice of handling unaccompanied cargo on a ferry, besides being in violation of regulations, can also increase the risk to the safety of the voyage. Goods loaded without proper lashing can pose the risk of cargo collapse, thereby disrupting the stability of the ship.

Persona Users

In this session, the writer will present names, ages, addresses, occupations, goals, pain points, and gain points of each persona and photo of the person during interview.

Empathy Map

In the empathy map the author explores what is says, thinks does and feels by each person interviewed, as shown in table 2.

Conclusion

Free In conclusion, cargo handling on KMP Bahteramas does not conform to regulations, leading to increased safety and security risks in maritime operations. Furthermore, passenger comfort is compromised due to the obstruction caused by cargo loading, which restricts passenger access to the ship.

The author recommends that the local government encourages the establishment of freight forwarders operating on the Kendari-long haul route, as the volume of cargo shipments meets the minimum standards required for freight forwarders to operate in this area.

The author also urges the relevant authorities to create a platform where owners of medium to large cargo loads can connect with mini-bus owners providing inter-island transportation services, facilitating the transfer of cargo to the transporting vehicles. This platform is expected to operate autonomously, without the need for third-party intervention, similar to applications like Uber, Go-Jek, or Grab. It is essential that this service operates on a non-profit basis to ensure affordability and accessibility for the communities in the Konawe Archipelago. However, strict oversight and regulations should be in place to manage and standardize the pricing for cargo handling within this system.

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