

COMPARATIVE ANALYSIS OF INAPORTNET APPLICATION SYSTEMS AGAINST PORTBASE TO IMPROVE PORT PERFORMANCE IN INDONESIA

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ABSTRACT

Inaportnet is a digital system used to facilitate operational systems at Indonesian ports whose system is similar to the portbase in the Netherlands which also has the same function and purpose. The main aim of this research is to compare the level of effectiveness and efficiency of the Inaportnet work system which is considered to be still far from the Portbase work system which has been proven operationally quite effective in Dutch ports based on primary data collected from interviews with the Dutch Portbase and also Inaportnet Indonesia. In the interview results, significant differences were found in the way these two systems work where Portbase prioritizes security by carrying out two-step verification to prevent data leaks and also the possibility of system hacking. On the other hand, Inaportnet has not done this so it has the potential to experience disruption when the system is not available and creates uncertainty in recording cargo volumes where the recording process is still done manually by relying on documents from shipping agents so that if Inaportnet is not available, it makes it difficult to access documents digitally and need a long time. The results of this research show that if the Inaportnet system is modified and slightly combined with the Portbase system on certain systems, the operational system will likely increase its efficiency and the data in the Inaportnet system will be more reliable and trustworthy so as to increase cooperation and strengthen trust between incumbent.

Keyword: Digitalization, Inaportnet, Portbase, Operational Efficiencies, Stakeholder

Introduction

The world of shipping is one of the industries that makes a fairly high contribution to the world economy through a trading system using shipping facilities, amounting to 80% of the total amount of trade, where the majority of this percentage occurs in developing countries, one of which is Indonesia [1]. The development of Indonesia's maritime economic system is supported by the fact that Indonesia is the largest archipelagic country in the world with more than 17,500 islands, has a coastline of 95,181 KM and a sea area of around 5.8 million KM² (75.7%) with a very strategic position, namely in between the Asian continent and the Australian continent as well as the Indian Ocean and the Pacific Ocean which are the routes for world trade [2]. According to data obtained from the Indonesian Supply Chain in UNCTAD (2014), it is known that 45% of all commodities and products

traded in the world with a value of USD 1,500 trillion/year are shipped via the Indonesian Archipelagic Sea Lane (ALKI). So, this also increases Indonesia's economic potential by USD 1.2 trillion per year with the potential to absorb 40 million people [2]. The determining factors for Indonesia's economic potential are in the maritime sector and are developed with strategies carried out in the shipping industry, shipping industry and ports [2]. Ports as maritime transportation infrastructure have a very important and strategic role for the growth of industry and trade and are a business segment that can contribute to the economy and national development because they are part of the chain of transportation and logistics systems [3]. According to data from the Ministry of Transportation (2014), to support an economic system that aims to improve the national economy, up to now Indonesia has 111 commercial ports, 1129 non-commercial ports and 914 terminals

for its own purposes (Figure 1). However, all these ports will still not be able to support increased economic growth if they are not accompanied by adequate improvements in port infrastructure. Infrastructure development in a region can have an impact on increasing people's access to resources, thereby increasing access to resource productivity, which ultimately encourages economic growth [4]. Infrastructure or facilities and infrastructure have a very strong connection with social welfare and environmental quality as well as the economic growth process of a region or region. This can be shown by indications that regions that have better complete infrastructure systems usually have better levels of social welfare and environmental quality as well as economic growth [5]. Port infrastructure development requires large costs, the success or failure of the project will have long-term implications [6]. The existence of a port has an impact on economic development around the port area, so that the success of the port not only provides benefits to investors but also to the government through externalities that spread to the regional economy [7]. So that the construction and development of port infrastructure can run well, efficiently and effectively in providing the best service to the community, the government has issued various regulations to make it more efficient and attract investment so that Indonesia's economic activity continues to increase. One of the regulations issued is the electronic One Stop Service (PTSP) policy or known as the Indonesia National Single Window (INSW). Inaportnet is one part of the implementation of the INSW program which is an electronic system for processing port documents (loading and unloading) and ship documents. Inaportnet as a portal that is operated and integrated into all service activity patterns for ships and goods apparently still does not provide fast service, for example there are still frequent disruptions in ship berthing, piloting and loading and unloading planning [8]. Inaportnet is actually a system created online to serve the arrival and departure of ships (clearance in and clearance out) as well as loading and unloading of goods. Parties involved in Inaportnet include Port Authorities, Harbormasters, Port Business Entities, Shipping Companies or Agents, Loading and Unloading Companies, and Transportation Management Services [8]. According to some business actors, the internet-based single service and port information system (Inaportnet) has not yet been running optimally, especially in relation to the integration of services

with the National Single Window. The inaportnet system does not always run smoothly because there are internal factors such as system maintenance or system repairs at certain hours which can hinder the port clearance process [9]. One system that has the same function as Inaportnet is Portbase which was developed by the Port of Rotterdam, Netherlands and this research will focus on comparing Portbase and Inaportnet's systems as a step to increase the effectiveness of Inaportnet because Portbase is considered more effective and has a more adequate system. and better compared to Inaportnet.



Figure. 1 The number of ports in Indonesia

Methodology

Given the complexities of port operations and the intertwined nature of stakeholders, it becomes imperative to use a qualitative research approach to fully grasp the ins and outs of the system [10].

Harbour

According to Article 1 paragraph (1) PP no. 69/2001 concerning Ports, a port is a place consisting of land and surrounding waters with certain boundaries as a place for government activities and economic activities which is used as a place for ships to dock, dock, board and/or disembark passengers and/or load and unload goods equipped with facilities. shipping safety and port supporting activities as well as a place for intra- and inter-mode transfers [11]. Ports with all their activities are very closely linked to the industrial, agricultural, tourism and trade sectors. When transporting goods by sea, each user assumes the obligation and responsibility to protect and guarantee the safety and integrity of the goods within the limits of their responsibility or from the time the goods are received from the sender at the port of loading to the recipient of the goods at the port of unloading [12].

Inaportnet

Inaportnet is an internet/web service system to integrate standard port information systems for

physical services and goods from all relevant agencies and stakeholders at the port. Inaportnet is an open, neutral electronic portal that is used to facilitate the exchange of information and service data to ports safely, quickly, neutrally and easily which is integrated with government agencies related to port business entities and logistics actors to increase the competitiveness of the logistics community. is in Indonesia [13]. The benefits of Inaportnet include faster service compared to before, completion of clearance in 12 hours compared to before which can take up to one-week, cheaper processing costs, increased transparency, increased public information and the company can move goods carrying ships and ship management documents after the ship enters the port via computer [14].

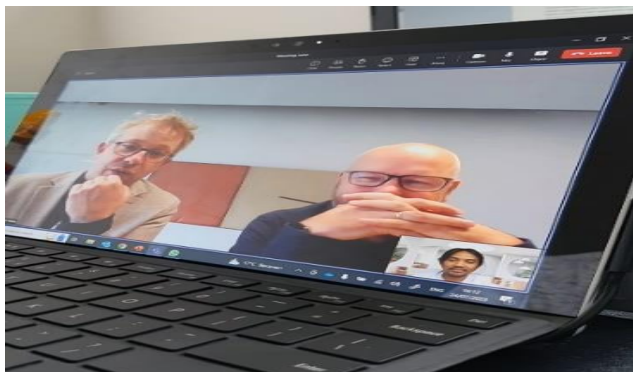


Figure. 2 Interview Documentation with Portbase

Data Source

MSCS The data used in this research is a combination of primary and secondary data. The primary data used is data obtained from the results of structured interviews with Marten and Donald from Portbase on July 24th 2023 (Figure 2). The secondary data used is sourced from several online literature reviews that support this research relating to the inaportnet and portbase systems with the focus of discussion being on issues such as real-time ship re-reporting, cargo volume recording, system downtime and possible system down-time. The interview process is carried out in depth and transparently to maintain the accuracy of the interview results and can be validated to ensure that the participant's perspective is portrayed correctly.

Result and Discussion

Real-Time Vessel Arrival Reporting and Harbour Dues Payment

Arrival reporting is important because it can provide accurate information about maritime vessels that is

essential for effective planning and management of maritime and logistics operations [15]. Based on the interviews conducted, information was obtained that things that could be developed and become a reference for Inaportnet based on the working system of Portbase include, Portbase prioritizes recording 'actual time of arrival', which plays an important role in ensuring the accuracy of invoices and port fees. Apart from that, the port operational model in the Netherlands involves various stakeholders, from the harbormaster to the Port Authority, meaning that this system runs well because of cooperation from all parties, not just the port. Another thing that is the operational focus of the portbase system is a system that is combined flexibly, meaning that if a problem occurs in one of the port activities, the movement of ships will not be hampered or will continue to operate according to schedule. Portbase also has a clear and consistent payment system, meaning that the payment process can be done easily and all of this can be developed by inaportnet because it is in accordance with inaportnet's work cycle and system in Indonesia.

Recording Cargo Volume and Ensuring Data Accuracy

Problems that often occur which hinder the development of the inaportnet system are related to fluctuations that occur in cargo volume, the majority of which are caused by dependence on initial shipping instructions and shipping documentation provided by shipping agents. To overcome this, Inaportnet can adopt a portbase work system that uses two-step verification where a process at the port must go through comprehensive cross-verification. Apart from that, Portbase also has an on-time and flexible development system that allows Portbase to quickly fix problems encountered so as to increase data accuracy. Portbase also has advantages in terms of data transparency for policy makers, where Portbase always provides real time data to customs and port authorities to increase the trust of each policy stakeholder and also strengthen data visibility. In the blog written by iTech in 2021, One way for logistics businesses to avoid errors is by establishing clear guidelines and protocols for accurate data entry, including standardized measurement formats [16]. These things can be developed in the inaportnet system so that it can increase the effectiveness of its work at Indonesian ports and can improve system problems.

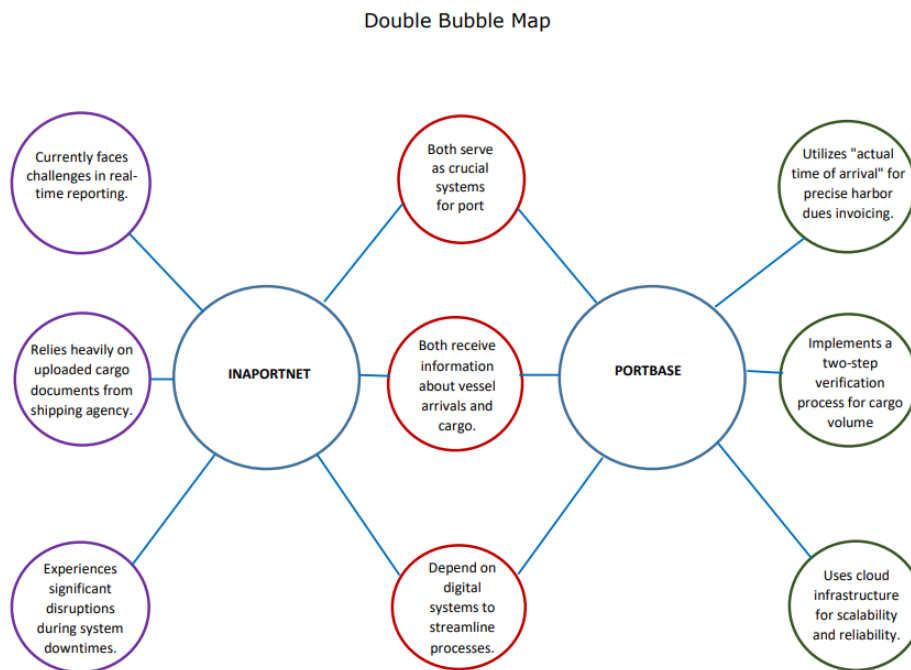


Figure. 3 Double Bubble Map Portbase and Inaportnet

System Downtime

System downtime disruptions at ports can have a significant impact on operations, reputation and revenue streams, resulting in significant delays [17]. Therefore, to anticipate greater losses when the Portbase system experiences a system shutdown, Portbase takes advantage of advanced technology in the cloud sector. The cloud used by Portbase has proven to be useful in handling processes at the Port when experiencing high demand, so that when an emergency occurs, Portbase has data backup and this does not affect ongoing activities or processes at the Port. This system can be utilized by Inaportnet considering that in Indonesian Ports it is not uncommon for system setbacks to occur and considering the high level of economic activity in the Port that if one process is stopped or there is a problem, then other processes also experience problems and, in the end, it can cause quite a lot of losses due to problems. the. This system can run well if there is collaboration between actors and related parties, as well as improving the ability to manage commodity logistics carried out end-to-end [2].

Contingency Plans for Government Systems Downtime

Downtime that occurs if there is a disruption to the system can have a domino effect on the government system and will result in long service delays. So, to overcome this, Portbase carries out a cloud system

which is proven to be able to store data backups in names to be accessed when downtime occurs at the port. The data storage area has significant importance and value in the field of data storage systems [18]. Therefore, Portbase works very hard to always update and improve the cloud system so that no data is lost during downtime. Apart from that, to anticipate things that happen during downtime, Portbase also provides customer service based on 24/7 service with the priority mechanism being reporting quickly and on time. These things are important to apply to the Inaportnet system so that problems at the port can be controlled and does not harm anyone.

Comparative analysis of Inaportnet with Portbase

There are many differences and similarities between the Portbase and Inaportnet systems and are shown in Figure 3. Even though the operating systems used are different, Inaportnet and Portbase have the same goal, namely to simplify port operations, and both share several operational methodologies. In particular, Portbase and Inaportnet rely heavily on timely and accurate data input. They emphasize the importance of 'actual arrival time' and comprehensive cargo volume information. There are several striking differences in these two systems, namely, Portbase in its system has implemented two-step verification to ensure the similarity of data between initial data collection and data existing at the time of actual release in the field. This is very suitable to be applied

to the Inaportnet system because the majority of the Inaportnet system still relies on uploaded shipping instructions, which sometimes causes differences and ambiguity in determining cargo volume. Portbase also upholds a cloud system in its system which is designed in such a way as to prevent data loss and shipping traffic jams when the system is down. In contrast, Inaportnet faced challenges during system outages. The lack of separate services on Inaportnet can cause considerable operational lag when facing these challenges. Another striking difference between the two lies in their organizational structure. Portbase has clear boundaries between the roles of Harbormaster and Port Authority. Meanwhile, Inaportnet's setup creates an integrated environment involving multiple entities. This arrangement can lead to possible overlap and ambiguity in the assignment and understanding of responsibilities.

Potential of Inaportnet

Based on the results of the comparative analysis carried out between the Inaportnet and Portbase systems, it is known that Inaportnet still has to do a lot of development and evaluation of the system used, such as using two-step verification, switching to a cloud system to store data backups and dividing the roles and responsibilities of stakeholders with clearly in order to strengthen cooperation between parties and not disrupt the running of other processes if there is a system disruption. All of this can be done if policy-making authorities such as the government and port officials work together effectively and efficiently to make it happen.

Conclusion

Based on the results of in-depth interviews and comparative analysis carried out between the inaportnet and portbase systems in improving the system at the Port, it is known that inaportnet still needs to be developed regarding its system and can learn from the existing system on Portbase such as the use of the cloud, two-step verification and also the division of responsibilities clear port authority. If Inaportnet can implement these things well and with good cooperation between parties, then improving Inaportnet's work system can run well considering Indonesia's position as a leading maritime country, this will certainly increase Indonesia's economic potential. As the global trade landscape evolves, it is important for Inaportnet to continuously benchmark and adapt, ensuring that it meets the dynamic needs

of shippers, carriers and the broader maritime community.

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