THE ROLE OF THE PORT BUSINESS ENTITY (BUP) PT. PELINDO III IN THE CONTEXT OF REALIZING GREEN & SMART PORT OPERATIONS AT TERMINAL TELUK LAMONG SURABAYA

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Abstract
PT. Teluk Lamong Terminal is a subsidiary of Pelindo III. Terminal operator that prioritizes services with high-tech facilities with the concept of “The first green port in Indonesia. The role and steps taken by BUP PT. Teluk Lamong Terminal in realizing a green port includes: (a) Improving the quality of cleanliness, port environment, (b) Improving service facilities, security, order and public safety. (c) Increasing institutional capacity and human resources for environmental management in the port area. (d) Implementing Regulations and Technical Guidelines that support the management of the port environment for the realization of legal certainty. (e) Increasing the active role of stakeholders in realizing environmentally friendly ports. The role of BUP PT. Teluk Lamong Terminal in implementing Smart Port includes: The implementation of the interconnection of the entire port logistics chain includes (a) an intelligent information system consisting of; (b) data center (c) cyber security.

Keywords: smart, green, port, high technology, BUP

1. INTRODUCTION
It has been a long time that the transportation sector plays a very important role in the trade of economic commodities nationally, regionally and internationally. The maritime industry sector has become a part that does not only play a role in the transportation or delivery of goods sector, but has become an integral part in the development of a city, region and the national economy of a country (Hall and Jacobs, 2012).

According to Talley (2009) Referring to the developments in the last decades which along with the increase in port activity in handling cargo loads by sea transportation has resulted in a deterioration in environmental quality. This forces port services to adapt to environmental issues in order to continue to maintain their role in the maritime logistics process. A port can be defined as an area of water that gets protection from the influence of waves, which has sea terminal facilities for the benefit of ships docking, carrying out moorings to unload their cargo. At the port, loading and unloading facilities are provided and a place for storing goods, within a specified period (Triatmodjo, 1996).

The port has a pool known as a mooring pool which functions for ships to dock and moor, a place for boarding passengers, loading and unloading of goods and a place for temporarily storing cargo. The port has a role, namely:

a. As a means for the implementation of international trade transportation from the buffer zone.
b. As an important link in the rotation of the wheels of trade and the economy as well as the development of the industrial sector.

The continuity of the port services business is important to maintain and improve, because it is a point of connectivity in maritime industry entities that must be able to operate effectively and efficiently. For this reason, the implementation of effective and efficient management is needed to ensure that port services can be carried out properly while still paying attention to handling environmental quality so that it does not suffer damage, as well as social and cultural aspects. Disruption of one of these aspects will have a negative impact on the smooth flow of goods in the national logistics system, which in turn will disrupt the national economy.
Economic activities must continue even though the world is experiencing a pandemic, economic activities are carried out by implementing strict health protocols including in the port area. The occurrence of the Covid 19 pandemic has prompted an effort to support harmony between economic activities and ecological aspects. One of the alignment steps is the management of ports with smart ports and green ports which are strengthened by aspects of digitization, so that face-to-face contact can be reduced as an aspect of the health protocol in tackling the COVID-19 pandemic. A smart port can be defined as a port that has intelligent technology capable of integrating environmentally friendly port operations.

Several things that still need to be prioritized for attention are related to Key Performance Indicators (KPI) where there are still differences in data in efforts to implement an energy use control system at ports. In this case, one of the ports in Indonesia that has implemented a smart port is the port of PT. Terminal Teluk Lamong in Surabaya. Smart Port which has been implemented at the port of PT. Teluk Lamong Surabaya Terminal is a smart ship supported by high-efficiency digital technology that has competitiveness and added value for the economic development of society, with the application of control and automation system technology in various aspects of port operations, so that in turn it will be able to improve aspects of protection and ecologically friendly ports and the surrounding area, as well as improving the quality of port safety standards and productivity.

Greenport Concept
The green port concept is an approach to port operations that combines ecological concepts in an effort to implement environmental protection strategies that seek to protect or prevent the decline in the quality of the port environment, and policies that encourage maintaining and increasing the productivity of port operations so as to increase the economic value of the existence of a port. The crucial point is how to create a condition that balances the two approaches, where aspects of social and economic exploitation of a port may not exceed the threshold of natural capabilities (Shao et al., 2009).

A green port that combines a port protection and environmentally friendly approach in port operations and management. Green ports aim to maximize the potential of existing resources, reduce adverse effects on the environment around the port, and to improve environmental management and ecological quality around the port and its surrounding areas. The green port concept has several parameters related to port environmental protection including reduction of air pollution, port development that pays attention to the carrying capacity of environmental protection by planting trees that reduce noise and pollution, the use of renewable energy for port operations and non-renewable material recycling programs, which can be reused for operations and activities at the port (Despina et al., 2011).

2. METHOD
In carrying out the research, a qualitative descriptive research method was used, where in this research the researcher explored the conditions of the research object, in this case the Teluk Lamong terminal, using non-quantified data, in this case such as a step or work procedure, process guidelines, implemented concepts and steps, physical model, work and organizational culture and others (Djam'an Satori, 2011: 23)

Sugiono (2012: 9) defines qualitative research as an approach to researching natural conditions, researchers play a central role in determining data collection and processing techniques such as triangulation techniques using inductive and quantitative data analysis which will emphasize the generalization of research results.

In carrying out research to obtain information about the role of the Port Business Entity (BUP) Pt. Pelindo III to manage Teluk Lamong terminal, researchers used 2 types of data, namely:

Primary data
The data was obtained from responses or direct research objects at Teluk Lamong Terminal, in this case the respondents who were the object of data sources through interviews and direct observation.
including the Director of Teluk Lamong Terminal, the Corporate Secretary of Lamong Terminal and the management and implementers who were directly involved in policy and implementation. Smart port and green port at Teluk Lamong terminal, Surabaya.

Secondary data

The secondary data used is from various references to laws and regulations and other relevant sources to obtain data that provides a real picture of the condition of the smart and green port management at Teluk Lamong terminal, Surabaya.

3. RESULTS AND DISCUSSION

Green port is a port that in its operations emphasizes activities that are environmentally sound (eco port), in terms of management policies in its implementation will always emphasize various aspects such as social, economic and environmental protection, so it does not only focus on how companies get business profusely.

The International Association of Port and Harbor (IAPH) provides a definition that a green port is a concept that has an emphasis on aspects of continuity or sustainability (sustainable port). In this case the port manager and various parties involved in the use of the port are responsible for the development and operation of the port by always prioritizing the protection of the port environment in a sustainable manner. This policy starts with port planning and implementation of the company's vision and mission to create a port environment and maritime business environment that will ensure sustainable economic growth and a maritime environment that will also be enjoyed by future generations. This is all a shared responsibility of stakeholders in the construction, development and operation of green ports.

As in Law No. 17 of 2008 on shipping, it does not directly mention green ports, but there is one article that specifically emphasizes various efforts to protect the environment. Whereas what is meant by efforts to protect the maritime environment in Law no. 17 of 2008 is the fulfillment of the conditions and requirements and procedures for carrying out an effort to prevent and overcome various potential environmental pollution in port areas, ship operations, transportation of various hazardous and toxic waste materials, waste disposal, and ship scrapping activities.

The government in relation to the protection of the maritime environment issued Government Regulation Number 21 of 2010 concerning the Protection of the Maritime Environment. The implementation of maritime protection in this law is carried out by the government, which is carried out in the form of prevention and control of pollution from the operation of ships and prevention and control of pollution from port activities.

According to Siahaan (2012), the Directorate General of Sea Transportation in 2004 has implemented an environmentally sound port management policy (ecoport), by issuing Technical Guidelines for Environmentally Friendly Ports (ecoport). Ecoport is a generic label that is worn on ports that apply systemic and environmentally friendly efforts and methods in the construction, development and operation of ports (Directorate General of Sea Transportation, Ministry of Transportation, 2004). In an environmentally friendly port (eco-port), all parties involved in and interested in port activities are encouraged and invited to be involved voluntarily (voluntary) to create an environmentally friendly port. Port managers in the world are competing to implement Blockchain to support the smart port concept that they implement. In addition to the port being more efficient, there is revenue that can be obtained from the smart port. Many maritime analysts estimate the value of implementing smart port technology (AI, IoT, Blockchain, and others) at around 2 billion US dollars in the next five years.

Ports in Indonesia have moved towards Smart Port-based port management, because developed countries have an interest in making the ports of developing countries including Indonesia efficient. Smartport is one way to make port management more efficient and generate more profit.

The implementation of a smartport or smart port is a solution for the logistics sector to face the new normal amid the current Covid-19 virus pandemic. Collaboration, commitment and change management are the keys to success for the formation of a smart port, moving towards the smart port.
concept, through two main indicators namely internal and external digitization which ends in digital. Internal digitization will create a digital company, while an external focus will create digital customers, the collaboration of the two will make this activity a digital business. Meanwhile, there are three main keys that must be prepared so that smart ports can be realized, namely commitment, change management and collaboration.

Change management really needs strong leadership from the top level of the company as well as sector leaders who realize smart ports. Thus, collaboration that will create a smartport with openness and collaborative data exchange, digital business can also be achieved. Smartport can be one of the solutions through the application of the internet of things (IoT), and artificial intelligence.

Port digitalization can improve port efficiency and services. Information technology has also become a strategic issue in resources to encourage the realization of smart ports. The smart port concept can also drive national logistics cost efficiency besides being the key to success in facing the new normal. Smart ports must be able to answer the needs of the health aspect by reducing or even eliminating human interaction in the port process. This interaction can be replaced into the responsibility of one of the stakeholders at the port digitally, so there is no more physical interaction.

With so many online portals starting from Inaportnet, Indonesia National Single Window (INSW), Marine Operating System (MOS), Terminal Operating System (TOS), to various portals, each ship operator still requires a physical response.

The digitization process using an online system or internet of things (IoT) should be accompanied by an automation and integration process that will improve port performance.

Development of Environmentally Friendly Port Facilities
b. ASC. Automated Stacking Crane Operated at Teluk Lamong Container Yard Terminal by using electricity.
c. CTT. Container Transport Trailer (CTT) with Engine Start and Stop inside to save fuel

The smart port consists of two pillars that include different components, as illustrated in the chart below.

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<table>
<thead>
<tr>
<th>Smart port</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interconnection</strong></td>
</tr>
<tr>
<td>Intelligent Information System</td>
</tr>
<tr>
<td>Data Center</td>
</tr>
<tr>
<td>Cybersecurity</td>
</tr>
<tr>
<td><strong>Automation</strong></td>
</tr>
<tr>
<td>Smart Ships</td>
</tr>
<tr>
<td>Smart Containers</td>
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<td>Automated Operations</td>
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![Figure1. Pillar Smart Ports](image)

1) Interconnection of the entire port logistics chain

The increase in logistics flows between various countries of the world has completely changed the port system and has increased the importance of information exchange in ports. This has prompted the world's major ports to seek better interconnections in the logistics chain through exchanging information, sharing best practices and creating joint ventures to develop innovative digital solutions. In fact, the successful implementation of interconnection throughout the port logistics chain enables i) improvement and facilitation of commercial exchanges ii) control and planning in real time iii)
increased velocity of fluidity vi) traceability, which ensures the efficiency of port operations, and avoids serious accidents and side effects. cascading. To be successful in managing this interconnection, it is essential to acquire three technologies:

a) A smart information system:

   An intelligent information system that ensures the synchronization and smooth running of all traffic and operations at the maritime terminal, through the exchange of data and information. Intelligent information systems are an asset to enhance the visibility, fluidity, reliability and security of marine terminals. It communicates directly with other systems and software, namely the port authority radar, the Cargo Community System and also the Business Maritime system, allowing for adaptation and upgrading of service levels. Moreover it can be accessed from any screen whether it is a computer or a tablet. Currently there are several examples of this type of system being tested at port terminals, for example, the duo Neptune and Ci5 in the port of Marseille which enhance interconnection in the management of goods.

b) Data Center

   Like smart ports, computer data is becoming more massive, forcing smart ports to have their own data center to store and analyze all maritime traffic information in real time which increases network speed and flexibility and also increases port productivity.

c) Cybersecurity

   Cybersecurity aims to ensure the availability, traceability, integrity and confidentiality of information stored and transmitted. This information is threatened by cyberattacks, which can lead to disastrous consequences such as information theft, remote control of computer systems, sabotage, etc. And sometimes the consequences are on a country scale. Then, cyberattack risk management is unavoidable

2) Port Automation

   The term smart is often used as a synonym for excessive automation. It also shows the monitoring and control system of the device. Automation means a combination of software, hardware and mechanics. Increasing the degree of automation in ports helps to support interaction between different collaborative partners, reduce unnecessary amount of manpower, reduce inactivity rates, ensure speed, reliability, fluidity and traceability, minimize resource wastage and also increase port technical efficiency, which is one of the determining factors of productivity. Smart Port must be equipped with automatic equipment and operations. To be successful in auto porting it is important to acquire this equipment:

a) Smart ships

   Smart ships are equipped with a satellite system, a set of sensors and monitoring equipment, to improve system monitoring and control through increasing the quantity and reliability of exchanging data with the port, in real time. In fact, the smart ship is connected with the smart port to collaborate automatically in berth planning, in the preparation of cargo handling operations and work and material handling and in the trucker organization to the clock. This improves fleet management and minimizes vessel waiting time at the wharf as well as downtime. This collaboration between ships and ports has a considerable marketing impact to make ports smart.

b) Smart Containers

   The smart container is equipped with a suite of sensors that enable the collection of data on geolocation, humidity, temperature, vibration, pressure, shock, etc. It communicates remotely and collects data directly to information systems, which makes it possible to consult in real time technical documentation, report breakdowns or even plan maintenance operations. Smart containers provide constant feedback throughout its journey giving a global vision to the fleet and facilitating trials.
c). Automated operations:

Automation of operations regarding the transportation, storage and handling of containers within the terminal. Automated transport involves replacing conventional trucks with electronically guided transport platforms. Then, storage operations consist of using a rail crane without an operator, so that the storage and extraction operations of containers are controlled by an automatic control system. Finally, the dock crane can automatically load and unload ships. The internal automation of port terminal operations reduces waiting times for ships and trucks and also reduces energy requirements.

PT. Teluk Lamong Port in developing a smart port has taken various strategic steps including:

1. Teluk Lamong Terminal Automation System
   Automated Stacking Crane (ASC)
   • Move containers automatically
   • 20 ASC Units are operated by Terminal Teluk Lamong
   • 2x faster productivity than RTG
   • More efficient operational processes
   • Environmentally friendly, fueled by electricity
   • Guaranteed Security Aspect:
     1. Using ROS System
     2. Field area of sterile accumulation of human physical activity
     3. The container stacking area is equipped with automatic motion detection sensors
     4. Anti-collision sensors are installed on each ASC. Anti-collision sensors on each ASC

2. Control Operation System:
The ASC is run automatically through the control tower, 2 of the ASC operators are women.

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<thead>
<tr>
<th>Table 1. Terminal Equipment</th>
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3). Corporate Social Responsibility

The scope of CSR implemented by Terminal Teluk Lamong refers to ISO 26000 which covers 7 (seven) areas of work, including the environment or concern for the surrounding environment by carrying out various improvements to nature and the environment around the port for the safety and comfort of the people around Terminal Teluk Lamong. Other fields include social development by paying attention to social developments around the company, as well as human rights by paying attention to human rights around the company, listening to aspirations, and respecting all activities of local residents. Teluk Lamong Terminal also carries out organizational governance or works together...
with the local government to create programs that benefit all parties, including the company, government, and local residents. Likewise, labor practice directly involves local residents as an important part of the company's development. Next is far operating practices to make residents part of Teluk Lamong Terminal's performance with various absolute requirements that must be met, as well as consumer issues or paying attention to all consumer complaints with various improvements in all fields. A number of programs that have been compiled are building community development, including improving the economy, education, health, socio-culture, and infrastructure within the company. Before going far, it takes the company's active role to build an environment that contributes to each other.

To ensure that the programs launched are right on target, social mapping is carried out. Social mapping is carried out by involving stakeholders consisting of the community, local government (from the bottom to the top), customers, business partners, and the parent company. Social mapping is carried out on areas that have a direct impact on the Company's activities. The social mapping found 6 (six) sub-districts and 3 (three) sub-districts in the Surabaya area and 2 (two) villages and 1 (one) sub-district in the Gresik area. The sub-districts that have a direct impact are Tambak Osowilangun, Romokalisari (both in Benowo District), Genteng Kalianak, Tambaksarioso (both in Asemrowo District), and Morokrembangan (Krembangan District). The three districts are included in the Surabaya area. Meanwhile, those included in the Gresik area are Tenggulunan and Karangkiring Villages in the Kebomas District.

Social mapping also needs to be accompanied by the implementation of focus group discussions (FGD) to meet the needs of residents in accordance with company policies. In the FGD, the community was asked to compile a list of needs to be submitted to Management. This social mapping facilitates the distribution of assistance as well as facilitates the preparation of further work programs.

4. CONCLUSION

The role and steps taken by BUP PT. Teluk Lamong Terminal in realizing a green port includes:

- Improving the quality of cleanliness of land and pond waters in the port area. Increasing the level of cleanliness, shade, and environmental beauty in the area.
- Improving service facilities, security, order and public safety.
- Increasing the institutional capacity and human resources of environmental managers in the port area. Improving service performance and work safety at the port. Implementing Regulations and Technical Guidelines that support port environmental management to create legal certainty. Increasing the active role of stakeholders in realizing an environmentally sound port.

The role of BUP PT. Teluk Lamong Terminal in implementing Smart Port includes:

- The application of interconnection throughout the port logistics chain includes: An intelligent information system that ensures the synchronization and smooth running of all traffic and operations at the maritime terminal, through the exchange of data and information. Data Center to store and analyze all maritime traffic information in real time which increases network speed and flexibility and also increases port productivity. Cyber security which aims to ensure the availability, traceability, integrity and confidentiality of information stored and disseminated.

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