



DIGITAL TRANSFORMATION OF CONTAINER SERVICES TO IMPROVE EFFICIENCY AND COMPETITIVENESS AT PELINDO CIREBON

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Abstract

PT Pelabuhan Indonesia (Persero) Regional 2 Cirebon faces challenges in improving the competitiveness of container services that have not been optimized. The purpose of this internship program is to analyze and implement innovative technology-based strategies to improve container services through a Value Chain Analysis approach. The methods used include field observations, analysis of port operations, and evaluation of the effectiveness of digitalization implementation in administration and marketing. The implementation of the Automated Container Handling System successfully reduced the loading and unloading time from 3-4 hours to 1.5-2 hours, in addition, the PHINNISI and PTOS-M systems accelerate the management of export-import documents online. The implementation of Real-Time Container Tracking System improves logistics transparency and efficiency, allowing customers to accurately monitor shipment status. A digital marketing strategy based on Search Engine Optimization (SEO) and social media increased service visibility and customer numbers by 25% in the first year. These results show that digitization and optimization of container services significantly improve operational efficiency and customer satisfaction. However, challenges such as limited digital infrastructure and labor resistance still need to be overcome to ensure the sustainability of the innovation.

Keyword: *Container Services, Port Digitalization, Operational Efficiency*

Abstrak

PT Pelabuhan Indonesia (Persero) Regional 2 Cirebon menghadapi tantangan dalam meningkatkan daya saing layanan peti kemas yang belum optimal. Tujuan dari program magang ini adalah untuk menganalisis dan mengimplementasikan strategi inovatif berbasis teknologi guna meningkatkan layanan peti kemas melalui pendekatan *Value Chain Analysis*. Metode yang digunakan mencakup observasi lapangan, analisis operasional pelabuhan, serta evaluasi efektivitas penerapan digitalisasi dalam administrasi dan pemasaran. Implementasi *Automated Container Handling System* berhasil mengurangi waktu bongkar muat dari 3–4 jam menjadi 1,5–2 jam, selain itu, sistem PHINNISI dan PTOS-M mempercepat pengelolaan dokumen ekspor-impor secara daring. Penerapan *Real-Time Container Tracking System* meningkatkan transparansi dan efisiensi logistik, memungkinkan pelanggan

untuk memantau status pengiriman secara akurat. Strategi pemasaran digital berbasis *Search Engine Optimization* (SEO) dan media sosial meningkatkan visibilitas layanan serta jumlah pelanggan sebesar 25% dalam satu tahun pertama. Hasil ini menunjukkan bahwa digitalisasi dan optimalisasi layanan peti kemas secara signifikan meningkatkan efisiensi operasional dan kepuasan pelanggan. Namun, tantangan seperti keterbatasan infrastruktur digital dan resistensi tenaga kerja masih perlu diatasi untuk memastikan keberlanjutan inovasi.

***Kata Kunci:** Layanan Peti Kemas, Digitalisasi Pelabuhan, Efisiensi Operasional*

A. INTRODUCTION

PT Pelabuhan Indonesia (Persero) Regional 2 Cirebon is one of the strategic ports that plays a key role in supporting logistics and trade activities in West Java. Container terminal services are an essential part of the port ecosystem as they enable more efficient goods distribution through container-based transportation systems. As part of the national maritime transport system, Pelindo Cirebon has great potential to develop into a more modern distribution center. Data from PT Pelabuhan Indonesia (2023) shows that container traffic reached 17.7 million TEU, a 7% increase compared to the previous year. The rising demand for container terminal services indicates that optimizing the logistics system is necessary to meet customer needs more efficiently and effectively.

The limitation in service diversification is one of the main issues faced by Pelindo Cirebon, causing its competitiveness to lag behind other ports that have adopted technology-based logistics systems. Container terminal services not only include the storage and shipment of goods in containers, but also the management of documents, tracking systems, and distribution efficiency. Until now, the main services have focused on handling bulk cargo, such as coal and cement, while the

demand for modern container services continues to rise. The lack of service diversification has prevented Pelindo Cirebon from fully optimizing its growing market potential and adapting to the increasingly complex dynamics of the logistics industry. As a result, operational efficiency has not been maximized, impacting customer satisfaction and service effectiveness.

In addition, the efficiency of the container handling and distribution process is still relatively low due to limited facilities and the lack of digital integration in the logistics system. Optimal container terminal services require integration between the container management system, multimodal transportation networks, and easy access to data for customers and port operators. The delay in modernizing the system hampers operational optimization, leading to inefficiencies in time and cost. The manual administration of services further slows down the workflow and complicates customer access to shipping data, service cost calculations, and other information. This situation not only impacts customer satisfaction but also affects Pelindo Cirebon's competitiveness in the port industry.

As a strategic step to address these issues, Pelindo Cirebon is implementing digital technology in its container terminal services to

improve operational efficiency and service transparency. This solution includes the digitalization of administrative processes, the implementation of a real-time container management system, and automation in the loading, unloading, and distribution of goods. With this solution, Pelindo Cirebon is expected to reduce inefficiencies, speed up processing times, and enhance its competitiveness in the logistics industry.

B. IMPLEMENTATION AND METHODS

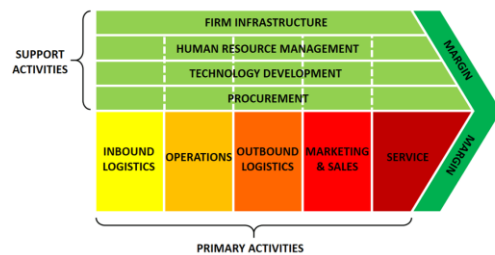
The internship program was carried out at PT Pelabuhan Indonesia (Persero) Regional 2 Cirebon, located in Cirebon, West Java. The internship program started on August 5, 2024, and ended on December 5, 2024, with a duration of 4 months. Activities were conducted in the commercial and business compliance division, providing hands-on understanding of property management and business operations. The work schedule ran from Monday to Friday, with working hours from 08:00 to 17:00 WIB. During the program, the company's dress code was also followed professionally.

The method applied was direct work practice, which aimed to provide practical experience and skills in a real work environment. Various administrative and operational tasks were carried out, such as the preparation of lease contract documents, port asset management, and publishing press releases related to port operations. In addition, involvement included managing rental documents, monitoring tenant data, and gaining

insight into the logistics distribution flow at the port.

C. RESULT AND DISCUSSION

To address the issues in container terminal services at PT Pelabuhan Indonesia (Persero) Regional 2 Cirebon, innovations based on digitalization and automation have been implemented to enhance operational efficiency, digital administration, and digital marketing transformation. The aim of these innovations is to create a more modern, effective, and adaptive service system that meets customer needs. By utilizing the Value Chain Analysis framework, every stage of the container terminal service is optimized, starting from inbound logistics, loading and unloading operations, outbound logistics, marketing & sales, to customer service, which also plays an important role in improving overall service quality.



Gambar 1. Value Chain Analysis

One of the key steps in the innovation of container terminal services is the implementation of the Automated Container Handling System, where the loading and unloading process is carried out more quickly and efficiently. Before this system was applied, the average loading and unloading time was 3-4 hours, but after automation, the time was successfully reduced to 1.5-2

hours. This reduction in time directly impacts the increase in port service capacity and reduces ship queues, which previously posed a major challenge in logistics distribution. Additionally, through the Real-Time Container Tracking System, customers can monitor the status of container shipments online, obtain estimated arrival times, and reduce the risk of distribution delays.



Gambar 2. Automated Container Handling System

In the administrative aspect, innovation is carried out through the digitalization of export-import documents using the PHINNISI and PTOS-M systems, where customers manage their documents online. Before the implementation of this system, document management was still done manually, which often led to delays and administrative errors. This digitalization of administration accelerates document processing, enhances service transparency, and supports overall operational productivity improvement. In addition to operational and administrative improvements, a digital marketing strategy has also been implemented to increase the visibility of container terminal services through Search Engine Optimization (SEO) and the use of social media platforms such as Facebook, Instagram, and YouTube. Evans (2021) states that optimizing

SEO can increase online traffic by up to 75% in one year, contributing to the growth of new customer acquisition.

The success of the implementation of these container terminal service innovations is measured through several key indicators, including improved operational efficiency, customer growth, and customer satisfaction with the services offered. In terms of operational efficiency, the loading and unloading time for containers has decreased significantly from 3–4 hours to 1.5–2 hours, which has increased port service capacity and reduced ship queues. The digitalization of administration has also sped up the handling of export-import documents, which previously took longer due to manual systems. Additionally, the implementation of the Real-Time Container Tracking System has increased service transparency, helping customers plan their logistics more effectively.

In terms of the number of service users, this innovation contributed to a 25% increase in the number of new customers in the first year after the implementation of digital-based container services. Digital marketing strategies can reach more potential customers who were previously difficult to reach with conventional marketing methods. In addition, customer satisfaction levels increased by 35%, especially in the aspects of service speed, operational transparency, and easy access to information through digital systems. It is now easier for customers to track the status of shipments, estimate the time of arrival of goods, and get information on service rates online.

The success of the container terminal service innovation at Pelindo Cirebon is attributed to several driving factors that supported its

implementation. One of the main factors is management's support in providing technology investments and human resource development to ensure the sustainability of the innovation program. Additionally, the increasing market demand for transparent, efficient, and digitized container services has also been a key factor driving the implementation of this innovation.

But there are several hindering factors that still need to be addressed to ensure the optimization of the program runs more effectively. One of the main challenges is the limited digital infrastructure in some areas of the port, which still faces network issues and information system capacity constraints. To address this, investment in digital infrastructure development is still necessary to ensure the optimal implementation of digital systems. In addition, resistance to change among the workforce is a challenge that needs attention in the implementation of this innovation. Some port workers are still accustomed to manual systems, so intensive training is required to improve adaptation to the new technology being applied. Not only from the workforce aspect, but the lack of education for customers is also a challenge, especially for those who are not familiar with using digital systems in logistics management. Therefore, regular socialization and education are crucial steps to ensure that customers can make optimal use of these digital services.

By applying Value Chain Analysis, PT Pelabuhan Indonesia (Persero) Regional 2 Cirebon has successfully improved efficiency at every stage of the container terminal service operations, from inbound

logistics, loading and unloading operations, outbound logistics, marketing, to customer service. The success of this innovation is evident from a 25% increase in the number of customers in the first year, a reduction in unloading times to 1.5-2 hours, and a 35% improvement in customer satisfaction.

Although this innovation has shown positive impacts, there are still challenges to address, such as the limitations in digital infrastructure and resistance to change among the workforce. Therefore, further investment in technology development, workforce training, and customer education is crucial to ensure the sustainability of this innovation. With the right strategy and continuous improvements, Pelindo Cirebon can continue to grow as a modern port that is responsive to the increasingly dynamic logistics industry needs.

D. CONCLUSION & SUGGESTION

Conclusion

The implementation of technology-based container service innovations at PT Pelabuhan Indonesia (Persero) Regional 2 Cirebon can improve port competitiveness amid the challenges of an increasingly competitive port industry. Based on the application of Value Chain Analysis, the company can optimize the main and supporting activities in the operational value chain, such as inbound logistics, loading and unloading operations, outbound logistics, marketing, and customer service. The innovations implemented, including the Automated Container Handling System, Real-Time Container Tracking System, and administrative

digitization through the PHINNISI and PTOS-M systems, have improved operational efficiency, transparency, and customer satisfaction. The loading and unloading time that previously took 3-4 hours has been reduced to 1.5-2 hours, and administrative digitization accelerates the management of export-import documents. This success is also reflected in a 25% increase in the number of customers and a 35% increase in customer satisfaction.

But there are some inhibiting factors that still need to be addressed, such as limited digital infrastructure in some port areas and resistance to change from the workforce. Therefore, further investment in digital infrastructure development and training for the workforce are important steps to ensure the sustainability of this innovation.

Sugesstion

First, to support the smooth implementation of the digital system, there needs to be an increased investment in the development of digital infrastructure, particularly in port areas that still face limitations in network capacity and information systems. Without adequate infrastructure, the implementation of technology will not be optimal. Additionally, intensive training for the workforce is essential to help them adapt to the new technology. This training will not only improve skills in operating digital systems but also accelerate the adoption of technology at the operational level.

In addition, continuous socialization to customers is also crucial. Customers who are not

familiar with the digital system need to be given an understanding so that they can make the most of this service. Clear socialization will increase customer comfort in using existing services. Finally, periodic evaluation of the implemented system will ensure that container service innovations continue to evolve in accordance with market needs and existing technology. With regular evaluations, ports can continuously improve their services to remain competitive in an ever-evolving industry.

Through these steps, PT Pelabuhan Indonesia (Persero) Regional 2 Cirebon can ensure the sustainability and effectiveness of container service innovations that have been implemented, as well as maintain port competitiveness in the future.

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