

Optimization of Business Administration in Maritime Logistics Chain

*Business
Administration in
Maritime Logistics*

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**Submitted:
MAY 2025**

**Accepted:
JULY 2025**

ABSTRACT

Belawan Port plays a strategic role in Indonesia's maritime logistics chain, yet its business administration system continues to face inefficiencies due to fragmented digital infrastructure and poor inter-agency coordination. This study aims to analyze the current administrative challenges at Belawan Port and propose strategies for optimizing business processes through digital transformation and stakeholder integration. A qualitative descriptive method was employed, using semi-structured interviews, participatory observations, and documentation analysis in 2024. Informants included stakeholders from Pelindo, PT Belawan New Container Terminal, Customs, Quarantine, and logistics companies. Thematic analysis revealed three major challenges: incomplete digitization of the Terminal Operating System (TOS), persistent administrative bottlenecks due to manual validation, and a lack of cross-agency collaboration. Despite a year-on-year increase in freight volume and container throughput, the average ship clearance time also rose from 7 hours to 8–10 hours, indicating that operational growth is not supported by administrative efficiency. The study proposes three strategic solutions: development of a unified Single Submission Platform, institutional coordination through joint task forces, and capacity building for digital literacy among port workers.

Keywords: Administrative Efficiency, Belawan Port, Digital Transformation, Inter-Agency Coordination, Maritime Logistics.

ABSTRAK

Pelabuhan Belawan memainkan peran strategis dalam rantai logistik maritim Indonesia, namun sistem administrasi bisnisnya terus menghadapi inefisiensi karena infrastruktur digital yang terfragmentasi dan koordinasi antarlembaga yang buruk. Studi ini bertujuan untuk menganalisis tantangan administratif saat ini di Pelabuhan Belawan dan mengusulkan strategi untuk mengoptimalkan proses bisnis melalui transformasi digital dan integrasi pemangku kepentingan. Metode deskriptif kualitatif digunakan, menggunakan wawancara semi-terstruktur, observasi partisipatif, dan analisis dokumentasi di 2024. Informan termasuk pemangku kepentingan dari Pelindo, BNCT, Bea Cukai, Karantina, dan perusahaan logistik. Analisis tematik mengungkapkan tiga tantangan utama: digitalisasi Sistem Operasi Terminal (TOS) yang tidak lengkap, hambatan administratif yang terus-menerus karena validasi manual, dan kurangnya kolaborasi lintas lembaga. Meskipun terjadi peningkatan volume angkutan dan throughput peti kemas dari tahun ke tahun, waktu bea cukai kapal rata-rata juga meningkat dari 7 jam menjadi 8–10 jam, yang menunjukkan bahwa pertumbuhan operasional tidak didukung oleh efisiensi administratif. Studi ini mengusulkan tiga solusi strategis: pengembangan Platform Pengajuan Tunggal yang terpadu, koordinasi kelembagaan melalui gugus tugas gabungan, dan peningkatan kapasitas untuk literasi digital di kalangan pekerja pelabuhan.

Kata kunci: Administrative Efficiency, Belawan Port, Digital Transformation, Inter-Agency Coordination, Maritime Logistics.

JIMKES

Jurnal Ilmiah Manajemen
Kesatuan
Vol. 13 No. 4, 2025
pp. 2769-2780
IBI Kesatuan
ISSN 2337 – 7860
E-ISSN 2721 – 169X
DOI: 10.37641/jimkes.v13i4.3425

INTRODUCTION

Indonesia's vision to become a global maritime axis, as articulated in its national development agenda, underscores the vital role of its port infrastructure in facilitating trade and economic growth. Among the key maritime hubs in the country, the Port of Belawan, located on the east coast of North Sumatra, stands out as the largest and most strategic port in western Indonesia. Functioning as a gateway for both domestic cargo distribution and international export-import activities, Belawan contributes significantly to the logistics performance of Indonesia's western corridor. As Indonesia's trade volume increases, so does the pressure to ensure that ports like Belawan operate with optimal efficiency, transparency, and competitiveness.

Recent performance indicators from PT Belawan New Container Terminal (BNCT) show a positive trend: in December 2024 alone, the port recorded 613,962 TEUs in container traffic, up 1.95% from the previous year (Sumatratoday, 2025; Nasution, 2025). Similarly, Pelindo recorded an increase of 14 million tons of freight flow in the first half of 2024, with Belawan contributing an impressive 5 million tons (Pelindo, 2024). These figures are a testament to Belawan's resilience and capacity in handling increasing logistical demands. However, these achievements mask the operational inefficiencies and administrative bottlenecks that continue to impede optimal performance at the port.

Despite improvements in infrastructure and throughput, long bureaucratic chains, manual administrative procedures, and a lack of integrated digital systems remain persistent problems. For instance, while the port successfully facilitated the entry of over 176,000 tons of rice during the 2024 holiday season, this achievement was heavily dependent on manual support from port workers and equipment (Anita, 2024a). These operational successes reveal that current processes rely too much on reactive coordination rather than proactive, streamlined planning. This issue is critical, especially when the port is expected to serve as a direct international trade gateway without the need for transshipment, which demands speed, accuracy, and security (Republika, 2022).

The business administration dimension in port logistics has increasingly drawn attention as a determining factor in port performance. According to Christopher (2022), the agility and competitiveness of supply chains depend not only on physical infrastructure but also on well-integrated planning, monitoring, and information systems. However, Indonesia's ports still lag in digital transformation compared to leading international ports (Safuana, 2022). Ariyani (2025) emphasizes that customs procedures, fragmented communication between agencies, and manual documentation are still barriers to port efficiency. Furthermore, Andrik (2022) notes that while some efforts to adopt Enterprise Resource Planning (ERP) systems have been initiated by private port logistics firms, integration across government-regulated terminals like Belawan is still minimal and inconsistent.

This situation reflects a broader research gap in the Indonesian maritime logistics literature. Although studies have examined port performance (Bichou & Gray, 2004; Duru et al., 2020) and technological adaptation (Alamouh et al., 2021; Ascencio et al., 2014), few have explored the administrative and managerial inefficiencies from an integrated, supply chain perspective, particularly in Belawan. According to Bouzekri et al. (2022), effective port performance depends on aligning storage, inspection, and port operations through decision support systems, a strategy not yet fully adopted at Belawan.

Another gap relates to collaborative supply chain frameworks within ports. Herz and Flämig (2014) argue that understanding port operations through the lens of supply chain integration can improve coordination across stakeholders. However, at Belawan, the coordination between Pelindo, customs, shipping lines, and inland transporters remains loosely coupled and manually driven. Koliouris (2020) proposed the use of integrated Port Community Systems (PCS) to increase security and efficiency, but such systems have not been institutionalized in Belawan.

Moreover, the environmental and social dimensions of port transformation are frequently underexplored. While infrastructural upgrades, such as the procurement of container scanners and pinning station units (Anita, 2024b), aim to improve performance

and safety, concerns over waste management, emissions, and social displacement remain insufficiently addressed in planning. Alamoush et al. (2021) advocate for a sustainable supply chain management framework aligned with the UN's Sustainable Development Goals (SDGs), yet practical applications in Indonesian port governance are still lacking.

In response to these research gaps, this study aims to explore how business administration practices at Belawan Port can be optimized through digital transformation and stakeholder collaboration. Thus, the specific research objectives are to analyze the current state and challenges of business administration at Belawan Port, including system inefficiencies, manual processes, and lack of inter-agency coordination that affect logistics performance; and to evaluate and propose strategies for optimizing administrative efficiency through digital transformation, cross-agency integration, and capacity building to support sustainable and competitive port operations.

LITERATURE REVIEW

Business Administration in the Context of Maritime Logistics

Business administration within the maritime logistics sector involves a series of coordinated functions, including planning, organizing, executing, and controlling activities related to the flow of goods via sea routes. According to Kotler and Keller (2016), business administration extends beyond internal company operations to encompass external interactions with markets, regulators, and logistics stakeholders. In port environments, it covers functions such as document management, data entry, customs handling, and service delivery to port users (Kartono & Hilmiana, 2018). Efficient business administration is critical to ensuring smooth port operations and preventing bottlenecks that affect supply chain fluidity.

Several studies emphasize the importance of administrative efficiency in logistics hubs. For instance, Bichou and Gray (2004) highlight how inefficient documentation and lack of transparency can lead to congestion and delays. Duru et al. (2020) support this by suggesting that business administration must be treated as a performance metric in port benchmarking. The integration of administrative functions with logistics operations is also essential. Almotairi and Lumsden (2009) point out that administrative processes must be harmonized with port logistics platforms to streamline activities and reduce redundancies.

In Indonesian ports, these principles have been slow to take hold. Manual paperwork, layered bureaucracies, and siloed systems persist despite technological improvements. Judijanto et al. (2025) argue that poor information-sharing mechanisms and fragmented administrative procedures significantly hinder logistics performance. A collaborative administrative system that aligns with modern logistics demands is urgently needed. Herz and Flämig (2014) advocate for business administration models that view ports as interconnected logistics ecosystems rather than isolated infrastructure units. This call for a paradigm shift is echoed by Bichou (2006) and Wendler-Bosco & Nicholson (2020), who emphasize adapting port administrative frameworks to manage systemic disruptions and perform under uncertainty.

The case of Belawan Port exemplifies these challenges. While recent investments have improved infrastructure, administrative inefficiencies continue to limit port productivity. There remains a pressing need to reevaluate and optimize administrative functions to meet growing maritime trade demands and ensure Indonesia's competitiveness in the regional logistics arena.

Integration in the Maritime Logistics Chain

The maritime logistics chain encompasses all entities involved in sea-based goods transportation, from ports and shipping lines to freight forwarders and government agencies. Christopher (2022) defines it as a synchronized system where supply chain coordination is critical to delivering goods efficiently and cost-effectively. In ports like Belawan, this chain includes customs, quarantine, port operators, and logistics

companies. A key determinant of logistics chain performance lies in the integration and interoperability among these stakeholders.

Several global studies have established that fragmented logistics systems reduce responsiveness and increase operational risks. Ascencio et al. (2014) developed a collaborative supply chain management framework specifically for maritime logistics chains. Their model emphasizes real-time information sharing and coordinated decision-making across institutions. Alamoush et al. (2021) also argue that sustainable port performance hinges on integrated systems that align with the United Nations' Sustainable Development Goals. Notteboom et al. (2020) further highlight the role of seaports in advancing green supply chain initiatives through coordinated logistics strategies.

In the Indonesian context, the Indonesia National Single Window (INSW) is a government-led effort to unify customs and administrative procedures. However, Firdausy (2021) and Safuana (2022) observe that many ports still rely heavily on manual processes and lack the IT capacity for full integration. This is a common problem in developing countries where logistics reforms outpace institutional change.

Wang et al. (2022) analyze Chinese port clusters and suggest that improved coupling and coordination between ports and their hinterlands result in better logistics outcomes. Applying similar concepts to Indonesia could help resolve systemic delays and improve inter-agency collaboration. Moreover, Cheon and Deakin (2010) stress that institutional frameworks must evolve to enable smoother interconnectivity in maritime logistics. Hipólito et al. (2022) support centralized coordination models for managing perishable goods, suggesting broader applicability for port logistics.

The concept of integration also includes vertical and horizontal supply chain alignment. Lambert et al. (1998) argue that this alignment is essential to achieving transparency and efficiency. In ports like Belawan, the absence of cross-functional collaboration leads to duplicated documents, inconsistent data, and misaligned priorities. Studies by Koliousis (2020) recommend the implementation of Port Community Systems (PCS) to facilitate access and communication between port stakeholders. These systems can act as digital bridges, fostering a more integrated logistics environment that is resilient, efficient, and scalable. Gao et al. (2025) also note that enhancing synergy in supply chains improves operational coordination, especially under clustered logistics arrangements.

Digital Transformation and Administrative Optimization in Ports

Digital transformation in port administration has become a global imperative for enhancing logistics performance. The adoption of technologies such as Terminal Operating Systems (TOS), container scanners, and integrated information platforms are revolutionizing how ports operate. At Belawan Port, partial digitization has begun, but challenges remain in fully integrating these systems across all agencies and service points (Andrik, 2022; Anita, 2024b). Previous studies strongly support the notion that digitalization improves administrative efficiency. Safuana (2022) found that ports using automated and paperless systems saw a 40% reduction in service times and significant cost savings. Similarly, Bouzekri et al. (2022) propose integrated decision support systems that synchronize production, storage, and port activities. This enables proactive rather than reactive logistics management.

Despite these benefits, implementation gaps persist in Indonesia. Aulia et al. (2023) observed that delays in ship clearance at Belawan were largely due to inefficient administrative systems and poor document verification processes. Wibisono (2020) highlights that improving IT capacity and HR competencies is essential to sustaining digital reforms in port environments. Bichou (2006) also recommends a framework that includes technological benchmarking in evaluating port administrative performance. Globally, port performance studies emphasize technology's role in driving operational excellence. Li et al. (2023) introduce a model linking resilience and low-carbon goals through smart terminal systems. Hussein and Song (2024) apply a resource-based view, concluding that digital supply chain capabilities are key to port sustainability. Similarly, Zhang (2020) demonstrates that after China integrated its coastal port logistics,

administrative delays dropped and throughput increased. Environmental and security considerations are also relevant. Sun and Zhao (2023) note that digital tracking improves both operational efficiency and environmental oversight. Koliouris (2020) adds that digital PCS platforms enhance port security and regulatory compliance. These findings underline the strategic value of digital transformation in optimizing administrative functions within ports.

RESEARCH METHOD

This study employs a descriptive qualitative approach aimed at gaining an in-depth understanding of the processes, challenges, and potential for optimizing business administration within the maritime logistics chain at Belawan Port in January to June 2024. The qualitative approach was chosen because it enables a holistic exploration of social phenomena through direct interaction with research subjects (Creswell & Creswell, 2018). The research was conducted at Belawan Port, located in Medan City, North Sumatra. This site was purposively selected due to its status as the main port in western Indonesia and its strategic role in both national and international logistics distribution.

The research subjects include key stakeholders involved in port operations, such as officials or staff from PT Pelindo Regional I (the port operator), employees of the Belawan New Container Terminal (BNCT), customs and quarantine officers, port service users (including export-import and logistics companies), and the loading and unloading workforce (TKBM). Informants were selected purposively based on their positions, experience, and relevance to the topic of logistics administration.

Data were collected through multiple techniques, including in-depth semi-structured interviews with key informants to explore their experiences, perspectives, and the barriers they face in logistics administration. Participatory observation was also conducted, involving direct observation of the administrative flow at the port, from document submission and cargo handling to reporting and customer service. In addition, a documentation study was carried out to obtain secondary data from official documents, annual reports, port- and logistics-related regulations, and recent news on Belawan Port's performance.

The data were analyzed using the thematic analysis method, following the steps outlined by Braun and Clarke (2019). These steps include: (1) data familiarization through thorough reading and comprehension of interview and observation results; (2) initial coding to identify important patterns in informants' narratives; (3) searching for themes by grouping related codes into broader categories such as "system digitization," "administrative bottlenecks," or "inter-agency collaboration"; (4) reviewing themes to ensure coherence and accurate representation of the data; (5) naming and defining each theme; and (6) compiling a narrative report to support the research findings and discussion.

To ensure the validity and reliability of the data, source and method triangulation techniques were employed. Source triangulation involved comparing information from various informants, including port officials, service users, and field workers. Method triangulation was achieved by integrating data obtained from interviews, observations, and documentation studies, thereby enhancing the credibility and comprehensiveness of the findings.

RESULTS

Current Conditions and Challenges of Business Administration

Business administration at Belawan Port is a vital component in managing maritime logistics, encompassing the submission of export-import documents, customs inspections, coordination among agencies (such as Customs and Quarantine), and goods handling activities. Based on field observations and semi-structured interviews, these processes are partially supported by digital infrastructure, most notably the Terminal Operating System (TOS) implemented at the Belawan New Container Terminal (BNCT). While this system

has improved the flow of several port services, gaps in coordination and integration among key agencies persist, leading to inefficiencies in administrative workflows.

Thematic analysis revealed three central issues as outlined in Table 1. The first theme is Digitization of the Administration System. Although the TOS platform has been implemented and the addition of two container scanners is planned to expedite customs clearance, the systems are not yet fully interconnected. This limits the potential of digital platforms to streamline port processes. The second theme is Administrative Barriers, particularly related to manual document validation. Many processes still require physical signature verification and back-and-forth communication, which extends clearance times to between 8–10 hours per vessel. The third theme, Need for Cross-Agency Collaboration, highlights how uncoordinated workflows between Pelindo, Customs, and logistics providers cause document duplication and procedural overlap, further delaying ship clearance and cargo movement.

Table 1. Optimization of Business Administration at Belawan Port

Theme	Description of Findings	Data Source
Digitization of the Administration System	Implementation of the TOS and scanner plans, but incomplete integration	Field Observations, BNCT Interviews (2024)
Administrative Barriers	Manual document verification extends average waiting time	PT Pelindo I Documentation Study, BNCT Report (2024)
Need for Cross-Agency Collaboration	Duplication and inconsistent clearance due to lack of coordination	Interviews with Exporters and Logistics Companies (2024)

Further compounding these challenges is the rising logistical demand at the port. As shown in Table 2, total loading and unloading volumes rose from 602,200 TEUs in 2023 to 613,962 TEUs in 2024, and freight flow increased by 1 million tons year-on-year. Yet, despite this physical growth, the average waiting time for ship clearance also increased from 7 hours to 8–10 hours, signaling that administrative process are not keeping pace with operational expansion.

Table 2. Loading and Unloading Volume at Belawan Port

Year	Loading and Unloading Volume (TEUs)	Freight Flow (Tons)	Average Waiting Time
2023	602.200	18 million	±7 hours
2024	613.962	19 million	±8–10 hours

Key administrative problems include the continued reliance on manual data entry at several service checkpoints, lack of system integration between Pelindo, Customs, and Quarantine, and the absence of standardized service times across work units. Another concern is the limited digital literacy among field workers, which slows the adoption and efficient use of existing technologies. These factors create delays, inefficiencies, and an unpredictable logistics experience for port users.

Strategic Efforts and Recommendations for Optimizing Administrative Efficiency

In response to the growing administrative bottlenecks, several optimization efforts have already been introduced at Belawan Port. Interviews with Pelindo and BNCT representatives indicated that online registration and e-payment services have been made available to reduce on-site queuing and processing times. Additionally, two container scanners have been procured to improve the efficiency of physical inspections, though these still require integration into a broader digital framework. Regular training sessions have also been launched for both administrative and field laborers, focusing on familiarization with digital systems and compliance procedures. However, these initiatives remain fragmented and have not yet produced transformative changes.

To build a competitive and sustainable logistics administration framework, three main strategic directions are proposed: digital transformation, inter-agency integration, and human resource development.

First, digital transformation must be elevated from isolated system installations to a comprehensive integration strategy. The development of a Single Submission Platform, connecting Pelindo, Customs, Quarantine, and logistics providers is critical for eliminating redundant processes and ensuring real-time data access and transparency. This platform should automate data validation, enable e-verification, and allow synchronized clearance processes. Enhancing the TOS to include full interoperability with these systems can significantly reduce document handling time and improve cargo flow.

Second, institutional coordination needs to be formalized through a joint operations task force that includes representatives from all key agencies. This group would be responsible for setting administrative service standards, resolving operational overlaps, and ensuring consistent policy implementation. Adopting international best practices, such as Port Community Systems (PCS), could help establish a governance model that promotes accountability and collaboration across different agencies.

Third, capacity building remains a foundational requirement for long-term improvement. Frontline staff and field laborers must be equipped with the necessary digital skills to engage effectively with new systems. Structured training programs focusing on port administration standards, digital literacy, and inter-agency collaboration protocols should be rolled out regularly. Performance monitoring and feedback loops must also be introduced to track progress and continuously refine procedures.

These recommendations aim to ensure that administrative functions at Belawan Port evolve in line with increasing operational demands. A fully integrated and digitally empowered system will not only reduce service times and improve stakeholder satisfaction but also support Indonesia's national logistics competitiveness in the global arena. Overall, the findings highlight that the challenges at Belawan Port illustrate a classic case of partial modernization without systemic integration. While digitization has made some impact, fundamental barriers such as manual verification, poor inter-agency coordination, and skills gaps continue to impede progress. By pursuing a multi-pronged optimization strategy, Belawan Port can transition into a high-performing logistics hub that meets the demands of a dynamic maritime supply chain environment.

DISCUSSION

The results show that although various initiatives have been introduced, Belawan Port continues to face persistent challenges, particularly in administrative integration, coordination, and responsiveness as the factors that align with global benchmarks on port performance (Bichou & Gray, 2004; Duru et al., 2020). One of the primary findings confirms that digitization has begun with the implementation of the Terminal Operating System (TOS) and BNCT e-services. This reflects Li et al. (2023), who emphasize that IT adoption at ports improves transparency, accelerates clearance, and enhances low-carbon and resilient terminal operations. However, the study reveals a lack of seamless integration among major actors, namely Pelindo, Customs, and Quarantine which diminishes the potential of such systems. Manual validation is still required, delaying operations, similar to Prince's (2024) findings regarding Indonesia's port bureaucracy.

Additionally, the deployment of container scanners supports Christopher's (2016) argument that logistics performance heavily relies on speed. Yet, without interconnected systems, Belawan Port fails to fully capitalize on technological benefits. Lambert et al. (1998) assert that integration within the supply chain improves efficiency by reducing duplication, aligning workflows, and synchronizing decisions. The persistent fragmentation in Belawan's administrative processes causes document redundancy and increases average vessel clearance time, from 7 hours in 2023 to 8-10 hours in 2024. The administrative barriers observed in this study also support the work of Ascencio et al. (2014), who developed a collaborative maritime logistics framework stressing real-time coordination. At Belawan, delays arise partly from disjointed communication and separate systems between agencies. Koliousis (2020) recommends Port Community Systems (PCS) as a bridge to close this digital gap and ensure secure, transparent, and efficient coordination.

Data also highlight that growth in port activity, an increase from 602,200 TEUs to 613,962 TEUs between 2023 and 2024, has not been matched by improvements in administrative speed. Ariyani (2025) warns that rising logistics demands require parallel growth in administrative and human capacity. Likewise, Gao et al. (2025) emphasize the importance of synergy in logistics clusters, cautioning against allowing operational volume to outstrip systemic capability. Human resources, particularly frontline workers, also present a major challenge in digital transformation. Many struggle with new systems due to insufficient training. This is consistent with Deming et al.'s (1986) theory of continuous improvement, which places human development at the center of organizational performance. As Almotairi and Lumsden (2009) explain, technical upgrades must be supported by institutional readiness and cultural adaptation to be effective.

Inter-agency coordination is another critical bottleneck. Interviews revealed poor communication and duplicated roles between Pelindo, Customs, and logistics firms. Hussein and Song (2024) emphasize that port sustainability depends on cross-sectoral integration, institutional alignment, and shared governance. Similarly, Sembiring (2024) found that Belawan Port has yet to embrace service models that prioritize speed and system-wide cohesion. Systems theory, as outlined by Herz and Flämig (2014), treats ports as interlinked networks where failures in one area, such as administration, disrupt the entire logistics chain. Without coordination, standardized service times, or integrated platforms, even the best infrastructure cannot ensure smooth logistics operations. Cheon and Deakin (2010) echo this by advocating institutional design that prioritizes collaboration and innovation.

On a policy level, the Indonesian government's Sea Toll program (Varikta, 2020) has aimed to modernize logistics infrastructure. Yet at Belawan, field data suggest that these improvements have not been fully realized due to uneven IT development and limited human resource capacity. Notteboom et al. (2020) indicate that successful port modernization must align policy, infrastructure, and institutional culture. Several studies reinforce that reform must be multifaceted. Sun and Zhao (2023) stress that technology must be aligned with environmental and operational goals to be effective. Hipólito et al. (2022) further recommend centralized decision frameworks for complex supply chains, applicable to Belawan's multi-agency structure. Meanwhile, Wendler-Bosco and Nicholson (2020) argue that performance under disruption depends on administrative resilience, which remains underdeveloped in Belawan.

As a managerial implication, this study reaffirms that optimizing business administration at Belawan Port requires more than piecemeal technical upgrades. It calls for full digital integration, standardized administrative workflows, enhanced institutional collaboration, and ongoing human resource development. These align with the World Bank (2020), which asserts that modern port competitiveness is shaped as much by administrative sophistication as by physical capacity. For Belawan Port to achieve sustainable growth and contribute effectively to national logistics performance, it must accelerate digital convergence, streamline multi-agency processes, and build an adaptive and digitally literate workforce. Only through such comprehensive reform can Belawan evolve into a regional maritime logistics hub that meets global efficiency standards.

CONCLUSION

This study concludes that while there have been significant steps toward improving business administration in the maritime logistics chain at Belawan Port, critical challenges persist, particularly in system integration and operational coordination. The adoption of digital tools such as the Terminal Operating System (TOS) and electronic services has contributed to some improvements in administrative processes. However, these advancements are not yet fully effective due to the fragmented interaction between key agencies like Pelindo, Customs, and Quarantine. The continued reliance on manual document verification and disconnected systems has led to delays, reducing the efficiency of logistics services.

The rise in cargo volume from 2023 to 2024 highlights an urgent need for administrative systems to keep pace with operational growth. Without synchronized and standardized administrative procedures, increased port activity risks being undermined by bureaucratic inefficiencies. Persistent issues such as document duplication, manual data entry, and inconsistent service times indicate a lack of procedural reform and inadequate workforce readiness for digital transformation.

Despite initiatives like container scanner deployment and the development of e-service platforms, the absence of a unified, integrated administrative system—such as a single window platform—remains a fundamental barrier. This study reinforces the relevance of supply chain management and systems theory, emphasizing the need for cohesive coordination among all port subsystems to achieve overall efficiency.

Ultimately, optimizing business administration at Belawan Port requires a comprehensive strategy. This includes advancing full-scale digitalization, integrating inter-agency systems, standardizing service protocols, and strengthening human resource capacity and awareness. Only through such an approach can Belawan Port enhance its role in supporting a smooth, responsive, and competitive national maritime logistics system.

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