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Opinion

Restoring the "Nusantara": Integration of historical values and modern logistics policy

Budi Purwanto*, Annisa Pangestuti, Moch Alfian Eko Prasetyo

Independent researcher and practitioner in the field of marine logistics, Indonesia

ABSTRACT

This study aims to examine the significance of achieving logistical objectives across different economic eras and to identify how historical maritime values can improve modern logistics systems. The research represents the author's perspective, combining field experience and previous studies through a qualitative descriptive approach and a cross-checked literature review. The findings indicate that ancient maritime civilizations practiced a more holistic, integrated logistics system than contemporary logistics, which is fragmented. Therefore, the concept of logistics restoration is proposed as a strategic approach to reintegrate historical values into modern logistics practices by leveraging information technology, service networks, managerial strategies, and cultural adaptation. This study integrates literature-based analysis and empirical insight to emphasize the importance of institutional integration—both at the corporate and national levels—in establishing an efficient, collaborative, and sustainable logistics ecosystem.

Keywords: Aud *just-in-time*, logistik, restorasi, nusantara, sustainable logistics ecosystem

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Corresponding author:
Budi Purwanto. Email: budip3@gmail.com

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Abstrak

Penelitian ini bertujuan untuk menelaah pentingnya proses pencapaian tujuan logistik dalam kegiatan ekonomi dari masa ke masa, serta mengidentifikasi bagaimana nilai historis dapat berkontribusi pada penyempurnaan sistem logistik modern. Kajian ini merepresentasikan sudut pandang penulis berdasarkan pengalaman lapangan dan hasil penelitian terdahulu melalui literature review dengan pendekatan deskriptif kualitatif dan metode cross-checking literasi. Peradaban maritim masa lampau menunjukkan praktik logistik yang lebih holistik dan terpadu dibanding sistem kontemporer yang cenderung parsial. Oleh karena itu, konsep restorasi logistik menjadi pendekatan utama untuk mengintegrasikan nilai historis ke dalam praktik logistik modern melalui pemanfaatan teknologi informasi, jaringan layanan, strategi manajemen, dan akulturasi budaya. Penelitian ini memadukan kajian literatur sebagai baseline dan pengalaman empiris penulis untuk menekankan pentingnya integrasi kelembagaan—baik pada tingkat perusahaan maupun negara—guna menciptakan sistem logistik yang efisien, kolaboratif, dan berkelanjutan.

Kata Kunci: Aud *just-in-time*, logistik, restorasi, nusantara

1. Introduction

Logistics is the backbone of the supply chain and is recognized as a strategic industry that significantly contributes to GDP. Logistics plays a crucial role in the economy by facilitating the flow of goods, information, and capital between producers and consumers. In the United States, logistics costs represent approximately 9.5% of GDP (Isaacs, 2008). Similarly, in Hong Kong, the logistics sector contributes an average of 4.2% to total GDP and provides 5.6% of total employment (To & Lee, 2017). As a foundation for international trade, efficient logistics systems are essential for enabling countries to participate in the global economy, thereby driving the economic development of both cities and nations (Varma & Shah, 2021).

Indonesia, as the world's largest archipelagic nation, faces unique logistical challenges stemming from its sheer number of islands and expansive maritime territory. Efficient integration of maritime logistics is essential to improving supply chain efficiency, particularly for remote islands, thereby increasing economic activity, boosting cargo throughput, and reducing maritime logistics costs (Amin et al., 2024). Developing integrated logistics centers near key islands can further lower operational expenses and address chronic inefficiencies, especially in Indonesia's eastern regions (Amin et al., 2024). Furthermore, the country's vast geography necessitates optimal fleet coverage and routing. Optimization models, such as Mixed-Integer Linear Programming (MILP), can assist in planning cost-effective and reliable supply chains by determining vessel assignments, routes, and inventory management. Critical performance factors in these models include vessel speed, fleet size, and port operation times (Sirait et al., 2025).

Moreover, the performance of local ports directly impacts the economies of small islands. Efficient port operations—including loading/unloading tariffs and sea transport costs—are crucial for improving Gross Regional Domestic Product (GRDP) per capita (Amin et al., 2021). Enhancing supporting infrastructure, such as cold storage facilities and port management systems, is also key to elevating overall logistics performance (Utomo & Muninggar, 2024). Overall, addressing Indonesia's logistical constraints requires an integrated approach combining

strategic infrastructure development, optimized network planning, and improved port operations to connect its dispersed regions effectively.

This paper aims to explore the historical business and logistics models that developed in the "Nusantara"—the Indonesian archipelago—and examine how their core principles can be restored and adapted through a modern approach. By analyzing the traditional maritime networks and trade practices that once connected its disparate islands, this study seeks to identify sustainable frameworks for today's challenges. It will propose integrative strategies that combine this historical perspective with contemporary tools—such as network optimization and hub development—to design resilient, efficient, and economically inclusive logistics systems for Indonesia's future.

2. The history of logistics model in Indonesia

This study explores the business and logistics models that developed in the Indonesian archipelago from the 3rd to 7th centuries AD, during the Kalingga Kingdom, based on inscriptions and archaeological findings. Kalingga, as an international trade hub in the Indian Ocean, laid the foundation for a maritime civilization that strengthened the archipelago's economic identity. Etymologically, the name Kalingga is related to the Kalinga region in East India (Coedes, 1975). A 7th-century historical account by I-Tsing (1896) describes a community on the north coast of Java as active in trade. This is reinforced by Wheatley's (1961) discovery of ceramic artifacts from China and South Asia, indicating that a logistics and goods exchange system was already established at that time (Wheatley, 1961). In Lombard's view, Kalingga became a world crossroads, connecting trade routes between India, China, and the Middle East. This position demonstrates that the archipelago already possessed the geopolitical and economic capacity to serve as a global trade hub.

Foreign records from the Tang Dynasty, the Yijing Dynasty, and Arab-Persian sources also reinforce Kalingga's role as a maritime logistics hub. The transliteration Ho-Ling in Chinese records is believed to refer to Kalingga (Coedes, 1975). Odisha, historically known as Kalinga, played a significant role in establishing early maritime ties with neighboring regions, aided by its extensive coastline and inland riverine network, which facilitated seafaring and trade with Southeast Asia. This geographical advantage supports the argument that Kalinga functioned as an early maritime logistics hub. Traditions further evidence the enduring cultural and commercial links between Kalinga and Southeast Asia. One of them is the Boita Bandana Utsava, a festival that celebrates this maritime heritage and underscores the historical significance of Kalinga's seafaring activities (Ray, 2024). Kalingga developed as an intermediary trading state, providing logistics, security, and transoceanic trade services with an extensive network. Therefore, it is considered a global economic ecosystem. Relations with South India were based on seafaring diplomacy (Coedes, 1975; Ray, 2024). Its strategic location on the Java Sea coast made it a transit point for ships from India and China, with spices, agarwood, and camphor as its primary commodities.

The pattern of maritime trade demonstrates the character of a holistic logistics system, in which sea lanes functioned not merely as geographic connectors but also as mutually reinforcing economic, cultural, and governmental networks. In the context of modern Indonesian historiography, Kalingga's maritime logistics activities predate Srivijaya and

Majapahit. Java became an integral part of the international community, consciously strengthening the nation's maritime identity while emphasizing the archipelago's long-standing logistical roots, particularly with the implementation of strict laws during the reign of Queen Shima (Ray, 2024). During this period (3rd to 8th centuries AD), Southeast Asia established an age of commerce, peaking in the 15th to 17th centuries. Kalingga, an integral part of the ancient trade network, later gave birth to the Srivijaya, ancient Mataram, and Majapahit kingdoms (Klokke, 2016; Ray, 2024). In the following era, Majapahit demonstrated a well-organized system of government encompassing economics, politics, military affairs, and territorial expansion. The Nagarakartagama (1365 AD) mentions Majapahit's successful management of agriculture,

natural resources, irrigation, and international trade through maritime routes. Yuan Shi's records also describe the export of timber and rice to China in the early 14th century.

In its administrative governance, Majapahit implemented the Hastabrata concept, encompassing aspects of food, transportation and logistics, communication and distribution, energy and defense, as well as social rhythms and political legitimacy. Building on this political foundation, the Majapahit Empire operated within a *mandala* system—a radial model of political relationships centered on a powerful core kingdom. This governance structure demonstrated remarkable resilience, as it was later adopted by successor states such as the Demak Bintara Sultanate, illustrating significant continuity in indigenous administrative practices (Romdhoni et al., 2024). Within this system, rulers strategically cultivated strong alliances with religious authorities, providing facilities for education and ritual to secure clerical support and legitimize their power (Romdhoni et al., 2024). This synergy between political and spiritual institutions helped stabilize and administer far-reaching maritime and trade networks, facilitating the flow of goods—such as the prized Tang ceramics—and cultural influences across Southeast Asia. Together, the *mandala* framework and elite-clergy relations formed an integral part of the region's historical capacity to function as an interconnected maritime logistic and cultural zone.

For Majapahit, ships were not merely a means of geographical transportation, but rather the lifeblood of the economy and interregional distribution (Manguin, 2017; Manguin, 2001). Large ships from Java, made of ebony, carrying spices, agarwood, and rice to the port of Siraf in the Persian Gulf, testify to the archipelago's active involvement in inter-island and even intercontinental trade on an international scale. In a modern context, this pattern of historical logistics integration is far more holistic than contemporary transportation and logistics systems, which are still partial and fragmented.

The principles of efficiency, maritime security, and interregional collaboration implemented by Kalingga and Majapahit at that time can serve as a reference in the development of Maritime Connectivity Corridors and a National Logistics Network to improve the efficiency of the national supply chain (Coordinating Ministry for Maritime Affairs and Investment, 2023; UNESCAP, 2023). This effort aligns with the Blue Economy Roadmap 2023–2045 (Bappenas, 2023) and the OECD's (2025) perspective on the importance of diversifying global trade routes based on sustainability. Therefore, this study confirms that a comprehensive, collaborative, and sea-based restoration of historical logistics values can serve as the foundation for developing a more efficient, resilient, and sustainable modern logistics policy for Indonesia as the global maritime axis.

3. Methods

This paper proposes a research model for National Logistics Connectivity Based on Maritime Civilization. The study restores historical logistics activities through a contemporary approach, focusing particularly on organizational culture, management authority, and strategy selection for logistics development. This conceptual model is visualized in Figure 1, reinforcing the idea that a field of knowledge undergoes a continuous cycle and suggesting that the present may be a continuation of the past.

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Figure 1. Research Model, 2025

The model illustrates a restoration cycle that begins with past logistics concept**s** as the foundation for shaping organizational culture, which is then strengthened through management authority, followed by the selection of appropriate strategies, ultimately leading to the development of national potential within the maritime logistics system. In the context of modern policy, each element of this model corresponds to a strategic component of the national development agenda:

a. Past logistics concepts represent the maritime heritage that forms the foundation of Indonesia's vision as a Global Maritime Fulcrum (Kemenko Marves, 2023).
b. Organizational culture emphasizes the importance of adaptive, digital, and collaborative logistics governance, as directed through the National Logistics Ecosystem (NLE) and the Blue Economy Roadmap 2023–2045 (Bappenas, 2023).
c. Management authority reflects the need for cross-institutional consolidation to enable integrated and effective maritime and logistics policies
d. Strategy choices are rooted in data-driven policy, logistics cost efficiency, and strengthening maritime security and resilience, as emphasized by the OECD (2025).
e. Develop potential aligns with long-term policy goals for blue economy equity and enhanced industry-port connectivity from western to eastern Indonesia (Kemenko Marves, 2023; Bappenas, 2023).

While contemporary concepts have yet to yield optimal results due to complex ambiguities, the *Hastabrata* concept used in the Majapahit era successfully addressed logistics and transportation challenges, leading to its historical prosperity. This concept is proposed and

developed by the author as a supporting model in this research, consisting of the following eight Brata principles (Koentjaraningrat, 1990; Soebardi, 1992):

1. Brata of Justice *"Brata Adil"* (Symbol: Sun) – Guides logistics and transportation actors to act reasonably toward all
2. Brata of Calmness "*Brata Tenang"* (Symbol: Moon) – Emphasizes transportation and logistics activities aligned with seasonal cycles and proper equipment management.
3. Brata of Direction "*Brata Arah"* (Symbol: Wind) – Knowledge of cycles/circulation in transportation and logistics, interpreted as activity designs that prevent stagnation (Taji Inscription, Central Java Museum records).
4. Brata of Strength *"Brata Kuat"* (Symbol: Sea) – In transportation and logistics, equipment should be chosen for its capacity, resilience, and ability to benefit all who depend on it (Taji Inscription, Central Java Museum records).
5. Brata of Stability "*Brata Stabil "* (Symbol: Mountain) – Transport equipment must be fully maintained for stability; effective operations are those that ensure high reliability (Soejono, 1987).
6. Brata of Morality *"Brata Moral"* (Symbol: Forest) – Morality filters out malicious or fraudulent actions; moral principles protect business actors in conducting transportation and logistics activities (Kalasan Inscription, National Museum records).
7. Brata of Responsibility *"Brata Tanggung jawab"* (Symbol: Earth) – Transport and logistics operators must uphold responsibility, ensuring productive outcomes commensurate with efforts—a principle reflecting high-quality professionalism and sportsmanship.
8. Brata of Transformation *"Brata Transformasi*" (Symbol: Fire) – Transformation in transportation and logistics relates to the availability, utilization, and adaptive use of equipment according to need, providing tangible benefits through reasonable and sustainable actions.

Thus, this framework serves not only as a theoretical construct but also as a policy framework that connects the historical values of Nusantara logistics with the direction of modern maritime economic transformation. This restorative approach introduces a supporting concept for sustainable logistics development that emphasizes integration, connectivity, innovation, blue investment, and collaboration—ultimately aiming to create an efficient and resilient national supply chain (ADB, 2021; UNESCAP, 2023).

4. Integration of Historical Values and Modern Logistics Policy

Logistics and transportation activities in Indonesia currently remain fragmented and not yet holistic, failing to achieve an efficient national supply chain. Based on a literature review and historical analysis, it was found that the archipelago's past maritime civilization implemented an integrated logistics system, in which production, distribution, and trade functioned as a unified, organized whole. Therefore, restoring the values and practices of past logistics is an essential approach to strengthening contemporary logistics integration. This research discusses the connection between historical values and modern logistics policy through five main aspects: Past Logistics Concept, Organizational Culture, Management Authority, Strategy Choices, and Potential Development.

4.1. The Need for Integrated Logistics (Past Logistics Concept)

Improving the national logistics system requires cross-sectoral integration to reduce waiting times, accelerate handover, and enhance distribution efficiency, both domestically and internationally. The concept of global distribution emphasizing process integration was practiced since the Kalingga era, when the archipelago was a key player in international trade (Coedès, 1968; I-Tsing, 1896). At that time, three main facilities existed: 1) Ports for berthing ships, 2) Warehouses for temporary storage of goods, and 3) Lodgings for workers' rest. Contemporary complex logistics activities require effective coordination and control systems that align with modern outsourcing principles (Meng, 2014). Integrated logistics includes storage, cargo tracking, transport services, customs clearance, cargo consolidation, packing, labeling, assembly/manufacturing, documentation services, and overall value—all of which must operate in harmony. This harmonious pattern was reflected in Majapahit's social system through the *Hastabrata* concept in the Nagarakartagama.

In the context of national policy, this integration principle is implemented through the National Logistics Ecosystem (NLE), which emphasizes digitalization, customs clearance, and inter-agency collaboration to reduce logistics costs (Kemenkeu, 2022). Aligned with the Blue Economy Roadmap 2023–2045 (Bappenas, 2023), maritime integration forms the foundation for supply chain efficiency and transparency. Thus, the integrated logistics values of the past Nusantara find relevance as a reference for restoring the still-fragmented modern system. For the next five years, the Indonesian government has set a target to reduce logistics costs to 8% of GDP. Currently (2025), logistics costs stand at 14.5%, with the hope of decreasing to 12.5% next year (Kompas.com, 2025).

4.2. The Importance of Fostering Organizational Culture (Organizational Culture)

Roso & Lumsden (2009) assert that an efficient transport chain can be built through the dry port concept—integrated port services connected to inland terminals. This concept allows loading/unloading, storage, and distribution to be carried out closer to production centers, thereby reducing queues at main ports and lowering logistics costs. With land-based container services, dry ports enhance connectivity between ports and hinterlands, creating time and cost efficiencies.

Developing such systems encourages collaboration among logistics practitioners, fostering an adaptive organizational culture oriented toward integration. Historically, the concept of integrated management was known during the Majapahit era, as reflected in the *Hastabrata* governance system, which emphasized the unity of resources, distribution, and communication. A collaborative, efficient organizational culture serves as a crucial foundation for management authority in choosing strategies and developing national logistics capabilities, a concept aligned with Christie's (1982) research.

Bappenas (2023) emphasizes that the success of Indonesia's blue economy depends heavily on the involvement of all stakeholders—government, academia, businesses, and communities—in the sustainable management of resources. This aligns with UNESCAP's (2023) view, which highlights the importance of enhancing human resource capacity, information exchange, and effective maritime logistics governance. Therefore, fostering a collaborative, innovative, and knowledge-based organizational culture is a key element in strengthening Indonesia's maritime connectivity and logistics competitiveness.

4.3. The Requirement for Management Authority

Distribution activities depend on the coordination of integrated transportation, warehousing, and delivery services. Liu et al. (2010), through a survey of logistics companies in China with workforces ranging from 200 to 30,000 employees, found that 93% of respondents were from state-owned and private companies, while the remaining 7% were joint ventures (JV) with international partners. Survey respondents were employees serving various sectors, including household appliances, machinery, and industrial equipment, with machinery and industrial logistics being the two dominant sectors. Statistical analysis showed that management authority significantly impacts competitiveness, particularly in service quality, operational efficiency, and cost management. This indicates that an organization's strength lies in management's ability to control processes and to determine strategies aligned with the company's specific capacity (Liu et al., 2010).

A similar approach was known in the archipelago's maritime history. Between the 3rd and 7th centuries, the Kalingga Kingdom demonstrated managerial capabilities in regulating trade routes and maritime security—a form of governance that balanced authority and efficiency. In a modern context, this is reflected in the Blue Economy Roadmap 2023–2045, which emphasizes consolidating authority across institutions to build an integrated maritime economic ecosystem (Bappenas, 2023). The OECD (2025) stresses the importance of transparent and resilient supply chain governance through public–private collaboration. Thus, strengthening management authority is not merely about bureaucratic structure but about building synergy and accountability within the national logistics system.

4.4. Understanding Strategic Choices (Strategy Choices)

Every company and country employs different strategies to enhance logistics performance (Liu et al., 2010). Liu identifies thirteen strategic alternatives in China, with three primary factors emerging as most influential: strategic management, information and technology, and service network. These three factors received the highest mean scores in statistical testing (Table 1).
The first factor, improving strategic management capability, showed a high coefficient in the statistical tests, with a mean score of 4.56 and a two-tailed significance value of 0.762 (76.2%). Strategy serves as a reference; organizations have goals, and strategy provides the direction to achieve them, as illustrated by the case data in the table. The second strategic choice, information & technology**,** has a mean score of 4.44 and a significance of 82.9%. The third factor, service network, has a mean score of 4.37 and a significance of 80.7%. This description underscores that modern logistics requires robust IT systems and a sound understanding of network concepts to support a reliable strategic framework. These findings align with the direction of Indonesia's national logistics policy. Through the implementation of the National Logistics Ecosystem (NLE) and the Indonesia National Single Window (INSW), the government seeks to strengthen digitalization of systems, service networks, and cross-sectoral governance to expedite the flow of goods and reduce logistics costs (Kemenkeu, 2022). Digitalization strategy also includes the development of smart ports and AI-enabled logistics management to support efficiency and inter-island connectivity (Bappenas, 2023).

Digital transformation supports the RPJPN 2025–2045 target to reduce the logistics cost ratio to 14% of GDP. Recommendations from Morgan et al. (2022) and the OECD (2025) emphasize that innovation, blue finance, and cross-sector collaboration are essential

foundations for a sustainable global supply chain. Thus, Indonesia's national logistics strategy affirms the critical importance of information technology, service networks, and strategic management as the primary foundation for transforming towards an efficient, resilient, and adaptive logistics system.

4.5. Logistics Development (Potential Development)

The maritime industry in the archipelago has developed rapidly since the 3rd century AD. Educating business actors in this sector, such as sailors, shipbuilders, and merchants, was no easy task, as all these elements were integral parts of a complex maritime economic system (Santoso, 1998). This fact confirms that the development of the maritime industry requires continuity, skill, and sustainable governance.

Transportation is a fundamental element in developing logistics activities. By leveraging time and optimizing transport equipment, the economic value of a product can be increased. Multimodal transport service companies, which combine the advantages of various modes (air, land, and sea), represent the efficiency of modern systems. This approach encompasses planning, implementation, and control of cargo flow, network information management, and cost control to meet end-user needs.

In practice, logistics is not merely about moving goods between points but about creating supply chain harmony. Every activity, from raw material storage and work-in-process management to finished goods handling, is part of a unified system oriented toward efficiency. Even value-added services like consolidation, labeling, or packaging contribute significantly to operational effectiveness. The goal is to create transport modal efficiency, facilitate cargo exchange between modes, and achieve solid integration throughout the supply and demand chain.

5. Conclussion

The development of logistics capability in Indonesia demands a focus on reducing transit and handover times, as well as forming efficient transport chains through proper management authority in selecting strategies and developing capabilities. Management authority plays a significant role in ensuring operational effectiveness and the continuity of the logistics system. Three primary strategies form the foundation of modern logistics transformation: a) Information & Technology, b) Service Network, and c) Strategic Management. Together, they create a framework for achieving inter-modal transport efficiency, strengthening seamless coordination and cargo exchange by promoting the integration of all supply chain functions through systemic stakeholder collaboration, underpinned by all Brata principles.

Historically, this integrated practice was evident from the 3rd to the 7th centuries AD, when the Kalingga Kingdom served as an international logistics hub connecting Indian Ocean trade routes—a system later refined by Majapahit through the application of the integrated governance principle of Hastabrata. Past logistics systems exhibited a holistic character compared to the still fragmented and partial contemporary system. Therefore, restoring the values and practices of Nusantara's maritime logistics is key to building an integrated national logistics system.

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