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Establishing a Port Community System: The Necessary Solution for the Sustainable Development of Logistics in Vietnam's Southeast Region

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ABSTRACT

The study identifies the necessity and requirements for establishing a port community system at the seaport clusters in the Southeast region as a core solution contributing to the sustainable development of the region's logistics industry. The article employs qualitative analysis to review relevant documents on seaports, the legal framework, and the institutional operations of port communities. Additionally, the article analyzes the current situation and potential for seaport exploitation in the Southeast region. The challenges in establishing a port community system at the seaports in the Southeast region are discussed to maintain the competitiveness of the region's ports and contribute to the sustainable development of the region's logistics industry.

1. Introduction

A vast number of seaports have developed and implemented a port community system. The port authority is a key member representing the port community system, serving as the efficiency coordinator who coordinates separate seaport operators within the seaport area. There is an underlying truth; several studies provide comprehensive summaries of the functions of port authorities in implementing a port community system. The authors collected a literature review to narrow this research gap. They presented the current situation and the necessity and requirements for implementing a port community system in Vietnam's Southeast seaport clusters.

According to Decision No. 221/QD-TTg, which amends and supplements Decision No. 200/QD-TTg dated February 14, 2017, regarding the approval of the action plan to enhance competitiveness and develop Vietnam's logistics services until 2025, the task of "improving logistics infrastructure" is mentioned. In addition, Decision No. 710/QD-CHHVN, dated June 2, 2021, by the Vietnam Maritime Administration, approving the development plan for green seaports, and Decision No. 749/QD-TTg in 2020, approving the national digital transformation program until 2020, with a vision to 2030, also recognizes logistics as one of the eight sectors that need to be prioritized for digital transformation. The Southeast region has a large and diverse seaport system, with many containerized cargoes passing through its ports. Therefore, establishing a port community system in the area is a fundamental and necessary solution to effectively utilize and harmoniously exploit the region's seaports' material resources while cooperating and sharing benefits.

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2. Theoretical Framework

In this section, the authors review relevant literature on seaports, port authorities, and a port community system.

2.1. Seaports, port authorities

Seaports play a crucial role as hubs in logistics and supply chains, linking road and sea transportation (Tijan et al., 2012). Seaports profoundly impact every country's economic, social, and environmental development, both locally and globally (Tijan et al., 2021). Sustainability issues are becoming a significant component of maritime logistics (Shin et al., 2018). Seaports face persistent change and challenges in international trade (Tijan et al., 2012), particularly in the context of the Fourth Industrial Revolution. Information technology is a crucial element in seaport competitiveness and efficiency, as it is one of the key resources of any seaport (Tijan et al., 2012).

Port authorities have traditionally been responsible for developing and improving the port area (Tijan et al., 2021) related to port operations, including the availability and readiness of shared infrastructure, as well as managing port policies. Port authorities are responsible for promoting import and export activities and ensuring sustainable port operations for the long term by managing and transferring information technologies and delivering information between seaport operators, logistics service providers, carriers, customs, and other relevant parties.

2.2. Port community system

A port community system comprises seaport members, including private and public entities operating within the seaport area, as well as providers of port services. It centralizes information about vessels and the goods they transport, allowing stakeholders to better control and coordinate the movement of goods (Sarabia-Jáscome et al., 2019). The primary objectives of establishing a port community system are to support operations such as sharing available berths, increasing seaport service quality, and facilitating data connections between various stakeholders.

The main issues of establishing a port community system are:

- The management apparatus (the role of government, the relationship between government and other related logistics sectors).
- The management of seaport infrastructure logistics (on sharing blank berths and information).
- The coordinating seaport operations (cargo handling processes, operational data, occupational seaport skills).

3. Research methodology

The paper employs a qualitative research method, reviewing domestic and international studies to gain a deeper understanding of seaports, port authorities, and port communities, as well as their relationships. The article also analyzes primary data from the Vietnam Seaport Association regarding the status of seaport clusters in the Southeast region, evaluating port accessibility, service readiness, container throughput at ports, and maritime port policies in Vietnam based on decisions related to seaport development. Additionally, the paper gathers expert opinions from Saigon Newport Corporation and Gemalink on the necessity and feasibility of establishing a port community system in this region.

4. The Current Status of Seaport Operations in the Southeast Region

4.1. The capacity of the seaport system

Vietnam's seaports have gone through three planning phases (Table 1).

These three planning phases demonstrate that Vietnam's seaports have made remarkable progress, transitioning from general cargo to containerized cargo by international standards while keeping pace with global trends in seaport development.

According to the report by the Vietnam Seaport Association (Vietnam Seaport Association, 2024), in the first half of 2024, a clear distinction was observed in cargo flow through seaports in the Southeast region between the two port clusters of Ho Chi Minh City (HCMC, including Tan Cang Cat Lai, Tan Cang Hiep Phuoc, VICT, SP-ITC, etc.) and Cai Mep – Thi Vai (CM-TV). Specifically, HCMC had a large trade deficit in containerized goods (21%), while CM-TV had a trade surplus, accounting for 19%. Thus, in the Southeast region, Vietnam has a significant trade deficit in goods from intra-Asian areas, which are transported through feeder vessels to ports in HCMC. Conversely, a trade surplus is concentrated in containerized goods shipped on main routes using deep-water ports in the CM-TV region. The containerization rate of cargo through HCMC is 68%, while in CM-TV, it is 64%.

4.2. The current status of seaport operations

Decision No. 442/QD-TTg, dated May 22, 2024, in the Southeast region, prioritizes the development of port areas at CM-TV. The main ports are HCMC Seaport and Dong Nai Seaport, which are classified as Type I. Currently, HCMC has four main container ports (Table 2).

Tan Cang-Cat Lai has the advantage of being a large-scale port with numerous service routes, and it is conveniently located near industrial zones, offering quick

Table 1. The Seaport Development Planning of Vietnam

No.	Plan	Content	Year of Planning
1	The First Planning	Decision No. 202/QD-TTg, dated October 12, 1999, which outlined the overall development plan for Vietnam's seaport system up to 2010	1999
2	The Second Planning	Decision No. 2190/QD-TTg, dated December 24, 2009, which established the overall development plan for the seaport system until 2020, with a vision extending to 2030	2009
		Adjusted by Decision No. 1037/QD-TTg, dated June 24, 2014	2014
3	The Third Planning	Decision No. 1579/QD-TTg, dated September 22, 2021, outlined the overall development plan for Vietnam's seaport system for 2021-2030, with a vision to 2050. This plan was subsequently	2021
		Adjusted by Decision No. 442/QD-TTg, dated May 22, 2024	2024

Table 2. The current status of container seaports in the HCMC area (Annual Report, Vietnam Seaport Association, 2024)

No.	Name of Seaport	Square (ha)	Length of Berth (m)	STS	Vessel Capacity (DWT)	Berth Capacity (TEU)
1	Tan Cang-Cat Lai (TCCL)	160	1,950	20	45,000	5,500,000
2	Tan Cang-Hiep Phuoc (TCHP)	16	420	6	50,000	600,000
3	SP-ITC	48	670	8	35,000	900,000
4	VICT	20	678	7	25,000	800,000

Table 3. The container throughput (TEU) at the HCMC area seaports (Annual Report, Vietnam Seaport Association, 2024)

Year	TCCL	TCHP	VICT	SP-ITC	Total
2020	5,585,086	194,215	574,469	316,733	6,670,503
2021	5,383,411	198,058	531,088	557,221	6,669,778
2022	5,481,950	192,027	562,526	588,659	6,825,162
2023	5,332,128	130,477	549,643	534,917	6,547,165

Table 4. The current status of deep-water ports in Cai Mep-Thi Vai (Annual Report, Vietnam Seaport Association, 2024)

	TCIT	TCTT	CMIT	SSIT	Gemalink
Square (ha)	55	48	48	13	33
Length of berth (m)	890	600	600	600	1.115
Draft (m)	-16	-16	-16	-16	-16.5
STS	10	6	5	4	8
Vessel Capacity (DWT)	160,000	160,000	160,000	194,000	250,000
Berth Capacity (TEU)	2,500,000	1,100,000	1,100,000	1,100,000	1,400,000

procedures. However, it faces limitations in traffic during peak hours and cannot be expanded further. TCHP has a policy of connecting with TCCL, and modern port infrastructure still has spare space. Its disadvantages include poor connectivity with industrial zones, high road transport costs, limited shipping routes, and a heavy reliance on the quality of transport provided by TCCL. SP-ITC has a convenient location and many international service routes. However, the port's drawbacks include narrow access roads that are often congested, restricted traffic during certain hours, and limited yard infrastructure. VICT has modern facilities, extensive experience in container handling, and a policy of providing free barge transfer services with ICDs. However, its drawbacks include an inconvenient location, being far from the cargo source, limited berth depth, and a lack of international service routes. Container throughput at HCMC's ports in 2023 decreased compared to 2022 (Table 3).

There are currently five deep-water ports operating in CM-TV (Table 4).

Table 5. The container throughput (TEU) at Cai Mep - Thi Vai deep-water ports (Annual Report, Vietnam Seaport Association, 2024)

Year	TCIT + TCCT	TCTT	CMIT	SSIT	Gemalink	Total
2020	2,089,555	741,454	1,026,840	553,989	-	4,411,838
2021	2,028,308	546,575	872,928	798,187	1,139,291	5,385,289
2022	1,931,344	797,366	534,090	702,479	1,628,168	5,593,447
2023	1,885,942	820,938	644,273	496,537	1,634,952	5,482,642

The trend of shifting intra-Asian cargo flows from the HCMC area to be handled at CM-TV is due to the inability of HCMC seaports to accommodate larger vessels, along with the trend of increasing ship sizes that are more suitable for deep-water ports. This has recently contributed to the increase in container throughput (Table 5).

The trend of shipping lines adding the CM-TV route to their schedules is becoming increasingly evident, especially for ships from the Ocean Alliance, Gemini Cooperation, and THE alliances. Seaports in the region are facing intense competition from Gemalink Port, which has been operational since 2021 and boasts several advantages in terms of location and berth length. This has led to a significant increase in container throughput at Gemalink, while other ports have experienced a decline.

Dong Nai Port, a branch of Long Binh Tan Port, has a favorable location along the Thi Vai River and Dong Nai River, allowing goods to be transported by hinterland waterway from the CM-TV deep-water port cluster and HCMC to the transshipment hub at Dong Nai Port, and vice versa. It also promotes the road transport of goods from inland areas, such as Dong Nai, Tay Ninh, and Lam Dong, as well as neighboring countries like Laos and Cambodia. Container throughput has grown by 10-12% annually, reaching 570,223 TEUs in 2023 (Vietnam Seaport Association, 2024). This growth is crucial in reducing logistics costs, lowering emissions, contributing to green logistics activities, and ensuring the industry's sustainable development.

Thanh Phuoc Port (currently HCMC, formerly Binh Duong) has a total area of 53 hectares and 16 berths. Each berth is 62 meters long and can accommodate vessels with a capacity of up to 3,000 tons. The port is equipped with modern handling equipment. The cargo handling capacity is 5,000,000 tons per year.

4.3. Some limitations in the individual operations of the seaport system

The container ports in the Southeast region operate and are managed according to the requirements of different authorities. In the HCMC area, the four main container ports are TCCL and TCHP (Saigon Newport Corporation – SNP), SP-ITC (International Trade and Transport Corporation), and VICT (Joint Venture Development Company No. 1). In Cai Mep – Thi Vai; there are five deep-water seaports: TCIT and TCTT (SNP), CMIT (a collaboration between Vietnam Maritime Corporation – Saigon Port and APM Terminals), SSIT (a joint project between SSA Holdings International - Vietnam, Saigon Port, and Vietnam Maritime Corporation), and Gemalink (a cooperative enterprize between Gemadept Corporation and CMA Terminals of CMA CGM shipping line from France).

According to the results of interviews with seaport managers from Saigon Newport Corporation and Gemalink, seaports such as Tan Cang Cat Lai and VICT currently have limited capacity for expansion. Therefore, sharing berths on a mutually beneficial cooperative basis has many limitations; only ports under SNP share berths. Additionally, the use of different port management and operation software by various ports makes it challenging to use and share operational data between them. This is seen as a significant limitation that the seaport logistics industry in the region is currently facing. Additionally, no operational mechanism presently allows ports to share berths and port resources between ports in the HCMC area and CM-TV, or between these regions. Therefore, establishing a port community in the seaport clusters of the Southeast region is essential. This would enable vessels to use berths interchangeably between ports, allowing one port to utilize a berth that is not available at another port, thereby facilitating the handling of goods by shipping companies and their customers. This would enable independent transport declarations between regional ports and direct cargo handling without modifying the manifest.

5. Solutions for Establishing a Port Community System in the Southeast Region

5.1. Establishing a Port Community System

5.1.1. Management apparatus

The priority is the official and legal framework for the institutional operation of port authorities in implementing a port community system. Decision No. 825/QD-TTg, dated July 11, 2023, which established the Coordination Council for the Southeast region, clearly defines the council's task of coordinating

activities related to the logistics industry. Therefore, it is necessary to specifically implement the task of managing and coordinating the operations of a port community system in the region for the council. The coordination of berths and resources will be assigned to the lower levels of the council, specifically to the port authorities. Accordingly, port authorities need to manage the sharing of infrastructure, such as berths and yards, to maximize the advantages of each port in terms of location and operational capacity. For example, the SP-ITC port has the advantage of shore crane equipment that can handle up to 14 rows, compared to TCCL's 13 rows, which could attract some service routes to increase the ship sizes of shipping lines currently operating at TCCL.

5.1.2. Upgrade and enhance the seaport logistics infrastructure

A port community system, comprising seaports in the HCMC area, deep-water ports at Cai Mep Thi Vai, and inland ports in the HCMC area and Dong Nai, will form a system that facilitates the efficient connection and transportation of goods in the Southeast region. Developing this port community system is a significant step in optimizing the supply chain, minimizing logistics time and costs, and reducing emissions during transportation, thereby promoting green logistics. According to trends, the demand for vessels with a capacity of 20,000-23,000 TEU in the CM-TV area is expected to increase, driving the development of feeder service routes to gather or distribute cargo to and from surrounding domestic markets, such as HCMC, and international markets like Cambodia, Thailand, and the Philippines. Therefore, seaport logistics infrastructure, including berths, storage yards, and cargo handling equipment, must be invested in and upgraded in a coordinated and harmonious manner to benefit the Southeast region, creating maximum convenience in sharing infrastructure between ports.

5.1.3. Applying information technology in operations

Simplified and standardized procedures facilitate cargo handling for shipping companies and customers by applying information technology in port management and operations. Sharing data on cargo, customs declarations, and manifests is crucial for establishing a cohesive and sustainable port community system. Ports utilize various software systems for container handling, including real-time container management in yards. Therefore, establishing a shared, integrated information platform for ports in the region will facilitate the sharing of information on vessel schedules, berth availability, storage yards, and other relevant details among ports, thereby enhancing the implementation of port community operations.

5.1.4. Training occupational skills for operations

Organizing specialized training courses on port operations and exploitation for port scheduling personnel in the region to enhance their understanding of each port's cargo handling processes, port management software, and the coordination mechanisms between ports when implementing a port community system.

5.2. State management and public administrative services

5.2.1. Coordination of activities between state management authorities

Decision No. 749/QD-TTg in 2020 on national digital transformation has facilitated the implementation of digitalization programs by state management authorities. Activities related to government management in the logistics sector, such as electronic customs, online manifest declarations, electronic tax settlement, and electronic port infrastructure fee collection, have achieved encouraging results, creating favorable conditions for businesses when completing cargo handling procedures. However, accepting customs declarations, approving customs clearance lanes, and reviewing manifest summaries between customs authorities and ports still face numerous issues, including a lack of consistency and mutual recognition. Therefore, it is necessary to establish a framework for action programs related to official government management in the logistics sector, such as accepting customs declaration information and assigning customs clearance lanes between customs departments. This would allow for more uncomplicated customs declarations in one location and clearance in another, and vice versa.

5.2.2. Human resources solutions

Organizing regular industry exchange sessions between state management authorities at local levels in the region, such as between customs sub-departments, between customs and tax authorities, etc., to enhance professional understanding, share and align the methods of cargo clearance to ensure consistency between customs sub-departments, share tax data of businesses, coordinate activities between management authorities, and facilitate cargo owners in the process of declaring and clearing goods.

Building an occupational skill standard for seaport operators' staff. This standard can help seaport operators and managers train their new staff in-house, on par with other seaports, and share employees with other seaport managers in case of a human resource shortage, thereby eliminating knowledge and skill disparities.

6. Conclusion

The logistics industry, particularly port logistics in the Southeast region, offers numerous opportunities and favorable conditions for establishing a port community system in the HCMC area, as well as a port community between deep-water ports (CM-TV) and inland ports (HCMC, Dong Nai). This is considered a core solution for the sustainable development of the region's logistics industry based on the shared use of seaport infrastructure and harmonized benefits in port operation and management. This is extremely necessary and aligns with the development orientation of regional connectivity outlined in the Politburo's resolution on the socio-economic development of the Southeast region.

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