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The role of port authority in hybrid governance structure: a comparative case study of Laem Chabang Port and Bangkok Port, Thailand

Yatimaporn Poontai

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WORLD MARITIME UNIVERSITY
Malmö, Sweden

THE ROLE OF PORT AUTHORITY IN HYBRID PORT GOVERNANCE STRUCTURE
A Comparative Case Study of Laem Chabang and Bangkok, Thailand

By

YATIMAPORN POONTAI
THAILAND

A dissertation submitted to the World Maritime University in partial Fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

MARITIME AFFAIRS
(PORT MANAGEMENT)

2019

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Declaration

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views and are not necessarily endorsed by the University.

(Signature) : ....................................................

(Date) : 2009. 09. 24

Supervised by : Professor Dong-Wook Song

Supervisor’s affiliation : Port Management
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Abstract

Title of Dissertation: THE ROLE OF PORT AUTHORITY IN HYBRID PORT GOVERNANCE STRUCTURE: A Comparative Case study of Laem Chabang Port and Bangkok Port, Thailand

Degree: Master of Science (MSc)

The Port Authority of Thailand (PAT) is a state-owned enterprise that is important as a gateway to connect the transportation of international and domestic products to support the economic development of Thailand as well as to reduce the cost of transportation of goods and logistics of the country. Along with the increasing level of development and enhancement the country's competitiveness in the world trade arena by developing and managing infrastructure and facilities to meet world-class standards, PAT also serves as a carrier that becomes a part of the logistics process that plays an important role in the country's economic development.

In the present, the market conditions of the port business in Thailand are becoming more severe which causes the port authority (PA) to compete with private ports that provide container goods services as well. Private ports are able to snatch some market share because they are able to enter the market easily. There is a law that make it easier for private sectors to compete with public ports. The administrative structure of public port in Thailand is complex and involves many government agencies. Therefore, they are unable to adapt to the higher competition appropriately.

This study aims to analyze the role of PA in a hybrid port governance structure, as a comparative case study between Bangkok Port (BKP) and Laem Chabang Port (LCP). The study was carried out through the qualitative methodology by the using case study method. Moreover, the analysis of the role of PA was based on the traditional PA function and the new function of PA in the renaissance. A comparative study of port performance was based on three dimensions including financial, operation and customer.

The results of this research reveal that the key to success to develop port competitiveness is the community manager function combined with the traditional PA function. The other result is that the lack of marketing and promotion roles will affect port competitiveness in the future. The paper also proposes a recommendation for BKP and LCP to improve port connectiveness performance.

KEYWORDS : port governance, role of port authority, Bangkok port, Laem Chabang port
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BKP</td>
<td>Bangkok Port</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>IEAT</td>
<td>Industrial Estate Authority of Thailand</td>
</tr>
<tr>
<td>LCP</td>
<td>Laem Chabang Port</td>
</tr>
<tr>
<td>NSW</td>
<td>National Single Window</td>
</tr>
<tr>
<td>PA</td>
<td>Port Authority</td>
</tr>
<tr>
<td>PAT</td>
<td>Port Authority of Thailand</td>
</tr>
<tr>
<td>SRTO</td>
<td>Single Rail Transfer Operator</td>
</tr>
</tbody>
</table>
Chapter 1 Introduction

1.1 Background

From the historical point of view, the development of port operations in Thailand began with the state-owned mechanisms but due to an expansion of the world economy and the increasing volume of containers, the government was unable to meet the economic expansion immediately. Therefore, the import and export operators were pushed to build their own ports to address the shortage of ports and warehouses. The government has been supporting the private sector to create ports which turned into more domestic ports.

While supporting private ports, the government also allows foreign stakeholders to invest in the port sector which results in higher competition. It means that when the government is supporting the private sector to play a role in managing the port, which is considered as a public utility business of the country, the government must also take a role in controlling and governing. In undertaking this role, there are several government agencies which are responsible for governing and managing the port sector by using the law as a control and supervision tool in Thailand.

According to the existing regulations, port related businesses in Thailand can be operated by the government and private sectors. Regardless of the port being is owned by the government sector or the private sector varies depending on the mission and objectives of the port, as well as the relevant laws which may classify the type of operator as follows (Harirak, 2016). Besides that, private ports that have been given concessions by the government and local government's ports must apply for permission under the Notification of the National Executive No.58, B.E.1972, which is a general law applicable to ports.

While the government encourages the private sector to invest more in the port business to support the expansion of the Thai economy, the potential development of the public port is still delayed and unable to respond to current changes quickly which affects BKP and private port owners in LCP. For example, the marketing strategy of private ports focuses on cheaper tariffs of the services to attract ship liners while private operators in LCP or BKP cannot set prices as low as the public ports outside LCP because they have a "fixed fee," as the proportion specified in the contract for LCP. Therefore, operators in LCP have a higher unit cost. This problem caused unfair competition and dissatisfaction to the operators in LCP while the growth
rate of private port container throughput has increased, causing operators in LCP to be concerned.

1.2 Problem Statement
From this statement, the problems can be defined as follows;

1. The operation of Thai port business is governed by many laws from different public agencies, which makes the supervision not unified on the same standard and there is overlap in the enforcement. In addition, each government agency is free to operate under the laws related to that agency, which can be either the PAT or the Marine Department.

2. The policy formulation of the administration lacks the integration between government agencies, resulting in the different directions in the operations. In addition, the inability to proactively manage and solve problems promptly may cause the port operation to be less efficient and reduce potentials.

3. Although PAT has more than 90% of the market share in the country, it is likely to continuously lose the market share in the country and region, which will affect the ability to compete in the port and logistics sector in the future. Port users have additional options for transportation and, storage of products such as container yardz, CFS / ICD / Dry Port / Door to Port, and Port to Door and land transportation. Further, there are many public ports continuously developing their capabilities which affect the decreasing number of cargoes passing through PAT by switching to use other terminal services instead.

4. There is lack of commitment to find a strategic partner (Strategic Alliance) and inability to take advantage of international cooperation to support the implementation of new missions and business benefits, including networking transport between ports.

5. Some shipping lines invest or operate in essential ports as well as providing a complete range of additional services, which may affect the operations of PAT in the future.

6. BKP is a fully serviced public port which will result in a reduced service volume for some services due to the increasing competition and BKP may lose the opportunity from certain types of services due to the increased competition if they are unable to perform their operations or expand their activities.

7. In macroeconomics, the law of demand states that demands will rise when the price of excellent/services is decreased. (Nicholson & Snyder, 2011) In terms of operators, the operators in LCP have to pay an additional cost which refers to contract so that the price cannot be reduced. Therefore, users tend to use cheaper services.
1.3 Research Objective
This study aims to analyze the role of PA in hybrid port governance structure: a comparative case study of BKP and LCP, Thailand in terms of port function (i.e., regulator, landlord, operator, and community manager) as well as to find out whether the current role of BKP and LCP can respond to a competitive market. In hybrid governance, the landlord model is the best model for PAT to increase their competitiveness by comparing port performance in terms of financial, operation, and customer, between BKP and LCP as well as how PAT can improve to increase more competitive performance in the future.

1.4 Research Questions
To accomplish the objective, there are several questions to be answered.

1. What is the role of BKP and LCP in a hybrid port governance structure?
2. Is the role of BKP and LCP appropriate for the competitive market?
3. Why is the landlord model in case of LCP the best model in the hybrid port governance structure for PAT?
4. How could BKP and LCP improve to increase more competitive performance in the future?

1.5 Research Methodology
This study used a qualitative methodology by using the case study method. Data and information regarding port governance model, port administrative and ownership, Thai Port, and the existing port performance indicator data from BKP and LCP were gathered through literature review. After gathering all the data, analysis relating to the role and responsibility of PA in the adapted framework of PA function in renaissance and comparative port performance between two ports will be assessed in order to answer the second question.

To achieve the objectives, there are details of the research methodology which can be divided into two parts: 1) Analyzing the role of PA in hybrid governance structure: Case study LCP. 2) Comparing port governance in Thailand by using port performance indicators in terms of financial, operation, and the customer.

The role and responsibility of PA in the case of LCP will be analyzed by guiding PA function in the renaissance (i.e., regulator, landlord, operation, and community manager). The port performance has been used to compare public ports, and landlord ports responsible in PAT as the way to improve competitive performance in the future of BKP and LCP. By finding
related roles of BKP and LCP, the comparison of port performance will be analyzed to further formulate a recommendations for the improvement of port performance to BKP and LCP.

1.6 Dissertation Structure

Chapter 1 Introduction and problem statement of the study, objective, and scope.

Chapter 2 Overview of ports in Thailand including Thai ports in general, PA and port governance structure in Thailand

Chapter 3 Review of port governance model, port administration, and the role of PA in a governance model.

Chapter 4 describes the methodology used to analyze the role of PA adapted from PA function in a renaissance. Comparing port governance in Thailand by using port performance indicators in term of financial, operation, customer, as well as environment and safety

Chapter 5 analyzes the role of PA and compares the port performance between BKP and LCP.

Chapter 6 Findings and discussion on the role of PA in hybrid port governance structure and comparing the port governance model between BKP and LCP and also discussion and recommendations to improve in order to increase a more competitive performance in the future.

Chapter 7 provides conclusion, implication, and limitation
Chapter 2 Literature review: Ports in Thailand

2.1 Introduction
In the past, there was almost no competition needed between the ports in Thailand. Partly due to government monopolies which caused the business operator to use a specific port, the situation has changed, resulting in the ports having to compete as other businesses. At present, Thailand has 2,600 kilometers of coastline with 443 different types of ports along the coast which consist of 147 cargo ports, 222 fishery ports, and 74 cruise ports. (Sumalee, 2009)

Ports can be classified by 1) usability (i.e., the port for shelter pier for commercial, military pier) 2) location (i.e., river port and seaport) 3) type of service.

2.2 Thai Ports in General
Port operations in Thailand are considered as a business of Panich Navy according to the Naval Promotion Act, B.E. 2521, which defines a port as a place for servicing boats for landing or unloading products or as a component to the port. It is also specified in the ministerial regulations that a boat operator is a part of sea entrepreneurs. Thailand divides ports into two categories geographically as sea port and river port and two types by ownership, including public ownership and private ownership.

Public Ports in Thailand
Public ports in Thailand are divided into two categories: 1) The public service which is owned and operated by public organizations such as BKP and Map Ta Phut Port 2) landlord ports which are publicly owned but the operation is in the hands of private sectors such as LCP, Phuket Port and Songkhla Port.

<table>
<thead>
<tr>
<th>Name</th>
<th>Public ownership</th>
<th>Management</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sattahip Commercial Port</td>
<td>Thai Navy</td>
<td>Thai Navy</td>
<td>Thai Navy</td>
</tr>
<tr>
<td>2. BKP</td>
<td>PAT</td>
<td>PAT</td>
<td>PAT</td>
</tr>
<tr>
<td>3. Ranong Port</td>
<td>PAT</td>
<td>PAT</td>
<td>PAT</td>
</tr>
<tr>
<td>Name</td>
<td>Public ownership</td>
<td>Management</td>
<td>Operation</td>
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<td>-----------------------------</td>
<td>------------------------</td>
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<td>---------------</td>
</tr>
<tr>
<td>4. Chiang Kong Port</td>
<td>Treasury Department</td>
<td>PAT</td>
<td>PAT</td>
</tr>
<tr>
<td>5. Chiang Saen Port</td>
<td>Treasury Department</td>
<td>PAT</td>
<td>PAT</td>
</tr>
<tr>
<td>6. LCP</td>
<td>PAT</td>
<td>PAT</td>
<td>Private company</td>
</tr>
<tr>
<td>7. Map Ta Phut Industrial Port</td>
<td>Industrial Estate Authority of Thailand</td>
<td>Private company</td>
<td>Private company</td>
</tr>
<tr>
<td>8. Songkla Seaport</td>
<td>Treasury Department</td>
<td>Private company</td>
<td>Private company</td>
</tr>
<tr>
<td>9. Phuket seaport</td>
<td>Treasury Department</td>
<td>Private company</td>
<td>Private company</td>
</tr>
<tr>
<td>10. Tha Thong Pier</td>
<td>Treasury Department</td>
<td>Treasury Department</td>
<td>Private company</td>
</tr>
<tr>
<td>11. Kantang Port</td>
<td>Treasury Department</td>
<td>Treasury Department</td>
<td>Private company</td>
</tr>
<tr>
<td>12. Sriracha harbor area</td>
<td>Marine Department</td>
<td>Marine Department</td>
<td>Private company</td>
</tr>
</tbody>
</table>

Source: Sumalee (2009)

Sumalee (2009) conducted a study of the management and operation of the state-owned port which can be classified into three types as 1) ports managed and operated by public sector 2) ports managed and operated by private sector 3) ports managed by public sector and operated by private sector which is shown in table 1: List of state-owned port in Thailand.

1. Sattahip Commercial Port.

The Thai government and the United States government agreed on the assistance to improve the facilities and to deliver energy to the northeastern region of Thailand to support the US combat forces operating in Vietnam. After the United States returned the Cork Samet pier to the Thai government, the government saw that it was appropriate to improve the Chuk Samet pier to be a port as a commercial port to support the expansion of PAT. Therefore, a decree
establishing the territory of PAT at Sattahip Commercial Port was issued. According to the announcement in the Government Gazette, Volume 9, Part 203, dated December 11, 1979, the Royal Thai Navy was appointed to deliver Chuk Samet Pier to PAT and an Act to transfer business in relation to the Sattahip Commercial Port of the Navy to belong to PAT was issued. When PAT constructed the first phase of LCP, PAT returned the Sattahip Commercial Port to the navy on 1 May 1991 and directed the officers of Sattahip Port Authority Sattahip Naval Base to enter the ongoing commercial operation by using the name "Sattahip Commercial Port - Navy" in the commercial operation. Subsequently, the Navy established "Working capital for the management of the Sattahip Commercial Port - Navy" according to the 1992 Budget Expenditure Act under the Royal Thai Navy.

2. Map Ta Phut Industrial Port
The Industrial Estate Authority of Thailand (IEAT) is a state enterprise under the Ministry of Industry which was established in accordance with the Announcement of the Revolutionary Council No. 339 dated 13 December 1972 and enacted as the IEAT Act, 1979. Subsequently, the amendments (No. 2) BE 2534 amended (No. 3) BE 2539 and amended (No. 4) BE 2550 were issued to expand the scope of development of the area from the industrial sector to the service sector. The Industrial Estate Authority of Thailand is responsible for the development and establishment of industrial estates by providing space for industrial factories to be integrated in a systematic and orderly manner. It is also a government mechanism for distributing industrial development to regions throughout the country.

Map Ta Phut Industrial Port was established by the policy under the Eastern Seaboard Development Project in 1981, by setting up guidelines for the development of targeted areas in Map Ta Phut, Rayong and Laem Chabang, Chonburi, Thailand. Map Ta Phut Port is used as a port to transport liquid from the petrochemical industry and general products in the Map Ta Phut Industrial Estate. The berths operated in the port can be divided by investment type into two types, namely:

1. Public Berth means a port that is not limited to the number of users. The Industrial Estate Authority of Thailand is the investor in the construction of the berth basic facilities including the dock.
2. Specific Berth means a port that limits the number of users only to the group of operators. The operator is the investor in the construction of the berth and all the necessary facilities.

3. The Treasury Department
The Treasury Department is an agency under the Ministry of Finance responsible for the management of state property. The Marine Department constructs most of the port owned by the Treasury Department. Due to the construction of national budget, ports are defined as state properties, which according to the State Property Act 2518 B.E. (1975 C.E.), specifically, the Ministry of Finance is the owner of state property with the Treasury Department acting as an administrator and management. Currently, the Treasury Department owns a total of 62 ports. These ports include river port and seaport that are managed and operated by other public agencies, such as the Fish Marketing Organization, the Subdistrict Administrative Organization, and Municipal agencies. In addition, there are different objectives, including the port of goods passenger ports, and fishing ports, of which there are eight international cargo ports.

4. Marine Department
The Marine Department has the duty to govern the marine transportation and the construction of the port. The Marine Department is an agency that governs and manages the Sriracha mooring area.

5. Port Authority of Thailand (PAT)
PAT is a state-owned enterprise under the Ministry of Transport. PAT was established in 1951 under PAT Act. B.E. 2494 (1951) with the purpose to operate the port business of Thailand. PAT governs five ports around Thailand such as BKP, LCP, Chiang Saen Port, Chiang Khong Port, and Ranong Port of which only LCP that is managed in the form of a landlord.

BKP is the main port of the country since World War II. It is located on the Chao Phraya River, Khlong Toei Subdistrict, Pak Khlong Phra District, Bangkok, Thailand. The establishment of BKP is of a considerable public interest importance. BKP management model is a service port in the way that PAT owns the land as well as regulating and operating their assets, while BKP provides services in the port, such as cargo handling activities, and warehouses. (World Bank, 2007)

BKP has a limited location both on land and in the water that cannot be expanded anymore. As the fleet used to transport goods between countries is likely to grow steadily, the import and export of the country also continues to increase. The government in that period has the idea of constructing a new deep seaport on the eastern coast of the country. Therefore, LCP was built to support the country's marine trade expansion which has a container volume through 1 in 20 in the world.
Private Ports in Thailand

The development of commercial port operations in Thailand started with the enactment of PAT Act BE 2494. The Act was enacted to establish a state-owned enterprise with the purpose to respond to the port business in Thailand. When international trade has expanded with the increasing number of imported goods that are transported by sea, the government sector has not yet developed a study of the potential of the port under the control of the state to have sufficient efficiency to meet the increasing and complex demands of today. Therefore, these challenges have caused a shortage of ports and warehouses. This issue became a driving force for the exporter or importer or even the shipping line itself. They had to build their ports and warehouses, both on the Chao Phraya River or even create additional ports within the government's port, especially in LCP including around LCP such as Kerry Port Siam Sea Port within the past several years.

To promote and push private sectors to play a role in participating in the operation of the country's commercial port business, the government has issued a policy which allows private sectors to invest in building more ports. Therefore, when private sectors invest in more water transportation systems, it has also caused increased competition. Together with the current system, Marine Logistics has been developed following government policies that were intended to import various export data. A company can be linked and checked to increase the convenience and working speed for all related sectors. Private berths within LCP and Kerry Siam Sea Port have introduced various technology systems which developed the port in accordance with the government's policy and the needs of the growing customers such as Hutchison Port Thailand (HPT) which has decided to invest in the construction of D series berths to extend the success of HPT as a leading port operator company in LCP for over 15 years. This port is also serves as an important gateway to connect with the East Region Economic Corridor Project (EEC) under the Thailand 4.0 strategy that aims to drive the Thai economy to grow and be modernized through the development of innovative economic infrastructure.

Regulation and Policy

The government and private sectors can operate the port-related businesses in Thailand. Regardless of the port being owned by the government sector or the private sector which varies depending on the mission and objectives of the port. In relation to this, according to Harirak (2016), there are relevant laws that may classify the types of operators as follows:
Port Authority of Thailand (PAT) established under the Port Authority Act of Thailand, B.E. 2494, and the 2nd amendment, B.E. 2499, is a state-owned enterprise which is responsible for managing the main ports in Thailand including, BKP, LCP, Ranong Port, Chiang Saen Port, and Chiang Khong Port.

The Thai Navy by virtue of the authority of the Royal Thai Navy on working capital for the management of Sattahip Commercial Port. The navy owns and operates the Sattahip Commercial Port (EEC) which has been returned from PAT. In addition, Sattahip Commercial Port also provides commercial services which operates for a general vessels.

Industrial Estate Authority of Thailand (IEAT) under the Royal Authority Industrial Estate Authority of Thailand Act B.E. 2522, is a state-owned enterprise that manages ports located in Map Ta Phut Industrial Estate, Rayong Province. The private sector leases concessions for port operations, which are 12 ports for liquid products in the petrochemical and general products industries.

The Treasury Department by virtue of the statute under the State Property Act, BE 2518 and the Ministerial Regulations of the Ministry of Foreign Affairs of the Kingdom of Thailand use and find benefits from the state property, B.E. 2545 (revised version) which put the port in the responsibility of the Treasury Department. The Marine Department has created and delivered 50 docks, such as Songkhla Port and Phuket Port.

Private port is a private port owned and operated by a private company. Private port provides services to vessels of varying sizes of more than 500 gross-ton. It is established under the announcement of the Notification of the National Executive No.58, B.E.1972 and the supervision is controlled by the Marine Department which stipulates the conditions for private operators to follow on a case-by-case.

In addition, private ports that have been given concessions by the government and local government ports must apply for permission under the Notification of the National Executive No.58, B.E.1972, which is a general law applicable to ports in general.

1.1 The measures to supervise the port operations
1.1.1 Navigation in the Thai Waters Act B.E. 2456 (1913)
There is a significant issue for the Marine Department to undertake the power to supervise as well as to control the traffic regulation in the area and construction, such as determining the maritime route, the port area, and access from the port area. The essence of the Navigation in the Thai Waters Act B.E. 2456 (Section 117 and 117) is related to direct port control which grants the authority to the Marine Department in determining the criteria and procedures for allowing the intrusive construction in rivers, canals, and rivers, lake or sea area. Therefore, the construction of a port, whether operated by the government agency or private sector, must comply with the Ministerial Regulations on Construction of the Intrusion of Rivers without exception.

1.1.2 Notification of the Ministry of Transport (dated 27 May 1999 and 6 January 2005)
This regulation determines the conditions for the permission to operate port business which is a trading business (Ministry of Transport, 2005).

1.1.3 Port Authority Act of Thailand, B.E. 2494 (1951)
The main objective of the Act is to establish PAT in order to manage the main port of the government. However, the Port Authority Act of Thailand had not been given any authority to supervise the assembly of private or state ports.

1.1.4 Merchant Marine Promotion Act, B.E. 2521 (1978)
The main objective of the Act is to control, maintain and promote maritime commerce in accordance with national policies and measures to be implemented in promoting and protecting the maritime trade of Thailand including sea transportation marine insurance, shipyard operations and the port business, which are essential to the economy and national security.

The operation of the Thai port business is governed by many laws, from different public agencies. The supervision is, therefore, not unified on the same standard and there is overlap in the enforcement. In addition, each government agency is free to operate under the laws related to that agency, which can be either the Port Authority or the Marine Department. Table 2 summarizes port administration in Thailand.

Table 2: Port Administrative in Thailand
2.3 Bangkok Port in particular

BKP is a government port under the supervision of PAT. The location is in the heart of Bangkok and nearby the Khlong Toei community as shown in Figure 1. This location is resulting in limited space for the loading and unloading of products as well as storage space.

Figure 1: BKP area

The area of BKP is divided into 2 parts: The western and eastern dam which consist of docks and container services with a total storage area of 147,600 square meters. There are 16 cranes in front of the terminal that can support a container vessel of the size of 10,000-12,000 DWT. Therefore, most container vessels that use the service at BKP are feeder ships with
cargo sizes approximately 500-1000 TEU. There are departments that take responsibility in the area, which are called: 1) container terminal; and 2) container terminals, which have 1,967 employees.

Administration of BKP

The BKP operates all port activities such as cargo handling, vessel handling, and all supporting activities. BKP also owns the land and superstructure and infrastructure. Figure 2 shows the organization chart of BKP.

Figure 2: Organization chart of BKP

Source: PAT (2018)

2.4 Laem Chabang Port in Particular

LCP is the leading deep seaport for international shipping in Thailand. Located in the eastern part of Thailand with an area of 10,144,000 m², LCP can support the Super Post Panamax. The Port Authority is acting as an overall port management organization while the operations section is privately owned by the operator or called the Landlord Port and LCP operates a second basin (18 berths). For the first basin, the total length is 1,600 meters with the container handling capacity of 4.3 million TEU per year. In the second basin, there are six terminals with a total length of 1,700 meters and has a capacity of 3.4 million TEU per year. For terminals D1-3 that are currently under construction, the total area is 1,700 meters in the front side of the port with a capacity of 3.4 million TEU per year. In total, LCP has the capacity of around 7.7 million TEUs per year (Sumalee, 2011, PAT, 2018).
LCP consists of ports that have been opened as shown in Table 3: List of operators in LCP.

Table 3: List of Operators in LCP

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Private operators</th>
<th>Berth Length (m.)</th>
<th>Water Depth (m.)</th>
<th>Container handling Capacity (million TEU)</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basin 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A0</td>
<td>LCMT CO., LTD</td>
<td>400</td>
<td>-14</td>
<td>0.3</td>
<td>Multi-purpose</td>
</tr>
<tr>
<td>A1</td>
<td>NYK AUTO LOGISTICS THAILAND CO., LTD.</td>
<td>365</td>
<td>-14</td>
<td></td>
<td>Ro-Ro, Passenger</td>
</tr>
<tr>
<td>A2</td>
<td>THAI LAEMCHABANG TERMINAL CO., LTD.</td>
<td>400</td>
<td>-14</td>
<td>0.4</td>
<td>Multi-purpose</td>
</tr>
<tr>
<td>A3</td>
<td>HUTCHISON PORTS (THAILAND) LIMITED</td>
<td>350</td>
<td>-14</td>
<td>0.4</td>
<td>Multi-purpose</td>
</tr>
<tr>
<td>A4</td>
<td>AAWTHAI WAREHOUSE CO., LTD.</td>
<td>527</td>
<td>-14</td>
<td></td>
<td>Molasses &amp; Sugar</td>
</tr>
<tr>
<td>A5</td>
<td>NAMYONG TERMINAL PUBLIC COMPANY LIMITED</td>
<td>359</td>
<td>-15</td>
<td></td>
<td>General Cargo, Ro-Ro</td>
</tr>
<tr>
<td>B1</td>
<td>LCB CONTAINER TERMINAL 1 COMPANY LIMITED</td>
<td>300</td>
<td>-14</td>
<td>0.6</td>
<td>Container</td>
</tr>
<tr>
<td>B2</td>
<td>EVERGREEN CONTAINER TERMINAL (THAILAND) LTD.</td>
<td>300</td>
<td>-14</td>
<td>0.6</td>
<td>Container</td>
</tr>
<tr>
<td>B3</td>
<td>EASTERN SEA LAEM CHABANG TERMINAL CO., LTD.</td>
<td>300</td>
<td>-14</td>
<td>0.6</td>
<td>Container</td>
</tr>
<tr>
<td>B4</td>
<td>TIPS CO., LTD</td>
<td>300</td>
<td>-14</td>
<td>0.6</td>
<td>Container</td>
</tr>
</tbody>
</table>
Administration of LCP

The LCP is under the management of the Port of Thailand and responsible for the overall management, such as port planning and development, supporting private operators and solving problems, as well as facilitating maritime entry and exit. The port service is operated in the form of concessions, such as loading and unloading services, storage of goods, as well as receiving and delivering products to the owner of the goods. Laem Chabang controls the tariff and service fee. Figure 3 shows the organization chart of LCP.

Figure 3: the organization chart of LCP.
2.5 Issues in Bangkok port and Laem Chabang port

PAT is responsible for managing and overseeing the country's important ports of which BKP is considered to be the main port along the river. From all the ports, LCP is the main port of the deep-sea port. Since the beginning, PAT almost monopolizes all the port business in Thailand. There is no competition because the government itself supports the port of the state (Sumalee, 2011). PAT is considered a government agency that must seek approval from the ministry, which causes the operation to be slow, such as the organizational structure adjustment or investing in various port businesses. At present, the government has encouraged the private sector to invest more in the port business, resulting in competition in the market. Figure 4 shows the market share of the port business in Thailand, in which PAT used to have a market share of 91.83% in 2014 and 86.62% in 2018 or decreasing about 5.21%.

Figure 4: Market Share of PAT
BKP and LCP must face the challenges in improving the management within the organization to be able to compete with private sectors. Figure 5 shows the number of throughputs which pass through LCP and BKP from 2012 to 2018.

Figure 5: Number of Container Throughput of LCP and BKP from 2012 – 2018

The overall growth rate of container throughput of BKP has remained the same while the market share of the river port market in Thailand has decreased from 83.98% to 72.82% in 2018 or 11.16 % within five years as shown in Figure 6. Meanwhile, the number of major private ports along the Chao Phraya river increased from 3 to 5 ports in the year 2018.

Figure 6: Market Share of a river port in Thailand from 2014 – 2018
For the LCP, the overall growth rate of container throughput has a continuous growth rate. However, the growth rate from 2017 in 2018 has slowed down to 4.4%, unlike 2017 which was 8.7%. In the market share, the same competitors in the market, and new players have increased their market share from 2% to 8% while the market share of LCP has decreased as shown in Figure 7. Allowing the use of private berths to transport international goods causes the LCL to lose revenues and market shares.

![Figure 7: Market Share of a Seaport in Thailand](source: PAT (2018))

While the government has encouraged private sectors to invest more in the port business to support the expansion of the Thai economy, the potential development of the public port is still delayed and unable to respond to current changes quickly, which affects the private port owners in LCP. For example, the marketing strategy of the private port focuses on cheaper tariffs of the services to attract ship liners while private operators in LCP cannot set prices as low as the public port outside LCP because they have a "fixed fee". This is because the proportion specified in the contract for LCP causes the operators in LCP to have a higher unit
cost. This problem causes unfair competition and dissatisfaction to the operators in LCP. The increasing growth rate of private port container throughput has caused a concern amongst the operators in LCP. In general, the reputation of PAT affects the attractiveness of investors. Reputation is often associated with the scope of the mechanism to build confidence in fair competition between various agencies competing in the port (Bennett & Gabriel 2001).

Moreover, the signing of the 9th ASEAN Framework Agreement on Services (AFAS) has resulted in more foreign investors coming to operate in Thailand in addition to the operations of the port and related businesses that have already been signed, such as boat rental, international cruise shipping services, warehouse and warehouse services, which will create a higher competition in the country and can affect the business of the PAT in the future.

The authority in granting permission to build the port lies in the Marine Department, which is specified in accordance with the Navigation in the Thai Waters Act B.E. 2456 and the use of building constructions that encroach on waters without restriction in construction which directly affects LCP. The unclear administration of government agencies resulted in no integration between government agencies in creating justice for all parties. Table 4 shows the summary of port policies which apply to LCP and Private Port.

**Table 4: Port Policy which applies with LCP and Private Port**
In terms of operators in LCP, they have to pay an additional cost referring to a contract that cannot be reduced. Therefore, users tend to use cheaper services. This issue has not been resolved until today because LCP does not have the authorization to control other private ports outside the area of LCP.

In addition, the human development and the capacity of the current employees may not be consistent and able to respond quickly to competitive conditions and external changes. There are also problems in linking information between internal departments and external government agencies, including the information technology system is still unable to respond to the needs and create convenience for customers/users in order to achieve effective management of services and to achieve satisfaction. The services of internal and external customers are both lacking in the customer information management system and marketing information.
1.5 Summary

From the problems that both BKP and LCP are facing, it can be seen that this is a matter of the expansion of private ports as a reason causing both ports under the supervision of the PAT to lose the market share to private ports and are likely to lose more in the future. When considering the background of the law on corporate governance in Thai ports, there is a law that regulates the supervision of the port business but only touches a few issues.Considering the business condition of maritime business at present, it is seen that the laws of Thailand are competent in such matters. Nevertheless, it is not yet covering the marine business. Furthermore, it can be seen that the responsible agencies have a wide variety. Therefore, it can be concluded that Thailand governs complicated issues.
Chapter 3 Literature review: Port Governance Model

3.1 Introduction
Governance is the continuous control of government agencies and focuses on the activities that benefit the community. The government sector uses these regulatory mechanisms as the tool to control its own operation or the operation of private sectors (e.g., LCP) such as the State Enterprise Policy Office or the Office of the State Enterprise Policy Committee. For the governance of the overall port business, it is possibly different from general governance due to the difference in the nature and condition of the operating activities. Both segregations of duties and responsibilities are different types of operations, such as the operation of the Singapore Port, BKP and LCP. They are differentiated into public and private port management and by river and sea conditions. Therefore, the form of port business management is varied. The matter that should be considered in the next order is the level of appropriateness in the management of the use of laws and regulations in management that are as diverse as the operations of the port itself. In order to form the suitable operation for each port, the management has to be in various forms which must be consistent with the geography operation model that includes various factors, both internal and external, to be considered all together so that each port can create equal and fair competition.

3.2 Port Administration and Ownership
The World Bank (2007) defines the characteristics of port governance structure by distinguishing it from its ownership and operation structure. It has four main categories, including service port, tool port, landlord port, and fully privatized ports.

1. Public Service Port
The Port Authority owns the land and all available assets as well as operating port activities such as cargo handling, stevedoring operation, and vessel handling. The Port Authority performs the regulatory implementation and functions of the port as well as taking responsibility for port administration. Public service ports have declined in recent years all around the world and have become fully public service port such as BKP.

2. Tool Port Model
In the Tool Port model, port operation equipment is usually operated by workers of the Port Authority, but other operations are operated by private shipping companies which are often small companies while the infrastructure and superstructure are maintained by Port Authority.
3. Landlord Port Model

In Landlord Port model, the ownership belongs to PA. PA plays the role of regulator and leases the port activities operations to a private operator. PA provides the land and the infrastructure maintenance while most of the private operators construct superstructure, including maintenance, warehouses, and buildings i.e., LCP, Thailand.

4. Fully Privatized Ports Model

The fourth category of port governance model is fully privatized ports which is owned and operated by private sectors. Private sectors perform all port activities and regulation implementation. Private ports develop and maintain all infrastructures and superstructures in their ports.

The responsibility of Port Governance model is summarized in Table 5.

Table 5: Responsibilities for Port Governance Model

<table>
<thead>
<tr>
<th>Type</th>
<th>Infrastructure</th>
<th>Superstructure</th>
<th>Port labor</th>
<th>Other functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public service port</td>
<td>Public</td>
<td>Public</td>
<td>Public</td>
<td>Majority Public</td>
</tr>
<tr>
<td>Tool port</td>
<td>Public</td>
<td>Public</td>
<td>Private</td>
<td>Public/Private</td>
</tr>
<tr>
<td>Landlord port</td>
<td>Public</td>
<td>Private</td>
<td>Private</td>
<td>Public/Private</td>
</tr>
<tr>
<td>Private service port</td>
<td>Private</td>
<td>Private</td>
<td>Private</td>
<td>Majority Private</td>
</tr>
</tbody>
</table>


Baird (1997) categorizes port administration by proposing port function matrix including regulation function, landlord function and operation function which point out four main schemes in terms of port administration, ownership, management and operations. The four main schemes can be divided into Public, Public and Private, Private and Public and Private (Song & Cullinane, 2017).

Table 6: Port Function
The second and third forms shown in Table 6 are characterized as state-owned enterprises representing the government and private agencies. Public characters relate to three main features, namely created by the government, power of attorney, and public ownership. The nature of the organization provides market orientation and includes four properties of market performance in commercial operations which set the operational goals based on user fees for operating income and capital markets for construction funds. In general, each operation requires the independence of the structure from the government. Moreover, port ownership can be determined in terms of port facilities providers and services (Song & Collinace, 2017).

Management and ownership can be separated as private and public and mixed ownership; and administrative owned infrastructure, superstructure or land, as well as in terms of regulatory aspects such as regulation, landlord and operation.

3.3 Port Governance
Governance is the acceptance and enforcement of rules that control behavior and property rights and may be determined by the government or used voluntarily by groups or associations (Brooks & Pallis, 2012). The OECD defines governance as the use of political, economic, and administrative powers necessary to manage the affairs of the country. In addition, governance is a concept that can be applied to more than one cooperation. The governance principles apply to all relationships between public, private agencies, and their stakeholders. (Brooks & Cullinane, 2007).

Port Governance is used to achieve the objectives so as to increase service levels for infrastructure users as well as improving and operating limited public funds allocation effectively (WorldBank, 2007). In relation to this, Zhang, Zheng, Geerlings and El Makhloufi
(2019) conducted a study to gather data from the studies related to port governance which shows the evidence supporting that the main purpose of port governance is to improve the efficiency and effectiveness of the port operations.

According to the World Bank (2007), the concept of port governance is divided into four categories including public port, tool port, landlord port, and private use as a tool for finance, regulation, and operation. In addition, Zhang, Zheng, Geerlings and El Makhloufi (2019) made a summary of the port governance tools, which are divided into three levels that consist of institution level, strategy level and managerial level as shown in Table 7. Institution level mainly supports the fundamental infrastructure of the port in terms of regulation where the government takes responsibility at this level. The strategy level focuses on port business and management and the managerial level serves as a tool that is used to improve efficiency and effectiveness of ports.

Table 7: Port Governance Tools Categorized by Level

<table>
<thead>
<tr>
<th>Level</th>
<th>Governance Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional level</td>
<td>1. Devolution</td>
</tr>
<tr>
<td></td>
<td>2. Port re-centralize</td>
</tr>
<tr>
<td>Strategy level</td>
<td>1. port co-opetition</td>
</tr>
<tr>
<td></td>
<td>2. port regionalization</td>
</tr>
<tr>
<td></td>
<td>3. port integration</td>
</tr>
<tr>
<td></td>
<td>4. stakeholder management strategy</td>
</tr>
<tr>
<td></td>
<td>5. corporate governance</td>
</tr>
<tr>
<td>Managerial level</td>
<td>1. port pricing</td>
</tr>
<tr>
<td></td>
<td>2. port concession</td>
</tr>
<tr>
<td></td>
<td>3. port user/customer relationship management monitoring and measuring</td>
</tr>
<tr>
<td></td>
<td>4. regulatory control</td>
</tr>
<tr>
<td></td>
<td>5. Port security management</td>
</tr>
<tr>
<td></td>
<td>6. Information and communication technologies</td>
</tr>
</tbody>
</table>

Source: Zhang, Zheng, Geerlings & El Makhloufi (2019)

3.4 Role of PA in Different Port Governance

PA can be defined as an institution with the objective under national law or regulation to administer and, manage port infrastructure as well as coordinating and controlling the activities inside the port. Regardless of the ownership and management traditions that they belong to, PA is a hybrid natural institution that has legal elements in both public and private sectors (Verhoeven, 2010).

In recent years, the idea of port devolution has been widespread all around the world. This change has affected the role and function of the traditional PA. PA is expected to play a
proactive role in increasing freight and economic growth in the region by managing the overall operation of the port strategically to the port customers (Chen, 2009). Thus, PA must build a platform to work with the port community and provide high-level competition in the market (Notteboom & Winkelmans, 2001).

Baltazar and Brooks (2001) identified port-related activities in the Regulator, Landlord, and Operator activities. According to Baird's work, the traditional function of PA shown in Table 8.

Table 8: Baltazar and Brooks' Port Devolution Matrix

<table>
<thead>
<tr>
<th>Governance</th>
<th>Regulator Functions</th>
<th>Port Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Licensing, permitting</td>
<td>- Waterside maintenance (e.g., dredging)</td>
</tr>
<tr>
<td></td>
<td>Vessel traffic safety</td>
<td>- Marketing of location, development strategies, planning</td>
</tr>
<tr>
<td></td>
<td>Customs and immigration</td>
<td>- Maintenance of port access</td>
</tr>
<tr>
<td></td>
<td>Port monitoring</td>
<td>- Port security</td>
</tr>
<tr>
<td></td>
<td>Emergency services</td>
<td>- Land acquisition, disposal</td>
</tr>
<tr>
<td></td>
<td>Protection of public interest on behalf of the community</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>· Determining port policy and environmental policies applicable</td>
<td>· Cargo and passenger handling</td>
</tr>
<tr>
<td>Mixed Public/Private</td>
<td>· Licensing, permitting</td>
<td>· Pilotage and towage</td>
</tr>
<tr>
<td></td>
<td>· Vessel traffic safety</td>
<td>· Line handling</td>
</tr>
<tr>
<td></td>
<td>· Customs and immigration</td>
<td>· Facilities security</td>
</tr>
<tr>
<td></td>
<td>· Port monitoring</td>
<td>· maintenance and repair</td>
</tr>
<tr>
<td></td>
<td>· Emergency services</td>
<td>· Marketing of operations</td>
</tr>
<tr>
<td></td>
<td>· Protection of public interest on behalf of the community</td>
<td>· Waste disposal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Landside and berth capital investment</td>
</tr>
</tbody>
</table>


Regarding port administration, Baird (1997) defines the role of PA into four types as follows:

In the PUBLIC Port, where PA controls all three functions as regulator, landlord, and operator. BKP would be an example of this type of port since all the port activities are operated and managed within the port. The labor force is also employed by the BKP.

In the PUBLIC/Private port or landlord port, PA controls most of the port activities, including land ownership and regulatory while the cargo handling is operated by the
private sector. This type of port has the ability to allow private sector management to manage the efficient handling of cargo to integrate with the public interest and general users. The examples of PUBLIC/Private port are the Port of Antwerp and the Port of Rotterdam.

In the PRIVATE/Public port, both operator function and land ownership are controlled by the private sector while regulation functions are controlled by PA. The Port of Hongkong is an example of this type of port as the private sector build their own terminals, but the responsibility for regulation and planning of new port belongs to the Hong Kong Marine Department.

In the PRIVATE port, all the functions including regulation, landlord, and operation are in the hands of the private sector. An example of this type is the ports in the UK such as Port of Manchester, Ports Portfolio of Associated British Ports and the Port of Liverpool.

Verhoeven (2010) identified a new role of PA in the renaissance after reviewing economic literature. The new role of PA would lead to community management. PA has to act as a coordinator to develop a relationship with transportation nodes as shown in Figure 8.

![Figure 8: A review of PA function](image-url)
De Langen and van der Lugt (2006) mentioned that the change in PA environment in the Netherlands has caused changes in the governance and strategy of the seaport. For the three major ports in the Netherlands, the cooperation with nearby ports and the efforts to provide professional portfolios are important issues. In addition, these three ports have also developed new activities in order to play a greater role in increasing the competitiveness of ports i.e., the main responsibilities of the port of Rotterdam focus on development, maintenance and support of safe and sustainable ports (Port Marketing, Investment in hinterland transport facilities).

The consequences of increased participation of the private sector in the operation and management of the port have resulted in the change on the mission of PA to focus primarily on the following five main functions (De Monie, 1994):

1) Landlord and performance monitoring function
2) Policymaking, planning, and development function
3) Traffic control, regulatory and surveillance function
4) Marketing, public relations, and promotion function
5) Port training within the human resource development function

The regulatory function is considered as the main role of PA, including the legal authority granted by the port management and including utility functions related to various transfers
such as cargo handling services, warehouse management, and safety. In addition, there are various developments both in marketing and promotional activities (Baird, 1995).

Furthermore, De Langen (2008) divided the main core activities of Landlord PA into four categories:

1) Traffic management focuses on the management of vessel movement, pollution, and security of the ship as well as cargo monitoring and pollution prevention from the ship in port. The example of this activity is a partnership for road and railway traffic management.

2) Area management focuses on developing, planning, and maintenance in the port area, including security environment performance in the port area.

3) Customer management means contacting all customers, including providing concessions to private operators and port marketing.

4) Stakeholder management relates to an activity that is used to ensure an operating license such as investments to maintain a license to operate.
Chapter 4 Methodology

The basic aim of the research is to analyze the role of PA in the hybrid port governance structure. The purpose of this chapter is to introduce the research methodology that is used to achieve the basic objectives of the research.

4.1 Introduction
The overall method of the research methodology being used in this research is the qualitative methodology through a case study method. For the presentation of the research methodology, this section sets the framework and scope of the research methodology as well as important reasons to be applied in this research with a significant summary as follows:

According to Yin (1998), a case study is a research situation in which the number of variables of interest is far greater than the number of datapoints. The selected case must be done to increase what can be learned during the time available for the study. Case studies tend to be chosen focusing on one or two issues that are fundamental to examine the understanding of the system. Yin (1994) proposes the four stage of case study research methodology, namely: 1) design the case study, 2) conduct the case study, 3) analyze the case study evidence, and 4) develop the conclusions, recommendations and implications.

This research is an alternative intrinsic case study through purposefully selecting of the case by choosing BKP and LCP which are under the administrative of PAT. The case study is intended to generalize the findings between public port in Thailand. According to Johansson (2007) the generalization from case studies is based on three principles, namely: deductive, inductive and abductive. In this research, the generalization is based on the abductive principle from the facts and a theory to a case.

4.2 Define and Design methodology
The research has five steps: 1) define the research questions; 2) review the literature review on relevant theories or propositions; 3) definition and selection of case; 4) data collection and analysis from both BKP and LCP; and 5) presentation of conclusion and recommendations. The detailed research steps are illustrated in Figure 9.
This research is mainly focused on four questions:

1) What is the role of BKP and LCP in a hybrid governance structure?
2) Is the role of BKK and LCP appropriate for the competitive market?
3) Why is the landlord model in case of LCP the best model for PAT?
4) How could PAT improve in order to increase the more competitive performance in the future?

After defining the research questions, review on literature is the next step. The theory to define the role of PA is the port governance model in order to see which models are more effective in the same hybrid port governance structure.

The next step is definition and selection of case study. As PAT is administrating five ports around Thailand, there are two port governance models under the administration of the PAT (i.e. fully public service port and landlord port). Since the three region ports including Chiang Saen Port, Chiang Khong Port and Ranong Port have a small volume of cargo, so the main ports in Thailand are BKP and LCP. In addition, BKP and LCP have distinct characteristics in the port management style. The fourth step, the data collection from BKP and LCP are based on secondary data from statistical reports from BKP and LCP, government reports, previous...
literatures, and the official website of PAT. The final step includes cross case conclusion and recommendations, which will be used to give the recommendations to BKP and LCP.

**The role of PA**

The details of the research methodology can be divided into two parts: 1) Analyzing the role of PA in hybrid governance structure: A case study of BKK and LCP 2) Comparing port governance in Thailand by using port performance indicators in terms of financial, operational, and customer.

First, the current roles and responsibilities of BKK and LCP will be review according to PAT Regulations on the Administration of PAT 2017. In order to analyze the role of PA which governs two different types of port governance model (public service port and landlord port), the traditional port function (regulator, landlord, and operator function) will be used to create a framework by adapting Baltazar and Brooks’ port devolution matrix. For the landlord port model, in which the operation side is transferred to a private operator, the two main traditional function remains as regulator and landlord. PA has to develop, maintain, and manage infrastructure and superstructure in the port, including safety and environmental concerns. In addition, the new role of port function that recently occurred in the role of renaissance PA as community manager function will be added into a framework. This is based on the reason that landlord PA should play a proactive role rather than traditional duties to facilitate and connect stakeholders in the logistics network and build core competencies in highly competitive markets using the role of entrepreneurs (Wang & Notteboom, 2015). The activities that fill in the role of community manager as stated by Verhoeven (2010) and the hypothetical typology of port authorities as well as the four core activities of landlord PA in European port (De Langen, 2008), are selected in each function depending on the data available from both BKP and LCP as shown in Table 9.

<table>
<thead>
<tr>
<th>Function</th>
<th>The Role of PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulator</td>
<td>· application and enforcement of rules and regulations (i.e., safety, environmental control)</td>
</tr>
</tbody>
</table>
In the second part, the port performance statistics were collected from the report and special access which will be used as the output of each port. The port performance indicators selected are based on UNCTAD (1976), which divided port performance into 2 dimensions (i.e., financial and operation). UNCTAD (2016) added another dimension, that is customer dimension which shown in Table 10. After completing all the information, the port performance is used to compare and summarize in a matrix pattern.

<table>
<thead>
<tr>
<th>Function</th>
<th>The Role of PA</th>
</tr>
</thead>
</table>
| **Landlord** | - Real estate: maintenance, development, improvement (i.e., waterside maintenance, port asset maintenance, strategy development)  
- To be Business to business (B2B)  
- Provide Emergency Service |
| **Operator** | - application of concession policy  
- performance monitoring  
- Provide services of general economic interest and specialized commercial services. |
| **Community manager** | - Solve hinterland bottlenecks  
- Provide training and education  
- Provide ICT services |

**Table 10: Port performance**

<table>
<thead>
<tr>
<th>Port Performance</th>
<th>Dimension</th>
<th>Indicators</th>
</tr>
</thead>
</table>
| **Operation**    | Crane Productivity  
Container per meter of the quay  
The Berth occupancy |
| **Customer**     | Market share  
The market shares growth rate  
customer satisfaction |
| **Financial**    | Profit  
The average revenue per TEU |
In the last section, the author will present the detailed results from the analysis and comparison of two-port governance models that are applied in PAT. These results are used to find a recommendation to increase the competitive performance in the future.

4.3 Data Collection
The data is collected from PAT, BKP, and LCP. The data mainly comes in different languages including public statistic of BKP and LCP, research reports, annual reports, archival reports, internal audit reports, official websites and other related publications available on the internet as well as publications or previous dissertations related to the concept of theories and related research of the port governance model. The secondary data helps to collect general information on the port, such as its geographic feature, port size, institutional structure, activities in port and port policies. The information that was collected from the document, annual reports, and, strategic plan report will be used to analyze the role of each port which is divided into four functions, ie as a regulator, landlord, operator, and community manager that have been identified.
Chapter 5 An Analysis of the Role of BKP and LCP

5.1 The role of BKP

5.1.1 According to PAT regulations on the Administration of PAT 2017.

The structure of BKP consists of 3 main departments, which are divided into 12 divisions that are responsible for managing the BKP in accordance with its assigned duties and responsibilities, which are summarized in Table 11 as follows:

<table>
<thead>
<tr>
<th>Table 11: Responsibility of BKP based on an organization chart</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Division</strong></td>
</tr>
<tr>
<td><strong>Inspect and certify product weighing based on actual conditions and control the loading and unloading of goods from truck operators or offshore vessels register and the person carrying goods or loading and unloading of foreign vessels in accordance with the Ministerial Regulations. Product arrangement set, product storage location as well as to facilitate other transportation and handling services for users. Responsible for the rental of space and buildings within the customs fences of BKP.</strong></td>
</tr>
<tr>
<td><strong>Ship and Cargo Operations Department</strong></td>
</tr>
</tbody>
</table>
| **Cargo Operations Division 1 – 3** | • Services and facilitates vessels loading and unloading of passengers, receives products from the boats, keeps products and operates coastal ports and transports in the country.  
• Delivers products, containers, and storage, container loading, outbound containers, delivers goods to consignee and controls labor and tools equipment at work. |
| **Warehouse Division** |  

35
<table>
<thead>
<tr>
<th>Division</th>
<th>Responsibility based on an organization chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Container Terminal Division 1 - 2</td>
<td>Planning control of container system for delivery, delivery as well as loading and unloading of both inbound and outbound containers. Log information about vessels and containers, information work, inspecting containers port and yard loading operations. Control the arrangement of equipment and labor in the container system and determine the operation methods in the container system.</td>
</tr>
<tr>
<td>Harbour Services and Mechanical Handling</td>
<td></td>
</tr>
<tr>
<td>Harbour Service Division</td>
<td>Providing docks, buoys, main mooring, tug boats and communicating with foreign vessels entering and leaving the port.</td>
</tr>
<tr>
<td>Mechanical Handling Equipment Division</td>
<td>Providing rental and inspection of equipment responsible to undergo cycle maintenance or as specified in the manual of tools.</td>
</tr>
<tr>
<td>Mechanical Handling Equipment Repairing and Maintenance Division</td>
<td>Repair, maintenance and improvement of equipment and tools.</td>
</tr>
<tr>
<td>Support Services Administration Department</td>
<td></td>
</tr>
<tr>
<td>General Administration Division</td>
<td>Carry out business development and dangerous goods.</td>
</tr>
<tr>
<td>Security Division</td>
<td>Security of property, building, location, as well as accident control of persons and accidents within the BKP area including the security of the ship entering the port.</td>
</tr>
<tr>
<td>Occupational Safety, Health and Environment Division</td>
<td>Determining policies, planning and formulating projects and measures as well as governing and monitoring the occupational health and safety, and environment in accordance to other relevant policies and laws. Promote and give advice related to the environment. Occupational health safety and establishes</td>
</tr>
<tr>
<td>Division</td>
<td>Responsibility based on an organization chart</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>social and environmental projects at BKP, collecting rules and information to be used in policy formulation management.</td>
</tr>
</tbody>
</table>

The Ship and Cargo Operations Department consists of 6 divisions with the duty to provide services and facilities for vessels carrying goods and passengers as well as deliver goods to the consignee, including goods across borders, parole products, dangerous product residue, auction products and automobile products.

Harbour Services and Mechanical Handling consists of 3 divisions are which responsible for providing services and facilitating posture, energy-saving tools and towing boats as well as maintenance.

The Support Services Administration Department consists of 3 divisions with the duty to manage and operate BKP in terms of supplies, administration, business development, dangerous goods, security, accident prevention, occupational health and environment. Further, it is responsible for establishing environmental measures and, studying environmental impacts of various projects including providing pollution control and prevention.

5.1.2 Analyze the role of BKP by PA function

The role and responsibility of LCP is categorized by following the traditional port function and the new function that was mentioned in Chapter 3, as follows:

**Regulator function**

Compliance with the laws and standards relating to international port operations to ensure that the port does not have negative impacts on society. BKP has established various policies in order to strictly comply with all relevant laws and regulations regarding operations, including quality, safety, occupational health and environmental policies including the implementation of regulations related to the environment and relevant international standards such as the Notification of PAT regarding the Storage and Treatment of Waste from Ships, Types of Waste from Oil at the Mooring Port of PAT, Notification of PAT on Practices Regarding the Management of Waste from Ships in BKP.
Area, PAT Regulations on the Practices Regarding Dangerous Goods of BKP 2016, and the Announcement of PAT Subject: Do Not Throw Away Oil Contaminated with Chemicals, Wastewater, Ballast, or Other Dangerous Toxic Substances, including Sewage or Hazardous Waste in Rivers or the Sea in the Area of PAT.

In addition, PA has implemented a standard system for occupational health and The Port Safety, Health and Environmental Management System: PSHEMS is a combination of 3 standard, i.e. Quality Management System (ISO 9001), Environmental Management System (ISO 14001) and Occupational Health and Safety Management System (OHSAS 18001). In order to provide services that comply with the International Convention on the Prevention of Pollution from Ships (MARPOL73 / 78), the Environmental Quality Promotion and Conservation Act of 1992 and the Code of Safety Regulations and the International Ship and Port Facility Security Code (ISPS Code) to ensure its systematic operations including quality, safety, occupational health and environment by collaborating with internal and external agencies to enforce laws and regulations such as the Marine Department, the Department of Labor, the Ministry of Transport, Khlong Toei District Office and the community around BKP.

**Landlord Function**

BKP has a medium and long-term plan of real estate maintenance and development, which is defined in government policies, such as road improvement, power plant renovation, water supply system, the responsibility for waterside maintenance and improvement, and dredging

BKP is a city port located nearby the center of the Bangkok area. BKP has a total area of 3,764,800 m², with approximately 1,508,800 m² of operation area. The BKP area has not yet been formulated to be suitable and standardized for the container service system, resulting in the management and supervision are not being fully effective. BKP has to bear the burden of quite high operating expenses which makes it impossible to create a worthwhile financial return when compared to the value of the land. Moreover, BKP has traffic congestion problems around the port. As a result of this traffic congestion, BKP has suffered from the decline amounting to 1.34 million TEU since 1991.

BKP has faced the problems with the slum community living in the BKP area causing the development of the area even more difficult. A project to transform the area to be a Smart Community, as reported by PAT, has the policy to develop the potentials to utilize the assets for maximum efficiency while at the same time, manage and improve the quality of
life of the community around the harbor. BKP has created housing in relation to this for 13 communities with 13,000 households.

BKP’s revenues from the real property are at 0.25% compared to the total revenue which is considered to be a very small proportion. Therefore, BKP has a development plan to establish an affiliated company in order to effectively manage the return on assets to appropriately strengthen its financial organizations.

The Exported Container Freight Station has a project to develop containers for export. The construction of the CFS EXPORT (Off-Dock Container Freight Station) is the construction of a new packing facility for ship agents and freight forwarders in order to provide convenient storage facilities. With this construction, the exporters have a working environment where the stored products are safe from loss and the problem of flooding, especially the products in the electronics industry and light group industry such as electrical appliances, food industry, and exports. Moreover, BKP has a project to develop the connection route between BKP and Expressway Bang Na-At Narong Line (S1) to increase the efficiency of transportation services and solve traffic problems around BKP.

In addition, BKP established a small enterprise export promotion center to provide information and advising services as needed for small entrepreneurs who wish to export their products via BKP and it is responsible for facilitating as well as coordinating with export-related agencies for small exporters.

**Operator Function**

BKP has the primary duty to provide services for vessel and goods, dredging maintenance, navigation channel on the Chao Phraya River and the marina control of loading and unloading of goods/containers including keeping the products waiting for delivery to the customer.

BKP has a development project, the Export Container Freight Station, which will be an additional activity that will create more value in the future. The exported container freight station will be a large distribution center in Bangkok and its vicinity that is located adjacent to the expressway, resulting in lower container freight charges which will be a benefit for users as well as expanding various types of warehouse services to support the needs of a more diverse customers.

**Community Manager Function**
BKP is a port that has an area adjacent to the country's capital causing the traffic around the port to get congested. BKP has solved the problem by developing a connection route between BKP and the Expressway Bang Na-At Narong Line (S1) to increase the efficiency of transportation services and solve the traffic problems around the BKP for the purpose of venting outbound trucks heading out to Bang Na-Trat Road and inbound trucks coming to Bangkok. This method will reduce the impact of road traffic on the roads of Bangkok and its surrounding provinces including reducing distance sticking time and trucking time.

BKP is sharing their knowledge and skills in the use of cargo handling equipment and also firefighting training programs to schools and communities around BKP. Moreover, BKP has a career promotion project within the Khlong-Toei community. For the ICT service, BKK has an integration project for linking the customs clearance documents and the request to bring the container to the BKK customs area with a certification of the total weight of the container for export through National Single Window (NSW). In order to improve and develop the data linking system, the BKK and the NSW system of the Customs Department should be integrated to have the same standard. The technology helps to reduce the steps in the work process including facilitating international trade exporters.

In addition, in terms of administration to create social value, BKP is strict in complying with various regulations and the implementation of international standards as well as quality control of the environment and operational safety to the standard level in order to not affect the staff, users and the community around the port such as the construction of docks or the implementation of various projects. BKP has prepared an Environmental Impact Assessment (EIA) report as a plan and prepared measures to prevent and solve environmental problems that may occur at the beginning of the project to prevent environmental problems affecting the society and the surrounding community. BKP requires that all projects, especially large projects, should conduct an analysis of social and environmental impacts under the law, for example the construction of 20G project and another port project. Moreover, BKP does public relations measures to communicate with the society and communities to raise the awareness and confident level of the service, including current and future operations.

5.2 The Role of LCP

5.2.1 According to PAT Regulations on the Administration of PAT 2017.
The roles and responsibilities of the LCP is carried out according to PAT Regulations on the Administration of PAT 2017. The organization chart shows the three main functions that are detailed as the office of support service administration which consists of five divisions. It is responsible for marketing management, public relations, and legal. The office of operation has two divisions that are responsible for providing services to ships in the LCP area, such as towing vessels, including communication with ships entering and leaving the port which can provide summaries of responsibilities based on the organization chart according to Table 12.

Table 12: Responsibility of LCP based on the Organization Chart

<table>
<thead>
<tr>
<th>Division</th>
<th>Responsibility based on the Organization Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Office of Support Service Administration</strong></td>
<td></td>
</tr>
<tr>
<td>General Administration</td>
<td>Administrative work and marketing including promotion</td>
</tr>
<tr>
<td>Planning</td>
<td>Collect data for the research and development of LCP to study and control the environmental impacts. Follow up and evaluate the performance of LCP relating to state enterprise evaluation variables.</td>
</tr>
<tr>
<td>Personal</td>
<td>Conduct human resource management activities, including job retention, salary, job, and welfare.</td>
</tr>
<tr>
<td>Financial</td>
<td>Conduct financial and accounting in general including financial position report, payment, collecting the burden and benefits, registering and checking disbursement of various types</td>
</tr>
<tr>
<td>Legal and Property Proceeds</td>
<td>Contract management, legal and contractual actions cases, investment cases, offering opinions on legal issues and regulations, maintenance of land boundaries, and collecting benefits from land and buildings.</td>
</tr>
<tr>
<td><strong>Office of operation</strong></td>
<td></td>
</tr>
</tbody>
</table>
Marine service division provides services to vessel in the LCP area, including communicating with vessel entering and leaving the port, together with other agencies involved in oil spill removal at sea.

Engineer division has the responsibility for planning and controlling the construction and maintenance of buildings, utilities, and sanitation in the area of LCP, houses, and various places as well as electrical installation wiring, electrical system installation, repair, and maintenance of electrical equipment (i.e., machinery power tool, land vehicle, arrange car service buses and trucks technician).

Division of cargo collects information of container, operation, the number of containers throughput, passenger, dangerous goods, and other activities of the contracting party to collect compensation, benefits processing, preparing statistics, cargo containers, passenger goods, and dangerous goods for administrative purposes, research and development including control work inspection and coordinate all security operations in the LCP area, as well as formulate strategies and create strategies to prevent and mitigate accidents in general situations and emergencies.

The office of support service administration consists of five divisions that take various responsibilities, including strategies planning, human resources management, information and technology, and financial matters. The planning division provides information for research and development plan of LCP as well as monitoring environmental impacts. The personal division has the responsibility for human resource management including job rotation, salary, and welfare while the other human resources management activities belong the Human Resources Department of the PAT including job analysis and training. The Legal and Property Proceeds is responsible for the legal and real estate management. Marketing and promotion belong to the General Administrative Division with administrative work.

According to studies, it is found that the marketing in LCP is not directly a responsibility of the General Administrative Division. The marketing plans come from a group of executives from various departments together. There must be an agenda meeting and it
is not assigned to any department to specially handle. Therefore, the marketing of LCP is not very effective.

5.2.2 Analyze the Role of LCP by PA Function

The role and responsibility of LCP is categorized by following the traditional port function and the new function that was mention in Chapter 3 as follows:

**Regulator function**

LCP plays a regulatory role by cooperating with government agencies that issue rules and regulations, such as the Marine Department, the Custom Department, and Disease Control. In addition, LCP issued a policy that was implemented from rules and regulations to monitor the operations in the port on both safety and the environment.

LCP has issued a Green Port policy that aims to reduce CO2 emission from activities within the port by 10% within the fiscal year of 2019. LCP supports the reduction of carbon emission (CO2 emission) and energy-saving activities, including promoting the overall environmental quality of the port to meet international standards. Moreover, LCP adopted the Safety, Health, and Environmental Management System (PSHEMS) standards system in port, which combines three standard systems, namely the Quality Management system (ISO 9001), Environmental Management System (ISO 14001), and Occupational Health and Safety Management System (OHSAS 18001). On the safety side, LCP operates in accordance to the International Ship and Port Facility Security (ISPS) Code, in collaboration with the Marine Department. On the enforcement of environmental and security regulations, in the case of the occurrence of an event, LCP will send a letter to warn and take further action.

**Landlord Function**

The revenue of LCP mainly comes from the tariff basis on the average of around 62% and from the real estate on the average of around 7%. LCP has a medium and long-term plan of maintenance and development of the real estate, which is defined in government policies such as road improvement, power plant renovation, and water supply system to support the port expansion as shown in the organization plan.

The improvement of the basic utility system of LCP is conducted to help solving traffic congestion and reducing the risk of accidents by improving the road surface, parking lots
and the railway from asphaltic concrete type to a 28 cm thick reinforced concrete, which can support the weight of not less than 3,800 tons/square meter with higher durability. This will be more valuable for long-term use. It also helps to reduce the time to repair damaged roads.

The development of the railway freight center is also conducted to support the transportation of goods by a railway system. At present, the proportion of hinterland container transportation is mostly using road transportation at 88% only 7% is using the railway system and another 5% is transported by the river as the ability to transport containers by a railway system is approximately 500,000 TUU per year. Therefore, the development of railway transportation center will be another option for those who use the service. In addition, there are development plans for the Intra Port Movement. Construction of the coastal terminal (Pier A) is provided specifically for the coastal port which can support the increasing number of containers throughput in the future. Figure 10 shows the picture of the coastal terminal (Pier A). Considering that port is the destination of goods transportation between the seaport and the river port, the development of this terminal is intended to change the mode of transportation from road to railway and waterway in order to lower the country's overall logistics cost.

Figure 10 : Development project of the coastal terminal (Pier A)

Source: LCP (2019)

LCP has proceeded to develop the LCP Phase 3 in order to be able to support the country's economic growth. This expansion will support the import-export sector as the country's main trading gate and enable it to be opened for service in time by increasing the capacity to support containers at approximately 11 million TEU per year (Phase 2) to
18 million TEU per year (Phase 3). It will be able to support the amount of container through railway at an additional of 4 million TEU by operating under the Private Investment In-State Undertaking Act, B.E.2556 (2013).

As a landlord, LCP plays the role as an intermediary between the service provider and the port customer. The LCP has conducted public relations media to promote the service available in LCP. A project of the LCP, the HO and Office Space, which has operated under a one-stop service concept to attract business owners and entrepreneurs. The space areas will be used for import-export businesses such as financial institutions, insurance companies, shipping agents, freight forwarders, customs houses, brokers, and packing.

In addition, LCP has a department responsible for direct emergency management. They conduct the dredging of the canal from the open sea to the port with the installation of signs and signal lights for navigation to support the service of large vessels in line with the expansion of the world economy. LCP also established the Oceanic Control Center Building for communication, monitoring (Marine Surveillance) and controlling the water traffic by radar, the MF / HF DSC radio system, and the VHF / DSC and the VTS computer system, this will help in preventing danger from waves while the ship is loading goods and also monitoring of water patrols within the waters of LCP and preventing outsiders from entering restricted areas.

Operator Function
The role of LCP in the operation function is referred to in the concession policy which was issued as a contract between LCP and private operators. The concession agreement specified the income and performance requirements. The operator must perform according to the target in the contract, specifically to general matters with the problems found in the terms specified in the concession. Therefore, LCP cannot proceed to amend the matters that are not listed in the contract, such as traffic jams that occur with each terminal. In terms of setting goals to maintain the operating results, the matters have been defined in the concession contract and has a department to monitor the operations of the entrepreneurs in accordance with the inspection plan in the case that it is found that the operator is unable to proceed with the obligations as planned (proceed to send a warning letter).

Apart from the core activities, LCP provide services of general economic interest which are Single Rail Transfer Operator (STOR) and development project of the coastal terminal
(Pier A), which offer an alternative for service users and increase the competitiveness of Laem Chabang Port.

**Community Manager Function**

*Hinterland bottleneck:* A port is the starting point of a connection to land, and the way from a deep-sea terminal can cause traffic congestion. The substandard infrastructure used as a connection with the land is results in higher logistics costs in the country (Merk & Notteboom, 2015). The study found that LCP had traffic problems for over a decade. There are about 8,000 vehicles passing in and out of LCP per day. In 2019, LCP solved the problem by developing Smart City together with the Office of Digital Economy Promotion (DEPA) with the objective of promoting LCP as a pilot project for the development of the management system "Smart Port" as well as public relations of the project of Truck Queuing to reduce traffic congestion. Smart Port is a pilot project for development which encourages the LCP to focus on increasing intelligent transportation efficiency by linking the multimodal transportation of export and import, including transportation by boat, train, and truck, which will increase the efficiency, convenience, and flexibility in container management. Transport and traffic are important parts of increasing service quality and reducing logistics costs in import-export by reducing traffic congestion and environmental pollution which in turn will increase the quality of life of the parties directly, including the surrounding community expected to be completed by 2021.

For the ICT service, currently, LCP has received container information from the National Single Window (NSW) system and has an information technology system installed at the main gate to link data with the Customs Department's system for electronic container weight and receive information about e-matching container inspection. In addition, LCP also has a project to develop information technology systems for coastal terminal management (Terminal A) and the Rail Transport Center (SRTO) during the fiscal year 2019-2020. Therefore, the development of the container inspection system of LCP by using the information from the above system to support the process to create a report to review the volume of containers entering and exiting at each terminal, by land, rail and coastal vessels will help to count the number of containers that enter and exit the port from the entrepreneurs to be more accurate.

In addition, in terms of administration to create social value, LCP is strict in complying with various regulations and the implementation of international standards as well as in controlling the quality of the environment and operational safety to the standard. It controls level which would not affect the staff, users and the community around the port such as
the construction of docks or the implementation of various projects. LCP have prepared an Environmental Impact Assessment (EIA) report as a plan and prepared measures to prevent and solve environmental problems that may occur at the beginning of the project. In the aspect of social and environmental responsibility, a project called "Conserving mangrove forests and the Laem Chabang coast" was established in response to the royal initiative of His Majesty the King who saw the importance of mangrove forest resource conservation by restoring the balance of the mangrove forest and helping to reduce global warming as well as raising awareness for the youth and the people to realize the importance of conserving natural resources and the environment.

LCP as a form of government administration, it must first seek approval from the government in each field of operation, which requires time and outdated rules, causing the delay in the development of LCP.
Chapter 6 Finding and discussion

Chapter 6 presents the port performance of LCP and BKP for the past five years from the fiscal year of 2014 to 2018 as well as comparing the performance in various areas such as operation, customer and financial.

6.1 Role of PA in Hybrid Port Governance Structure

BKP and LCP are agencies under the Ministry of Transport. They are managed specifically under PAT, which uses the management form of PUBLIC/public or fully public service port and PUBLIC/private or as a landlord port in governance model. Port policy and port management activities are controlled by the Thai government. The Ministry of Transportation in Thailand is responsible for supervising and governing the transportation system in accordance with the government policy. The Marine Department is responsible for governing various ports in accordance with the rules and regulations of the maritime law, environment, and safety. Table 13 shows the relationship between the private and public organization that involves ports which are categorized by function.

Table 13: the relationship between private and public organization

<table>
<thead>
<tr>
<th>Port Function</th>
<th>Regulation</th>
<th>landlord</th>
<th>operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ministry of Transportation of Thailand</td>
<td>Marine Department</td>
<td>PAT</td>
</tr>
<tr>
<td></td>
<td>Private Port</td>
<td></td>
<td>Private Operators</td>
</tr>
<tr>
<td></td>
<td>LCP</td>
<td>BKP</td>
<td></td>
</tr>
</tbody>
</table>
Tables 14 and 15 show the role of BKP and LCP in hybrid port governance structure analyzed by four functions including traditional function (regulatory, landlord and operation) and community manager function as the new role of PA.

Table 14: The Role of BKP in Hybrid Port Governance Structure

<table>
<thead>
<tr>
<th>Function</th>
<th>The Role of PA</th>
<th>The Role of BKP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regulator</strong></td>
<td>Application and enforcement of rules and regulations</td>
<td>- Active proposal and enforcement of rules and regulations through co-operation with government agencies such as Custom Department, Marine Department, and Department of Disease Control. - formulation of rules and regulations such as the Notification of the PAT regarding the Storage and Treatment of Waste from Ships, Types of Waste from Oil at the Mooring Port of PAT, Notification of PAT on the Practices regarding the Management of Waste from Ships in BKP Area, and PAT Regulations on the Practices regarding Dangerous Goods of BKP 2016.</td>
</tr>
<tr>
<td><strong>Landlord</strong></td>
<td>- Real estate Maintenance, Development, Improvement</td>
<td>- Maintenance and improvement of waterside, dredging, road improvement, power plant renovation, and water supply system. - Area development: establish Smart Community for the communities around BKP, develop Exported Container Freight Station, and solve traffic congestion by developing the connection route between BKP and Expressway Bang Na-At Narong Line (S1). - Business to business (B2B) commercial</td>
</tr>
<tr>
<td></td>
<td>- Provide Emergency Service</td>
<td>Provide emergency service such as firefighting, and security center within port.</td>
</tr>
<tr>
<td><strong>Operator</strong></td>
<td>Provide core services</td>
<td>Provide service for vessel and goods, dredging maintenance, navigation channel on the Chao Phraya River</td>
</tr>
<tr>
<td>Function</td>
<td>The Role of PA</td>
<td>The Role of BKP</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and the marina Control of loading and unloading of goods/containers including keeping products waiting for delivery to the customer.</td>
</tr>
<tr>
<td></td>
<td>provide services of general economic interest</td>
<td>Project development of Exported Container Freight Station which will be a large distribution center in Bangkok and its vicinity that is adjacent to the expressway.</td>
</tr>
<tr>
<td>Community manager</td>
<td>Economic dimension</td>
<td>Solve hinterland bottlenecks: Developing connection route between BKP and Expressway Bang Na-At Narong Line (S1) to increase the efficiency of transportation services and solve traffic problems around BKP.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide ICT services: the integration project for the linking of the customs clearance document and the request to bring the container to the BKK customs area with a certification of the total weight of the container for export through NSW.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide training and education: Provide firefighting course and forklift truck training course for the people in the community surrounding LCP.</td>
</tr>
<tr>
<td>Social dimension</td>
<td></td>
<td>Prepare an EIA report as a plan and prepare measures to prevent and solve environmental problems that may occur at the beginning of the project.</td>
</tr>
</tbody>
</table>

Table 15: The Role of LCP in Hybrid Port Governance Structure

<table>
<thead>
<tr>
<th>Function</th>
<th>The Role of PA</th>
<th>The Role of LCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulator</td>
<td>Application and enforcement of rules and regulations</td>
<td>Application and enforcement of rules and regulation in cooperation with other government agencies such as Custom Department, Marine Department, and Department of Disease Control. The rule and regulation mainly set by other agencies while the penalty is specified in a concession contract.</td>
</tr>
<tr>
<td>Landlord</td>
<td>- Real estate Maintenance, Development, Improvement</td>
<td>- Maintenance and improvement of waterside, dredging, road improvement, power plant renovation, and water supply system. - Area development: Expand project LCP Phase 3 on the intra port movement. Construction of the coastal terminal</td>
</tr>
<tr>
<td>Function</td>
<td>The Role of PA</td>
<td>The Role of LCP</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and the railway freight center to support the transportation of goods by railway system.</td>
</tr>
<tr>
<td>- Business to</td>
<td></td>
<td>Act as intermediary between the service provider and the port customer. The LCP has conducted public relations media to promote the service available in LCP.</td>
</tr>
<tr>
<td>business (B2B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>commercial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Provide</td>
<td></td>
<td>Provide emergency service such as firefighting, and security center within the port.</td>
</tr>
<tr>
<td>Emergency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- application of concession policy</td>
<td>The concession agreement which specifies income and performance requirements. The operator must perform according to the target enlisted in the contract which specify only general matters with the problems found in the terms specified in the concession.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Provide services of general economic interest and specialized commercial services.</td>
<td>Provide services of general economic interest such as Single Rail Transfer Operator (STOR) and Development project of the coastal terminal (Pier A). SRTO and the development of the coastal terminal (Pier A) offer an alternative for service users and increase the competitiveness of Laem Chabang Port.</td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td></td>
<td></td>
</tr>
<tr>
<td>manager</td>
<td>Economic</td>
<td>Solve hinterland bottlenecks: Provide truck queuing system to reduce traffic congestion, construct the coastal terminal, and the railway freight center to support the transportation of goods by railway system.</td>
</tr>
<tr>
<td></td>
<td>dimension</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Provide ICT services: Received container information from the National Single Window (NSW) system and has an information technology system installed at the main gate to link data with the Customs Department's system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide training and education: Provide firefighting course and forklift truck training course for the people in the community surrounding LCP.</td>
</tr>
<tr>
<td></td>
<td>Social</td>
<td>Prepare an Environmental Impact Assessment (EIA) report as a plan and prepare measures to prevent and solve environmental problems that may occur at the beginning of</td>
</tr>
<tr>
<td>Function</td>
<td>The Role of PA</td>
<td>The Role of LCP</td>
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<tr>
<td></td>
<td></td>
<td>the project in the aspect of social and environmental responsibility</td>
</tr>
</tbody>
</table>

### 6.2 Comparing Port Governance Model: BKP and LCP

This discussion provides the comparison of the port governance model by using the port performance of LCP and BKP for the past five years from the fiscal year of 2014 to 2018 as well as comparing the performance in various areas such as operation, customer and financial. In each aspect, the discussion will show the past and present performance along with analyzing the results of each side because BKP and LCP have different management styles but are under the management of the same organization, that is PAT. Therefore, the use of management styles is quite different which affects the results of operations administration in various fields as well as responding to the needs of diverse customers and changes in current logistics systems to be used as a suggestion to improve the service model that is suitable for LCP in the next chapter.

At present, every country around the world is trying to develop an efficient domestic logistics system to promote international trade which is considered a key to the country’s economic growth. The transportation process is one of the important factors in the system, especially sea transportation which is a transportation system that can carry a wide variety of products while also having a lower cost than other systems. Considering the sea transportation system, PAT is regarded as an important organization in the water transportation system of Thailand. The port can be divided into 2 types of goods transportation according to the geographical location, that is seaport and river port. According to the ownership characteristics, the port which is owned and operated by the state is BKP and the port that allows the private sector to operate by the government is LCP.

BKP is a river port located on the Chao Phraya river as the main shipping route. Most types of ships that come to use the service are the size of not more than 12,000 DWT, 75% of which are container vessels. Figure 11 shows the number of vessels calling both LCP and BKP from 2014 to 2018.

![Figure 11: Number of Vessel Call](image-url)
BKP is a government port under the supervision of PAT. The location is in the heart of Bangkok and close to the Khlong Toei community. This location results in limited space for loading and unloading of products and storage space.

The area of Bangkok Port is divided into 2 parts: The western and eastern dam which are divided into docks and container services with a total storage area of 147,600 square meters. There are 16 cranes in front of the terminal that can support a container vessel with the size of 10,000-12,000 DWT. Therefore, most container vessels using the service at Bangkok Port are feeder ships with cargo sizes of approximately 500-1000 TEU. There are departments that take responsibility in the area, called 1 container terminal and 2 container terminal with 1,967 employees.

As the Thai economy began to expand, the issues of traffic congestion occurred around Bangkok Port including the limitations of the Bangkok Port area. The government has the policy to build a new port in the eastern region to support the transportation of the continuously increasing products. In addition, the different management system of BKP requires a change in the management model to a private business model to allow greater flexibility in operations.

LCP is a deep seaport operated by private operators. Most of the incoming vessels are 86% container ships with a total storage area of 6,451 square meters, which is able to provide the service for the vessels up to 16 meters in depth or 83,000 deadweight tonnage vessels and has a total of 259 employees. Table 16 shows the comparison of the capacity of LCP and BKP in general.

Table 16: LCP and BKP in general
Port performance indicators are used to measure various aspects of port operations to improve the port performance (UNCTAD, 2004) by evaluating the port performance in 4 aspects (UNCTAD, 2016) and subsequently comparing the results of the operations of Bangkok Port and LCP, which represent 3 sides out of a total of 4 sides (due to the availability of information) which consists of operation, financial and customer aspects.

Figure 12 shows the number of container throughput of LCP and Bangkok Port. The volume of containers at LCP is increasing while the Bangkok Port is likely to be stable. In the year 2018, LCP had a volume of eight million containers, an increase of 0.339 million TEU or 4.410% as shown in Figure 13 while Bangkok Port has the number of containers of 1,497,444 TEU, which shows that the volume of containers has decreased to -0.03%. The volume of containers passing through BKP is relatively stable due to the full capacity of support. At the same time, the container volume of LCP has increased due to the economic conditions in 2018 that resulted in the growth in exports of products. The key export markets are the ASEAN region, China and the USA.

**Figure 12: Number of Container Throughput**
6.2.1. Operation

Efficient port management is essential for port development. PAT has the policy to improve port efficiency to be as efficient as possible with a set of performance quality indicators such as ship waiting time, berth handling capability, equipment availability, equipment utilization, and net crane rate. According to the study of this research, the author chose performance indicators in comparing the operations of both ports, as follows:

1. Crane productivity
2. Container per meter of quay
3. The berth occupancy

1. Crane Productivity

Crane productivity is the movement of crane per hour which is used to measure the ability to handle the cargo from the vessel to the shore. Cranes with higher capacity will help to increase the speed of vessel turnaround time. Therefore, port operators tend to
consider the optimal number of cranes to shorten ship response times for shipping lines when cranes work for vessels. The crane productivity depends on type of crane (Ha, 2017).

Figure 14: Crane Productivity

The crane productivity of LCP is around 30.18 boxes per hour while crane productivity of BKP has an average of 25.5 boxes per hour as shown in Figure 14. The data above indicates the operational modes of activities at each port under the supervision of the Authority of Thailand is different. The operating model of the Authority of Thailand to manage the terminal operations, including other activities are related. The LCP is the concessionaire for the operators in the port management business by governing the operators of each container terminal with a total of 10 ports.

2. Container per meter of quay

Container port throughput per meter of quay of LCP decreased from 2,286 to 1,584 TEU per meter of quay in 2018 due to the expansion of the terminal in D1 – D3 which increased in size from 3,359 to 5,059 meters. While the container throughput of BKP is 1,012 TEU per meter of quay in 2018 the size of the quay of BKP remains the same which is 1,479 meters. Figure 15 shows the container port throughput per meter of quay from 2014 to 2018.

Figure 15: Container Port Throughput
3. Berth occupancy

Berth occupancy is the total hours of vessels at berth divided by the total hours of the terminal operation. The low rate of berth occupancy is an indication of low congestion while high level of berth occupancy is sign of high congestion. (Mwasenga, 2012). Figure 16 shows the berth occupancy rate of BKP is higher than LCP with around 19%.

Figure 16: Berth Occupancy

Figure 17 shows the average vessel calls per week. The number of average vessels calls for LCP is around 256 per week and around 63 vessels call per week in BKP. In this regard, the integration of shipping lines resulting in the small ship lines to be lacking in bargaining power and also unable to compete in the market and finally experiencing loss of market shares. This may cause a decrease in the number of vessels calls to LCP due to the integration of the shipping line and the sharing of space, which may affect the revenue from the vessel services of LCP.

Figure 17: Average Vessel Calls per Week
6.2.2. Customer

PAT has guidelines for customer classification. Customer groups and market segments at present and in the future are based on the key services of the organization, which are cargo handling/container services and geographic services, location of the port, the responsibility of PA, which has the berth size and the carrying capacity of the different types and quantities of products. LCP and Bangkok Port have categorized customers as follows: 1) shipping lines, 2) cargo owners, 3) operators, and 4) space tenants.

The river port market share of BKP dropped from 86% in 2015 to 73% in 2018 and has 0% of growth rate. The deep-sea port market share of LCP decreased from 75% to 73% in 2018 as the growth rate dropped from 8.78% to 4.43%, which is shown in Figures 18 and 19. In Figure 16, the number of container throughput of LCP is continually growing while dropping in market share. This means that the market of the container port has been growing in Thailand. This is caused by the competition with private ports like the Kerry Siam Seaport Pier, which provides a container port. At present, Kerry Siam Seaport is able to snatch the market share due to a law allowing private ports to more easily compete with government ports.

Figure 18: Market Share
Figure 20 shows the customer satisfaction assessment rate from 2014, 2016 to 2018. (5 = Extremely satisfied, 4 = very satisfied, 3 = moderate, 2 = slightly satisfied, 1 = not satisfied). The satisfaction of BKP customer is rated around 3.3 (moderate), while customer rated LCP is around 3.75 (moderate). The method being used to listen to the customer in BKP is by focusing on meeting and listening to customers to be able to ask about the problems and needs of the customers directly and to be able to present product and service information. This can be used as a customer dissatisfaction problem-solving method. The information obtained will be used to prepare a meeting report for all customers for consideration in the planning of various phases of project measures. While LCP focuses on arranging meetings, seminars, disseminating information and listening to opinions of stakeholders to bring the information to design and, improve the type of service and plan of the various project measures. Looking at the statistics of customer satisfaction that appeared from 2014 to the present, there is not much difference. Therefore, LCP itself has to find more new customers because the expansion of private ports and the integration of ship lines may affect the operation in the future.
6.2.3. Finance

From figure 21, it can be clearly seen that the profit of LCP is higher than of BKP. The profit shown is incurred after deducting expenses from each port. LCP has continuously decreased profits from 2017 (-5%) to 2018. While for BKP, it is found that the employee expenses of BKP are higher than those of LCP. From comparing proportions, it has caused a small profit margin. In 2016 and 2017 the profit of BKP was negative because the number of containers remains the same and combined with the increasing number of employees, resulting in the financial operations of BKP to be unable to make profit.

Figure 22 shows the total revenue divided by the number of container throughput in each year. The average revenue of LCP is slightly increased from 3,483 to 3,755 THB in 2018 while the average revenue of BKP is decreased from 702 to 638 THB per TEU which point out the rising cost of BKP.
6.3 Discussion and recommendations

6.3.1 Discussion

The empirical results from studies of LCP and BKP show that both ports have a greater role in community manager function with stakeholders. The development of the port must be developed in parallel with society. Systematic port development with good efficiency will be able to create economic benefits for that locality and towards the country as a whole. In the form of economic growth, it has created added value from related activities, for example, LCP has implemented multimodal transport and linkage areas efficiently. In addition, the knowledge and skills sharing has been conducted by BKP and LCP to the surrounding community with the objective of encouraging an increase in employment rates.

For the landlord function, the result of analyzing the landlord function shows that developing and managing real estate to add value to the organization is another role that BKP and LCP should focus on because it is still not fully managed, especially the real estate managed by BKP. Some of the lands of BKP have been occupied by slum. In the operation function, BKP and LCP should find a new service that can generate income due to the high competition. Both BKP and LCP must look for a new businesses or services that can create added value, which also increases port competitiveness. At the same time, it was also found that the technology used by BKP and LCP is not yet integrated.
From the duty of LCP, when being compared to BKP which is under the administration of PAT in the form of a full-service port, it can be seen that the income and profit of LCP are higher than BKP since BKP has a large number of employees and the organization structure itself has not been adjusted to keep up with the situation. This is causing BKP to bear the burden of employees expenses while the number of containers passing through and out of the port remains the same. In addition, both LCP and BKP have a reduced market share which indicates that the administration needs to be more proactive to be able to compete because the port itself is a government agency that still has a system of government administration that is not as flexible as that of private ports. From the aspect of administration managed by PAT including the financial and customer aspects, the study found that both BKP and LCP lose market share from private ports, which indicates the complex internal management. For operational management, the operational efficiency of LCP is better than that of BKP because private port operators are more flexible than those of BKP that have to administrate under the government policy.

The port performance described in the findings shows the efficiency of each port depends on the ability to connect to the transportation network of the country which has been developed and expanded continuously according to the economic growth of the country. The development of the transportation system in each mode, which consists of road, railway, and water transportation, must be coordinated to be an intermodal linkage to reduce transportation costs as well as to reducing the time needed for transportation.

According to Kitti (1998), who analyzed the advantages and disadvantages of BKP and LCP in terms of economics which brought the tariff and the cost of transportation into the main variable, the analysis conducted through specifying the port cost of the port is a fixed cost regardless of how much cargo is being loaded. The shipper will have to pay the same amount of load. The cost of freight is a variable cost because it will change according to distance and category of transportation. The studies found that distance comparison of pick-up points between BKP and LCP with the perimeter and region shows that the distance from LCP to the perimeter and the central region is far greater. The distance from BKP is resulting in higher transportation costs. In the long run, LCP is more advantageous than BKP due to the development of the country's transportation system.
In contrast, BKP and LCP are facing the same problem, that is the lack of responsible agencies in charge of marketing, which can be seen from the structure of both ports. This is consistent with the port performance in term of customer that is likely to lose more market share in the future as well as the use of technology to connect data still not being integrated.

6.3.2 Recommendation

In order to improve port competitiveness, it is necessary to improve the linkage or the construction of the maritime connectivity network. The port should be efficiently linked to the hinterland area including the development and improvement of the operational efficiency (Port Operations) to meet the standards in order to create a good image and perspective or participation of the community or locality. Any problems or negative impacts on the environment and traffic that may occur with the local or city location of the port should be reduced (Huybrechts, Meersman, Van de Voorde, & Van Hooydonk, 2002). The recommendations are based on the study above to be recommended to PAT.

1) Integrated transportation infrastructure in the area around the port

LCP is characterized as a gateway with a tendency to increase container volume growth, which is an opportunity for LCP to develop the area behind the port to increase the value of goods and services.

2) The administrative structure of the marketing department

The administrative structure of LCP is bureaucratic management. The structure of LCP shows that there is no agency directly responsible for marketing. The marketing activities are handled in the form of a committee. In practice, the committee cannot be convened at the same time. Therefore, the structure of marketing is important for LCP to support and integrate market and customer relations in the form of shared service for other business units and special business lines focusing on proactive marketing customer relationship management, including internal communication (information) and external communication (public relations), and also to control the information both internally and externally in the specified direction efficiently.

3) Management agility

The administration of LCP is managed according to the hierarchy structure. PAT should establish a centralized and decentralized working system for each port area.
The central responsibility is only for academic, policy, and governance, which will lead to the agility and speed in decision making in accordance with the operational structure of LCP which is under the supervision of PAT. The administration should increase specific skills and expertise to increase specific skills and expertise as well as working efficiency and organizational structure with shared service for organizations in corporate strategy, finance, personnel, mechanics to increase the standard of operation, including the efficiency of management.

4) **Alliances with ship lines**

At present, port business is in the position of a fiercely high competition due to the fluctuations in the shipping business and increased customer expectations in every dimension, all in terms of convenience, speed, accuracy, and economy. LCP needs to develop a marketing strategy which requires collaboration between port businesses, shipping lines, logistics service providers, and educational institutions in mutual reinforcement of the market, to be able to compete with other international ports. It is essential that the LCP should have variety of business alliances to focus on creating new business channels and lead to the markets that are still not accessible, such as establishing the partnership with entrepreneurs, world-class port and shipping lines because the port and shipping line operators are considered as the heart of port development. These measures will result in the advancement of port connectivity which will lead to be the port of call of LCP.

5) **Technology system development**

Both BKP and LCP should develop the information technology system into digital technology in order to improve the service as a feature of Smart Port that is convenient and modern as well as reducing human error and develop human resources and be able to create value-added in other areas. BKP and LCP have used various systems to manage each function but running on different systems. Each system cannot link to exchange information from one to another. Moreover, the process of linking and exchanging information with related external agencies is complicated and requires a lot of time for development. Therefore, to fully enhance the potential in electronic services (e-Services), it is necessary to continue to develop, improve links, exchange and standardize data formats using Service-Oriented Architecture (SOA). This enhances the efficiency of data exchange between various internal systems in Thailand and related external organizations in accordance with the National Single Window policy as well as increasing central information services. The system that BKP and LCP are developing could share the
information which helps to reduce data errors that may occur for both internal and external users and agencies.

6) Linking platform
The integration of international logistics and water transportation activities in all sectors, both public and private to support the operation of port and service activities under the concept of digital is essential for the performance enhancement of a port. One of the way is by developing the port community system to be used in the management of data related to government agencies and private organizations (Big Data), such as logistics chain and water transport from upstream to downstream of those involved in the whole system connecting data between the government related to import and export. The other way is by linking the data between business and business (B2B) in the form of an e-logistic platform. In addition, BKP and LCP have planned to improve the current service which has been developed from previous services in order to create effective services and reduce the time for effective management to meet the satisfaction of the users. There is an improvement in requesting for facilities and services via the website and also the plan to improve the management of the inspection gates and traffic lanes.
Chapter 7 Conclusion

7.1 Conclusion
The duties of port authorities of Thailand have been established with the objective of preserving the interests of the country. At the present time, although still holding the same objectives, it can be seen that the port itself has a duty to stimulate the important economic driver for the country. In the current situation, it is needed to push government ports to compete with private ports within the region. The study found that the community manager function seems to be the key to future success. When the port itself needs to develop to be able to compete, the cooperation from the surrounding community and understanding from the stockholders are also required. Thus, systematic port development with good efficiency will be able to create economic benefits for the localities and the country as a whole. In addition, the form of economic growth will create added value from related activities and increase employment rates. Therefore, to make the port and town to be developed harmoniously, they need to support each other. This will be the key to success for PA because in reality, the competition is not only inside the country but also with international ports.

In addition, when looking at the organization's main goal to increase the profit of the organization, whether it is for learning and human resource development, internal process development, customer development, and financial development, it is evidence that port performance is significant because there are factors that will help the organization to achieve its goals and vision. The performance of the organization reflects the efficiency of management and there is still a way to increase revenue and management styles that can be adjusted to maximize benefits to the organization.

7.2 Implication
The main finding with regard to the port governance model is that the landlord port model seems to be a more appropriate management model than the fully public service port under the hybrid port governance model in Thailand. The lengthy enforced oversight of the bureaucratic system makes the structural changes or investments in various projects not being able to do so promptly. Although BKP is able to manage and operate port performance, having to bear the employee expense and the depreciation of infrastructure will affect the revenue of the future. Allowing the private sector to take over the operation appears to be a solution for the problem of rising costs of the fully public service port model. In managing the port business, the port must adjust to keep up with the fierce competition situation. PAT should continue to improve the organizational structure to support the current competition. Due to the external
factors, government agencies can allow private companies to freely construct ports with various kind of cooperation established between regions by allowing foreign investors to participate in the port business in Thailand. The future study should be a study to compare the potential of Thai ports and neighboring ports such as Indonesia, Malaysia and Vietnam.

7.3 Limitation
The limited time put the author under pressure to limit the scope of the research. Therefore, there are limitations on the data to be used for comparison, such as financial statistics. However, the data available from each function is not integrated with each other and it has been taking time to access data. At the moment, the system is in the process of linking the system such as operation, financial and customers to access information more efficiently and accurately.

The imitated number of ports was used for comparison in this research. Furthermore, the purpose was to conduct research in the competitive port market in Thailand, which compared public and private ports in Thailand to discover the strategy for PAT.
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