

Competitive analysis of Leam Chabang Port, Thailand

Khattiya Surarak^{*} & Pipattawade Wannaree

Rajamangala University of Technology Lanna, CISAT Faculty, Department of Pre-Business
Administration, Chiang Mai 50220, Thailand

Abstract : Ports have become significant factor to drive national economy and social well-being forwards. In order to survive in such fierce competition, ports need to offer outstanding activities to add value to the end customers. Data collected in this study came from review of literatures and interview in order to provide in-depth information on current practices and perceptions of the ports. Relevant factors of port competitiveness are identified; namely, port location, services, hinterland connection, telecommunication and port charges. These criteria can be divided into three groups based on port users' perspective. Regarding these factors, Laem Chabang Port is carefully and critically evaluated. Along with these criteria, SWOT analysis is implemented to point out strengths, weaknesses, opportunities and threats of Laem Chabang Port aiming to identify its competitive advantages.

Keywords : Port competitiveness, Leam Chabang Port, ASEAN

*Corresponding Author: little_book@hotmail.com Tel.08 2894 6898

1. Introduction

Nowadays, maritime transportation is a major way of transportation. It represents 90 percent of global trade (IMO, 2013). As a result, ports all around the world confront an intense and serious competition. In order to be able to compete with other ports in such a dramatic world competition, the character of port competition has changed from port service basis to fighting in terms of port's operation and accessibility of hinterland transport (De Langen, 2007). This implies that ports play an important role in combining different logistics and transport operators in order to bring value to final customers. They need to provide services such as handling various types of cargos, speed of response to any change in schedules, quick response to customers' demands, ability to deliver customized services to different market segments, etc. (Robinson, 2002; Song and Panayides, 2008). In other words, ports are the key elements in value-driven chain systems.

Hence, ports need to understand customers' need so as to improve their competitive advantage. For this reason, this study is conducted to analyse the main port of Thailand, Laem Chabang Port. Regarding the global seaborne trade, Asia is responsible for the largest share in the world. In 2002, it accounted for approximately 46.5 percent of the maritime traffic worldwide (Lee et al., 2006). Thailand took 1.15 percent share of maritime trade worldwide in terms of value in 2009 (UNCTAD, 2010). Within Asia-Pacific region, Thailand ranked at the 15th place regarding container traffic based on TEUs and the 35th place in terms of cargo volume in the same year (AAPA, 2009).

Moreover, the ASEAN Economic Community will be fully operated in 2015. It means that ASEAN will be a single market in which goods and services would flow liberally. Therefore, it would be a great opportunity for Laem Chabang Port due to an increasing market size as well as potential customer. However, Thailand port development is still slow and far behind its neighbor countries like Singapore, China, South Korea, Japan and Malaysia. Interestingly, according to Informa (2010), cargo transshipment mainly demonstrates traffic segment which provides vulnerable competition. Yet, considering Laem Chabang Port, it appears statistically that transshipped cargo accounted for less than 1 percent on average (Laem Chabang Port, 2011). Put this into perspective, Thailand cargo transshipment is very low and incomparable with other figures from import and export of the country.

As a result, this study aims to identify factors that influence selection of port based on perspectives from port users in the international competition, to critically analyse Laem Chabang Port by each factor of port selection, and finally to classify Laem Chabang Port's strengths and weaknesses, opportunities and threats (SWOT analysis).

In previous years, there were many studies about port selection factors, but this study will focus only on studies after 1990. UNCTAD (1992) and Hayuth and Fleming (1994) and Malchow and Kanafini (2004) concluded that geographic location was the key of port competitiveness. In 1994, Murphy and Delay emphasized that shipment information as well as loss and damage performance were the most important constituents in selecting a port. In contrast, Cullinane and Toy (2000)

pointed out that cost and speed were the most important factors. Later on, the study of Nir et al. (2003) also concluded that travel time and cost aspects were priority factors for shippers choosing a called port. Ugboma et al. (2006) studied four ports in Nigeria and provided seven significant impacts on ports' choice. These factors were also the main factor for port choice in the Tongzon's study in 2009 which covered Southeast Asia. Both studies found that port efficiency was the most important factor. Furthermore, Rodriue et al. (2009) pointed out that security had become an additional factor for port selection criteria.

Due to dramatic changes in port's environment, a port has to face many upcoming factors in port's competitiveness. However, based on related literature survey, port selection factors by shipper decision are still largely similar. The most mentioned elements were port location, hinterland connection, port services, port charges and availability of shipments information. As a result, this study aimed to use these factors in order to find out whether there are any differences in port choice according to Leam Chabang port's customers.

2. Materials and Methods

The study is divided into two parts. The first is desk research, where information will be gathered from literature review. This part is conducted by looking at information about port's competitiveness from several sources; for instance, journals, academic articles and books. This stage focused on trying to find definition of a port's competitiveness and aspects that matter in port selection. By reviewing these, it helped in understanding concept of port's competitiveness, pointing out important factors for port selection, and creating questions more effectively. Consequently, these aspects were implemented to carry out the second section of this study, which was done by interview, in order to collect qualitative data as it allows an effective and relevant answer. Qualitative method tends to provide an in-depth understanding as well as real-life situation from interviewees' perspectives. Moreover, it provides unexpected ideas from knowledgeable participants. The sample group includes 2 shippers, 1 carrier, 3 freight forwarders, 2 staff from Port Authority of Thailand, and 2 officials from local government organization.

3. Results and Discussion

After classifying port selection factors based on literature review and interview, Leam Chabang Port is carefully and critically evaluated. Along with these criteria, SWOT analysis is implemented to point out strengths, weaknesses, opportunities and threats of Leam Chabang Port aiming to identify its competitive advantages.

Interviewees were asked to rank factors of port competitiveness from the most important to the least important and results are shown in Table 1 below. Most of the contributors thought that port location is the most relevant factor for ports in order to be able to compete with each other. The least relevant factor is undoubtedly port charges. This result is fairly similar to what the author has found from literature review that port location is a significant importance for port

competitive power and tariff is the lowest important (Malchow and Kanafini, 2004; Tongzon and Sawant, 2007).

From the main five factors, it was clearly divided into three broad groups, based on port users' perspectives; namely, primary factors, secondary factor and non-critical but necessary factor.

Table 1: Ranking of port competitiveness factors

Rank	Factors	Percent (%) ¹	
1	Port location	80	→ Primary elements
2	Hinterland connection	90	
3	Port services	70	
4	Telecommunication	90	→ Secondary element
5	Port charges	90	→ Not critical but necessary element

The most important factors that came into consideration regarding the competitiveness power of port are port location, port services, and port hinterland connection.

Port location

Leam Chabang Port is located in the east of Thailand, in the central of Southeast Asia. This leads to good attributes for freight cargo transportation through Leam Chabang Port, as it is established not only in one of the busiest global maritime trade regions, Southeast Asia, but also in an enormous domestic market of Thailand. As a result, Leam Chabang Port suits for import and export flight transportations as well as inland transit.

Moreover, it enjoys a great water depth of 16 metres and well protected area in the Gulf of Thailand, providing a safe and suitable accommodation for vessels. Leam Chabang Port can effortlessly accommodate the largest vessel as Post Panamax which carries more than 4,000 TEUs (ESCAP, 2003). Moreover, Leam Chabang Port receives priority attention to get support from Thai government due to the fact that it is an extremely important commercial seaport of the country. In the future, Leam Chabang Port will continue its expansion by enlarging its capacity to provide a greater water depth of 18 metres and will cover approximately 256 hectares. (PAT, 2011).

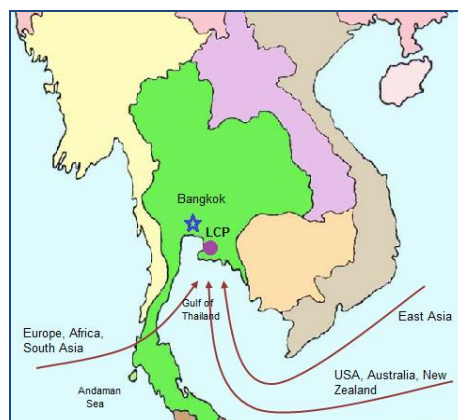


Figure 1: Maritime routes from potential original nations

Hinterland connection

The World Bank (2010) ranked Thailand at the 3rd place of the world Logistics Performance Index within Southeast Asia, behind Singapore and Malaysia. In regard to hinterland connection, there are three possible modes connecting Leam Chabang Port to inland transport: road, rail and inland waterway. However, most transportation activities to/from Leam Chabang Port have relied heavily on the road transport system which accounted for nearly 90 percent each year, while rail and inland waterways shared a marginal part in traffic volume (Planning Division Leam Chabang Port, 2008). Thailand has a massive road transportation network of more than 112,000 km in 2010 which is asphalt paved and concrete for 95.4 percent and the rest of 4.6 percent is gravel road (MOT, 2010). Thailand road network is known as one of the best in Southeast Asia (UNESCAP, 2007).

Thailand provides 5,382 km of railway tracks radiated from the hub at Bangkok throughout the country (World Bank, 2011b). There are three types of railway tracks: single, double and triple tracks, accounted to 93, 4 and 3 percent, respectively (OTP, 2011). Leam Chabang also links to the Latkrabang Inland Container Depot which is about 118 km apart and takes approximately 3 hours by train. It operates 7 days a week with 28 voyages (14 outbound and 14 inbound). It can transport more than 60 thousand TEUs each year (SRT, n.d.). Thai railway is well-constructed but has quite poor rail network due to shortage of proper maintenance and development as well as narrow expansion. It is believed that more than 60 percent of Thailand's railways are older than 30 years. As a result, it has led to emergency stops on average 3,000 times a year (OTP, 2011)

Thailand has a total of 4 thousand km of inland waterways. Within this amount, 3.7 thousand has a navigable depth of up to 0.9 metres (World Bank, 2011b). Bangkok is the major area of inland water transportation and the main rivers are Chao Phraya river, Pasak river, Bangphakong river, MaeKlong river and Tha Chin river for domestic transport.

Furthermore, the Asia Highway runs across Thailand and links Leam Chabang Port to neighboring countries. It is adjoined to Myanmar and Laos to the north, Cambodia to the east, Myanmar to the west, and Malaysia to the south. This excellent highway network links Thailand not only to the East-West corridor between South Asia and Southeast Asia, but also to the North-South corridor which links to China (Kunming) and Southeast Asia. The Asia Highway stretches 5,112 km across Thailand and most has at least 2 lanes (UN, 2003). There are 10 entrance and exit routes to/from Thailand which connects to more than 15 countries. Operators can deliver cargo with one truck to Turkey, Moscow, Kunming, Ho Chi Minh or Singapore.

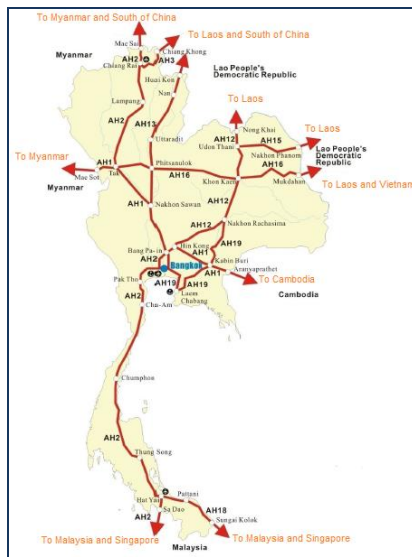


Figure 2: Asia Highway routes in Thailand (Ha, 2010)

Port services

In regard to port services, services' efficiency is mainly focused. On average, Leam Chabang Port is able to turn a vessel around within 14.16 hours (Leam Chabang Port, 2011). Moreover, labour force quality is also taken into consideration as the 53 percent of accidents in port area were caused by human error (Lu and Shang, 2005). Leam Chabang Port as well as terminal operators have organised regular training, courses, programmes or seminars to improve their labours' abilities. In general, there are trainings about accident control, safety, personnel health, and handling of new equipment.

Leam Chabang Port operates 24 hours a day, 7 days a week with modern facilities and equipment for cargo handling. With their 1,900 metres crane length, Leam Chabang Port can easily handle Post-Panamax vessel size, up to 80,000 DWT (Leam Chabang Port, 2011).

Telecommunication

Leam Chabang Port aims to develop its telecommunication to provide greater local and global connections. For this reason, an electronic port system has been introduced into Leam Chabang Port since 2004 by association between Port Authority of Thailand, Customs Department and National Science and Technology Development Agency (Laem Chabang Port, 2011).

Many modern technologies have been implemented by Leam Chabang Port, such as Radio Frequency Identification (RFID), data center of Leam Chabang Port system and Electronic Data Interchange (EDI) system.

This e-port system can lead Leam Chabang Port to operate with high efficiency and further improving national competency due to the fact that it facilitates port users in terms of reduced time-consumption as well as cost in documenting process.

On one hand, these information technology systems connect Leam Chabang Port with other transport modes in terms of filing, interchanging, analysing, and searching information. On the

other hand, it links Leam Chabang Port with other organisations such as terminal operators, port users, customs department, entrepreneurs, and ship representative. Relevant information, such as manifestation, maritime traffic control, regulations, related announcements and maritime safety control, are easily and efficiently shared between all involved parties.

Port charges

Port charge is the least important factors of port selection. However, it normally accounts for 50 percent of the total ocean freight transport encompassing general tariffs, facility tariff and service tariffs (Informa, 2010; UN, 2002). This is because time has become more important for today's business. Accordingly, port charges are no longer applied in maritime business. Since value-added services have become more important for today's business, port users prefer to pay more if they can provide superior service quality with less time required in operation. Thus, port charges need to be consistent with service quality.

Port Authority of Thailand applied a landlord concept to control and manage Laem Chabang Port. It means that private terminal operators are able to set up the port charges themselves. Therefore, it provides a great deal of competition in terms of prices within Leam Chabang Port. This guarantees that each terminal are not overcharged, otherwise they will lose attention from port users. Although port tariffs can be charged differently, depending on cargo types and handling, there are also other factors influencing prices; namely, port tariff system, legal charge, port regulation, currency exchange rate, and fuel price fluctuation.

SWOT

SWOT analysis is undertaken in order to investigate strengths, weaknesses, opportunities and threats related to Leam Chabang Port.

Leam Chabang Port offers a great water depth of 16 meters as well as a well-protected water area. Leam Chabang Port can therefore accommodate large vessel in line with the recent trend of increased vessel size due to economies of scale. With the introduction of e-port perspective, Leam Chabang Port keeps up on development in facilities, equipment, labour and supporting technology in order to upgrade and add value to its services. Moreover, Leam Chabang Port provides a well-connected network to Latkrabang Inland Container Depot as well as Suvarnabhumi Airport, the main international airport of Thailand. As a result, cargoes can easily be transferred through to both domestic and international market.

However, Leam Chabang Port still confronts several issues such as less experience in port operation as it has operated as the main commercial port of Thailand for only 20 years. Moreover, it is not located directly on the main maritime trade route. It would take at least 2-3 days for vessels to go around to the Gulf of Thailand (Phothion and Raothanachonkun, 2008). As a result, it is difficult for Leam Chabang Port to attract vessel for transshipment. Furthermore, railway terminal operation in Leam Chabang Port is still ineffective. As a result, it causes delays in cargo handling to/from rail transportation.

In terms of external aspect, both domestic and world economy has shown a sign of recovery. By 2015, ASEAN will become a big single market where goods and people can flow freely within this region. It helps to enhance international trade, transferring skilled-labour as well as exchanging knowledge between members. Furthermore, Thai government focuses on developing and facilitating of transport network expansion to the neighboring country. This implies that Leam Chabang Port has quite great opportunity for increasing its competitiveness.

However, there are some barriers causing a developmental delay of Leam Chabang Port as people recently start to be more concerned about environmental impact. This causes a delay of Leam Chabang Port area expansion. Another barrier is Thai railway. It has poor quality, lack of proper maintenance and development as 93 percent of track of Thailand is still single track, including the one between Latkrabang ICD and Leam Chabang Port (OTP, 2011). There is also a dramatic shortage of locomotives. Moreover, it has a limited expansion as natural constraint of high mountains around the country. As a result, it can cause congestion and delays for rail transportation.

4. Conclusion

In the recent years, ports have become increasingly important for the logistics chain. Due to the dramatic change in world trade, ports are no longer just a crossing point between ocean and land transport. In contrast, it has to provide services, facilities as well as connection with inland transport network to be able to survive in such an intense market.

As a result, this study has provided a valuable insight in evaluating determinants of port competitiveness factors which are composed of three groups. The first is primary elements which consist of port location, port services, and port hinterland connection. The second is the secondary element which is port telecommunication. Finally, a not critical but necessary element is port charges.

Based on these factors, Leam Chabang Port is wisely and critically evaluated. After that, the SWOT analysis is implemented to point out strengths, weaknesses, opportunities and threats of Leam Chabang Port aiming to identify its competitive advantages.

This study indicated that Leam Chabang Port is located in a great location near one of the busiest world maritime routes. It also provides a great water depth for large vessel as well as offers many modern information technologies for facilitating customers and adding value into its services with payable port charges.

However, there are few things that need to be taken into consideration; namely, railway connection, railway terminal operation, and environmental impact of port expansion. By reducing the error and the delay, this would lead to an increasing efficiency of port operation. In this case, Leam Chabang Port will be able to support the mega flow of cargoes due to the launch of ASEAN Economic Community in 2015.

All in all, Leam Chabang Port needs to strengthen its current operation. Meanwhile, it needs to upgrade its trade facility as well as capacity in order to be able to compete with other ports in ASEAN region. In this case, it would attract not only the load/unload vessels but also the transshipment. Most of all, the society's well-being and environment need to be taken in consideration when it comes to port development.

5. References

- AAPA.; Alexandria.; American Association of Port Authorities.: World Port Rankings, Available from <http://aapa.files.cms-plus.com/PDFs/WORLD%20PORT%20RANKINGS%202009.pdf> Accessed: 2012-06-20.
- Cullinane, K. and Toy, N.: Identifying influential attributes in freight route/mode choice decisions: a content analysis, *Transportation Research: Part E*, 36 (2000) 1, 41-53.
- De Langen, P. W.: Port competition and selection in contestable hinterlands; the case of Austria, *European Journal of Transport and Infrastructure Research*, 7 (2007) 1, 1-14.
- ESCAP.: *Commercial development of regional port as logistics centres*, United Nations, New York, (2003).
- Ha, M.-S.: A comparison of service quality at major container ports: implications for Korean ports, *Journal of Transport Geography*, 11 (2003) 2, 131-137.
- Hayuth, Y. and Fleming, D. K.: Concepts of strategic commercial location: the case of container ports, *Maritime Policy & Management*, 21 (1994) 3, 187-193.
- IMO.: Introduction to IMO, London, International Maritime Organization, Available from <http://www.imo.org/About/Pages/Default.aspx> Accessed: 2012-06-01.
- Informa.: *Container Traffic* Zug: Informa UK Limited, Available from <http://www.ci-online.co.uk/> Accessed: 2012-06-02.
- Laem Chabang Port.: Electronic port project, Chonburi: Laemchabangport, Available from http://www.laemchabangport.com/lcpnew/index.php?option=com_content&view=article&id=98:-e-port-e-port-logistics-21-22-2547-l&catid=47:2011-01-27-10-27-7&Itemid=34&lang=en# Accessed 2012-06-29.
- Lee, L. H., Chew, E. P. and Lee, L. S.: Multi-commodity network flow model for Asia's container ports, *Maritime Policy & Management*, 33 (2006) 4, 387-402.
- Lu, C.-S. and Shang, K.-C.: An empirical investigation of safety climate in container terminal operators, *Journal of Safety Research*, 36 (2005) 3, 297-308.
- Malchow, M. B. and Kanafani, A.: A disaggregate analysis of port selection, *Transportation Research: Part E*, 40 (2004) 4, 317-337.
- MOT.: Thailand road transport, Bangkok: Thailand Transport Portal, Available from <http://vigportal.mot.go.th/portal/site/PortalMOT/stat/index6URL/> Accessed 2012-06-19.
- Murphy, P. R. and Daley, J. M.: A Comparative Analysis of Port Selection Factors, *Transportation Journal*, 34 (1994) 1, 15-21.

- Nir, A.-S., Lin, K. and Liang, G.-S.: Port choice behavior-from the perspective of the shipper, *Maritime Policy & Management*, 30 (2003) 2, 165.
- OTP.: *Project of development plans for transportation and traffic*, Office of Transport and Traffic Policy and Planning, Bangkok, (2011).
- PAT.: *Key facts about Laem Chabang*, Bangkok: Port Authority of Thailand, Available from http://www.laemchabangportphase3.com/port_02_en.html Accessed: 2012-06-05.
- Planning Division Leam Chabang Port.: *Information of Laem Chanbang development*, Leam Chabang Port, Chonburi, (2008).
- Robinson, R.: Port as elements in value-driven chain systems: the new paradigm, *Maritime Policy & Management*, 29 (2002) 3, 241-255.
- Song, D.-W. and Panayides, P. M.: Global supply chain and port/terminal: integration and competitiveness, *Maritime Policy & Management*, 35 (2008) 1, 73-87.
- SRT. Inland container depot Latkrabang, Bangkok: State Railway of Thailand, Available from <http://www.licdrt.ob.tc/icd.html> Accessed:2012-06-18.
- Tongzon, J. L. and Sawant, L.: Port choice in a competitive environment: from the shipping lines' perspective, *Applied Economics*, 39 (2007) 4, 477-492.
- Tongzon, J. L.: Port choice and freight forwarders, *Transportation Research: Part E*, 45 (2009) 1, 186-195.
- Ugboma, C., Ugboma, O. and Ogwude, I.: An Analytic Hierarchy Process (AHP) approach to port selection decisions - empirical evidence from Nigerian Ports, *Maritime Economics & Logistics*, 8 (2006) 3, 251-266.
- UN.: *Comparative analysis of port tariffs in the ESCAP region*, United Nations, New York, (2002).
- UN.: *Asian highway handbook*, United Nations, New York, (2003).
- UNCTAD.: *Port Marketing and the Challenge of the Third Generation Port*, United Nations Conference on Trade and Development, Geneva, (1992).
- UNESCAP.: *Health without borders*, United Nations Economics and Social Commission for Asia and the Pacific, Bangkok, (2007).
- UNCTAD.: *Review of Maritime Transport 2010*, United Nations Conference on Trade and Development, Geneva, (2010).
- World Bank.: *Transport in Thailand*, Washington: the World Bank, Available from <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPREGT/OPTRANSPORT/0,,contentMDK:20767673~menuPK:2069358~pagePK:34004173~piPK:34003707~theSitePK:574066,00.html> Accessed: 2012- 06-18.
- World Bank.: *Connecting to compete 2010: trade logistics in the global economy*, The World Bank, Washington, (2010).