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THE HIDDEN PROBLEM OF THE GOVERNMENT POLICY ON PROMOTING THE INLAND SHIPPING IN THAILAND

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Abstract

In Thailand, the road transportation accounted for 80.86% of total energy use in domestic transportation. The least energy use is 0.01% allocated to air transportation. The energy consumption in water transportation is 17.23% by splitting into 8.70% from coastal transportation and 8.53% from inland water transportation. According to statistic, the road transportation has overwhelmingly exceeded the other transportation even compared to rail and water transportation. It also has caused air pollution as well as produced serious impacts on the environment. Also, it caused the problems of life and asset lost, road accidents, and added an extra financial burden to increase road maintenance. Therefore, it is important to continuously push forward the transportation development by focusing to change road transportation to others modes of transportation which have lowered cost per unit and are more efficient in energy consumption. This is an urgent issue and also consistent to the government policy and logistic development plan of Thailand. However, in the process of enhancing efficiency in coastal transportation, not only requiring the development of ports but also the infrastructure system and hinterland, which must reach the level of the expectation of the users, are necessary to be all considered. This article aims to show the analyzed results from the survey gathered from the inland shipping service providers and their customers in order to provide the guideline to the Thai Government on the sufficient level of the transportation infrastructure development to achieve their objectives on reducing the logistics cost and energy spending of the country.

Keywords: Coastal, Containers, Barge, Competitiveness, Logistics, Policy

1. Introduction

In Thailand, the expansion of economic, industry, agriculture and service sectors particularly in tourism sector contributed to the rapid growth of city. The energy has been vastly consumed usually in these sectors. In 2015, energy use in the transportation and industry sectors were the highest at 36.23% and 35.77%, respectively. The road transportation accounted for 80.86% of total energy use in domestic transportation. The least energy use is 0.01% allocated to air transportation. The energy consumption in water transportation is 17.23% by splitting into 8.70% from coastal transportation and 8.53% from inland water transportation as shown in Figure 1a and Figure 1b. According to statistics, the road transportation has overwhelmingly exceeded the other transportation even compared to rail and water transportation (Goulielmos *et al*. 2012; Woodburn, 2007). It also has caused air pollution as well as produced serious impacts on the

environment (Baird, 2007; Tzannatos and Nikitakos, 2013; Beskfvnick, 2006). Even though, Thailand needs to rely on oil import, the oil consumption in the country is still high.

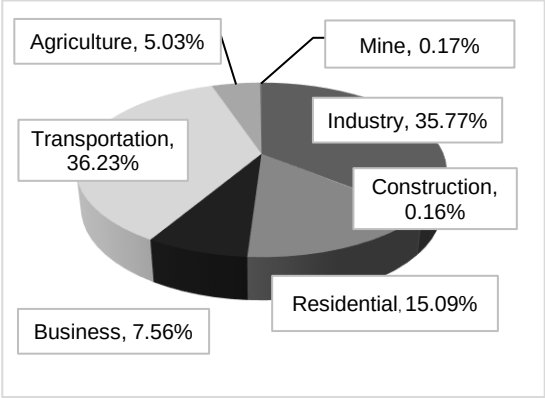

Figure 1a. Energy consumption classified by economic types (2015)

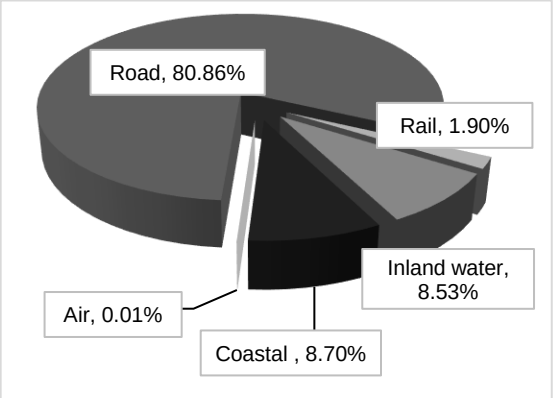

Figure 1b. Proportion of domestic transportation (2015)

Source: Office of the Permanent Secretary (2015)

Over the past 5 years (2011-2015), Thailand has an average of 570 million tons of cargo a year. The proportion of mode of transport is not consistent with costs, namely the cost of 2.12 baht per ton-kilometer from road transportation indicated to have the highest use. While next below is rail transportation cost 0.95 baht per ton-kilometer and the lowest cost is water transportation cost 0.65 baht per ton-kilometers. This is the reason why logistic cost per Gross Domestic Product (GDP) still remaining in high level at 14.2%. In addition, within these 14.2% percentage, the transportation cost accounted for 7.4% of GDP. In other words, transportation costs accounted for 52% as shown in Figure 2a and Figure 2b**.**

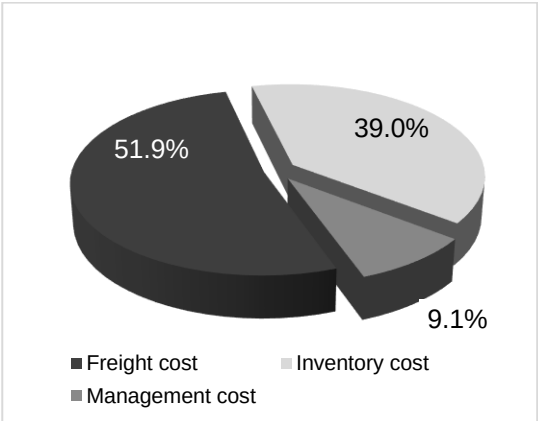

Figure 2a. Shipping costs (baht/ton-kilometer) (2013)

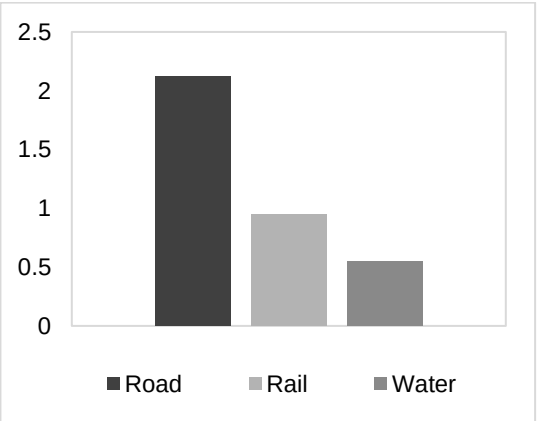

Figure 2b. **The proportion of Thailand's mode of transport (2013)**

Source: Office of Transport and Traffic Policy and Planning (2013)

According to the statistic of transportation in Thailand from Ministry of Transport, domestic and coastal transportation have been steadily expanding and increasing every year. However, coastal transportation is not as sufficient as it should be. Considering Thailand has 2,600 kilometers long coastline, its length covered 24 provinces in Thailand by 1,660 kilometers located along the Gulf of Thailand and 954 kilometers located along Andaman Sea. Several ports are overcapacity or not in use at its full capacity. In contrast, some ports have been used more than their capacity such as at Lamchabang port, the main gateway of the country. The cargo

transportation by coastal ships has been predicted to be steadily increased and expanded. However, 89% of container transportation which linked to Lamchabang port is road transportation. Even though rail and water transportation have lower cost per unit (Woodburn, 2007), their contributions to the cargo carriage of the country are only 7% and 4%, respectively. This directly increases logistic cost and fuel energy expense in the transportation sector of the country which has lowered the country's competitiveness and caused problems toward traffic flow in the country (Cochrane *et al*. 2017). Besides, it caused the problems of life and asset lost, road accidents, and added an extra financial burden to increase road maintenance.

Therefore, it is important to continuously push forward the transportation development by focusing on changing road transportation to other modes of transportation, which have lowered cost per unit and are more efficient in energy consumption (Saldanha and Gray, 2002). This is an urgent issue and is consistent to the government policy (Brooks and Frost, 2004) and logistic development plan of Thailand. However, in the process of enhancing efficiency in coastal transportation, not only requiring the development of ports (Morales-Fusco *et al*. 2012) but also the infrastructure system and hinterland, which must reach the level of the expectation of the users, are necessary to be all considered (Lopez-Navarro *et al*. 2011).

This presentation aims to show the analyzed results from the survey the author gathered from infrastructure users; the inland shipping service providers and their customers, in order to provide the guideline to the Thai Government on the sufficient level of the transportation infrastructure development by taking into account their need instead of considering only the data from the infrastructure providers, governmental units, in order to achieve their objectives on diverting cargoes to the water transport which can lower the logistics cost and energy spending of the country.

2. Background of study

Shifting of freight transport mode has gained attention from public in Thailand for the past several years. As concerns over fuel price, road congestion, and environmental degradation arise, the idea of promoting and encouraging the shift from road to other transport modes that are more cost efficient and environmental friendly, especially inland waterway, has been discussed widely (Perakis and Denisis, 2008). In the national level, the mode shift of freight transport has been incorporated into the current National Economic and Social Development Plan, which is the national master plan for public policy and investment of the government (Goulielmos *et al*. 2012). This obviously evidences that the mode shift has become a significant issue for public policy on national competitiveness and investment in logistics network (Islam *et al*. 2006).

In the recent years, there are a number of initiatives of mode shifts proposed by government bodies (Suarez-Aleman and Hernandez, 2014). Responsible departments and ministries such as Marine Department, Land Transport Department, the Office of Transport and Traffic Policy and Planning, Ministry of Transport, National Economic and Social Development Board have conducted several studies on the appropriate policies for transport mode shift from road to water.

Such policies concerning the investment on maritime infrastructure by the public sector, under the strategic plan on maritime transport with a budget of THB 50 billion, will improve the inland waterway routes and reduce problems associated with the lack of coastal ports. The examples of such investment are the building of navigation dams on Chao Phraya and Nan Rivers, the project on improving the route between Pa Sak River and Chao Phraya River out to the sea, and the project on building new coastal ports. These had been provided without evaluating with the users on their infrastructure requirement or their demand but rather with considering and thinking by the government agency alone which the purposes of providing these infrastructures have often been distorted to the equality on income distribution to the poor areas where the business activities are very low. This causes the underutilization problem on such infrastructures.

Therefore a survey was conducted to review all government projects on constructing those infrastructures for promoting the inland water transport by collecting opinion data concerning the levels of those infrastructure improvements from all the users comparing to their

expectation levels by computing those gathered data with the following formula so-called the SERVQUAL model (Parasuraman *et al.* 1988).

$$INDEX_i = \frac{PER_i}{EXP_i} \quad (1)$$

$INDEX_i$ is the quality index showing the relative level of infrastructure quality in the user's opinion to the quality in their expectation. If this INDEX is less or more than 1, it means that the infrastructure quality is less or more than the one in the user's expectation, respectively. PER_i is perceived quality in the user' s opinion. EXP_i is expected quality in the user's opinion. PER_i and EXP_i can be derived from the followings;

$$EXP_i = \frac{\sum_{i=1}^{n} w_i x_i}{\sum_{i=1}^{n} w_i}, \quad PER_i = \frac{\sum_{i=1}^{n} w_i y_i}{\sum_{i=1}^{n} w_i} \quad (2)$$

Here, x_i is the score level the user gives to the infrastructure quality he perceives. y_i is the score level for the expected quality the user needs for expanding his carriage of cargoes by waterway. *n* is the number of quality items in this survey. w_i is the weight of important level the users give to each quality item in this survey.

3. The finding of the study

3.1. Inland waterway vessels transporting containers

We conducted an analysis of opinion indices of all three related parties: a) Operators of coastal freight container vessels; and b) Clients of coastal freight container vessels which can be two parties; the first is the main shipping lines which employ the coastal to transship the containers to and from their customers and the second is the big cargo owners which directly employ the coastal to carry their containers to the main shipping lines at the port.

3.1.1. Operators of coastal freight container vessels

Based on the evaluation of the index of the level of service from the governmental facilities in the attitude of coastal vessel operators, it was found that the owners of the coastal vessels transporting freight in containers had received service that was not very different from their expectations. That is, the values of the index vary between 86-100%; and there are even some cases where the index exceeds 100% which would represent overall service quality that exceeds expectations from the government facilities. However, when we rechecked with the interviewed data, it clearly implies that this exceeding 100% index reflects that the vessel owners do not want to set expectations too high because they may have been frequently disappointed in the response to problem previously. This gives the signal to lower the data validity on expectations expressed from the whole group and makes us believe that all the indices shown above would all be overestimated.

This is why, although owners of coastal vessels gave the attitude scores showing the perceived service quality levels from the government facilities that meet their expectations, they have provided also a lot of suggestions in the questionnaires for improvement as following:

At Laem Chabang Port, there should be the cargo handling service which is provided exclusively to coastal vessels from that provided to international vessels and the arrangements should be made to provide a rail link between the ports at Laem Chabang and Bangkok to support transporting containers left behind to the port at Bangkok. Actually, at present, there are rail tracks but no available train service. Consequently, containers left behind have to wait at Laem Chabang Port for 7 days thereby incurring extra costs for container placement. Also, in the case of

transferring containers between quays at Laem Chabang, B1 and A0, this should be included in wharfage fees and shipping lines should not incur extra expenses. Container transfers between quays at Laem Chabang, C1 and C2 to A2 and A3 should not incur extra costs, as the quays are adjacent as well as under the same proprietor. In the case of refrigerated containers transferred from other quays to coastal vessels at quay A0, they incur costs for electricity, container transfers, and container offloading. Of these costs, the only one that should be charged is the heavy container offloading only, and a 3-day free time should be granted similar to regular pulled container. In the case that large vessels take turns to dock at berths on both banks thereby blocking coastal vessels from docking, however, there is no offer of compensation, which occurs as a result of the ports' own problems.

3.1.2. Clients of coastal freight container vessels

Based on the collection of data from clients of coastal container vessels, the attitude of the first groups of customers (main shipping lines), which are normally also the port operators, granted the concession in running government port facilities (or handle cargo services in the port itself) has given a mean index value of 92%. It is strongly believed that it tends to be biased because they give quality services score to their own operations. The attitude of the second groups of customers (or the big cargo owners) provided a mean index value of 80%, which is a lower index value. This is reasonable and more reliable as this group of customers and the operators providing service from government facilities are independent. Therefore, it is likely that they received services quality that are further inferior and further from expectation than those of the first are. The realistic index would therefore be the one of the second group. Anyway, both groups of users provided additional suggestions as follows:

The first group provided additional information that the service charge for storage of goods at Khlong Toe Port in Bangkok is 30% more expensive than actually charged at private ports. Moreover, it is suggested that cargo-hauling fees inside the port should be discounted for greater numbers of containers (Yan *et al*. 2014; Beskfvnick, 2006).

The second group provided additional information that the cost per container for domestic shipment of freight by coastal vessels from Surat Thani to Laem Chabang to be loaded onto freightliners is Baht 10,000 (including two-way containers, port charges, and forwarder fees, and freight charges for pick-up at the factory). It is much cheaper than using a truck to ship to Laem Chabang at an estimated cost of 13,000-14,000 baht per container. Currently only 10% of freight is shipped by truck, which is used only for emergencies. Most problems encountered are due to the following:

Planning production and freight delivery to the port to keep up with the rising tide: The main reason for this problem is the inadequate depth of water channels. Non-flexible working hours of government agencies, especially the Rubber Department: This is required for inspecting the quality of rubber before export. Consequently, sometimes the product is ready to leave the plant on Friday evening but will have to delay delivery for another two days because of the weekend, for instance.

3.2. Coastal vessels that are barges

We analyzed attitude indices from all three parties involved: barge operators, and survey port potential by questioning port operators, who typically own the goods themselves. Therefore, in the case of barges, it is not possible to conduct attitude surveys on cargo owners or barge users regarding port services.

3.2.1. Barge operator

Based on the evaluation of the service quality index provided by the port facility, it was found that the barge owner had provided a service index value both greater than expected, or greater than 1, and less than expected, or lower than 1, where:

The group that provided an index value greater than 1 is only attitude related to the port

at Bang Pa-in in Ayutthaya, where barge operators would prefer a relaxation of urban planning regulations so that more docks could be built.

Groups that provided an index value assessment of less than 1 appear to have provided an index value assessment between 63% and 92%. It has been reported that the main cause is from channel service in the outer vessel navigation-service section. In this regard, information has been revealed that the Marine Department has not constructed vessel anchorage points, especially in Tapi waterway in Surat Thani, and that generally deep-sea channels have been maintained at the 3 -meter level, while barges require a depth of around 4-6 meters.

Meanwhile, further information provided on recommendations related to obstacles to freight transport operations by barge, operators have provided information that can be summarized pointwise as follows:

At present, ports at Ayutthaya Province number up to 50, while the width of the river is quite limited, and the number of boats that come in to dock far exceed berths. Pollution occurs from coal and cement products, which are placed in open stacks. When it rains, they flow into the river. When there are strong winds, dust spreads. If coal is stored in a closed system, risk arises when oxygen can combust into fire. Consequently, lawsuits are filed against most ports for pollution.

The group that provided an index value greater than 1 is only attitude related to the port at Bang Pa-in in Ayutthaya, where barge operators would prefer a relaxation of urban planning regulations so that more docks could be built.

The river area usually contains buildings such as piers of Buddhist temples, restaurants, etc. that are built protruding towards the channel. There should be identification of suitable vessel berths in each river or port.

3.2.2. Port operator

The surveys of potential to provide service of ports servicing barges today found that all ports still have potential remaining and stand ready to expand them by themselves. However, their key constraint is zone by laws, namely green urban planning, which has been designated as a conservation area. Meanwhile, there is still a demand to use this area for transferring freight of barges, for instance. We would conclude that all above open-end data from this survey are the hidden problems to the government Policy on Promoting the Inland Shipping in Thailand.

4. Conclusion

So far, the infrastructure development policies in Thailand have usually solely been determined by the governmental bodies without considering the users' or business requirements but rather taking into account on other purposes; such as, income distribution. The policy on promoting the inland shipping is also one of the example for this one side decision. This causes the underutilization problem on such infrastructure developed by the government policy and deters the impact of the policy implementation.

However, the surveyed study results from the users' satisfaction done by the author through the SERVQUAL model conversely show that majority have satisfactory reach to 100% and, in some case, more than 100% level. To verify these results, the in-depth data analysis has been conducted by looking back to the raw opinion data. The data showed that the majority of the answers tend to give low level for their expectation on the infrastructure quality or even showed no hope for the supporting project. The cause of these feeling opinions may come from the followings;

Firstly, the perpetual lack of considering carefully from the government part on the users' real need for the infrastructure support (Brooks and Hodgson, 2006). This destroys their expectation for the help from the government. Secondly, the influence of the culture and manner on believing that too demanding or expectation is not the proper way to express to the society. Therefore, this article would like to give two suggestions;

First, to implement the policy on promoting the inland shipping successfully and efficiently, the government agencies concerned would give the weight to consider more on the

information on demand side and provide all facilities to meet the level of expectation of all parties concerned. In practice, this can be done through the system of consultation closely with all the private sectors mentioned in the study probably by setting up some form of the sub- committee to follow up all the government construction projects on this promoting the inland shipping to reduce logistic cost and to create the good environment; less carbon dioxide emission and less road accidents, for the country.

Second, to the academic researchers, the use of the SERVQUAL model for research must be considered also with the culture or belief of the persons providing answer, not just make conclusion or recommendation by depending on the ratio value, which is only relative and not absolute figure.

References

Goulielmos, A. M., Lun, V. Y. H., Lai, K.-H., 2012. Maritime logistics in EU green ports and short sea shipping. In: D.-W. Song, P. M. Panayides, eds. 2012. *Maritime Logistics: Contemporary Issues*. Bingley, U.K.: Emerald. pp. 245-262. https://doi.org/10.1108/9781780523415-013

Suarez-Aleman, A. and Hernandez, A., 2014. Incentives to reduce port inefficiency: A theoretical approach. *Maritime Policy & Management*, 41(5), pp. 462-479. https://doi.org/10.1080/03088839.2014.929752

Baird, A. J., 2007. The economics of motorways of the sea. *Maritime Policy & Management*, 34(4), pp. 287-310. https://doi.org/10.1080/03088830701538976

Beskfvnick, B., 2006. Importance of short sea shipping and sea motorways in the European and Slovenian transport policy. Pomorstvo, 20(1), pp. 23-35.

Brooks R. M. and Hodgson, R. J., 2006. *Short sea shipping on the east coast of North America: An analysis of opportunities and issues*. Canada: Dalhousie University Publication.

Yang, C.-C., Tai, H.-H., Chiu, W-H., 2014. Factors influencing container carriers' use of coastal shipping. *Maritime Policy & Management*, 41(2), pp.192-208. https://doi.org/10.1080/03088839.2013.818729

Islam, D. M. Z., Dinwoodie, J. and Roe, M., 2006. Promoting development through multimodal freight transport in Bangladesh. *Transport Reviews*, 26(5), pp. 571-591. https://doi.org/10.1080/01441640600576902

Tzannatos, E. and Nikitakos, N., 2013. Natural gas as a fuel alternative for sustainable domestic passenger shipping in Greece. *International Journal of Sustainable Energy*, 32(6), pp. 724-734. https://doi.org/10.1080/14786451.2013.811414

Saldanha, J., and Gray, R., 2002. The potential for British coastal shipping in a multimodal chain. *Maritime Policy & Management*, 29(1), pp. 77-92. https://doi.org/10.1080/03088830110067339

Cochrane, K., Saxe, S., Roorda, M. J. and Shalaby, A., 2017. Moving freight on public transit: Best practices, challenges, and opportunities. *International Journal of Sustainable Transportation*, 11(2), pp. 120-132. https://doi.org/10.1080/15568318.2016.1197349

Brooks, M. R. and Frost, J. D., 2004. Short sea shipping: A Canadian perspective. *Maritime Policy & Management*, 31(4), pp. 393-407. https://doi.org/10.1080/0308883042000304881

Lopez-Navarro, M. A., Moliner, M. A., Rodríguez-Artola, R. M. and Sanchez-Garcia, J., 2011. Accompanied versus unaccompanied transport in short sea shipping between Spain and Italy: An analysis from transport road firms perspective. *Transport Reviews* 31(4), pp. 425-444. https://doi.org/10.1080/01441647.2010.528588

Office of the Permanent Secretary, 2015. *The Annual Report*, Thailand: Ministry of Transport.

Office of Transport and Traffic Policy and Planning, 2013. *The study on transport and traffic development master plan.* Thailand: Ministry of Transport.

Parasuraman, A. Ziethaml, V. A. and Berry, L. L., 1988. SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), pp. 12-40.

Morales-Fusco, P., Saurí, S., and Lago, A., 2012. Potential freight distribution improvements using motorways of the sea. *Journal of Transport Geography*, 24, pp. 1-11. https://doi.org/10.1016/j.jtrangeo.2012.05.007

Perakis, A. N. and Denisis, A., 2008. A survey of short sea shipping and its prospects in the USA. *Maritime Policy & Management*, 35(6), pp. 591-614. https://doi.org/10.1080/03088830802469501

Woodburn, A., 2007. The role for rail in port-based container freight flows in Britain. *Maritime Policy & Management*, 34(4), pp. 311-330. https://doi.org/10.1080/03088830701539032