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STRATEGIC PLAN 2025 FOR PORT OF TANJUNG PELEPAS IN CONJUNCTION WITH THE DEVELOPEMNT OF ISKANDAR MALAYSIA

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ABSTRACT

Port of Tanjung Pelepas (PTP) is one of the key ports in Malaysia located at the busiest shipping line, Malacca Straits. The status of the port for five years back as cash cow shows its outstanding behaviour and performance to be one of competitive ports neighbouring Tanjong Pagar Port and Port of Singapore. As PTP share the same location with the development of Iskandar Malaysia, it is predicted that PTP will result in a huge positive impact. Hence, the purpose of this paper is to study the strategic planning for PTP by using SWOT Analysis and BCG (or) Growth-Share) Matrix in order to maintain its ideal position as cash cow for the until the year 2025.

Keywords: *SWOT, Strategic Planning, BCG Matrix, Port Tanjung Pelepas (PTP).*

1.0 Introduction

Iskandar Malaysia is a massive project development under the Johor government. The project involves the construction of a huge metropolis that will include a cluster of factories, centres of learning, hospitals and entertainment. It is being promoted as a business hub within the Johor-Singapore-Indonesia triangle and as the southern gateway that connecting the west and east bound lane.

Port of Tanjung Pelepas is expected to benefit from this massive development of Iskandar Malaysia. The volume of ships coming to PTP is expected to incline. As a result, maritime and logistics is set to improve GDP growth and adapted to the development. A study carried out based on the accumulate containerized traffic at PTP as 2017 have positioned PTP as a cash cow in the BCG Matrix which indicates that PTP have reached maturity and well established positions with low growth rate and high market share.

The SWOT analysis on PTP for the five years back (since 2014 to 2018), shows the strengths of PTP as it has the capability to offer 14 berths in total 5.04 km of linear wharf length and 1.8 million square meter container yard which have over 10,500,000 TEUs capacity of storage area. The terminal is equipped with 57 Super Post Panamax cranes and these cranes also have twin-lift

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capability to further enhance productivity. However, as PTP has not handled any other ships than container, it becomes one of the weakness for PTP as this relating to their business prospects. Other than that, the issues of inadequate number of local man power and high rental cost of the facilities are among the weaknesses of PTP.

The SWOT analysis also have list down the opportunities offer to PTP. One of the opportunities is definitely the positive impact from the Iskandar Malaysia development as mentioned earlier. The strategic position of Iskandar Malaysia projects has indirectly invite additional number of container ships to PTP. Unfortunately, the competition from Singapore ports, the flop in Malaysia currency compare to foreign exchange and also unstable political and legal systems in foreign markets have constrained the import and export activities of PTP and become threats to PTP.

It's proven that the development of Iskandar Malaysia has brought positive impact to PTP even though the development is yet to reach its maturity. China who has put its interest as important investor in the development also seen PTP potential to become one of the busiest container port in the world. Thus, the purpose of this research is to study the feasibility of PTP related to the development. In the other hand is to determine the strategic plans for PTP in order to stay competitive and to sustain their position as cash cow up to years 2025.

2.0 Literature Review

2.1 Theories on strategic planning related to port.

The theories on strategic planning of port the development of strategic planning has played a very important role in guiding the port construction, more frequent economic exchanges between the countries in contemporary, closer relationships of economics, and the economic trend of globalization has been formed, the more important the development strategy plays based on the needs of the port development strategy planning and Entropy Method. Evaluation model of port development level by introducing the driving force theory through the example analysis [5]. The factors of port driving force include three levels, which is economic dimension, the management dimension and strategic dimension. Factors of economic dimension include factors such as, social division of labor, industry globalization, uncertainty of market demand (flexibility) and risk diversification; factors of management dimension include factors such as, scientific development, supply chain management technology and agile manufacturing style; factors of strategic dimension include factors such as, cost control motivation, complementary motivation and resources utilization. The above is the theoretical framework of the driving force of the port changes. However, port development has characteristic of timeliness. So combined with the characteristics of level of development of the port, we can establish the evaluation index system based on the port driving force, which shows in Table 1.

Table 1 : Theoretical framework of evaluation of the port driving force [5]

Dimension	Driving force factors (First layer of Indexes)	Evaluation index of level of port development (Secondary indexes)	Definition of Indexes (quantitative/qualitative)
Economic dimension	Influencing factors of global industry -Factors of social	-Global economic factor -State policy factor -Proportional relationship of the national economy -Port cargo proportion Relationship	-The level of national economic security -Positioning of national development and strategic planning -Proportion of secondary

	division of labor -Factors of market Demand -Factors of risk diversification	-Market demand of economic Hinterland -Level of integration of port and City -Competition among nearby Ports	and tertiary industries accounting GDP -ports predicated throughput of ten years later
Management dimension	-New technology	-Level of information	-The level of integrated information services of coverage rate of AI, tracking rate of GPS ships and capacity of online services
Strategic dimension	-cost control -common interests -resource utilization factors	-Channel maintenance water Depth -Wharf construction-Quantity of industry Associations -Quantity of human resources	-The year guarantee rate of waterway maintenance of water Depth -Proportion of piers more than 5000t -Quantity of industry associations -Quantity of labor resources

2.2 Theory on BCG Matrix

[6] define the Boston Consulting Group (BCG) Matrix strategy and planning the market share on the other hand comprises of the competition and the product potential in the market consider growth rate and market share together, it automatically gives an overview of the competition and the industry standards as well as an idea of what the future might bring for the product. Once the businesses have been classified, they are placed into four different quadrants of the matrix. The quadrants of the matrix are divided into:

❖ Cash cow

Cash cows are products which are having a high market share in a low growing market. As the market is not growing, that cash cow gains the maximum advantage by generating maximum revenue due to its high market share. Thus for any company, the cash cows are the ones which require least investment but at the same time give higher returns. These higher returns enhance the overall profitability of the firm because this excess revenue can be used in other businesses which are Stars, Dogs or Question marks.

❖ Stars

Stars are products which are having High market share and High growth rate (high competition) .Unlike cash cows, Stars cannot be complacent when they are top on because they can

immediately be overtaken by another company which capitalizes on the market growth rate. However, if the strategies are successful, a Star can become a cash cow in the long run.

❖ Question Marks

Question marks are products which are having Low market share and high growth rate (uncertainty). Several times, a company might come up with an innovative product which immediately gains good growth rate. However the market share of such a product is unknown. The product might lose customer interest and might not be bought anymore in which case it will not gain market share, the growth rate will go down and it will ultimately become a Dog.

❖ Dogs

Dogs are products which are having Low market share and low growth rate (less profitable or may even be negative profitability). Products are classified as dogs when they have low market share and low growth rate. Thus these products neither generate high amount of cash nor require higher investments. However, they are considered as negative profitability products mainly because the money already invested in the product can be used somewhere else. Thus over here businesses have to take a decision whether they should divest these products or they can revamp them and thereby make them saleable again which will subsequently increase the market share of the product.

The Success sequence of BCG matrix happens when a question mark becomes a Star and finally it becomes a cash cow. This is the best sequences which really give a boost to the company's profits and growth. The success sequence unlike the disaster sequence is entirely dependent on the right decision making. Disaster sequence of BCG matrix happens when a product which is a cash cow, due to competitive pressure might be moved to a star. It fails out from the competition and it is moved to a question mark and finally it may have to be divested because of its low market share and low growth rate. Thus the disaster sequence might happen because of wrong decision making. This sequence affects the company as a lot of investments are lost to the divested product. Along with this the money coming in from the cash cow which is used for other products too is lost Figure 1 shown the relative between success sequence and disaster sequence

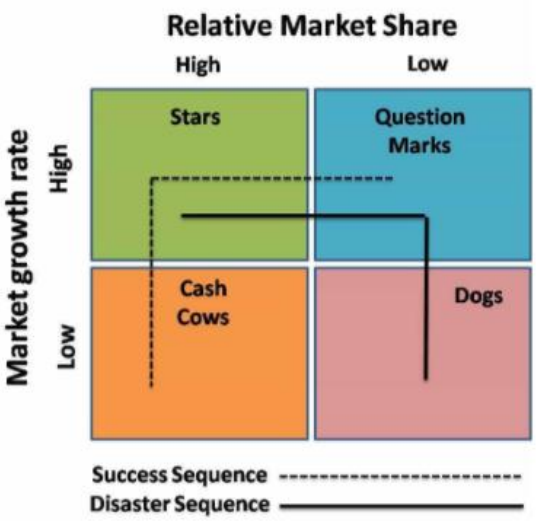

Figure 1 : Sequences BCG Matrix [6]

2.3 Development in ASEAN (Southeast Asian Nation)

Given the numerous factors pushing for better logistics mentioned above, the performance of this sector is examined using the World Bank's Logistics Performance Index (LPI). ASEAN countries show disparate performance in their logistics industry (Figure 2). Singapore is ranked fifth among 160 countries in terms of its logistics performance, followed by Malaysia, Thailand and Indonesia. At the other end of the spectrum, Laos is ranked 152 [9].

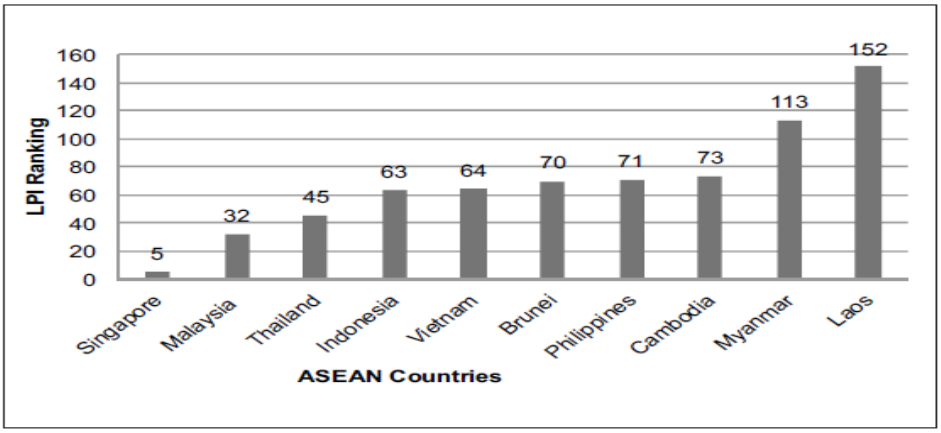

Figure 2 : Ranking in Logistics Performance of ASEAN Member Countries, 2016

This disparate performance can be traced to great differences in all six components of the LPI, namely infrastructure; customs; international shipments, tracking and tracing, logistics quality and timeliness (**Figure 2**) among the ASEAN-10. Cambodia, Myanmar and Laos are weakest in terms of infrastructure and their performance is 55 per cent or less than the highest performer, i.e., Singapore. With the exception of Brunei, Malaysia and Singapore, ASEAN countries appear to have better scores for operational services compared to their respective infrastructure. Regarding the state of customs and related services (timeliness, international shipment, tracking and tracing), performance again varies considerably across ASEAN countries. While Singapore performs consistently well for all cross-border customs facilities, Myanmar and Laos score the lowest for all. The rest of the ASEAN countries are in the middle, with Malaysia and Thailand closely following each other in second and third positions respectively. Although Indonesia ranks better than Vietnam in overall LPI ranking, Vietnam has better scores in customs, international shipments, and time predictability. It should be noted that efficient border processes are crucial to avoid delays and provide predictability. Coordination among government agencies and establishment of ICT-based services is essential to narrow the gaps among the ASEAN members.

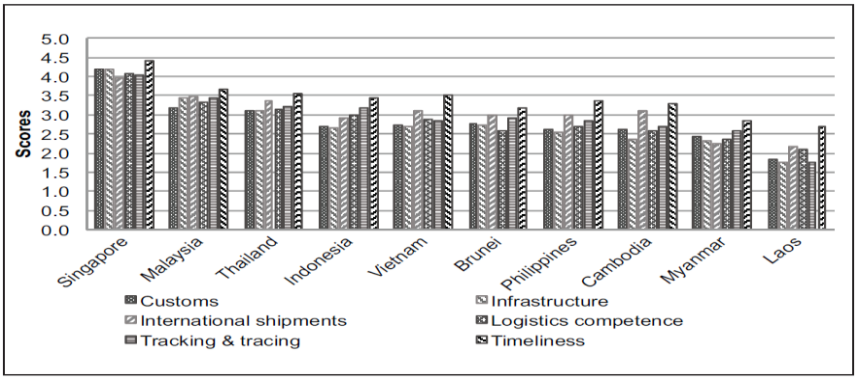

Figure 3 : Logistics Performance in ASEAN Member States, 2016 [9]

2.4 ASEAN container demand projection up to 2040.

The Association of Southeast Asian Nations (ASEAN) is a region with of the largest and fastest growing economy in the world with an average annual real growth rate of 5.3 percent between 2007 and 2015. In 2016, the combined GDP of ASEAN Member States (AMS) reached USD 2.6 trillion, making it the sixth largest economy in the world and the third largest in Asia, ASEAN Secretariat (2017). The region's GDP is projected to double up to USD 4.7 trillion in 2020, with the Association becoming the fourth largest economy in the world by 2030[3].

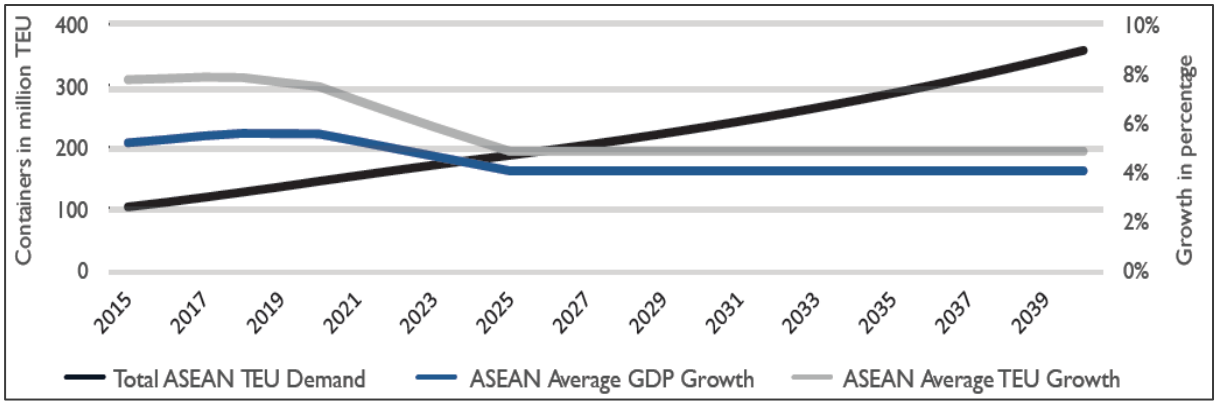

Figure 4: ASEAN container demand projection up to 2040

The State Planning Strategy 2050 is an overarching strategic document that provides direction for all State, regional and local planning strategies, policies and approvals.

2.5 Port Tanjung Pelepas as a matured market

Port Tanjung pelepas is positioned as a cash cow, cash cow within BCG matrix represent ports have reach maturity and have well established positions with low growth rate and high market share. The result of the analysis in regional port in Malaysia is illustrated in table and figure below by showing the market growth rate and relative market share.

Table 2: Market growth rate and relative market share in port of Malaysia.

No	Port	Market Growth Rate		
		2009-2010	2011-2012	2013-2014
1	Klang	21.37	5.28	5.75
2	Tanjung pelepas	12.01	2.62	11
3	Johor	3.72	-3.53	4.69
4	Penang	15.64	-3.03	2.26
No	Port	relative market share		
		2009-2010	2011-2012	2013-2014
1	Klang	1.36	1.33	1.33
2	Tanjung pelepas	0.74	0.75	0.75
3	Johor	0.1	0.08	0.07
4	Penang	0.12	0.12	0.12

The BCG matrix can be used to analyze seaports by using port-related data to determine the average annual growth rate and the average market share of ports. The matrix can represent traffic categories in this case is container. Position of 4 ports in Malaysia is illustrated as follow:

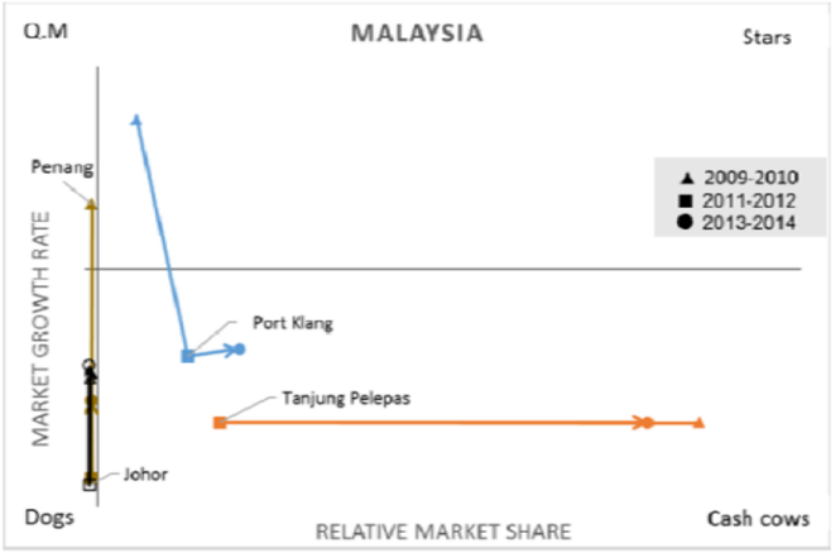

Figure 5 : Malaysia ports positioned in BCG matrix

The two largest ports of Malaysia (i.e., Port Klang and Tanjung Pelepas) retained star or cash cow positions. Two ports (i.e., Penang and Johor) retained dog positions.

3. Methodology

3.1 SWOT analysis of Port Tanjung Pelepas.

In order to develop a new strategic plan for Port of Tanjung Pelepas many need to be assesses what a business can and cannot do, as well as its potential opportunities and threats. The method of SWOT analysis is to take the information from an environmental analysis and separate it into internal (strengths and weaknesses) and external issues (opportunities and threats). Port of Tanjung

Pelepas should evaluate the strengths, weaknesses, opportunities and threats involved future planning for PTP development as shown in the figure below:

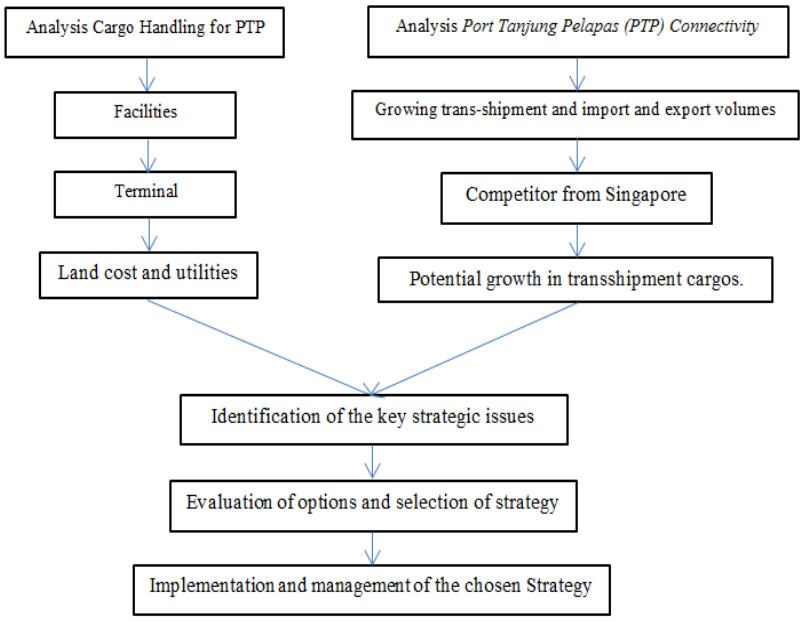

Figure 6: The process of SWOT for PTP

Port of Tanjung pelepas identified the elements for SWOT analysis in 2017. In order to develop an analysis for Strength, weakness, opportunities and treats for PTP until 2025, this SWOT analysis can be a bench mark for furthering the strategic planning. Nature business and activities of PTP will generate revenue and provide value to Johor, and also contribute significantly success of the Iskandar Development Region (IDR) and help Malaysia achieve its vision to become a developed country after the year 2025.

Table 3: SWOT for the Port Tanjung Pelepas

Strengths	Weaknesses	Opportunities	Threats
Free zone	Container Traffic	Growing trans-shipment and import and export volumes.	Competitor from Singapore.
Taxes and industrial development incentives	High rental cost	Growth prospect of intra-Asian trade.	Shifts in foreign exchange rates impacting the company imports or exports.
Land cost and utilities	Basic feature	Potential growth in transshipment cargos.	Slow market growth or decline in market size.
Terminal facilities	Number of local labors very less	Spillover from Vale's plan to make its Port of Tanjung Pelepas iron ore trans-shipment.	Unstable political and legal systems in foreign markets.
A haven for investor	PTP not handled other container	Growth potential within the Iskandar Malaysia region.	New technologies from Singapore Port that may make PTP products or services obsolete.

3.2 Analysis on the impact from Iskandar Regional Development Authority (IRDA) to Port of Tanjung Pelepas.

Strategic planning for new Johor Bahru development is put in IRDA for future planning. PTP is listed in the development which is stated in Flagship Zone C where the Western Gate Development highlighting the Port of Tanjung Pelepas which will provide a second link for Malaysia/Singapore, a Free Trade Zone. Another port included is in Flagship Zone D where the Eastern Gate Development focusing on Pasir Gudang Port and industrial zone, Tanjung Langsat Port, Tanjung Langsat Technology Park and Kim-Kim regional distribution centre.

In order to analyse the impact of IRDA is based on the throughput. Port of Tanjung Pelepas container yard capabilities has a total Area of 1,800,000 sq.m with total ground slots of 48,374 TEUs and able to reach the capacity of 10,500,000 TEUs. PTP expansion development in Flagship zone C describe that the capacity will be increased by 3.2 million TEUs to 11.2 million TEUs where the total expected foreign direct Investment will be up to RM17 billion. The total planning stage for PTP expansion area will be 2,255 acres [8].

4. Results and Discussion

4.1 Cargo Handling Efficiency Management Plan

In principle, the following three points are commonly required for port management and operations around the world, i.e. efficiency, provision of services at reasonable charges and reliability and safety. As refer to **Figure 3** in the methodology, the timeliness of Singapore port is far way better compare to the other port in ASEAN countries. Thus, in order to maintain PTP in cash cow for the projection year of 2025, it is crucial to improve the management plan for cargo handling efficiencies. The facilities of PTP are outstanding and comparable to Singapore but not its timeliness of handling the container. They are numerous methods to improve the efficiency of cargo handling time. One of the methods is by improving the management plan of PTP port.

The management shall be start from the bottom. Personnel working at PTP need to be trained to operate equipment worth many millions of dollars, to handle documents and administrative procedures, while supervisors and managers must be of the highest caliber to plan, control and supervise the high speed and complex terminal operations. In order to ensure efficient utilization of the port facilities and port services and to minimize the cost of transport through the port, efficient port management and operations are indispensable. In many cases, congestion or dangerous conditions, which happen during ship and cargo operations and services, are mainly caused by inefficient management, especially personnel management. It is strongly recommended that personnel management be taken into consideration and improved.

In order to cope with the new efficient management and operation system, it is recommended that personnel at port should develop and supplement its training courses in terms of the following matters:

- To make the new port management and operation system including cargo handling and information system understood by the personnel.
- To recognize the importance of correct, proper, safe, responsible and efficient operation for the enhancement of the port.
- To recognize the service mind and improve the image of the organization.
- To instill a cost consciousness in the personnel.

On the other hand, as cargoes are expected to stay in port for a short time, so streamlined documentation, customs and administrative procedures are needed. Computerized information

systems have been introduced widely to monitor and control the movements of containers. Tariffs and contracts have to be changed as have the managerial and organizational structures of the terminals.

Before the arrival of the ships, the accurate booking position, number and weight of containers, destination of each container among others must be known. Furthermore, the position of containers on board and those being discharged at the port must be fully at hand. The stowage planning must take all information on other calling ports into consideration and has to be very complex. Thus, each terminal usually assigns personnel for planning who prepare stowage plans exclusively, in close touch with shipping lines.

Therefore, a completely new approach is needed by management for the introduction of the new container handling technology, carefully thought out plans and policies, and appropriate solutions to the problems. These will eventually improve the cargo handling efficiencies. However, recommended actions may not be accomplished if there is no cooperation among the people concerned. Thus, it is compulsory for PTP to start improving its management plan as it can be accomplished towards aspiration of maintaining as cash cow status until 2025.

4.2 Additional Ship Services and its Contribution

Since Port Tanjung Pelepas (PTP) presence in one of the International Shipping Lanes, it can concentrate more on the additional ship services. Currently PTP is Offering Marine Surveying, Marine Navigation Equipment Supply, Repair and Maintenance, Container Refurbishment and Container Cleaning at its docks [10]. Supply of Fresh Water is also undertaken under the ship provision replenishment once the ship is berthed.

Currently the Singapore port is at no. 1 position in offering a wide range of ship services for the vessels calling in its port in the ASEAN region. The companies and firms involved in this business have set up regional offices in Singapore with the help of the Singapore government in order to increase the efficiency of the company's services and management in offering the services to the customers consuming it. This makes the Singapore Port, a real maritime hub in the ASEAN region and also making them more competent in the overall port management activities globally. They also offer additional services than that of PTP making it a highly competent maritime hub.

PTP can also adopt such practices with a benchmarking with the Singapore port which is at close proximity from the PTP. This can help in setting up the various ship services companies in the State of Johor, under the Iskandar Malaysia initiative benefitting the Johor State development positively and be competent in terms of business due to the demand created by the consumption of various port services. This also have the potential to become a better maritime transshipment hub still retaining the status as a cash cow according to the Boston Consulting Group (BCG) or the Growth Share Matrix.

Other than to other regulatory or legal services, minor technical maintenance of ships like under water hull cleaning of fouls, repairing of miniature damages which do need dry docking, sourcing of various spares to its main and auxiliary machinery, Garbage Disposal, Crew Medical Attendance and emergency repairs and maintenance can also be provided in competent procurement and/or service charges. These services can be run parallel to the cargo handling services by the ready availability of the resources to conduct the necessary activities for the job to be done without affecting the delivery or port schedule of the Ocean Cargo liners.

Provision and Sourcing of the other supplies like food, Stores, etc. through the industries under the Iskandar Malaysia Region can be will increase demand of the local food products, thus a financial boon to their business and sustainability in it. Various types of lubrication oils, fuel bunkering, refrigerants, coolants, etc. for the main and auxiliary machinery can be sold at a reasonable (probably at a lesser) price by benchmarking with the Singapore port prices of the same products which creates demand for the local petroleum products.

But the present state of the PTP does not provide such additional services, so the Port Tanjung Pelepas (PTP) management has to make a critical decision on the provision of the above discussed services with much quality consciousness in future in order to maintain their competency and sustainability in business. Thus Port Tanjung Pelepas (PTP) can pave way for the development of Iskandar Malaysia in the state of Johor.

4.3 Port Tanjung Pelapas (PTP) Connectivity

According to Transportation Blueprint 2010-2030, Iskandar Malaysia (2011), PTP currently handle slightly over 6 million TEUs annually with its 14 berths. It have the capacity to expand 95 berths and could handle up to 150 million TEUs.

However, Malaysia logistic industry is subject of neglect. The main issues are road congestions due to high volume of heavy vehicle, poor urban logistics, over dependance on road networks over rails and lack of connectivity between industrial parks and terminals.

Without addressing these crucial issues, full benefits from the improvement of PTP facilites would not be realize. Furthermore, increase in freight which arise from Iskandar Development Region may be directed towards PTP competitor, for example Singapore.

Through Pengangkutan Logistik-Iskandar Malaysia (PLIM) plan, it intended to alleviate these issues through better truck corridors, logistic parks and improvement of supply chain management.

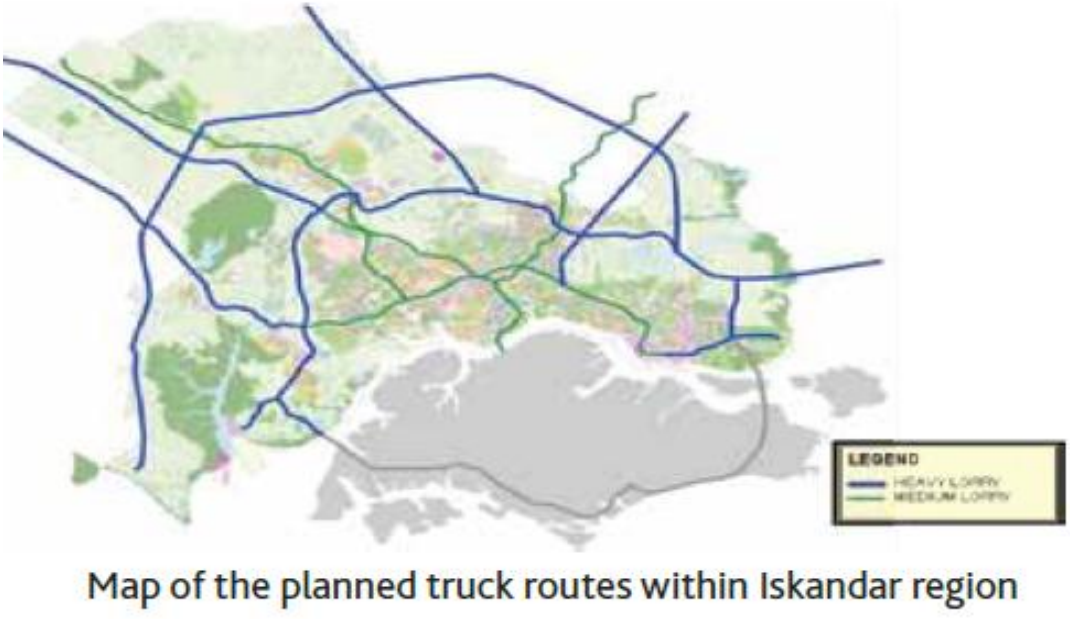

Figure 7 : Map of Planned Truck Routes within Iskandar Malaysia [8]

Figure 8 : Intermodal Network of Iskandar Malaysia [8]

However implementation of such strategies proposed by PLIM necessitates utilization of existing networks and infrastructure which already burdened. In addition, majority of the networks crosses through urban centres which are one of the original choke-points to PTP logistical networks.

An addition to the plans already proposed by PLIM is to re-imagine how terminals and industrial parks are connected. For example, rail depots and network could be build on the periphery of Iskandar Malaysia zone connecting PTP, Senai Airport, Pasir Gudang and Tanjung Langsat. Distance travelled for the freight would be longer than the current trucking route. However, this would allow for better haulage capacity, improvement in reliability and speed due to traffic avoidance. In addition, it would also ease the traffic burden in the urban areas of Iskandar Malaysia.

A novel concept which could also be considered to address the connectivity issue of PTP is to utilize coastal barges. Short distance trip between coastal collections terminals and PTP could provide an indirect route between industrial zones and PTP. However, this plan requires logistical operators to buy-in to be economically feasible. To achieve this, consolidation of currently fragmented logistic operators maybe necessary.

5.0 Conclusion

From the above development of Problem statement and its solution, it can be claimed that the implementation of Iskandar Malaysia Project has a direct and indirect positive effects on the development of PTP which can help in maintaining its current status by implementing the strategic plan up to the year 2025. Thus it can be inferred that the Iskandar Malaysia Region is in well conjunction with the development of PTP.

6.0 Acknowledgement

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REFERENCES

1. ASEAN Secretariat (2017), "ASEAN Economic Integration Brief No. 01/June 2017", retrieved from: <http://asean.org/storage/2017/06/AEIB_No.01-June 2017_rev.pdf>.
2. Dang, V. L., & Yeo, G. T. (2017). A Competitive Strategic Position Analysis of Major Container Ports in Southeast Asia. The Asian Journal of Shipping and Logistics, 33(1), 19-25. doi:10.1016/j.ajsl.2017.03.003
3. Bloomberg (2017), "Fifty Years On, Southeast Asia Emerges as Global Growth Leader", retrieved from: <https://www.bloomberg.com/news/articles/2017-08-06/fifty-years-on-southeastasia-emerges-as-global-growth-leader>.
4. Maritime and Transport Business Solution (2015:8).
5. Lin, R & Tan, J. (2013). Evaluation of port development based on the theory of the driving force and the law of entropy weight. Procedia - Social and Behavioral Sciences 96. 1774 – 1783.
6. Bashin, H. (2018). BCG Matrix or BCG analysis. Retrieved 16 March 2017, from https://www.marketing91.com/bcg-matrix/
7. Riston N (2008). Strategic Management. Neil Riston and Ventus Publishing APS, ISBN 978-87-7681-417-5.
8. Transportation Iskandar. (2011). *Blueprint 2010 - 2030 for Iskandar Malaysia*. *Journal* (Volume 1).
9. Logistics Performance Index 2016, World Bank.
10. http://www.ptp.com.my/services