The Port of Singapore (PoS)

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This descriptive example case is prepared to demonstrate the characteristics (geography; port access and features; organisation of its docks, berths, retro port; accessibility to other hinterland modes; and the main types of cargo handled among other features) of a port taking an example of the Port of Singapore. Also to explain why a sea port is important to the global economy and how Port of Singapore achieves international importance.

The port of Singapore is one of the most important ports in the world. Since 2015, it has been ranked as the top maritime capital of the world. It is currently the world's second-busiest port in terms of total shipping tonnage, it also transships a fifth of the world's shipping containers, half of the world's annual supply of crude oil, and is the world's busiest transhipment port. It had also been the busiest port in terms of total cargo tonnage handled until 2010, when it was surpassed by the Port of Shanghai.

The Port is critical for importing natural resources, and then later re-exporting products after they have been domestically refined and shaped in some manner, for example wafer fabrication or oil refining to generate value added revenue. The Port of Singapore is also the world's largest bunkering port. The majority of ships that pass between the Indian Ocean and the Pacific Ocean go through the Singapore Strait.

The Maritime and Port Authority of Singapore (MPA) owns and is responsible for the growth and development of the port.
The port handled 37.2 million twenty-foot equivalent units (TEUs) of containers and 626.2 million tonnes of cargo in 2019. It attracts approximately 130,000 vessel calls a year, on an average, currently. The port has 6 terminals and 84 berths, with computerized and automated equipment, which provides efficiency and productivity.

The terminals at the Port of Singapore are the busiest in the world and can accommodate all types of vessels, including container ships, bulk carriers, ro-ro ships, cargo ships, coastal vessels, and barges. The open spaces (/patios) are used for storage, packaging, and distribution of charges. Adjacent to the port terminals there is retro port area which is located a bit away from the terminal, that facilitates customs control logistics and the port terminal traffic.

The port offers a range of services for break bulk and specialised cargoes. The facilities and services allow the port to handle containers and cargo including bulk, break-bulk and project cargo. The warehouses and open yard spaces are used for storage, packing, consolidation and distribution of cargo. Approximately 80% of the containers that arrive in Singapore are transhipped to other ports. The Port of Singapore has conventional and special-purpose terminals to handle oil, petroleum and natural gas products as well as cement and steel products. It also has a dedicated car terminal, which is one of the major automotive transhipment hubs in the region. Other ancillary services include the supply of water and provisions. Pilotage and towage services are also provided.

The docks (i.e., the structures for anchoring boats) for the vessel to load or unload cargo are well located adjoining the access channel (a stretch of waterway that connects the berths of the port to the open sea). In the port of Singapore access channel in the Strait of Singapore. The distance of piloting is average of 2 meters. The depth of the port channel is up to 18 meters deep and it has 16 meters of maximum draft for ships. The cranes of the pier in PoS terminals can reach 24 rows of containers.

Although Port of Singapore currently enjoys a clear lead in the region in terms of both cargo volumes handled and shipping volumes received, the port community recognises that it must improve on its competitiveness by offering higher standards of service and productivity at competitive prices. While the maritime sector in Singapore has ample growth opportunities, it is not immune to issues and

challenges. Some of the problems facing the maritime industry include changing regulatory compliance, environmental concerns, and technological advancements.

Questions:
1. What are the key features and activities of a sea port?
2. What are the important aspects that make a sea port successful?
3. What could be the current challenges posed by many seaports? How port authorities address or cope with those challenges?

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[1]This test case has been prepared as part of the course Port and Airport Management for the MBA students who have taken specialisation of Supply Chain Management. The case study is part of teaching notes / material and the information is drawn from various open sources and is intended to stimulate class discussion. This case is not contented to serve as an endorsement, source of primary data or to show effective or inefficient handling of decision or business processes. The information contained in this case study is to be used only as a case study example for teaching purposes.

EXHIBITS

Figure 1 – Location
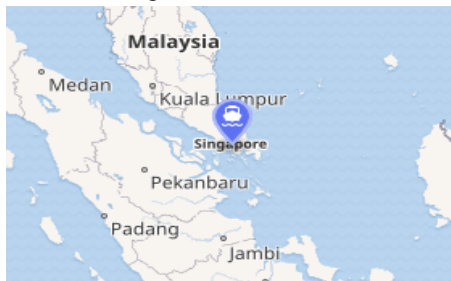
Source: Wikipedia

Figure 2 – Geography

Source: Google Maps

Figure 3 – Berths

Source: https://expresso.sapo.pt 2011.

Figure 4 – Top terminals and open areas

Source: http://jornalcanal16.com.br/, 2015.

Figure 5 – Retro Port

Source: Google Maps

Figure 6 – Docks / Anchorage

Source: https://pt.dreamstime.com/, 2013.

Figure 7 – Accessibility by other modes

Source: Google Maps, 2018.

Figure 8 – Stretch of road access

Source: Google Maps, 2018.

Table 1 - Port of Singapore Operational Statistics

Year	Vessel Arrival Tonnage	Container Throughput (million	Cargo Throughput (million	Bunker Sale Volume
2014	2.37	33.9	581.3	42.4
2015	2.50	30.9	575.8	45.2
2016	2.66	30.9	593.3	48.6
2017	2.80	33.7	627.7	50.6
2018	2.79	36.6	630.0	49.8

Table 2 –Performance of Port of Singapore

Some of the major challenges faced by the Port of Singapore

The port of Singapore is also facing growing competition from other ports, alternative routes bypassing PoS and lack of skilled executives.

1. Competition from neighbouring countries

Several neighbouring countries such as Malaysia and Indonesia are vying on the transshipment business, investing billions to ramp up their port capacity.

2. Alternative trading routes

Kar Canal has been the suggested alternative trading routes since a century ago, and the topic is brought back again by the Thai Canal Association of Study and Development in Feb 2018, who is persuading Thailand's Prime minister to approve a study research on this project. China shows great interest in this project and has proposed to fund the Kra Canal project through multi-billion one road and belt initiative. It is estimated the whole project will cost up to US$28 billion dollars, to create a wide and deep canal to link the south china sea with Indian ocean. If the Kra Canal project is implemented successfully, it will reduce the sailing distance by 1200 kilometers, saving 2 to 3 days sailing time, Singapore will lose about 30 percent of overall shipping traffic. Another alternate trading route will be Northern Sea Route, along with the Russian Arctic coast, from the Kara Sea to the Bering Strait. Due to global warming, the northern ice caps have been melting and sea level is rising. In the year 2017, for the first time, a Russia tanker travelled the Northern Sea Route successfully without accompany of an icebreaker. This alternative route serves as a challenge as well as an opportunity to Singapore. If the high Arctic open all year round, it will reduce 30 percent off the travel time through the conventional Suez Canal-Malacca Strait route, linking North East Asia and Europe.

3. Lack of skilled executives/leaders

In the current fast-changing environment, executives must be able to foresee the demand changes and design their own unique solution to meet the organization's requirement. However, skilled executives tend not to stay in an organization for a substantial time, which result in loss of sight in the details when managing changes. Any wrong decision may result in catastrophic consequences.

Furthermore, Singapore's fertility rate is declining in the past 6 years, a new 7 year low of 1.16, which means that a couple is only giving birth to 1 to 2 children on average. If this rate continues, there will not be enough new generation in the workforce, poses economic issues. Singapore port is still

considered labour intensive, with a generation of workers who are between 50 to 60 years old. Most of them are handling hard labour jobs such as forklift driver, crane operator, stevedore, lasher, etc. The new generation is highly educated and not willing to accept these hard labour jobs, but looking for management positions.

[2]Singapore's $14 billion mega-port takes aim at shipping chaos

As the world's economies struggle to untangle unprecedented congestion in global supply chains, one of the world's busiest ports is backing an ambitious modernization plan to provide solutions. Singapore is forging ahead with a S$20 billion ($14 billion) project to build the world's biggest automated port by 2040 — one that will double the existing space and feature drones and driverless vehicles. The city state started operations at two new berths last year, and construction work is continuing on the next phase. The port eventually will double its capacity to 65 million twenty-foot equivalent units (TEU) by 2040.

REFERENCES

[1] Wikipedia - https://en.wikipedia.org/wiki/Port_of_Singapore

[2] freely adopted from PORTS AND WATERWAYS, a CASE STUDY: PORT OF SINGAPORE – by Gabriel Gomes, Yuzo Iano, Ana Carolina, Reinaldo Padilha, Diego Pajuelo, Michell Miranda B. Costa and Thiagarajan Y. Universidade Estadual de Campinas, São Paulo, Brazil and Sri Venkateshwaraa college of Engineering and Technology, Puducherry, India

[3] Other sources from web/internet search