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A STUDY ON FUNCTIONS OF SULE PAGODA WHARF (SPW)

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ABSTRACT

Ports are the medium that connect ships with land for both passengers and goods to transfer. Ports are seen as a factor of economic growth which has high contribution levels to the development of economic sectors. Sule Pagoda Wharf (SPW) is a nation's busiest seaport for rice and major transit point for cement, timber and steel. This paper examines how the maritime trade plays as a vital role in economic activities and to study the functions, constraints and problems of Sule Pagoda Wharf (SPW) and give suggestions for more productivity. The descriptive method and secondary data are used for this study. The development of maritime trade is based in how the functions of ports are being performed. Sule Pagoda Wharf (SPW) has a lot of functions since it helps a country to distribute the goods domestically and internationally which served as the gateways of trade and contributes to growth of nations.

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List of Abbreviations

AIPT	Alive International Port Terminal
AWPT	Asia World Port Terminal
BSW	Bo AungGyaw Street Wharf
DWT	Dead Weight Tonage
ED	Export declaration
GDP	Gross Domestic Product
GRT	Gross Registered Tonnage
GSM	Greater Domestic Product
HOB	Hteetan Oil Berth
HPT	Hteetan Port Termianl
IBR	Import Bill of Register
IFCL	Irrawaddy Flotilla Company Limited
IGM	Import General Manifest
ICD	Inland Container Depots
IWT	Inland Water Transport
LC	Letter of Credit
LOA	Length Over All
MAS	Myanmar AnnawaSwaner Shin Group
MIP	Myanmar Industrial Port
MIPL	Myanmar Integrated Port Limited
MITT	Myanmar International Terminal Thilawa
MOC	Ministry of Commerce
MOT	Ministry of Transport
MPA	Myanmar Port Authority
PPT	PasirPanjang Terminal
PSA	Port of Singapore Authority
RO/ RO	Roll – on/ Roll – off
SI	Shipping Instruction
SPW	Sule Pagoda Wharf
TEU	Twenty Foot Equivalent Units
UNESCAP	United Nations of Economic and Social Commission for Asia and Pacific
USD	United States Dollar

Chapter I

Introduction

1.1 Rationale of the Study

Transportation sector is one of the most important sectors for the development of the Nation. Although, there are many ways to transport from one country to another for social and economic functions, maritime transport is the most used, cheapest, effective and can carry a huge volume by vessels. Since two-third of the Earth's surface area has covered by a layer of sea water about 8,200 ft (2,500 m) deep, our ancient people especially merchants used maritime transportation by using vessels for trading. As the sea transportation for goods by vessels is important for international trade, it is also important for Myanmar according to her geography.

To transport goods by vessels, a country must have a place where the edge of continent meets ocean or big lake or river which is called a port. A port is located on the coast which contains one or more harbors where ships can shelter or dock or load and unload cargo or passengers. Ports are important to provide the economic activities in the hinterland because they are necessary connection between sea and land transport. Harbors, is also called port which is located on the coast, can be natural or artificial. A natural harbor is surrounded on several sides by prominences of land. An artificial harbor has deliberately constructed breakwaters, sea walls, or jetties.

More than 90 percent of Myanmar's trade comes through the port of Yangon. Economic growth and opening up of the country have resulted in a doubling of the number of vessel calling at port over the past 10 years. The current main existing terminals are all river terminals which mean that shipping lines are unable to bring in larger-sized vessels and lack of port infrastructure and congestion present a significant constraint of port. Port depends on many variable factor; market development, infrastructure development and connectivity.

Yangon port is the premier port which is the gateway to the sea for international trade and it is also played as an important sector for the Economic Development of the State. Yangon Port handles more than 85% of Myanmar's export

and import and the growth of 8% contains in GDP. Yangon Port cannot handle the national requirement in order to increase the rate of growth percentage with its existing capacity. Yangon's growing trade demands deeper port due to lack of efficient and adequate facilities in existing port. Especially, major delay for ships in obtaining berth as well as during cargo loading and unloading. Deep Sea Port makes river ports less competitive.

Sule Pagoda Wharf (SPW) which was established in 1913 is the nation's busiest port for rice which handles an average of 1.3 million metric tons of imports and 600,000 metric tons of export, annually. A total of 49,801 metric tons of rice were exported to foreign countries through SPW in current financial year and SPW is a major transit point for cement, timber and steel. Seventy percent of rice exports over sea route are destined to foreign market. The port is capable of accommodating vessels of 190 meter length over all (LOA), a draft of 8.6 meters and a capacity of 50,000 tons. Among the International Ports in inner harbor area of Yangon, Sule Pagoda Wharf (SPW) plays as an important role as a transit point for foreign vessels and connects to foreign market.

1.2 Objectives of the Study

The main objective of the paper is to study how the maritime trade plays a vital role in economic activity and to study the problems and constraints of Sule Pagoda Wharf (SPW).

1.3 Method of study

This paper used descriptive method and secondary data from Myanmar Port Authority (MPA), Sule Pagoda Wharf (SPW), Library of Yangon University of Economics and Internet websites.

1.4 Scope and Limitation of Study

This paper covers from 2007 to 2017 and the study focus on how the Sule Pagoda Wharf (SPW) is operated, how the port plays as an important contribution to economic growth, port efficiency and their functions. This study only focus on port's functions and it does not cover functions of shipping.

1.5 Organization of the study

This research paper is organized into five chapters. Four sections are included in Chapter 1 which is the rationale of the study, objectives of the study, scope and method of study and the organization of the study. Chapter 2 mentions literature review and Chapter 3 will be explained about the role of Myanmar Port Authority (MPA) and Important functions of Port. Chapter 4 highlights functions of Sule Pagoda Wharf (SPW). Finally, the findings and suggestion are described in Chapter 5.

Chapter II

Literature Review

2.1 Concept of Port

A port is a maritime commercial facility which may consist of one or more wharves where ships may dock to load and discharge passengers and cargo. Although most ports are usually situated on a sea coast or estuary, some ports are located inland. These ports include seaports as well as smaller inner coastal and inland ports that facilitate movement of goods between the seaports and local communities. Ports are the main industrial and commercial tools for economic and social development of the countries. Port has multidimensional system combined economical function, infrastructure system, geographical space and trade.

Port is also defined as a place where the ships are sheltered and also the place where the goods pass or even where they are transit. This means that the port has two essential functions. The first one tells how the port performs their functions which the port acts a home or shelter to the ship. The second function is how the port handles the transfer of goods or passengers from one mode of transport to another and from the ship to one of the terrestrial modes and vice versa.

Shipping is the cheapest method of all other common competing modes of transportation. Shipping carries a large volume of cargo which is almost four times more than rail and four hundred times higher than air transportation in total (Martin and Stopford, 2009). So, shipping and port are combined as a pair which acts as a need for trade. Port economics and shipping comprise as a branch of economic that is known as maritime economics. Port economics means the historical development of port organization and function, technology, production measures, short and long-term cost functions, pricing, and investment. Shipping can provide efficient low-cost transportation and its effective use is important to the economic progress for developing countries, in terms of the economic contribution and growth of their foreign trade, and their domestic production and consumption.

Maritime is a word with many senses, which covers many aspects related to the sea often beyond purely transportation. However, maritime economics, which is referred to transportation and the directly related port functions. A more accurate name for Maritime economics is Maritime Transport Economics. Maritime economics is a tool, which is used as decision makers to understand the relationship between economic variables within port and shipping and other relevant organizations such as private sector. So the limited resources can be best utilized to achieve port goal.

In addition, two functions can be added to the ports which are commercial and industrial functions. Commercial functions are necessary to carry out all operations connected with the carry of goods on the ship to the port. Modern Industrial function is needed in order to develop the port infrastructure.

Ports represent a mix of public and private goods. They generate direct economic benefits (private goods) through their operations, as well as additional indirect benefits (public goods) in the form of trade enhancement, second order increases in production volumes, and increases in trade-related services. The economic multiplier effects have been used by many ports to justify direct public sector investment. It is in this dual production of both public and private goods that complexities arise, which makes defining roles for and boundaries between the public and private sectors challenging in the ports industry.

2.2 Importance of Port

Transport is an important factor because it enables trade between people, which is essential for the development of civilizations. Economic growth has always been dependent on increasing the capacity and rationality of transport but the infrastructure and function of transport have a great impact on the trade. Among transportation, water transportation is the cheapest one and most of developed cities are Port city.

Ports are medium that connect ships with land for both passengers and goods to transfer and are the most energy efficient form of transport. Ports are seen as a factor of economic growth and have high contribution level to the development of economic sectors. Ports have a lot of functions since it helps a country to distribute the goods domestically and internationally which served as the gateway of trade and influencing development and growth of nation.

Ports constitute an important economic activity in coastal areas. The higher the throughput of goods and passengers year-on-year, the more infrastructure, provisions and associated services are required. These will bring varying degrees of benefit to the local and regional economy and to the environment. Ports are also important for the support of economic activities in the hinterland since they act as a crucial connection between sea and land transport. As a supplier of jobs, ports do not only serve an economic function but also a social function.

In developing countries, most of port infrastructures are not efficient and half of funds for port go to salary because of inefficient infrastructure. But, when the port's functions become efficient, the amount of employment will be reduce in order to avoid the labour inflation. In Singapore, the demand for port were not clear in the late 60 but the port authority invested millions of dollars for port terminal which was seem as a risk. But after a century, all their costs are covered and the volume of trade also increased because of once massive investment and adaption of computerization system to smoothen the functions of port.

Taking into account for investing for the port in a country, Ports can be considered as “funnels” to economic development since they act as a development factor to take place in specific economic sectors and locations nearby ports or along corridors. The economic benefits of ports are commonly categorized as direct, indirect and induced. When port investment does lead to increased economic activity, the benefit is properly measured by the net value of the additional output. The direct benefits to the port are financial in nature and would be taken into account in any financial consideration as well as in economic review.

Around the Asian region, as a whole, has suffered from long years of under-investment in infrastructure. With nearly 90% of international trade being seaborne, it is still not too late to pursue an intensive course of infrastructure development so as to maintain economic growth, productivity and competitiveness. In fact, trade and economic growth here has strained existing port infrastructure in many countries to the point where they simply cannot accommodate further expansion without serious investments. In short, it is now ‘boom or bust’.

2.3 Functions and Factors of Port

The functions of port have a complex system composed of a set of material and immaterial elements, destined for the services of ships and goods. The tangible

and intangible elements that make up are port infrastructures and port superstructures and tool which are also known as goods handling equipments. Among them, port by itself has its own three functions which are tariff function; also known as function of port, merchant function and industrial function.

2.3.1 Traffic function

The underlying function of a port is the traffic function. Port function won't run without these functions. To cope with the traffic function, the port needs:

1. Sufficient capacities, comprising adequate seaport infrastructure and superstructure,
2. Good traffic connections with the hinterland, and
3. Good maritime connections.

The entire potential of a port and its optimal performing of the traffic functions can only be achieved by matching port capacities, transportation potential of the land infrastructure, and an adequate number of lines and services.

2.3.2 Merchant function

In ports, there is a big concentration of goods for the national requirements, as well as for other countries without access to the sea. The merchant function of a port depends on its traffic function. To satisfy the commercial function, a port needs:

1. Good land and sea connection,
2. Concentration of goods in the port area, and
3. Adequate storage capacities.

In the port, the merchant functions include:

1. The purchase and sale of goods, and
2. Additional services to the goods, adding with the value added theory.

A visible and more elementary form of the merchant function is the purchase and sale of goods in the port area. Various forms of free trade zones grant the necessary potential for the development of the merchant role of ports.

2.3.3 Industrial Function

After the World War 11, the industrial activities were introduced in ports. The first industrial branches in ports were shipbuilding and naval equipment manufacture. These were followed by oil refineries, chemical industries, cement works and

production of fertilizers later on. Today, large international ports of world importance support the development of industrial zones and various customs facilities which allow them to be competitive in the world market. Large industrial complexes have been built in numerous international ports. The concentration of industry in ports offers numerous economic advantages, and in particular:

1. Increases the turnover and provides employment,
2. Facilitates and furthers the inclusion of the country in international exchange,
3. Improves the competitive potential of the industries based in seaports in comparison with the industry located inland.

The underlying precondition for an adequate industrial function in a port is its satisfactory traffic function. Today, industrial ports with all the basic facilities for efficient performance are planned already at the time of construction of new ports.

At the overall level, the port has impact on transportation, level of output, employment and income within a national economy. For the individual, it has only impact on producers, consumers and production costs. According to Cariou(2004), “the impact means the consequences of an economic activity on the environment.” (Cariou, 2004, p32).

The environment has such kind of impacts when people exploit massive benefits from port:

1. Economic and Social Impact: The economic impact of the port would be on extension or changes in income, costs, efficiency, trade, financial reserves, infrastructure and payments.
2. Labour: The impact on the labour is on the consequences of port on the human elements, availability of labour force, know-how and technologic development.
3. Physical or natural: This impact refers to the consequences of the creation, existence or development of the port on landscape and their pollution.

The economic impact of a port can be categorized into three:

1. Direct Impact: This measure the effect of port on the organizations or firms directly linked to the port operations. It measures the level of employment and spending generated by port activities. These firms, organizations and individuals are directly dependent on the port and its assumed that the existence of the port is their main reason for their location near the port. It usually refers to organization involved in port industry services associated with moving goods

through port system and capital investment on port construction or expansion.
(Cariou,2004,p34)

2. Indirect Impact: This measures the effect on the port on the firms and organizations which are economically dependent on the primary activity. The indirect impact includes the effect on labour, services, materials and other items purchased by firms the supply port functions.(Carstensen,2001,p29)
3. The induced impact: The induced impact measures the effect of both the direct and indirect impacts on other sectors of the economy.

Main factor which determines the port will be port efficiency. Efficiency was defined as the condition where the wants could be achieved by using the minimum amount of resources that the producer has (Tossa, 2016). In order to become efficient port, port need modern infrastructures, well trained labour, stevedoring labour and documentation with computerization system and backup future development plans. When the port is more efficient, it will be caused the transportation cost to decline also leads to the ability of facilitating the imports and exports. If the port is not at the level of inefficient, its handling cost can also increase as well. According to a previous study, argued that port efficiency means generating goods' movement using the minimum amount of fund in as little time as possible (Clarke, Dollar & Micco 2004).

There are also indicators which measure the efficiency of port which are financial indicators and operational indicators. Financial indicators measure the use of funds and capital that the port authority needs to compare to the performances of port. It refers to the cost used by the port to distribute the goods and how the allocation of funds by the port supports the functions of port. The allocation of cost varies among countries since it depends on the structures and condition of the economy of the country. In most of developing countries, half of the funds go to capital and the other half goes to the direct labour cost such as salary for the staff that employed in the port.

The other indicator is operation indicator which measures the functions of port performance. Operational indicators have a more direct relation to the port management and its performance compared to financial indicators. Basically, operational indicators measure the productivity of port. Operational indicators are the most important indicators as it also affect the financial performance of the port. The operational indicators show how the operational aspect of the port authority and take into account the time needed for ship to distribute the goods via vessels. The

operational indicator is more specific to time measurement whereas financial indicators more towards the cost needed and how efficient the port is in using the funds.

2.4 Case Study on Functions of Singapore Port

The Port of Singapore, which provides services and facilities for ships to dock, load and unload goods, has always been a key contributor to Singapore's economy and growth. From the early days of modern Singapore as a small town with a harbor on the river banks, the port has expanded and grown into what it is today – a transshipment hub with connections to a vast number of ports around the world. The Port of Singapore is now the world's second busiest port in terms of container volume and ranked as the top maritime capital of the world. It is economically necessary because of lacking in land and natural resources.

2.4.1 Ancient times

Trading activities on the northern banks of the Singapore River had existed from as early as the late 13th century, when a port settlement was established there by a prince from Palembang known as Seri Teri Buana. Singapore was then known as Temasek and was one of many port cities that had sprung up along the Strait of Melaka. A change in China's maritime trade policy saw a large number of Chinese ships calling at Southeast Asian countries to source for goods for their home markets.

Besides acquiring and exporting products from nearby regions such as South Johor and the Riau Archipelago, Singapore also distributed goods brought in by ships from China, Southeast Asia and India to neighbouring lands. However, the port settlement did not last very long as the 14th century saw Melaka being made the key port of call, while Temasek eventually declined as an international port. Singapore was left without a port settlement until the British colonial era in the 19th century.

2.4.2 Colonial Era

When Stamford Raffles arrived in Singapore in 1819 to establish a trading post for the British East India Company, one of the first tasks he undertook was to dispatch a survey vessel to carry out a hydrographic survey of the port. This survey provided the improvement of the Singapore Harbour being issued by the East India

Company in 1820 In 1851, the first lighthouse in Singapore, Horsburgh Lighthouse – named after hydrographer James Horsburgh – began operations.

Raffles made Singapore a free port where fees such as those paid to the town, harbour, port and dock were not collected. Ships from all over the world could trade freely in Singapore with custom duties imposed only on selected products such as tobacco, opium, alcohol and petroleum. This policy, coupled with Singapore's strategic geographical location – lying on the sea route between India and China and thus easily accessible to ships and junks from around the region and natural deep water harbour, attracted numerous vessels to call at its port. Thus, within five years of its establishment, Singapore's port had become a regional entrepot.

Towards the mid-1800s, steamships requiring the use of coal were calling at the port for refueling. Coal was brought in for storage in the warehouses on the Singapore River and then transported to the steamships by lighters when they arrived, which created further congestion at the already-overcrowded river. A deep-water berth was thus needed and New Harbour (today's Keppel Harbour) was the natural choice, following a survey conducted by government surveyor John Turnbull Thomson in 1849.

In 1852, a wharf was opened by the Peninsular & Oriental Steam Navigation Company at New Harbour. This wharf was the preferred choice of ocean shipping while the Singapore River continued to be used for coastal shipping. Cargo to be transferred to another ship waiting at Boat Quay or New Harbour would be transported overland. Soon, wharves, warehouses and coal stores were opening up around New Harbour. The first dry dock was built by Patent Slip & Dock Company, and the second, Victoria Dock, was opened by the TanjongPagar Dock Company. Shipping traffic increased quickly with the greater availability of wharves and more shipping companies inaugurating regular steamship services through the port of Singapore.

When the Suez Canal opened in 1869, a ship's journey from Southeast Asia to Europe and vice-versa was reduced by about one-third as it no longer had to go around the African continent via the Cape of Good Hope. The second half of the 1800s, therefore, saw a steep climb in the number of steamships calling at Singapore for repairs, refuelling and the loading and unloading of cargo. To increase the rate of cargo handling, mechanical installations such as cranes and steam winches were employed in 1874 to replace the manual loading and unloading of cargo, while land

reclamation started at Telok Ayer in 1879 to provide additional land for the construction of new roads running between Keppel Harbour and the Singapore River.

The new roads helped to address the congestion problem along existing roads, a result of the increased volume of cargo to be transported overland. Meanwhile, both Patent Slip & Dock and TanjongPagar Dock companies expanded their respective number of docks and wharves until 1899 when they merged. Control over the dock and wharf businesses then came under TanjongPagar Dock Company until 1905 when the Straits Settlements government took over its undertakings.

Following the acquisition, the Singapore Harbour Board was formed to control and expand the facilities of the port. By 1932, the Port of Singapore under the Harbour Board was made up of the wharves at the Singapore River, Telok Ayer Basin and Keppel Harbour. Besides enhancements to the facilities such as replacing the wooden wharf frontage with concrete ones, the 1930s also saw the setting up of oil storage facilities on the islands of PulauBukom and PulauSebarok as well as ship-repair facilities in Sembawang.

2.4.3 Postwar developments

When the Japanese invaded Singapore in early 1942, port facilities were badly damaged by the bombings. In addition, machinery and equipment at the dockyards subsequently fell into a state of disrepair because no maintenance of the port and its facilities was carried out during the Japanese occupation (1942–45). The Harbour Board was thus faced with the difficult task of rebuilding and restoring the damaged port infrastructure before passenger and cargo services could resume after the war ended. With port facilities restored, the shipping tonnage began to climb and hit a total of 82.9 million net register tonnage (NRT) in 1963, a four-fold increase from 1947 when the total tonnage registered was 20.4 million NRT. In 1964, the Singapore Harbour Board was replaced by the Port of Singapore Authority (PSA).

2.4.4 Post Independence

Port developments in the 1960s and '70s were linked to the rapid industrialisation programme that was underway then. A cornerstone of the Jurong industrialisation project was Jurong Port, opened in 1965 to handle bulk cargo used by the industries located in the Jurong Industrial Estate. The PSA also took over

and converted the former British Naval Base Store Basin into Sembawang Wharves in 1971. By 1974, PasirPanjang Wharves had begun operations.

In the late '60s, the PSA invested millions of dollars to build Southeast Asia's first container terminal at a time when demand was not clear, as no shipping companies would commit to building container vessels that sailed between Europe and Southeast Asia. The TanjongPagar Container Terminal opened in 1972 with three container berths, and welcomed the first container vessel, M.V. Nihon, on 24 June 1972. Container shipping was initially slow to take off, but during the 1980s, container volume mounted steeply and more container berths had to be built to cope with the demand. With the rise in container shipping, computerisation was adopted to serve the needs of the vessels that called at the ports as well as other related businesses.

Expansion of the various port facilities and enhancement of capabilities continued in the '90s. These included the addition of berths at the new Brani Terminal, redevelopment of facilities at TanjongPagar Terminal, and increased capacity at Jurong Port to handle the growing volume of bulk cargo. In 1996, the PSA's port regulatory functions were taken over by the Maritime and Port Authority of Singapore, while PSA was corporatised in 1997 and became known as PSA Corporation Limited. The company still manages and operates the port today with the exception of Jurong port.

Singapore is connected to many ports in numerous countries and draws a large number of ships to its port. To meet the changing needs of the shipping industry, two new PasirPanjang Container Terminals equipped with the latest technology were opened in 2000. Phases 3 and 4 of the PasirPanjang Terminal development were launched in 2012, with the PSA investing heavily in the latest port technology such as unmanned cranes and automated container yard. That same year, an official decision was made to consolidate all the existing container terminals into one mega port in Tuas. The Tuas Port project, which is being rolled out in stages, marks a new phase in the development of the Port of Singapore.

2.4.5 Terminals

Singapore has two main commercial port terminal operators, namely PSA Corporation Limited and Jurong Port. Both ports can accommodate all vessel types. The Port of Singapore includes terminals located at TanjongPagar, Keppel,

Brani, PasirPanjang, Sembawang and Jurong. They can accommodate all types of vessels, including container ships, bulk carries, Ro/Ro ships, cargo freighters, coasters and lighters.

The terminals are managed by two commercial port operators – PSA Singapore Terminals, which manages the major share of container handling in Singapore and Jurong Port Pte Ltd, which is Singapore’s main bulk and conventional cargo terminal operator.

1. PSA Singapore terminals

PSA Singapore Terminals operates four container terminals with a total of 52 berths at TanjongPagar, Keppel, Brani, and PasirPanjang as one seamless and integrated facility. Its newest terminal, PasirPanjang Terminal (PPT), can handle mega container vessels of 13,000 TEUs or more with quay cranes that can reach across 22 rows of containers. Remote controlled bridge cranes allow each operator to handle up to six cranes.

PSA Singapore Terminals also operates a dedicated car terminal at PPT and is fast becoming a vehicle transshipment hub for the region, handling about one million vehicles annually. In January 2009, Singapore's first dedicated car terminal, the Asia Automobile Terminal (Singapore), began operations. It is a joint venture of PSA Singapore Terminals, NYK and "K" Line.

2. Jurong Port

Jurong Port is a multi-purpose port and the main bulk and conventional cargo gateway for Singapore and the region. The port handles steel products, cement, project cargo and copper slag, among others, using an extensive network of pipelines and conveyor systems for speedy and environment-friendly discharge and loading. It is also accredited by the London Metal Exchange as an ideal storage and transshipment hub for companies dealing in metals such as steel and tin ingots. With its multi-purpose capabilities, Jurong Port is able to handle different types of cargoes efficiently and seamlessly at the same terminal.

2.4.6 Operations and Functions of Port

At the crossroads of seaborne trade, Singapore’s interconnectivity makes it the preferred port of call for more than 130,000 vessels totalling some 1.5 billion gross tons. Singapore’s hub port is a complex stream of activity, handling a variety of cargoes at different terminals. About 30 million containers and 500 million tonnes of

cargo are handled every year and more than 30 million tonnes of bunkers lifted annually. In addition, about a million visitors cruise into Singapore every year.

Technology is at the heart of Singapore's intelligent port. Advanced technology enables MPA to oversee port and marine service providers round-the-clock, making sure that services are safe and reliable. As Singapore's national port planner, MPA is also responsible for the safe and optimal use of sea space and waterfront land. While our port can accommodate today's largest ships, MPA is preparing for tomorrow's increased cargo and mega ships by deepening channels and fairways, and developing the next generation of terminals.

With guidelines, procedures and systems in place, MPA ensures that the port of Singapore remains safe, secure and clean while maintaining a high level of reliability, speed and efficiency in its operations. The guidelines, procedures and other information relating to the systems, activities and operations within the port of Singapore are covered in this section.

2.5 Review on Previous Studies

The previous study pointed out the importance of port in Myanmar in order to develop the economy of nation and increase import and export. Water borne transport is cheapest among four types of transportation; air, rail, road and water and many developed countries are port cities. Port is major part of maritime transport and the development of nation economy depends on how the port is operated and mainly on their services. (Aye, 2007).

Another study reveals that Yangon Port handles 90% of export and import of Myanmar and in order to expand foreign trade, the efficient and effective port and ship operations are played as a vital role (Tint, 2007).

Most of ports in Yangon handle cargo and this study was focus on how the ports and terminals are managed in Yangon Ports. This study's primary aim was to improve ways of cargo handling which can improve customer's satisfaction and terminal's competitive position. This study also expressed about the various kinds of problems and difficulties in daily operations which are occurred because of port congestion, lack of equipment, inefficient cargo handling and complicated document systems which make port less productive in port operations (Tun, 2011).

Chapter III

Roles of Myanmar Port Authority And Important Functions of Port

Myanmar Port Authority takes the responsibilities of providing terminal facilities and services for shipping. All duties, functions and obligations of Myanmar Port Authority are governed by Yangon Port Act 1905 and the order conferring duties and powers on Myanmar Port Authority issued by the Ministry of Transport and Communication on 4th August 1976. Myanmar Port Authority plays a vital role in nation, building task for the interest of people and organizations and economic development of a nation.

3.1 History of Myanmar Port Authority

Yangon was a fishing village known by the name of Dagon up to the mid eighteenth-century. It was not yet established as a seaport. At that time, ThanLyn, Patheingyi, Mottama and Pegu were mostly used as seaports. In 1775; King AlaungPhaya seized the territories along the Ayeyarwaddy River and reached Dagon. The name Dagon was changed to Yangon by the King. In 1790, Yangon and Yangon Port were under the charge of Yewun. The King's Wharf at the corner of Mahabandoola Park and China Wharf at the corner of Latha Street were built in 1795.

In 1824, the volume of trade in Yangon Port decreased because of levying heavy tax. After First War, the Thin Nin Tha Yee coast and Rakhine Coast are captured by British and most of trading is occurred in there because they levied no tax. In 1830, teak was major export and the number of ship construction and preparation were increased but the area of Yangon Port was small because of insufficient budget.

At the end of Second War in 1852, the British conquered the lower Burma and merchants did their trading business in Yangon instead of Mawlamyath. Because according to geographical position, Yangon was located at the main point of

Ayeyawaddy River which had a lot of potential to expand the volume of trade. At that time, Yangon Port was governed by chief navigation officer (i.e. Chief Pilot).

There were many progress in Yangon Port when it was under the control of British; placing the navigation buoys in river which are waterway markers or warning points for ships, building roads and bridges for better transportation and using navigation light and boat to guide ships. Not only the volume of trade were increased after opening in 1869, built Yangon-Pyay railway in 1877, built Twan Tae channel in 1833 and Yangon-Taung goo railway in 1884, but also increased the volume of trade in Yangon Port.

Even though, the volume of trade, numbers of docked ships were increased and the development of Yangon Port was enhanced, the area of port was not expanded after the Third War in 1885. In 1876, Yangon Port was managed by Strand Bank Committee which had three departments. These three departments are Government Marine Department which took the responsibilities of the maintenance of river, Yangon Municipal Department controlled Kannar Street and Yangon Kaw Late Taw Department maintained both sides of Yangon river walls.

In 1879, the Port Act of Rangoon was promulgated as requested by the merchants because one-third of the income from the Yangon Port was used for Yangon Municipal's activities instead of providing for the development of Yangon Port. On 1st January 1880, the Commissioner for the Port of Rangoon was established and controlled the Yangon Port.

The port of Rangoon New Act was enacted in 1905. In 1943, after the Second World War, while the office of board of Management for the port of Rangoon was established in Similar City in India, the Port of Rangoon was ruled by the emergency act. Then in 1954, the Board of Management for the port of Rangoon was appeared and managed Emergency Amended Act of the Port of Rangoon.

In 1962, all out-ports for Sittwe, KyaukPhyu, Pathein, Mawlamyine, Dawei and Mergui, in 1965 Kawthoung Port, in 1968 Antgyi Dockyard and Thandwe Port in 1969, all stevedoring companies and in 1972 Division of Light House under the Department of Marine Administration were not only transferred but also administrated by the Board of Management for the Port of Rangoon. As the new administration system was introduced in 1972, it was reformed to "Burma Port Corporation" by the Revolutionary Council dated 15-3-1972 and notification No.(1) of Ministry of Transport and Communication dated 16-3-1972. Then series of changes occurred until

the corporation was renamed as “Myanmar Port Authority” which is known today since 31st March 1989.

The Republic of the Union of Myanmar has a total of nine ports which are located along the coastal line of 2832 kilometers. Among the ports in Myanmar, Sule Port is part of Yangon Port which is located in Strand Rd., Corner of Shwe Dagon Pagoda Rd., Mitharsu Ward, Seik Kan Township, Yangon Region and served as the nation’s busiest port for rice and major transit point for cement, timber and steel.

3.2 Roles and Importance of Port in Myanmar

Transport sector is an important component of the economy and a common tool used for development. Any activity cannot take place without the transportation factor. When transport systems are efficient, they provide economic and social opportunities and benefits that result in positive multiplier effects such as better accessibility to markets, employment and additional investments. Efficient transportation reduces costs in many economic sectors while inefficient transportation system increases costs.

Transportation development has taken place since the beginning of industrial revolution that has been linked to growing economic opportunities. At the macroeconomic level, the importance of transportation for a whole country has impact on employment, output level and income within a national economy. At the microeconomic level, the importance of transportation for specific parts of the economy is related to producers, consumers and production costs.

A country’s transportation system is an important sector to enhance the National development. All developed countries have well functioned transportation systems. Well functioned transport system can fully support an increased production in economic sector and grow public and social demand and enhance trade activity. In Myanmar, all transportation systems are operated under Ministry of Transport (MOT). There are four types of transportation in Myanmar; Air, Water, Rail and road.

Currently, there are five departments, one enterprise, one university and one college under MOT. Roles of Out-ports, river ports and inland shipping are taken place in Myanmar’s water transportation. All of out-ports and River ports are organized by Myanmar Port Authority and Inland shipping is operated by Ministry of Transport and Communications. The Union of Myanmar has nine ports operating for seaborne and coastal trade and spreading over the whole coastal line of about 2,229 km. All of

coastal ports are operating for seaborne and coastal trade within neighboring countries and Yangon Port as an inland port also serves as a gateway for the export and import of the state.

Yangon Port is divided into two ports. The first and largest port is the Myanmar International Terminal Thilawa, used mostly for RORO ships for transport of cars. This port is located 16 km from Yangon downtown and 16 km from Yangon river bay and next to the Thilawa Special Economic Zone developed by a Japanese Joint-venture company. And the second port in Yangon Port area is three inland container depots (ICDs) and 18 international wharves operated under

1. Bo AungKyaw Street Wharf (BSW)
2. Hteedan Port Terminal (HPT)
3. Sule Pagoda Wharf (SPW)
4. Myanmar Industrial Port (MIP)
5. Asia World Terminal (AWPT)
6. Hteedan Oil Berth (HOB)

Eight coastal ports, also known as Out-ports are regionally grouped as

1. Sittwe, Kyaukphyu and Thandwe ports located in Rakhine State
2. Pathein port in the Ayeyarwady Region
3. Mawlamyine Port in Mon State
4. Dawei, Myeik and Kawthoung Ports in the Tanintharyi Region

The ports of Sittwe, Pathein, Mawlamyine and Myeik serve as international exporting ports. Kyaukphyu, Thandwe and Dawei ports mainly stand for domestic coastal traffic. Particularly, Kawthoung Ports has been used for domestic coastal traffic as well as export cargoes destined to Thailand. All these ports are located along the coast of Myanmar specifically on the Rakhin Coast, Delta Coast and Tanintharyi Coast.

Main export categories with container are bean, yellow maze, sesame, rice, timber, garment, sea food, rubber, and others and the main imports are garment, electronic goods, car and accessories, paper, tyre, food stuff, construction materials, plastics, medicine, engine oils, cement and etc.

Since the second half of the twentieth century with the rapid globalization of the world economy and expansion of world trade, ports have played a vital role in the international transport system and become increasingly important. World's major port

cities are growing faster than Inland Cities. As global trade keeps growing, it directly boosts the economic development of the cities which handle cargo traffic. Before the establishment of port in Myanmar, Yangon which is known as Dagon at the time of King Alaungpaya, is founded as a fishing village with poor transportation. Later on later, with a lot of massive investment after centuries, transportation and trade improves a lot which enhance the national development.

In the early development of international trade, seaports are tools for national development. Beside the Yangon Port ,Thilawa Port was implemented and so did the plan of deep seaports along coastal of Myanmar. Later in the industrial revolution, many ports become important heavy industrial platforms. With the globalization, seaports increased their importance as a support to international trade and global supply chains. Seaborne trade has increased substantially in part because 80% to 90% of trade are operated by seaborne trade in Myanmar and massive redistribution of manufacturing to low cost locations and enhance Myanmar's ongoing economic growth.

Port is an economic concept of the a nation's economy which is a center of land and sea exchange and requires good access to a hinder land even more than a sea linked foreland. Today ports are not just a transporting point between different mode of transport but also logistics hubs and centers in global transport chain. Research shows that increasing port efficiency and in particular reducing the time needed to load and unload ships lower transportation costs and boosts trade which in turn leads to GDP growth.

Ports are capital intensive infrastructures that are associated with a wide array of economic impacts. Port development and world trade are closely interrelated. A port by itself is no guarantee of a country's growth but improving port infrastructure should be a priority investment for many municipal; authorities. Cargo handling, warehousing and storage are not the only ways ports stimulate metropolitan GDP growth. Some ports are also home to closely interlink manufacturing clusters which benefit from access to raw materials via nearby ports or from cheaper shipping costs.

A relation between the quantity and quality of transport infrastructure and the level of economic development is apparent. High density transport infrastructure and highly connected networks are commonly associated with high levels of development. When transport systems are efficient, they provide economic and social opportunities and benefits that result in positive multipliers effects such as better accessibility to

markets, employment and additional investments. Most of private port such as Asia World Port Terminal (AWPT), Hteetan Oil Berth (HOB) and Myanmar Industrial Port (MIP) which is joint port with MPA, focus on the investment of capital intensive infrastructure.

High density transport infrastructure and highly connected networks are commonly associated with high levels of development. In public sector, port infrastructure cannot be expanded because of lack of financial aid. When transport systems are deficient in terms of capacity or reliability, they can have an economic cost such as reduced or missed opportunities and lower quality of life. At the aggregate level, efficient transportation reduces costs in many economic sectors, while inefficient transportation increases these costs.

3.3 Contribution to GDP

Since Myanmar has transformed to Market Oriented Economy in 1988, the transportation sector plays as a one of the most important sector to provide the national economy. The transportation sector is a strong factor in terms of economic and regional balanced development, as well as also having a great influence on national integration to the world economic market. The following table (3.1) shows how the service sector contributes to Myanmar GDP.

Table (3.1) Percentage Contribution to GDP by Service Sector in Myanmar

Year	Trade (%)	Transportation (%)	Communications (%)	Financial Institutions (%)	Social and Administrative Services (%)	Rental and Other Services (%)
2007-2008	21.51	1.78	0.28	0.14	2.42	1.93
2008-2009	21.45	2.59	0.27	0.16	2.1	1.82
2009-2010	23.21	2.83	0.28	0.17	1.78	1.87
2010-2011	22.64	3.18	0.27	0.16	1.45	1.77
2011-2012	23.04	4.5	0.26	0.13	1.19	1.78
2012-2013	23.41	4.74	0.23	0.12	0.91	1.63
2013-2014	23.94	4.61	0.21	0.1	0.76	1.47
2014-2015	24.04	5.73	0.28	0.1	1.54	1.38
2015-2016	24.18	5.15	0.26	0.09	1.26	1.41
2016-2017	23.58	5.96	0.41	0.09	0.9	1.53

Source: Planning Department, Myanmar Statistical Information Services

All the terminals in inland and coastal line of Myanmar were operated by MPA till 1997. Since 1997, the private investment had been allowed in Port industry and the volume of foreign investment increased after the adoption of Market Oriented Economic Policy in 1988. The volume of seaborne trade also increased in Myanmar's sea. Two-third of ports in Yangon is now operated by private sector and the rest are joint operates with MPA. The development of port operation also enhances percentage contribution to GDP. Trade, transportation, communication, financial institution, social and administrative services and rental and other services play under the service sector. In the service sector, transportation sector take place as a second contribution. A development in port industries increases the percentage of contribution to GDP as a part of transportation sector.

Table (3.2) Percentage Contribution of Port Sector to GDP in Myanmar

Year	Rate of GDP	Transportation Sector (%)	Port Sector (%)
2007/2008	12.0	1.78	0.032
2008/2009	10.3	2.59	0.034
2009/2010	10.6	2.83	0.039
2010/2011	9.6	3.18	0.041
2011/2012	5.6	4.5	0.039
2012/2013	7.3	4.74	0.082
2013/2014	8.4	4.61	0.076
2014/2015	8.0	5.73	0.06
2015/2016	7.0	5.15	0.069
2016/2017	6.4	5.96	0.071

Source: Myanmar Port Authority (MPA)

According to data in table (3.2), the percentage contribution of port sector was slightly low in 2007/2012 because at that time, the port infrastructures were not efficient and most of ports were operated by public. After 2012, two-third of ports was run by private sector and they are focused on intensive infrastructure investment in order to become more productive. The amount of export and import increased which was loaded and discharged by local and foreign vessels. So, the percentage contribution of port sector to GDP increased dramatically in a percentage of 0.082.

From 2013 to 2016, the contribution was decline fairly because the number of vessels which was calling at Yangon Port was declined and the charges, tariff and dues for foreign vessels were started collecting in dollars. But in 2016/2017, the contribution increases to 0.071% because the number of foreign vessels calling to inner harbor increased and so did the amount of loading and unloading commodities from those vessels.

At the macroeconomic level (the importance of transportation for a whole economy), transportation is linked to a level of output, employment and income within a national economy. In many developed countries, transportation accounts between 6% and 12% of the GDP and so does the under developing countries. Looking at a more comprehensive level to include logistics costs, such costs can account between

6% and 25% of the GDP. Further, the value of all transportation assets, including infrastructures and vehicles, can easily account for half the GDP of an advanced economy.

At the microeconomic level (the importance of transportation for specific parts of the economy) transportation is linked to producer, consumer and production costs. The importance of specific transport activities and infrastructure can thus be assessed for each sector of the economy. Usually, higher income levels are associated with a greater share of transportation in consumption expenses. Transportation accounts on average between 10% and 15% of household expenditures, while it accounts around 4% of the costs of each unit of output in manufacturing, but this figure varies greatly according to sub sectors.

3.4 Policy and Act of Myanmar Port Authority

There is a difference between the meaning of policy and act; an act means law that is any law is made any particular matter by parliament or state legislatures and a policy is goals or objectives set by the government to achieve. There are six types of act which are related to Myanmar marine transportation are participated under the Act of Myanmar Port Authority. They are Myanmar Merchant Shipping Act, Ports Act, Yangon Port Act, Out-port Act, Myanmar Lighthouse Act and Myanmar Registration of Ships Act.

The earliest act which was enacted in 1905 was the Yangon Port Act and resurrected and provided necessary facts in 1954. This act had an impact only at Yangon region especially in shipyards, dockyards, wharves, pontoon, railways and warehouses around Yangon Port. The second act was known as the Port Act and promulgated in 1908 and resurrected in 1954. This act was affected to ports which located in Yangon, KyaukPhyu, Sittwe, Mawlamyaing, Putain, Dawaii, Myeik and other ports expanded by the government. If someone break the rule of port act, he or she has to receive a punishment such as one month in jail and a one thousand kyat at that time. Some of rules are that the individuals, exempt from government have no right to block or district navigation channels along rivers, no one can remove, replace or destroy buoys and moorings, every ships do not have right to deny, masters, seamen or any person who work on the ships have to follow every safety steps and etc.

The Out-port Act was launched legally to public in 1914 and relaunched in 1954 which had only impact on out-ports along costal line except from Yangon Port.

The Myanmar Merchant Shipping Act was promulgated on 1st May, 1923. The application of this Act to ships propelled by electricity or mechanical power but the public ships are exemption. The States of Kachin, Kayar, Kayin, Chin and Shan cannot be influenced by this act.

The fifth act of Myanmar Port Authority which was promulgated in 1937 which was called Myanmar Light House Act. This act had impact on all the lighthouses from Myanmar marine which are Mayyu Lighthouse, Man Aung Lighthouse, PuTain Lighthouse, Mingalar Island Lighthouse, KyunNyeeNaung Lighthouse, Thu RiYa and Sandar Lighthouses and Sate KanThar Lighthouse. The Myanmar Registration of Ships Act was enacted in 1841 and promulgated in 1954.

The objectives of Myanmar Port Authority are

1. To serve ships that no longer need to stay at the port
2. To improve safe entry and exit of ships
3. Loading and discharging of the cargo within a short time
4. Import and export cargoes to be handled without damage
5. To provide better service to port users
6. To increase performance of port's personnel

The implementations of Myanmar Port Authority for these objectives are

1. To equip with navigational aids for incoming and outgoing ships.
2. To manage and maintain navigational access channel for safety of the ships.
3. To have warehouses, labor gangs and cargo handling equipment and machinery for discharging and loading of cargoes and storage of cargoes.
4. To have civil engineering, mechanical engineering, marine, accounting and personnel services for supplying of port facilities.
5. To provide shipping agency service for the vessels which are calling to ports of Myanmar for the purpose of discharging and loading of cargoes.

3.5 Departments of Myanmar Port Authority and their Functions

Not only private ports but also public ports are served to operate the functions of Myanmar Port Authority. There are nine main departments, two divisions and four out-ports under the Myanmar Port Authority and General Manager has the responsibility to operate and supervise these departments and their duties.

The Departments are

1. Traffic Department
2. Shipping Agency Department
3. Marine Department
4. Civil Engineering Department
5. Mechanical Engineering Department
6. Account Department
7. Personal Department
8. Store Department
9. International Relation and Human Resource Department
10. Medical Division
11. Internal Audit Division
12. Outer Ports

3.5.1 Traffic Department

Traffic Department plays as one of the important roles in Myanmar Port Authority and it serves the foreign and local ships which dock to berths and handles exports and imports for loading and unloading. The main functions of Traffic Department are as follows:

1. To allocate berths for vessels calling to the Yangon Port
2. Unloading and storage of imported cargoes temporarily
3. Loading export cargoes in accordance with ship's stowage plan
4. To auction undelivered cargoes
5. To supply cargoes handling equipments and operators
6. To provide fresh water
7. To recruit and train workers and assign stevedores
8. Leasing land and buildings owned by Myanmar Port Authority
9. To levy charges and dues from the port users
10. Ensuring safety and security of persons and properties within port area

3.5.2 Shipping Agency Department

The main function of the Shipping Agency Department is to take the responsibilities of foreign and local ships and accomplish the tasks in place of ships' owners. There are eight functions to carry out their task which are

1. To respond the permission for the acceptance of Agency appointment
2. To send and ask proforma estimated port Disbursement Account to ship owner, operator and charterer
3. To book pilot to entry of the vessel
4. To make Berthing Arrangement
5. To do ship's husbandry matter
6. To issue Delivery Order
7. To arrange to get Port clearance

Other services provided by the Shipping Agency Department are Disposal of Sludge, Disposal of Gray Water, Disposal of Garbage, Supply of Fresh Water, Supply of Provision, Supply of Dunnage, Supply of Marine Diesel Oil, Ship Repair and Crew Sign on / Sign off and other matters.

3.5.3 Marine Department

The main function of the Marine Department is to provide services which are marine essentials for vessels calling to and departure from the port and issuing the regulations concerned in all foreign and local vessels which are using port limit area to provide move safety and monitoring them to abide by such regulations. There are ten services which are provided by the Marine Department are Pilot, Lighthouse, Mooring, Diving and Salvage, Tug, and Tow, Water Supply, Communication and Lunch Boat Services.

Pilot service is providing the pilots to vessels to be safety which enter to or leave from port and the navigation services is provided by the lighthouse and light ships along the coastal area and Myanmar sea and also laying down light buoy, navigational buoy and marker buoy for the purpose of channel safety. Mooring Service provides Mooring Gating while the vessels are mooring or unmooring from mooring buoy. Under water inspection of vessels and removing and cleaning the obstacles which are sinking in water channel are taken action by the Diving service. Salvage service is one of marine service which salvages the navigational equipments that are sinking in water channel.

Tug and tow services are provided by tug boat of Myanmar Port Authority for calling vessels to be safe in turning and moving. Launch Boat Service is carrying out transportation service to vessels which demand transport activities, providing sufficient depth and width and maintenance of waterway channel within port limit area and carrying out dragging and other necessary measure in cooperate with Dragging Division of Civil Engineering Department. Communication service provides in time information service assigned by 24 hours duty to interact among those vessels, shore and MPA's ships.

3.5.4 Civil Engineering Department

Civil Engineering Department is taking the tasks of construction and maintenance of wharves, road, retaining walls, buildings and other related civil infrastructures which leads to the smooth operation of traffic flow. Under the Civil Engineering Department, seven divisions are deliberated their responsibilities.

Maintenance Division is responsible for maintenance, repair and renewal of pontoon jetties, wharves, slipways, offices, warehouse, water supply and sanitation facilities, training walls, revetments and navigation related facilities. Construction Division is responsible for implementation of capital work and minor work. Work Division is responsible for construction of long term and short term civil engineering projects, minor work, retaining wall and outside party jobs.

Outport Division is responsible for maintenance, repair and renewal of building, retaining walls, revetment, slipways, navigation related facilities and outside party job at the 8 outports. Planning & Admin Division is responsible for collection of required data for the implementation of long term and short term projects, checking and analysing the ongoing works and estimate budget, design and drawing of the projects, recommendation and comments of the port civil engineering point of views.

Survey Division is responsible for hydrographic survey, land survey work within the port limit, and location of the navigation buoy. Dredging Division is responsible for management and operation work of grab dredger infront of the jetty and wharf areas and outside party dredging jobs.

3.5.5 Mechanical Engineering Department

The Mechanical Engineering Department is in charge of taking measures in orders to get regular inspection, maintenance on time and necessary repairing of

vessels, machineries, electrical and electronic apparatus. Their main functions and duties are as follow:

1. Our prime task is to keep on port services to run regularly.
2. Ships building and repair of vessels using in various port services such as navigating, dredging, mooring, fresh-water supply, towing and fire-fighting.
3. New construction and repair of navigation buoys and mooring buoys.
4. Maintenance and repair of containers and general cargo handling cranes, forklifts, towing tractors, prime-movers and trailers.
5. Maintenance and repair of vehicles and machineries.
6. Maintenance and repair of electrical and electronic apparatus of vessels, cargo handling equipments and port machinery.
7. Installation, maintenance and repair of electrical appliances and electricity supply for port terminals, yards, warehouses and office buildings.
8. Taking measure of afloat repair services on seagoing ships, to and from the harbours.
9. Maintenance and repair of vessels machineries and electrical components using in outports
10. Doing periodically survey on non-propelled boats and cargo barges.
11. Construction and repairing of vessels and buoys according to the orders given by government or other outside parties.

Mechanical Engineering Department is carrying out the duties with three dockyards and three divisions as follows:

1. Theinbyu Dockyard
2. Angyi Dockyard
3. Setsan Dockyard
4. Electrical Division
5. Planning & Works Division
6. Vessels Maintenance Division
- 7.

3.5.6 Account Department

The Account Department takes the responsibilities of the entire financial affairs of Myanmar Port Authority which are separated into Financial Accounts of

Myanmar Port Authority and Ship owners' Accounts. The Account Department is organized with the Planning and Budget Division, Ledger and Accounts Division, Bills Receivable Division and Agency Accounts Division.

The main functions of Planning and Budget Division are budgeting and forecasting of long term and short term plan, preparing of Capital Expenditure Budget, Current Expenditure Budget, Appropriation of Budget, Surrendering of Budget annually, Financial statements and Reporting and Out Ports budget estimates and revised budget estimates, maintaining the Fixed Assets Register, the Cargo throughputs statistics data and Navigational and Passengers statistics data. The last function is dealing with taking action on audit reports of the Office of the Auditor General.

Leger and Accounts Division takes the responsibility of administrating the staff of Accounts Department, controlling the Fund of Current and Capital Expenditure, Advanced payment, Outside Party Job Accounts, Store Accounts, maintaining the Income and Expenditure Ledger, the Suspense Ledger & Fixed Assets Ledger, preparing of Ledgers for the Out Ports, Monthly Trial Balance, Weekly , Monthly ,Quarterly and Annual Reports and making receipt and payment of cash transaction and dealing with Myanma Economic Bank and making receipt and payment of foreign currency transaction and dealing with Myanma Foreign Trade Bank.

The income of Land rent, Building rent, Warehouse rent, Shop house rent, Buoy hiring charges, Electricity charges , Sales of fresh water and other receivable Accounts are controlled by the Bills Receivable Division. This division also takes in charge of calculating and issuing the combined Bill of Port Dues Charges, Pilotage Charges, Berthing Charges, Mooring Charges, Ship Hiring Charges, Stevedoring Charges etc. and Controlling Debtors Account, maintaining the income received by Challan and controlling the Deposit accounts.

The role of checking and disbursing the expenditure of vessels on behalf of ship owners, controlling the Ship owners' Deposit Accounts and reconcile with ship owners, checking the fund, making the repatriation of surplus fund to ship owners, dealing with Myanmar Economic Bank and Myanma Foreign Trade Bank on behalf of ship owners and preparing the Disbursement Accounts and General Accounts for ship owners are the responsibilities of Agency Accounts Division.

3.5.7 Personal Department

All the roles of administrative affairs of Myanmar Port Authority are accomplished by the Personal Department and organized with Administration Sub department, Personnel Affairs Sub department and Establishment Sub department. The main function of the Personnel Department is that the responsible for the affairs of all personnel under the Myanmar Port Authority starting from selection and recruitment of personnel up to their resignation or retirement. The department also has to give assistance to MPA regarding the human resources management and labor polices.

3.5.8 Store Department

The main duty of the Store's Department is to get the main and spare materials of limited kind within limited time and low price for Myanmar Port Authority. The functions of Store Department are

1. Planning and Administration of office works
2. Procurement of goods from domestic and foreign
3. Storage and Issue of goods
4. Making Auction

3.5.9 International Relation and Human Resource Department

International Relation and Human Resource Department was structured with four sub departments which are Business Administration and International Relation Department, Development of Human Resource Department, Information Technology Department and Administrative and Cooperation Department.

The first sub department plans and contributes the development procedures of local and foreign institutions, private business organization and port affairs. The second one takes in charge of improving employees' skill by providing not only local and foreign Human Resource Development Trainings but also provide trainings for Port Operation, Management and Sustainable Development and doing research and survey for development of ports.

The Information Technology Department is planning to accomplish the Integrated Online System for the whole ports in Myanmar. Making operation, maintenance and upgrading the network system, hardware and software of all departments. The last sub department has the responsibilities to report the functions,

labor conditions and management affairs of all departments to Managing Director and General Manager.

3.5.10 Medical Division

Medical Division provides medical treatment for Port employees and give health Education and health talks daily to the patients. They also provide drugs, medicine and laboratory facilities for employees and crew of sea going ships such as checking of stool urine, blood and sprutum and submmition of weekly and monthly medical reports to Myanmar Port Authority administrative section, social medical department and occupational health department and to keep administrative and medical records.

3.5.11 Internal Audit Division

Internal Audit Division is responsible for Internal Audit through General Manager to Managing Director of Myanmar Port Authority. Duties and functions of Internal Audit Division are as follows;

1. Auditing of Daily Challan Income from foreshore areas (Including Cash, Deposit and Advance)
2. Auditing of Expenses
3. Auditing of Bills issued.(Including port bill, combined bill and miscellaneous bill)
Auditing of Salaries and Wages.
4. Auditing of Monthly Pension Pay, Gratuities and Pension Cases.
5. Verification of Store Stocks.
6. Auditing of eight out ports under Myanmar Port Authority
7. Auditing of Private Ports conducted with B.O.T system
8. Auditing in Special Case as necessary

3.5.12 Outer Ports in Myanmar

Except from Yangon Port, eight coastal ports which are also known as outer ports are located along coastal area and stand for coastal trade to international. These eight coastal ports are Sittwe, Kyaukphyu and Thandwe ports in Rakhine State, Pathein port in Ayeyarwaddy Region, Mawlamyine port in Mon State and Dawei, Myiek and Kawthoung ports in Tanintharyi Region.

Sittwe, Patheingyi, Mawlamyine and Myeik ports serve as international exporting ports and Kyaukpadaung, Thandwe and Dawei ports mainly stand for domestic coastal traffic. Particularly, Kawthaung port has been used for domestic coastal traffic as well as export cargoes destined to Thailand. All the coastal ports provide services as the Navigation services for the vessel entering port, shipping agency services and loading, unloading and stevedoring services.

3.6 Private Ports and Public Port in Yangon

All the terminals of Ports in Myanmar were operated by Myanmar Port Authority till 1997. The private investment has been allowed in Port Industry since 1998. The volume of foreign investment increased after the adoption of Market Oriented Economic Policy in 1989. The volumes of seaborne trade also increase in Myanmar's Sea. Ports and terminals are needed to operate by MPA but also by the private sector. Private investments are necessary in order to enhance sustainable economic development of the country, upgrading living standards and generating job opportunities for the local people.

(a) Myanmar International Terminal Thilawar (M.I.T.T)

Myanmar International Terminals Thilawa (MITT) which is fully owned by Hutchison Port Holdings (HPH), is a multi-purpose container terminal located at Thilawa which is near the mouth of the Yangon River. The terminal offers a comprehensive range of safe, efficient and productive services to the shipping industry 24 hours a day, seven days a week.

MITT is located just 25 kilometres from Yangon, the largest city in Myanmar and the country's international trade portal, through which 90 percent of the nation's maritime trade passes. Total Quay Length and Width of MITT is 11000 M long and (5) vessels can accommodate at the same time, operating for all kinds of vessel (I.E- Container Vessel, Ro Ro Vessel, G/C Vessel & Cruise Vessel) except for tanker vessel. The terminal is also adjacent to the Thilawa Special Economic Zone planned to become operational by the middle of 2015.

MITT has five berths capable of handling a wide variety of cargo. Large Vessels with deeper draft could dock at MITT compared to at city terminals. There is also a rail line right into the terminal linking MITT not only with Yangon city but also with the national rail network.

(b) Myanmar Integrated Port Limited (MIPL)

Myanmar Integrated Port Limited (MIPL) is located in Thanlyin area and port is about 20 nautical miles from the Yangon River estuary in Kyauktan Area, situated on the right side of Yangon River and next to Myanmar International Terminals Thilawa (MITT). The facilities which are applied in MIPL are designed to handle General Cargo such as steel products, heavy equipment and vehicles and rice.

MIPL also provide Stevedoring, Warehouse storage, Bulk Liquid storage (palm oil) and Break Bulk services (e.g. urea, cement) with a first class wharf supported by a total terminal working area of 150,000 sq. The wharf is 200meters long with 10meters draft which allows vessel up to 20,000 metric tons to be conveniently berthed alongside.

MIPL has a skilled and stable workforce with a highly developed and modern infrastructure as well as an extensive warehousing and storage capacity. The port is fully equipped with stevedoring equipment for handling bulk liquid, bulk dry and other dry cargo ships, served by a well-fortified 200 meters jetty, a Warehouse, Tank Farm, Car Parking Site and Steel Drum Factory.

The wharf of MIPL has a well functioned 200 meters jetty which is designed for heavy general cargo operations and cruise ships and easily accessible by trucks, trailers and other vehicles for cargo transfer which are connected with heavy-duty roads. MIPL has two investments projects which are granted by Myanmar Integrated Port Service Private Limited (M.I.P.S) for construction of port and by Asia Pacific Edible Oil Limited (A.P.E.O) for construction of oil Storage tank and edible oil production for B.O.T system and two of these investments projects are started on 25th March 1998.

In Thilawa region, only MITT and MIPL were the only ports operational in the past but recently there has been an increase in port development in this region as well. The area highlight in red represents the newly developed and operational ports. 37 plots are expected to be developed. In this map, the highlight yellow represents the expected areas for Development of International Port and Terminal and the highlight white shows the existing ports and terminals.

(c) Asia World Port Terminal (A.W.P.T)

Asia World Port Terminal (A.W.P.T) is well developed, managed and operated by Asia World Co., Ltd (A.W.C) which was established in 1992 and were core

business in the infrastructure sector. A.W.C is undertaking and completing numerous critical infrastructure development projects throughout Myanmar. Their projects include roads and highways, airports, ports, power plant and telecommunication tower.

A.W.P.T is located upstream of the Yangon River, about 32 kilometers inland from Elephant Point on the Gulf of Martaban. AWPT is located in the heart of Yangon and offers the most convenient and fastest access to downtown Yangon and major industrial hub. A.W.P.T handles a substantial portion of Myanmar's container export and import which supports the economic growth of Myanmar and creates new business and employment opportunities.

The first wharf of A.W.P.T was started building in April 1996 and the wharf become operational in December 1997. In November 1998, the second wharf was built and operated with container handling facilities in May 2001. The third wharf was commenced in August 2002 and facilities were officially opened in November 2005. After that port terminal in A.W.P.T was expanded their capacity year by year. The water depth alongside the wharf-head of both wharves is designed at 10 meters below datum in order that the largest available vessel entering the Yangon River can be accommodated at AWPT.

Most of the berths are designed for general cargo and there are fuel storage tanks and liquid cargo handling facilities but RO/RO facilities are not available at A.W.P.T. The Length of the berth is 614m long and four vessels can accommodate at the same time; two berth spaces for container vessels and two berth spaces for G/C vessels.

(d) Myanmar Industrial Port (M.I.P)

Myanmar Industrial Port (MIP) was incorporated since 19th February 2000. Myanmar Industrial Port (MIP) which is national and private owned port, is located close to downtown and situated downstream of Asia World Port in Yangon River. MIP port was formally managed and operated by Myanmar Annawa Swan-er-shin Group (S) Co Ltd (MAS) since 4th January 2003. MIP was built with MAS as a sole investor and MAS provide fully funding and overseeing the port construction and operations of MIP.

MIP Container Terminal and the Inland Container Depot of Myanmar Annawa Swan-er-shin Group (MAS) was opened on Jan 2003. MIP handles mainly containers: It has two containers terminals that can handle two container ships at one time and a

third is under construction expected to be completed in 2015. There is a container yard, a container freight station and an inspection bay. MIP can handle ships up to 15,000 GRT at the terminals. There are safety and fire prevention systems at the port and a clinic. Main business of MIP is handling of containers and provides port services on an international level. All the containers are moved out of the port by trucks.

At MIP, there are three terminals for vessel calling in and out; terminal 1 can handle 15,000 GRT container ships at one time and land area of terminal 2 has 291,374 sqm. For Terminal 3, the area has 748,668 sq.m(185 acres) which is under construction. Together with terminal 1 & 2, the total capacity is expected to increase to 1,200 TEU per day. Upon completion of Terminal 3, expected in 2015, with an extra 1,800m wharf, the entire MIP wharf will be 2,800m (2.8km) long.

(e) Bo AungGyaw Street Wharf (B.S.W) and Sule Pagoda Wharf (S.P.W)

Bo AungKyaw port is under management of Myanmar Economics Holdings that (MEH) and located at Botahtaung Township, Yangon.Bo AungKyaw Street Wharf has three berths which are No(1) BSW, No(2) BSW and No(3) BSW. The water depth alongside the wharves is 9 metres in accordance with the maximum draft of the Yangon River. The total length of berth is 470 M longs and 3 vessels can accommodate at the same time, two berth spaces for G/C, Ro Ro vessels and one berth space for container vessels.

Bo AungGyawNo(3) container wharf was opened in 1989 and started operated in February 1998. The length of wharf is 183 m long and 30 m wide and storage capacity is 2622 Twenty Foot Equivalent Unit (TEU). BSW No(2) Inland Container Depot was opened in December 1999 and container storages capacity is 2822 TEU. BSW No(1) was opened in July 1996 and the capacity of container storages is 4387 TEU.

Sule Pagoda Wharf (SPW) was established in 1913 and has seven wharves, each of wharf has 1040 m long which stretch from Latha Street to Pan Sodan Street along the Strand Road. The wharves of No(1) to No(4) are operated by private company which is Myanmar Industrial Port (MIP) and from wharf No(5) to No(7) are operated by Myanmar Port Authority (MPA). The length of wharves is 1050 m longs and 7 vessels can at the same time but only G\C and RO RO vessels.

The port includes seven warehouses with the capacity of 96110 metric tons. The port is capable of accommodating vessels of 190 meter length overall, a draft of 8.6 meters and a capacity of 50000 tons. Total of 10 ships including ship carrying steel and nine ships loaded with rice have already been docked at SWP.

SPW is the nation's busiest sea port for rice and handles an average of 1.3 million metric tons of imports and 600,000 metric tons of exports annually. A total of 49,801 metric ton of rice was exported to foreign countries via SPW in current financial year. SPW is also major transit point of cement, timber and steel.

(f) Hteetan Oil Berth (H.O.B) and Hteetan Port Terminal (H.P.T)

Hteetan Oil Berth was operated by private company and 52 KM distance from Yangon Pilot-station. The length of the HOB berth is 120 M long and only one tanker vessel can berth (maximum available length 118 M). Hteetan Port Terminal was operated by private company and 52 KM distance from Yangon Pilot-station. It has 1438 M long and 3 vessels can accommodate at the same time, mainly for container vessels and G/C vessel also available to berth.

3.7 Development Plans of Seaborne trade in Myanmar

Since the maritime transportation is served for more than 85% of country's exports and imports, more future development plans for ports should be carried out in order to develop the nation's economy. Government has planned to develop the Yangon Inner harbor area for gaining sufficient infrastructure to handle the larger volume of cargo in the near future. The implementations for the development plans of maritime trade are

1. To construct revetment and reclamation area for expanding the backup area of Botataung foreshore.
2. To upgrade passenger jetties to a modern passenger terminal.
3. To upgrade the local jetties to international inland port terminal.
4. To upgrade and renovate the Sule Pagoda Wharf as a multipurpose terminal for international general and container cargo vessels.
5. To construct modern commercial buildings.

In Thilawa port area, ports in Thilawa have been earmarked for the enhancement of higher cargo throughput. Hence, a projected port development scheme together with special economic zone in Thilawa area has been implemented by foreign and local investors on BOT system.

To cope with the growth of seaborne cargo traffic and to lessen logistics cost in maritime trade, larger vessels will have to be able to access the Yangon and Thilawa ports. MPA is now making an increased effort to improve the Yangon river access channel based on the existing natural conditions.

Since all existing ports of Myanmar are river ports and not deep enough for larger conventional and container vessels, so the government took the initiative to develop deep sea commercial ports along the coast of Myanmar. The potential areas to be developed as Deep Sea Ports are

1. Dawei Special Economic Zone together with Deep Sea Port at Thanintharyi Region in the South Coast.
2. Kyaukphyu Deep Sea Port at Rakhine State in the West Coast.
3. Kalagauk Deep Sea Port between Mawlamyine and Ye Region in the South Coast.
4. Westport Deep Sea Port at Nhayoke Bay, Ayeyarwaddy Region.
- o Three Deep Sea Ports projects to be implemented in Myanmar are
5. Kyaukphyu Deep Sea Port in the Rakhine State on the West coast which borders Bangladesh to the North and Bay of Bengal to the West. This project was awarded to Chinese CITIC Group which will lead the projects to build the port as well as an industrial area at the Special Economic Zone.
6. Kalagauk Deep Sea Port project is still under investigation for technical and financial feasibility.
7. Dawei Special Economic Zone together with Deep Sea Port in the Thanintharyi region on the South coast.

Thailand and Myanmar signed MOUs to develop the Dawei SEZ in 2008 and 2012. As part of MOU, Myanmar granted Italian-Thai Development PCL (ITD) which was a 75-year concession in 2008 to construct the project and attract investments. The project was suspended due to the lack of financing. ITD lost the 75-year concession in 2013 with the government of Thailand and Myanmar taking a 50% stake in the project each. On 30 January 2015, Japan agreed to participate in the project and holding equal partnership to Thailand and Burma in the Dawei SEZ Development Co, and intend to provide technical and financial support for the project. The Dawei Special Economic Zone Development will include a deep sea port with a capacity to hold 250 million tons of cargo which is surrounded by an economic zone covering some 200 square kilometers.

The development plan for future transport infrastructure projects which are and to be implemented by MPA, are

1. Development of Waterways Channel along Ayeyarwaddy and Chindwin rivers.
2. New River Ports along Ayeyarwaddy and Chindwin rivers and other potential areas will be established.
3. MPA is trying to establish the deeper port near the seaside of Yangon area to accept bigger vessels due to the limitations of water depth of existing ports.
4. Development of Dry Port will be carried out at Yangon and Mandalay.

Among the ports in Myanmar, Yangon ports serves as a gate way for the exports and imports of the state which plays important role as a main sector for the Economic Development of the State. The maritime cargo traffic of the Yangon Port has increased more than 24 million tons and the efficiency in cargo handling at 29 wharves of Yangon Port has reached up to almost 70% which will be optimum capacity of the Port. Therefore, it is needed to develop more terminals and facilities such as modern and sophisticated cargo handling equipment and machineries are needed and also skillful stevedore within the area of the Yangon and Thilawa Port.

For the Yangon Port expansion, MPA also has future plans which are to be implemented in near future. They are available foreshore area along Dala Foreshore area, Letkhotkone and Zwel Bar Kone Dan area which are located at the mouth of Yangon River.

Chapter IV

Functions of Sule Pagoda Wharf (SPW)

Sule Pagoda Wharf (SPW) is one of wharves in Yangon Port which serves as the National's busiest sea port for rice and a major transit point for cement, timber and steel. The functions of SPW also play as a vital role for Nation's Economic Development.

There are seven jetties in Sule port terminal and four of them are handled between the MPA and a joint venture company. The rest are operated by the MPA alone. The MPA is upgrading the terminal to dock bulk carriers of 300,000 tons deadweight.

The length of Sule Pagoda Wharves No. (1), (2), (3) and (4) were the total of 548 m and built in 1941. Wharves No. (1) and (2) are mainly used for rice products and No. (3) and (4) are used for general products. Wharves No. (5), (6) and (7) were built in 1962 and had the total length of 478 M². The storage area of SPW has 12600 m and the warehouse area has 4500 M². Wharf No. (8) was built in 1993 and the total length has 152 m and mainly used for passengers and coastal ships.

4.1 Services provided by SPW

Movement of freight traffic in a port generally involves the following distinct multi-services. When a vessel is calling to a port, it require navigational aids to make sure that the ship enters the port safely, an anchorage area for use while waiting for berth, pilotage system for approaches to the port and movements within the port, breakwaters to provide smooth water to facilitate ships handling cargoes, dredging to ensure that the required that the required depth of water is maintained in channel, harbor, alongside berth , tugs to assist the ship from the open sea to a buoy, anchorage or against a quay to get information of Port Marine Notice and Port Marine Circular. A vessel also requires a terminal that a vessel will come alongside a dry dock if necessary that a vessel has to berepaired because of mechanical failure. Owners of

vessel have to appoint the private or public as ship agent to carry out all the activities of vessels such as immigration, supply of fresh water and fuel oil, documents and etc.

Cargo usually requires storage area and warehouse before being released for land transport out of the port area, custom facilities for inspection and clearance of goods, a system of supervision to prevent pilferage while handling or storing goods and a system of transferring goods from store to land transport and vice versa.

Fire prevention program is laid down to prevent fire hazard and port users if necessary, request a port to pack larger or odd-shaped item. Ports and terminal operator come to use EDI to keep up with the pace of development. In a port organization, safety program is laid down to create accident free environment.

Dredging service is the work of clearing out the bottom of rivers, harbours and other bodies of water so that ship can use them. The machines that do the work are called dredgers. They work as a power shovel does on land. Dredging make an improvement of waterways and water front.

In tugboat service, tugboat which is used in harbor to tow large ocean liners or freighters and aid all types of vessels in entering or leaving their anchorage places. They can tow from the front or side or push from the back.

Terminal services is a service in which terminal is a platform on posts or piles which stretches out over water from the shore. These terminals are for mooring boats and ships while they are loading or unloading cargo. Generally, a terminal is considered to be a starting point or an ending point in a mode of transport. But in an inter-modal transport, a terminal should be considered to be a transferring point because an ending point of one mode of transport usually becomes a starting point on another mode of transport.

Among the services at SPW, there is another service called fresh water supply which is portable and vessels buy fresh water after departing. Sule Pagoda Wharf (SPW) supply fresh water for both of local and foreign vessels. A vessel must buy at least 50 tones if a vessel buys fresh water with barge and 30 tones must be buying if a vessel buys at wharf. SPW supply fresh water for 4000 kyat per tone at outer harbour and 2000 kyats per tone for inner harbour. The following table (4.1) shows that amount of fresh water (Ton) and amount of earning from supplying for both of local and foreign vessels.

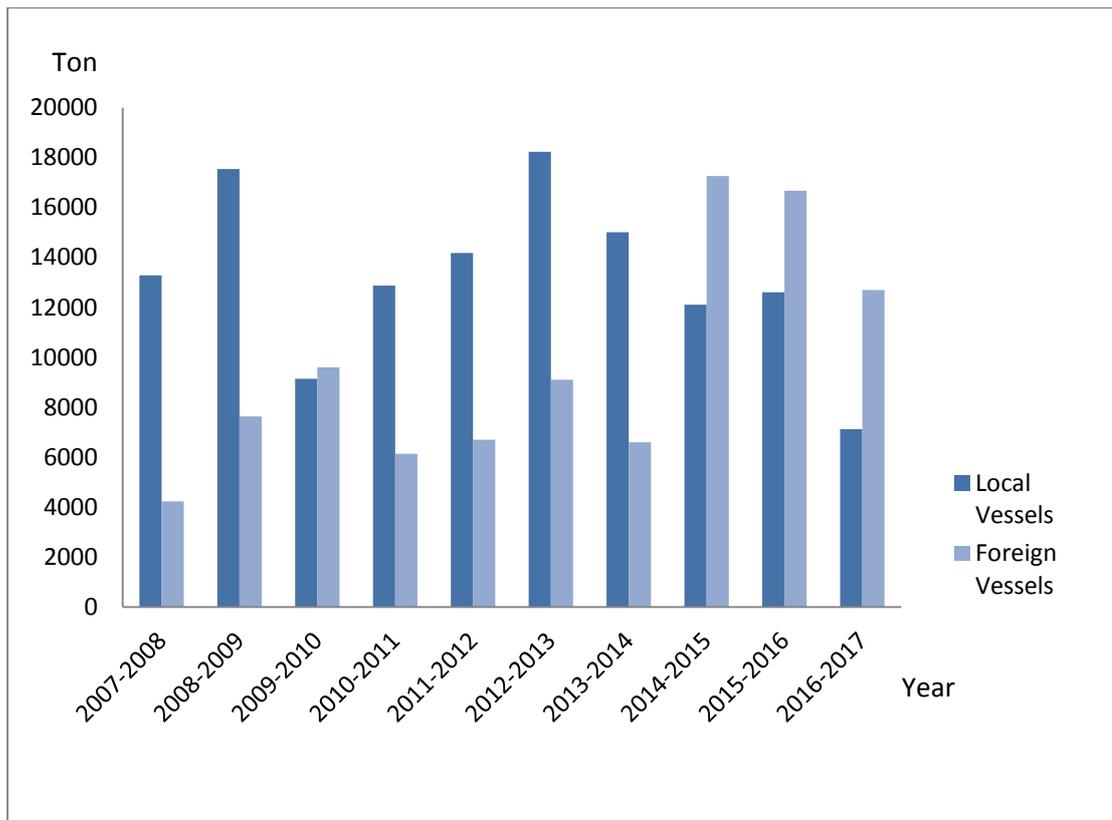
Table (4.1) Fresh Water Supply at SPW

Year	Local Vessels		Foreign Vessels	
	Ton	Kyats	Ton	US\$
2007/2008	13281	19765654	4223	10096
2008/2009	17550	25873460	7635	15867
2009/2010	9134	12897555	9601	21769
2010/2011	12870	18769442	6139	12987
2011/2012	14184	21114042	6702	13404
2012/2013	18236	27354346	9098	18196
2013/2014	15010	22515404	6595	13190
2014/2015	12103	18154736	17262	51561
2015/2016	12609	18913710	16673	50019
2016/2017	7121	10981584	12702	93436

Source: Sule Pagoda Wharf (SPW)

As the data represented in table (4.1), the amount of fresh water supply to local vessel was slightly decreased, but the amount supply to the foreign vessels was increased year per year. When the vessel enters into terminal to dock and after loading, they need fresh water before departure.

Figure (4.1) Fresh Water Supply Services at SPW



Source: Sule Pagoda Wharf (SPW)

According to figure (4.1), we can see clearly how much fresh water was supplied per year. The highest tone of fresh water was supplied for local vessels in 2013 but didn't decline so much in next year. Foreign vessels bought more fresh water than last year and amount of supplied tone reached to 12702 tones for 300525 USD. Supplying fresh water is necessary for port because it can increase revenue for port.

4.2 Number of Vessels calling to SPW

Table (4.2) shows the number of vessels calling at Sule Pagoda Wharf (SPW) for export and import during 2007 and 2017.

Table (4.2) Number of Vessels calling at Sule Pagoda Wharf (SPW)

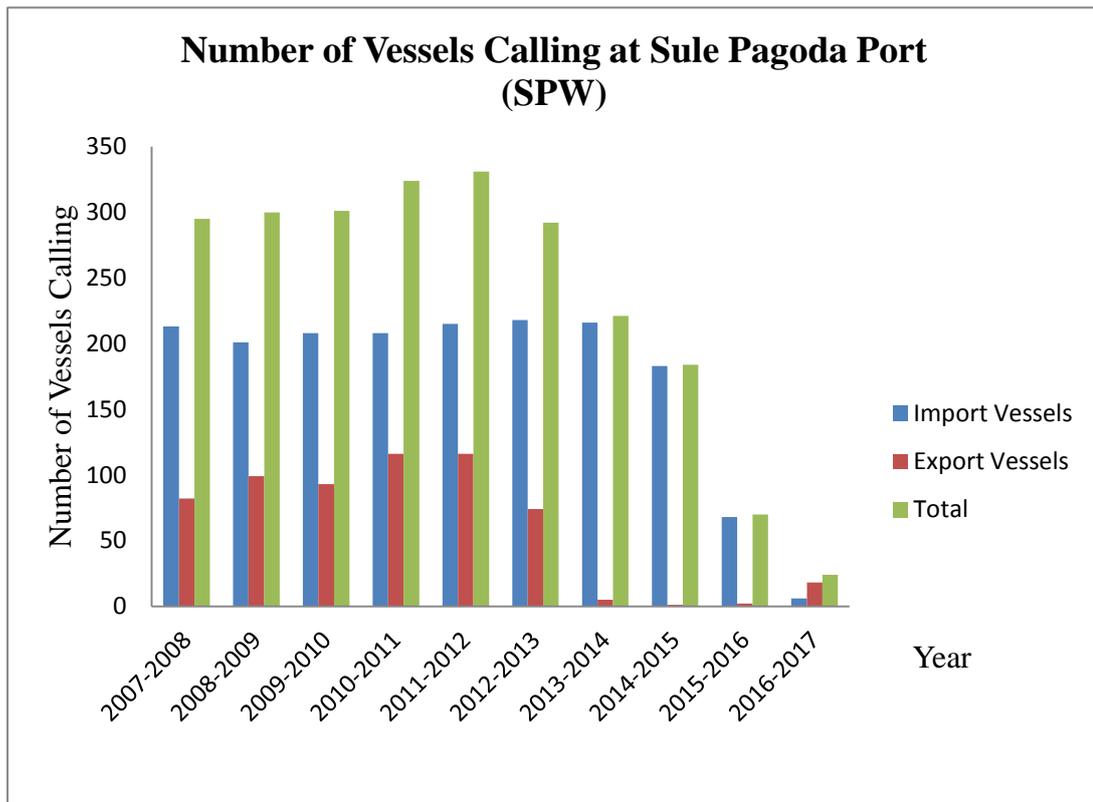
Year	Import Vessels	Export Vessels	Total
2007/2008	213	82	295
2008/2009	201	99	300
2009/2010	208	93	301
2010/2011	208	116	324
2011/2012	215	116	331
2012/2013	218	74	292
2013/2014	216	5	221
2014/2015	183	1	184
2015/2016	68	2	70
2016/2017	6	18	24

Source: Sule Pagoda Wharf (SPW)

According to the table (4.2), the number of vessels calling at SPW which is situated next to Bo AungGyaw Wharf, for both of Import and Export was slightly increased from 2007 to 2012 and then smoothly decreased from 2013 to 2017. The increase and decrease in number of vessels calling at wharves depend on seasonal changes and unstable economic activities.

Vessels calling also could be delay because of season, especially in rainy and wet season. Due to Inner Harbor of Yangon Port, the entry of vessels into Port is limited to vessels up to 10000/15000 DWT with a maximum draft of 9 meters and maximum length of 167 meters and also limited with daylight hours. With the following Bar graph, increase and decrease of the number of vessels calling can be seen exactly during 2007 and 2017.

Figure (4.2) Number of Vessel Calling at Sule Pagoda Wharf (SPW)



Source: Sule Pagoda Wharf (SPW)

According to Figure (4.2), the number of vessels calling for export at SPW was suddenly drop because Wharves No (1),(2), (3), (4) and (5) was started operating by private sector since 2009. And also SPW did not handle containerized cargo, they mainly operate bulk cargo. A bulk carrier, bulk freighter, or bulker is a merchant ship specially designed to transport unpackaged bulk cargo, such as grains, coal, ore, and cement, in its cargo holds.

4.3 Handling of Annual Export and Import Commodities at SPW

Exports are one component of international trade. The other component is imports. They are the goods and services bought by a country's residents that are produced in a foreign country. Combined, they make up a country's trade balance. When the country exports more than it imports, it has a trade surplus. When it imports more than it exports, it has a trade deficit.

Imports are important for the development and growth of national economies because not all countries have the resources and skills required to produce certain goods and services. Nevertheless, countries impose trade barriers, such as tariffs

and import quotas, in order to protect their domestic industries. At Sule Pagoda Wharf (SPW), the first most imported product is cement, steel takes place as a second product and the third product is parts of vehicle and the rest are general products.

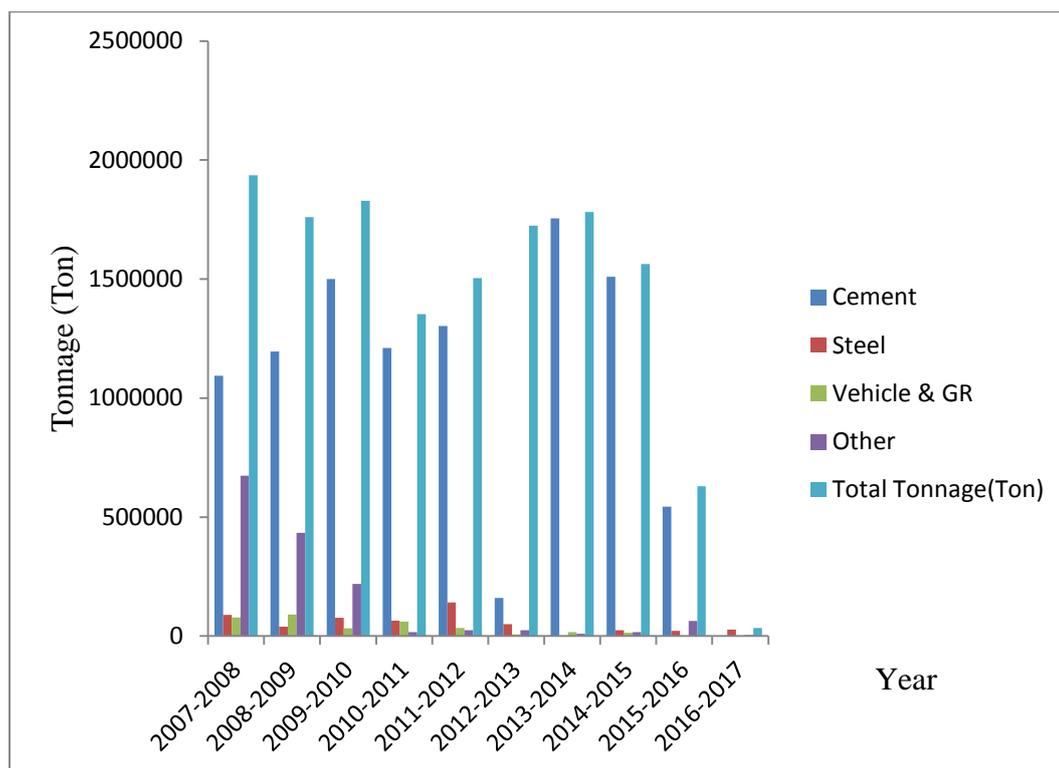
Table (4.3) Annual Handling of Import at SPW

Year	Import (Ton)				Total Tonnage (Ton)
	Cement	Steel	Vehicle & GC	Other	
2007/2008	1094354	88932	78994	674353	1936633
2008/2009	1195433	40093	90444	434343	1760313
2009/2010	1499699	77477	33002	218905	1829083
2010/2011	1210435	64460	61241	16990	1353126
2011/2012	1303175	141041	34472	25214	1503902
2012/2013	1640074	50536	7622	25283	1723515
2013/2014	1754686	456	16896	9706	1781744
2014/2015	1509081	25063	13432	16074	1563650
2015/2016	544209	21976	-	63138	629323
2016/2017	-	27400	1929	5188	34517
Total Tonnage (Ton)	11751146	537434	338032	1489194	14115806

Source: Sule Pagoda Wharf (SPW)

Table (4.3) data illustrates the annual import handling at SPW along with total tonnage of Ton. Because of the Privatization, total tonnage of import decrease steadily down but in 2013, 2014 and 2015, the total tonnage of import increased suddenly and then fell back again in 2015. There were no even imported vehicles in 2016 and zero import for cement in 2017.

Figure (4.3) Annual Handling of Import at SPW



Source: Sule Pagoda Wharf (SPW)

Above figure (4.3) reveals that the amount of cement and other general imported significantly are higher than other imports which are handles at SPW. The rest importes products such as Steel and Vehicle & GR have only few total tonnage of ton.

Major export commodities in Myanmar are Natural gas, Timber, Pulses and beans, Fishery products, Rice, Clothing and Jade and gems. Among the export products, SPW handles mainly rice, timber and pulses and beans. The following table (4.4) shows total tonnage of export commodities which were handled at SPW annually.

Table (4.4) Annual Handling of Export at SPW

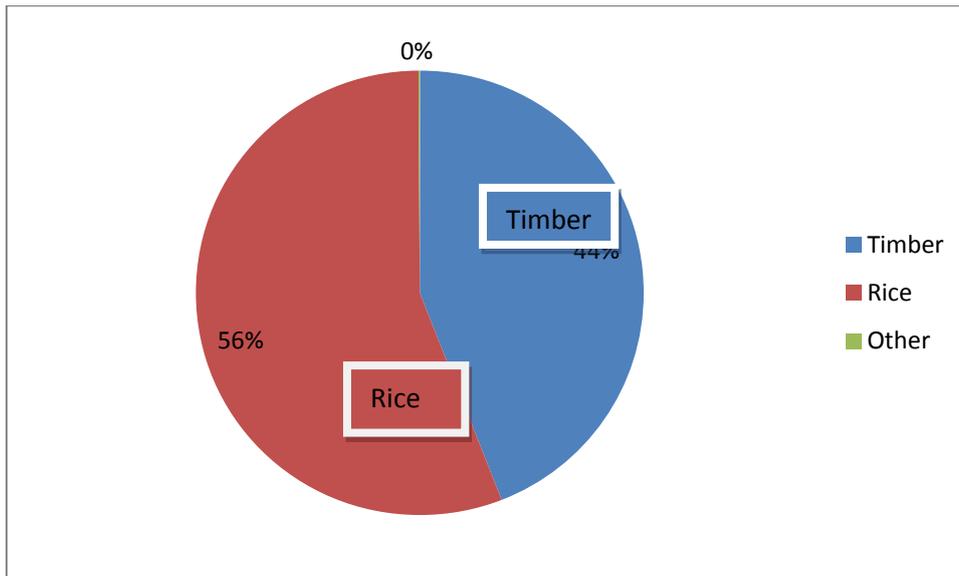
Year	Export (Ton)			Total Tonnage (Ton)
	Timber (Ton)	Rice (Ton)	Other (Ton)	
2007/2008	234150	344121	-	578271
2008/2009	118690	412811	-	531501
2009/2010	168832	141876	-	310708
2010/2011	270784	214509	2904	488197
2011/2012	355801	146224	25	502050
2012/2013	199853	32482	-	232335
2013/2014	-	23110	-	23110
2014/2015	-	-	164	164
2015/2016	-	13748	-	13748
2016/2017	-	380289	-	380289

Source: Sule Pagoda Wharf (SPW)

At Sule Pagoda Wharf (SPW), the total tonnage of export is fewer than amount of import because most of vessels are calling to private ports and so does the local cargo transported by trains, trucks and other vehicles. The above data in table (4.4) are classified into types of export commodities such as timber, rice and other general commodities.

The total tonnage of export during 2007 and 2008 was huge in ton and the rest years were slightly decreased. The Metric Ton of timber was dramatically increased in 2011 and 2012 and then suddenly dropped in 2013. But the tone of rice didn't drop till 2017 and increased annually except in 2012 and 2013. The following figure (4.4) displays the percentage of export commodities at SPW.

Figure (4.4) The Percentage of Export handled at SPW



Source: Sule Pagoda Wharf(SPW)

Above graph (4.4) demonstrates the percentage of export which are handling at SPW. SPW handled 56% of rice as export commodities and the rest 44% was the tonnage of timber.

4.4 Procedures of Documentation

4.4.1 Document Handling Procedures for Loading Export Cargo and Commodities

A vessel which is calling at wharf to load export cargo and commodities must have the following documents:

- a. Export License
- b. Letter of credit (LC)
- c. Cargo Loading
- d. Shipping instruction (SI)
- e. Export declaration (ED)
- f. Vessel arrival notice

a. Export License

It is required by law for the exporter who need to have in shippers hand before the vessel's arrival. Export license can be applied from Ministry of Commerce (MOC) by presentation of sale contract between seller and buyer. Normally, FOB Sale is allowed by Ministry of Commerce (MOB).

b. Letter of credit (LC)

If the documents for shipment of export are not ready or complete, shipment will not be allowed to proceed by government authorities. It is important document as a payment between seller and buyer.

c. (i) Cargo Booking for Conventional Vessels

The shipper needs to prepare necessary documents which include shipping instruction and cargo specification when a cargo booking has been confirmed as instructed by ship owner, SAD. Most of vessel nominations are accomplished by the foreign buyer's parties and only FOB sales are allowed by government. The buyers' company and shipping line directly made the vessel charging / freight negotiations. When the ship owners made official Agency Appointment, they have to give necessary information about shipper, consignee, charterer and their contact number to the SAD.

(ii) Container Export Booking

The procedure of container export booking is similar to the booking for conventional vessels. The shipper also has to make a container space booking at a chosen container line and make arrangement for obtaining empty containers for cargo stuffing.

When the arrangement of container booking is done, the document for container liner or operator will arrange for taking out empty container from depot and returning laden container back to the port.

d. Shipping Instruction (SI)

The document for shipping instruction as an important document is prepared by shipper and require to apply to Shipping Agency Department for accepting cargo. After receiving Shipping Instruction from the shipper, this department makes necessary arrangement for the cargo. Shipping Instruction instructs to whom the cargo is sent and to whom to inform on arrival of the cargo.

e. Post Chelan

Port chelan mentions the vessel's name, berth's name, arrival date, shipper and consignee name and is prepared by MPA. The charges such as demurrage and labor charges, landing charges, over side charges, shipping and conservancy charges are additional into port chelan.

f. Export Declaration

Export declaration is prepared by the shipper for customs endorsement for export cargo. It is normally go along with packing list, commercial invoice, export license, bill of lading and sales contract.

g. Vessel Arrival Notice

The predictable time of vessel arrival to the pilot station must be sent to MPA 72 hours/ 48 hours and 24 hours. The vessel has to keep reporting the pilot vessel and mail Notice to the Shipping Agency Department and to the charterer by fax, telex or e mail.

4.4.2 Procedures for Export Cargo Loading

a. Conventional Cargo

The Shipping Agency Department assembles berthing for the vessel to load the cargo when the export cargo is prepared. The shipper organizes the cargo at the side of the ship along with needed document. The ship accepts the cargo and the cargo being loaded is counted. The document of export statement is at hand to the custom protective officer for supporting the cargo loading. Then the agent prepares daily loading report and offers to the daily berthing gathering.

b. Container Shipment Cargoes

The containers are transmitted to the port with the carrier's note for customs examination when the cargo has been loaded into the container at the shipper's factory or warehouse. A shipper is normally approved 7 days free container storage at the terminal. The demurrage charges will be collected from the shippers if the duration of storage exceeds 7 days.

c. Boat Note

Boat note illustrates the loaded quantites and freight tons of the cargo and accompany the loaded cargo. It is organized by the shipper and approved by the ship's officer.

d. Mate's Receipt

When the cargo loading is completed the agent supervisor prepares a Mates's receipt in triplicate which is based in the tallied quantity. It is signed by the Chief Officer of the ship, who retains one copy and remaining two copies are passed to the Shipping Agency Department and one of which is handed over to the shipper to prepare for bill of landing.

e. Export Manifest

The supervisor from Shipping Agency Department maintains day to day export manifest, upon which the details of the completed Mate's receipt are entered.

f. Cargo Stowage Plan and Bay Plan

The hatch list for conventional cargo and bay plan for containerized cargo which is called the cargo stowage plan is prepared during the course of loading in which weight of cargo and container number is illustrated.

g. Bill of Lading

Bill of lading is a detailed list of a ship's cargo in the form of a receipt given by the master of the ship to the person delivering the goods. After checking Mate's receipt, Shipping Agency Department signs on the bill of lading on behalf of the ship's owner.

4.4.3 Procedure of Documentation for Discharging of Import Cargo

a. Import License

For an import shipment, the importer must have valid import license. By presenting the sale contract between the importer and the seller, the import license can be obtained.

b. Letter of Credit (LC) or Import Bill of Register (IBR)

An importer shall pay the payment according to terms of letter of credit. The imported goods can be collected from the port without presentation of LC for a company with a Myanmar Investment Commission (MIC) permit but import bill receipt from Central Bank of Myanmar is necessary instead.

c. Bill of Lading

The importer or the consignee shall hold original Bill of Lading before ship's arrival at the port for necessary procedure of clearing the cargo at department concerned.

d. Import Manifest

The manifest from port of loading is required by Shipping Agency Department which meets the terms with Import General Manifest (IGM). The IGM details are:

1. Bill of lading
2. Manifest line number (this number serializes each line of entry on the manifest)
3. Marls and Numbers
4. Quantity and description of goods

5. Consignee
6. Weight and measurement of the cargo

4.4.4 Procedures for Import Cargo Unloading

a. Arrival Notice

The arrival of a vessel with import cargoes is published in the daily newspapers by Shipping Agency Department. The publication contains claims days notice, instructions for direct delivery, pre-manifest clearance and transshipment goods, etc.

The berth and manning arrangement are decided during daily berthing meeting, under the directions of the committee for speedy and efficient port operations and General Manager of MPA. Copies of IGM and other relevant documents will be distributed to responsible person of particular terminal to carry out the followings;

- i. To receive the cargo
- ii. To provide adequate space
- iii. To deliver the cargo to the actual consignee.

4.5 Functions of Warehouse

Warehouse which is a building for the storage of wares or goods, until such time as they are required for consumption sale or other use. A warehouse may be privately operated for the sole use of its owner or it may be a public enterprise charging a fee for storage space and other conducting a warehouse is licensed and regulated by law. It has become a vital role in the expansion of trade.

Warehousing began for storage being raised in the principle ports to receive shipments imported and to hold them in safekeeping until they could be sold to local merchants. There are two types of warehouses: one for holding imports until the customs duty is paid and the other for holding goods produced subject to the internal revenue tax. Both afford valuable facilities to business.

4.6 Labor Condition in SPW

A stevedore, longshoreman, docker or dockworker is a waterfront manual laborer who is involved in loading and unloading ships, trucks, trains or airplanes. Loading and unloading ships requires knowledge of the operation of loading

equipment, the proper techniques for lifting and stowing cargo, and correct handling of hazardous materials. In addition, workers must be physically strong and able to follow orders attentively.

In order to unload a ship successfully, many stevedores are needed. There is only a limited amount of time that a ship can be at a port, so they need to get their jobs done quickly. Today, the vast majority of non-bulk cargo is transported in intermodal containers. The containers arrive at a port by truck, rail, or another ship and are stacked in the port's storage area. When the ship that will be transporting them arrives, the containers that it is offloading are unloaded by a crane. The containers either leave the port by truck or rail or are put in the storage area until they are put on another ship.

Once the ship is offloaded, the containers it is leaving with are brought to the dock by truck. A crane lifts the containers from the trucks into the ship. As the containers pile up in the ship, the workers connect them to the ship and to each other. The jobs involved include the crane operators, the workers who connect the containers to the ship and each other, the truck drivers that transport the containers from the dock and storage area, the workers who track the containers in the storage area as they are loaded and unloaded, as well as various supervisors or labor gang.

Those workers at the port who handle and move the containers are likely to be considered stevedores or longshoremen. Work time for Dayshift and Nightshift are separated for workers. During the day time, the working hour starts from 8am to 4pm and over time working hours start from 4pm to 8pm. At night time, the work time starts from 8pm to 4am and the over time working hours start from 4am to 8am. Lunch time for dayshift worker starts from 11:20am to 12pm and the time between 11:20pm and 12:00am is the lunch time for over timing worker. The following data shows the number of stevedoring labors and their income.

The stevedore labors worked in gang and the strength of each gang varied with the commodity handled and the busiest season is between January and April when there is a heavy export trade for rice.

Table (4.5) Standard Rate of Tone and Number of Labor According to Types of Commodities

Types of Commodities	Standard Rate (Ton)	Labor Gang	Number of Labor	
			Maximum number of Labor	Minimum number of Labor
Rice and Rice Products	120	1	16	10
Beans	80	1	16	10
Pulses	60	1	16	10
Cement	80	1	14	10
Commodities from Coastal Vessels	80	1	13	9
Timber Products	40	1	10	7
Cargo	48	1	10	7
General Cargo	80	1	10	7
Timber	40	1	9	6

Source: Sule Pagoda Wharf (SPW)

The data of the standard rates of Tone and number of labor from table (4.5) shows that how does a labor gang handle various tone of commodities. A labor gang which consists of 16 labors as a maximum number or 10 labors as a minimum number can handle 120 ton of rice and rice products when a ship dock. But the number of labor used in gangs depends on whether the rice bags are small or large and on whether the cargo is destined for a short trip or long trip or a long voyage.

The number of labor which handles beans and pulses has the same number of labor for Rice and rice products but different standard rate of tone. A labor gang with a maximum number of 14 or a minimum number of 10 can handle 80 ton of cement. For the commodities form coastal vessels, the number of more or less 10 labors can handle 80 tons of the commodities.

A labor gang with 10 or less workers can operate the 40 ton of timber and timber products and the same number of labor for cargo and general cargo. If the ton

of commodities reaches over the standard ton, more than one labor gang will be used to handle commodities. After discussing about the Standard Rate of Tone and Number of Labor According to Types of Commodities, we will continue to explain about tonnage rates.

Table (4.6) Tonnage Rates for Stevedoring Labors

Commodity	Norm for 12 hours shift	Tonnage Rate		
		Gang Chief	Winch Driver	Labour
All types of General Cargo	1 Ton and above	8.00 (Kyat Per Ton)	7.20 (Kyat Per Ton)	6.40 (Kyat Per Ton)
All types of Rice and Rice product, Pulses, Bean, Oil Kakes (In Bag)	1 Ton and above	6.40 (Kyat Per Ton)	5.60 (Kyat Per Ton)	4.80 (Kyat Per Ton)
Coal, Cake and Petroleum Coke (In Bag)	1 Ton and above	12.00 (Kyat Per Ton)	10.80 (Kyat Per Ton)	9.60 (Kyat Per Ton)
Rice, Pulses, Bean Oil (In Bulk)	1 Ton and above	8.00 (Kyat Per Ton)	7.20 (Kyat Per Ton)	6.40 (Kyat Per Ton)
All Types of Timber	1 Ton and above	16.00 (Kyat Per Ton)	14.40 (Kyat Per Ton)	12.80 (Kyat Per Ton)
Container (TEU)	1 Ton and above	12.00 (Per TEU)	10.80 (Per TEU)	9.60 (Per TEU)
GP Gang	Depending on Working hours	80.00 (Per Hour)	72.00 (Per Hour)	64.00 (Per Hour)

Source: Sule Pagoda Wharf (SPW)

The above data for tonnage rates for stevedoring labors shows that Gang chief, winch driver and labor receive the different amount of money in kyat according to

commodities and tonnage rates. Gang chief who is a leader of labor receive more than winch driver and labor. After reviewing the tonnage rates for stevedoring labors, their income will illustrated in below table (4.7).

Table (4.7) Number of Stevedoring Labors and their Income

Year	Number of Vessel	Vessels Charges			Income (USD in Thousands)
		Gang	Winch Driver	Labor	
2007/2008	209	7601	7056	112876	5346
2008/2009	106	4321	6543	100743	5098
2009/2010	121	3621	5643	90865	3452
2010/2011	340	9075	9072	1262279	10109
2011/2012	307	10431	9331	154397	7436
2012/2013	234	7369	8622	112918	5876
2013/2014	190	7071	8866	114075	5006
2014/2015	73	3247	4932	52287	2058
2015/2016	29	2240	3935	35863	1347
2016/2017	70	3211	4098	49880	1967

Source: Sule Pagoda Wharf (SPW)

According to data in table (4.7), a gang which is also known as a labor gang consist of more than 10 labors and a winch drivers take a duty of loading commodities from warehouses to trucks. The nucleus of permanent members who are working at port and established as a group of labor is called a gang. Ports and Terminals need to minimize operation time in order to become efficient and productive port. A stevedore is main one in a gang who loads and unloads cargo on to the ships, typically working in a team to ensure that the process remains smooth and efficient.

In 2010/2011, the number of import vessels increased to 208 and 116 for export vessels and the amount of export and import commodities also increased which

were loaded and discharged by stevedoring labors. So, a year between 2010 and 2011 became busiest year for stevedoring labor and they earned more salary who worked for both shifts per day on the other hand. Started from 2015, the number of vessels calling at SPW dropped suddenly because of some privatization and so the number of labor gang for loading and unloading commodities also declines. But next year, number of vessels calling was gained three times than last year.

4.7 Income and Expenditures of SPW

Most of income from port comes from tariff and dues such as charging the vessels and handling of export and import commodities and renting the machine to load and unload. The charges on vessels are calculated on gross tonnage of the vessel. The Tariff and Dues for the Myanmar Port Authority has been revised and standardized for all ports of Myanmar, effective 1st March, 1998. Charges are classified into four categories as charges on vessels, charges on cargoes, miscellaneous charges and charges on containers.

Under the charges on vessels, we have Port dues, Light dues, Pilotage charges, Berthing Charges, Stevedoring Charges, Conservancy Charges on export only, Vessel's Hire and Salvage Charges, Container Charges and other dues and charges levied and settle in Foreign Currencies. Most of Charges are levied in kyat but in 2014, most of charges are levied in USD.

The Port due is charged on the net registered tonnage of vessels and it is collected only once in 90 days. It charges 25 USD for sea going vessels per 100 GRT within 30 days and 2 kyats for inland vessel per ton capacity. The conservancy charges for import and export cargo is 25 kyats per ton and shipping charges is 20 kyats per ton. Landing and labour charges cause 20 and 35 kyats per ton respectively.

Light dues are levied on all vessels entering or departing from any port of Myanmar which will be valid for a period of 30 days, provided the vessel had not departed for any other foreign port during this period. Vessels including sailing ships are charged for 0.20 USD per GRT within 30 days. A pilotage fee is levied on the basis of gross tonnage and the higher of the forward or sft draft of a vessel. The basic fees according to the draft of a vessel range from 15 USD (draft up to 3.4m) to 35USD (draft up to 9.2m).

After discussing the earning of port, we will focus on particular Income of Sule Pagoda Wharf annually. The following data shows total earning from import and export handling and income from hiring of machine to shippers.

Table (4.8) Annual total Income at SPW

Year	Import & Export		Machine	Total (Import & Export + Machine)		Total Income
	USD	(in Kyat)	(in Kyat)	USD	(in Kyat)	
2007/2008	-	-	-	-	-	-
2008/2009	-	-	-	-	-	-
2009/2010	10967546	567387207	-	10967546	567387207	578354753
2010/2011	7659873	187254621	-	7659873	187254621	194914494
2011/2012	8109845	298075276	-	8109845	298075276	306185121
2012/2013	9140518	308543070	-	9140518	308543070	9449061440
2013/2014	6752098	243069592	143436300	6752098	386505892	7138603892
2014/2015	5899254	299579947	68539000	5974978	368118947	6343096947
2015/2016	2457258	215036155	59464230	2491509	274500385	3189565915
2016/2017	1604990	71881792	41604730	1641610	113486522	2329659685

Source: Sule Pagoda Wharf (SPW)

The data of Annual total Income at Sule Pagoda Wharf in table (4.8) shows that earnings from import and export vessels slightly decreased year by year. The data of annual earning from 2007 and 2009 is absent in table because of some condition when they replace their office. Some of tariff and dues are charged in USD and USD amount can be changed according to inflation.

When a vessel docks at terminal, a port user needs to hire machines at port in order to load and unload the commodities that they transport. The charges from the

port users are collected by port authority according to types of machines that they hire. At Sule Pagoda Wharf, total of 82 different types of machines are employed to load and discharge commodities from vessels to warehouses and then warehouses to trucks. The machines are one RIGO crane (diesel), two Diesel mobile cranes which can carry 40 ton, forty-three Diesel powered forklift truck which can cart minimum of 2 ton to maximum of 42 ton, seven battery forklift which can load minimum of 2.5 ton to maximum of 4 ton, fifteen prime movers (40 ton), one NISSAN truck (25 ton), eight trucker (5 ton to 10 ton), two ISUZU Tipper (6 ton), one Diesel Bowser and two Yard Gantry Crane (40 Ton).

According to the data in table (4.8), from 2007 to 2013, the data are not displayed; port users didn't hire machine not much because of inefficient machine which are not modern. After 2013, the above explained machines were utilized to enhance port productivity. Port users also hired machines in order to smoothen and make faster their loading and discharging operations at terminal, so the berthing charges will be less costly.

After seeing the income amount of Sule Pagoda Wharf, we shall consider the various expenditures of port. There are 29 different expenditures to run Sule Pagoda Wharf daily. They are salary, electronic charges, Fork Lift Truck oil expenditures, security cost, employees' transportation costs, loading and unloading costs, overtime charges for labor gang, winch drivers and stevedoring labors, waiting charges, holiday costs, costs of dayshift labors, vessels' security costs, offices maintenance costs, costs of Civil Engineering Department, Mechanical Engineering Department, Portal Checking Vehicle, certificate fees and Fire fighting Vehicle costs.

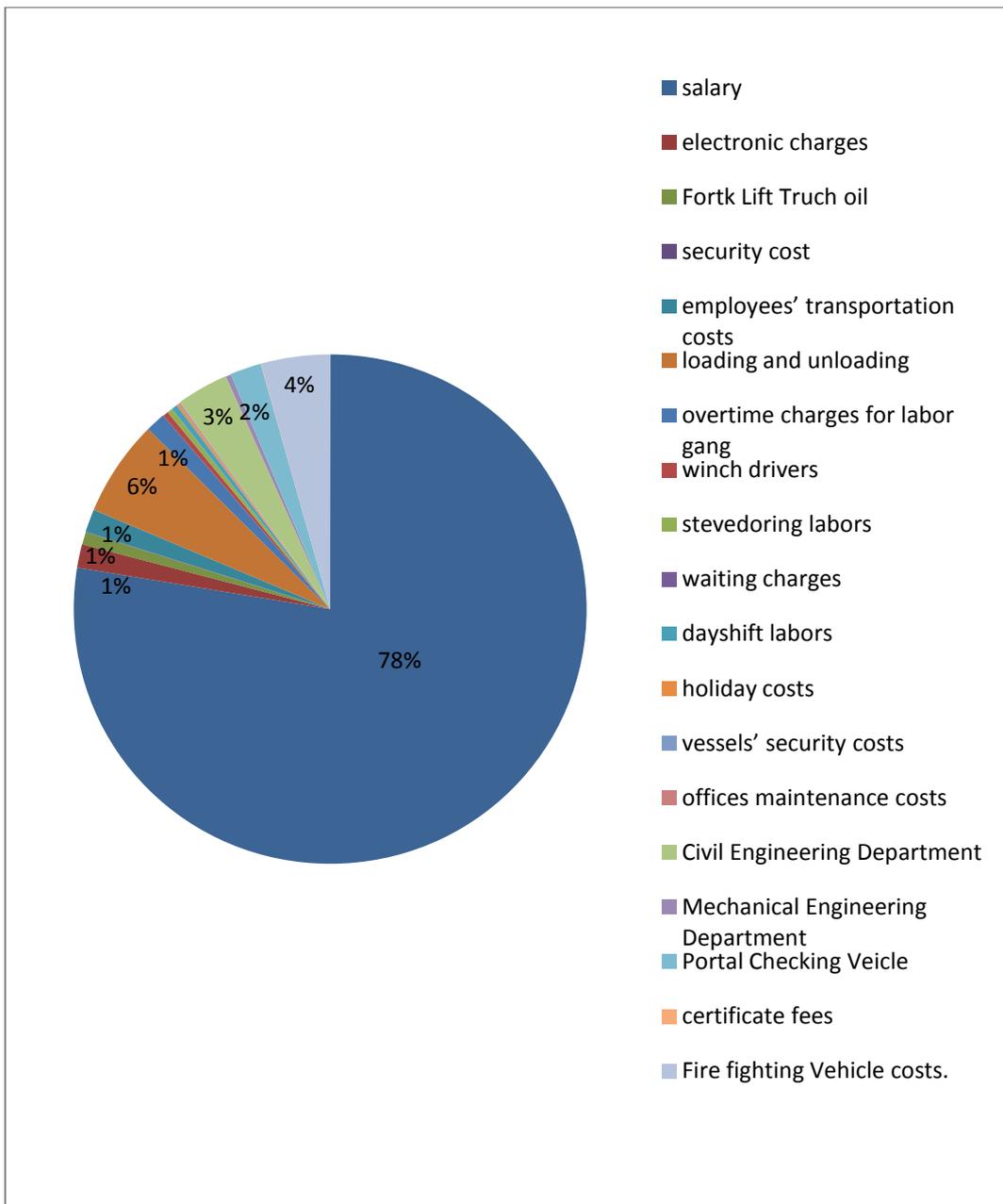
Table (4.9) Expenditures of Sule Pagoda Wharf (SPW) (2016/2017)

Types of Expenditure	Expenditure (In Kyat)
Salary	1965509092
Electronic charges	37565531
Fork Lift Truch oil	20077593
Security cost	906000
Employees' transportation costs	36873853
Loading and unloading	154411514
Overtime charges for labor gang	31851500
Winch drivers	8875622
Stevedoring labors	8238620
Waiting charges	350560
Dayshift labors	9075600
Holiday costs	3372000
Vessels' security costs	1267200
Offices maintenance costs	2331840
Civil Engineering Department	82988701
Mechanical Engineering Department	8523572
Portal Checking Vehicle	49700000
Certificate fees	500000
Fire fighting Vehicle costs.	110265276

Source: Sule Pagoda Wharf (SPW)

The following table (4.9) shows that the salaries for labor are quite higher than the rest of other expenditures. But these data represents only for one month due to lack of accurate data in other years. According to the data in table (4.9) and figure (4.5), salaries as the expenditures of port took 78%. This took place mostly two-third of the port's expenditures because of inefficient port's operations and it increase labor costs.

Figure (4.5) Types of Expenditures at SPW



Source: Sule Pagoda Wharf (SPW)

According to the data from Table (4.9) and percentage shown in figure (4.5), most of expenditures of SPW goes to employees' salaries because one third of the employees has to work at office manually and the rest are stevedoring labors whose are separated into dayshift workers and nightshift workers and there are also over time charges for whom work more than 8 hours a day.

The second higher spending is loading and unloading costs. When the domestic vessels and sea going vessels are calling to the port, stevedore labors have to

load and unload commodities, especially packed rice, pulses and beans manually because of lack of efficient and sufficient facilities.

By examining the earning and expenditures of SPW, we may conclude that it has been running fairly efficient as far as financial position is concerned. The following table (4.10) explains the surplus and deficit of SPW for ten financial years.

Table (4.10) Revenue Account of SPW in Kyat

Year	Income (Kyat)	Expenditure (Kyat)	Surplus (Kyat)	Deficit (Kyat)
2007/2008	-	-	-	-
2008/2009	-	-	-	-
2009/2010	578354753	328709822	249644931	-
2010/2011	194914494	87210943	107703551	-
2011/2012	306185121	492001283	-	185816162
2012/2013	9449061440	1293707216	8155354224	-
2013/2014	7138603892	4592530108	2546073784	-
2014/2015	6343096947	2707287289	3635809658	-
2015/2016	3189565915	1735672143	1453893842	-
2016/2017	2329659685	823106170	1506553515	-

Source: Sule Pagoda Wharf (SPW)

From the data in table (4.10), after considering the financial position of SPW annually, we can see there is only deficit in year 2011/2012 because expenditures exceed than the income because of infrastructure maintenance at wharves. The rest of balance shows surplus which make an increase national gross domestic product.

Chapter V

Conclusion

5.1 Findings

For the economic development of all nations, trading plays as a vital role among neighboring countries and global in world wide. In order to transport a good from one country to another, transportation is necessary. Among the all types of transportation, trading goods by sea is the most well known mechanism which is solely dependent in today's world as ships can carry huge volume and heavy cargo at the lowest cost. Sea transport has dramatically boomed since last fifty year and has been booming gradually over the year. So, ports became the major part of trade process where inland water craft and sea going vessels berth for loading and discharging cargo.

Yangon which was known as the fishing village, Dagon with no port in the era of King Alungpaya, started establishes ports along Yangon River after captured by British. A lot of merchant traded in Yangon port because of low tax but the port was not efficient which was caused by financial problems. Yangon port was developed than before after conquers ion of British; built so many infrastructures in order to provide better transportation which also improved the development of Yangon Port.

The Port Act of Rangoon was promulgated and the Commissioners for the Port of Rangoon operated the outer ports and inland ports in 1880. In 1905, the Port of Rangoon New Act was enacted. After that, all the duties and responsibilities were transferred and taken by Board of Management for the Port of Rangoon. The board was reformed as Burma Port Corporation and the new administration system was also introduced in 1972. Then the series of changes occurred until the corporation was renamed as Myanmar Port Authority which is known by today since 31st March 1989.

Ports in Myanmar have divided into two which are Yangon port also known as inland port where international export and import cargo are loaded and unloaded and the out ports where regional and coastal cargo are loaded and discharged. Yangon

ports operate almost all import cargo through sea transportation from overseas countries and 95 percent of export cargo to various countries.

All the ports and terminals are operated by MPA till 1997 but after becoming Joint-Venture between MPA and Foreign and /or local Investors, the number of vessels calling and the amount of import and export cargo and commodities increase year per year. The percentage contribution of transport sector to GDP also rises yearly. Grant aids and soft loan financed by international financial institutes also gained by privatization.

The problems which meet the most in Myanmar Port Authority are documentation and vessel delaying. Before the entry of Yangon River, shippers have to pass steps of paper work which causes vessel delaying. Vessel delaying can also happen because of weather problem, especially in rainy season. The bulk vessels which carry bags of rice and cement cannot load and unload urgently during rainy season.

SPW was established in 1913 and has seven wharves and each has 1040 m long which stretch from Latha Street to Pan Sonda Street along the Strand Road. After privatization in 2008, only three wharves which are wharf no (5), (6) and (7) of SPW are operated by MPA recently. At SPW, 7 vessels can berth at same time but RO/RO vessels cannot berth because of depth of water. Since the entry of port to Yangon River is limited to vessels up to 10000/15000 DWT with a maximum draft of 9 meters and maximum length of 167 meters and also with daylight hours.

Sule Pagoda Wharf (SPW) is one of the public service ports which is operated by MPA. SPW plays as a vital role for the transport of rice, timber, beans and pulses as the export commodities and cement, steel, vehicle & GC as the import commodities. Even though, MPA only operates three wharves at SPW, the amount of rice export does not decline dramatically. One-third of SPW area is land lorded by MPA which are BOT (Built, Operate and Transfer system) with private sector by contract.

All vessels entering and leaving ports have to wait for high tide to obtain required depth at respective access and channels. If the berth is not free, vessels have to be moored at the buoys in the river channel and all these are arranged by port authority. Myanmar Port Authority arranges labor gang at SPW for vessels to moor at buoys in the river channel and charge according to port dues and tariff.

Another finding for SPW is the depth of water because all wharves are situated at the inner harbor and the vessels approaching port need to pass two under water sandbars (outer bar and inner bar). The berth allowance depth is only 9 meters and a vessel's maximum draft depends on the depth of the inner bar which is shallow in the dry season. Dredging is conducted regularly for maintaining the depth of water at the inner bar, which is costly for the Myanmar Port Authority.

5.2 Suggestions

The fuel for dredging boats consumes much fuel per month but the volumes of sediment are still plenty especially at inner bar. Sedimentation is a continuous problem at some locations of SPW channel. Regular maintenance dredging is required by using dredgers, especially designed for the localized siltation. Simultaneously, erosion at some portion of the river banks and siltation at some foreshore areas are challenges. River navigation and bank protection works have to be undertaken to face these problems.

There is another case in labour at SPW that the present working hour is from 8am to 4pm as day shift and 8pm to 4am as a night shift and there are two major shifts in one day. From 4pm to 8pm is fixed as day over time and 4 am to 8am is fixed as night over time. Therefore, it is found that one shift has 12 official working hours and gangs are allowed 40 minutes for a meal break. There are total of 11 hours and 20 minutes working hours for each labour which exceeds normal working hours approved by labour law. Labours cannot work efficiently for 11 hours and 20 minutes, so the extra labour to share time to sleep by turn without disturbing the work. This cause labour inflation on the other side.

Port procedures for port users follow should be clear, precise, easy to follow and low cost. The document required and forms should be the least number and the information to be filled shall be compact and efficient, only the work related supporting document should be required, clear directions and instructions are displayed to ensure easy calculations for port dues and tariff, each and every step of procedures for port users to comply with should be issued, announced and posted.

Working with manual paper should be left long time ago as ports have improved, they are expanded and installed with modern facilities and the computerized systems is essential for administration, management and improvement of port. In order to increase port efficiency, computerized system should be replaced. Port personal must

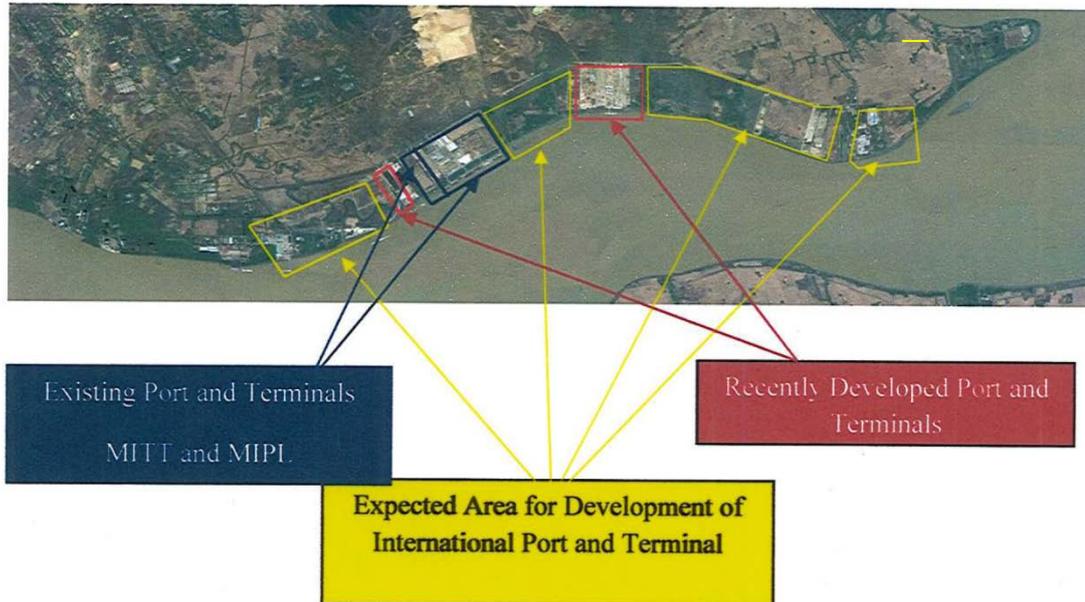
come to terms with advancements in port technology. Port organization must learn to design and implement new procedures and operational structures to match changing port technology.

Moreover the procedures and documentation required for port users should be arranged at one place as One Stop Service, so that port can administer and perform its duties efficiently at low cost in less time. Not only need to focus on development of port, but also there is a need to improve export's quality in order to increase national income. In expansion of our export trade, not only price but also quality of the export is import.

As a conclusion, much cost for implementation for ports, in order to enhance the port's efficiency and to increase the number of vessel calling, should be invested because the benefits of both of direct and indirect effects outweigh the cost.

Appendix I

Location Map for Future Port Development at Thilawa Area

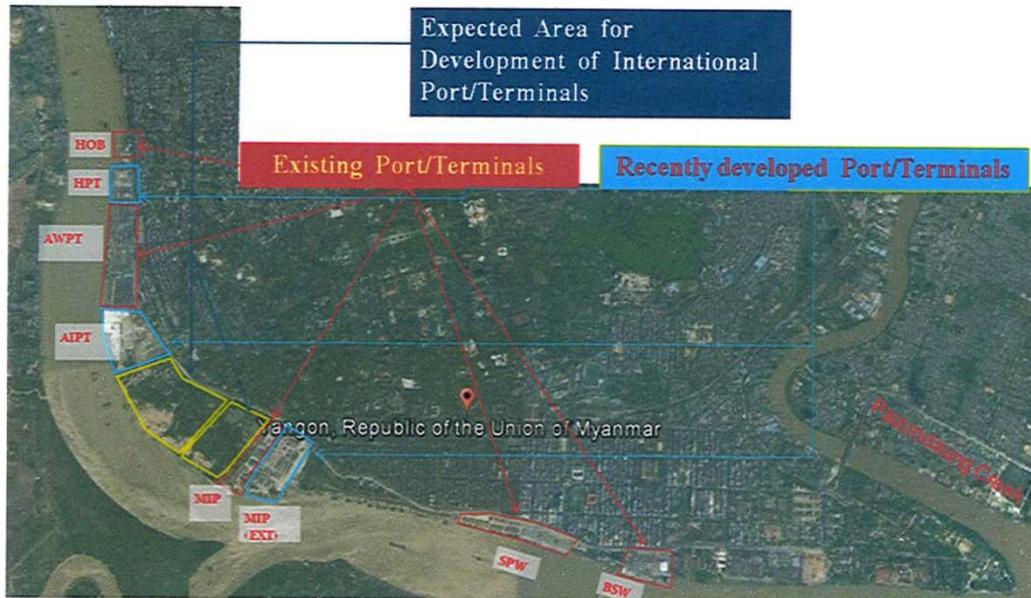


Source: Myanmar Port Authority (MPA)

The following figure shows the location of Thilawa Port. The yellow boxes show the expected areas to develop in near future. The red boxes represent recently developed ports and the blue one shows the existing ports which are recently busiest ports at Thilawa Port.

Appendix II

Location Map of Yangon Port

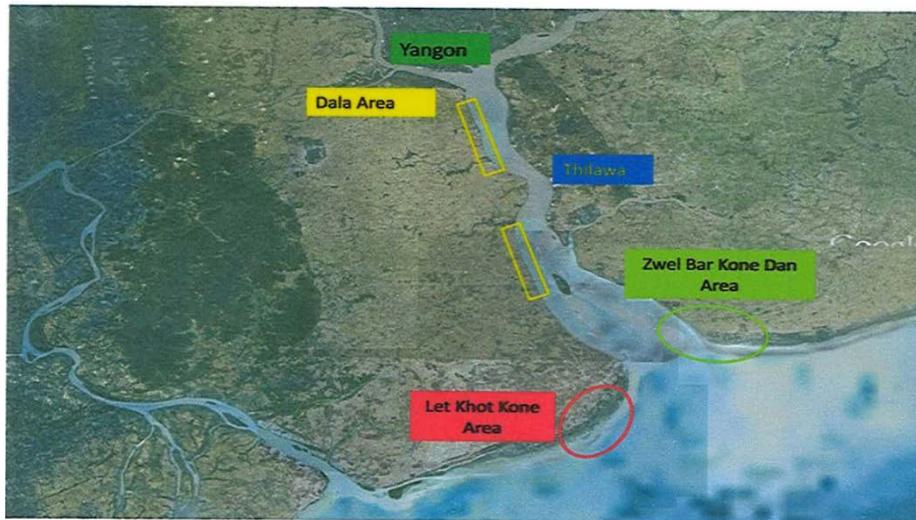


Source: Myanmar Port Authority (MPA)

The above figure shows the location map for Yangon Port along Yangon River. The yellow boxes show expected area for development of International Port and Terminal at Yangon Port. The red one shows the running ports. The light boxes show the recently developed port area. Most of expected areas to develop are located adjacent to the existing ports.

Appendix III

Possible Locations for Long Term Yangon Port Expansion



Source: Myanmar Port Authority (MPA)

Myanmar Port Authority (MPA) plans recently to expand the Yangon Port in Dala area next to Thila Port. All boxes and circles in figure show the area which are going to implement in near future.

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