

EVALUATION OF WORLD SHIPBUILDING INDUSTRY AND OPPORTUNITY FOR BANGLADESH

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ABSTRACT

Shipbuilding is a low-tech and capital intensive industry. Shipbuilding is both promising and challenging industry in the World. Total global shipbuilding market size is US\$ 1600 billion. If only 1% market share can be captured by Bangladesh it will be equal to US\$ 16 billion. Bangladesh had an excellent history in shipbuilding since ancient. But this sector was disappeared because of technological changes in the world. The modern era of ship building industry started its journey from the western countries. But due to the global impact as the cost of everything went up, the trend of shipbuilding industry was shifted from west to east. Thus the countries like China, Korea, Singapore and Vietnam were dominating the sectors. At present, the countries like Bangladesh, India, Indonesia, Turkey and Brazil are trying to hold the surplus market of shipbuilding industry, especially those demands that are not entertained by the traditional shipbuilding nations. Shipbuilding industry of Bangladesh has all the potentials to flourish and penetrate the global markets. From analysis it can be predict that Bangladesh will be addressed as shipbuilding nation within 2016 and ranked within ten in global order in the year of 2021.

KEY WORDS: Shipbuilding, advantage of ship & shipbuilding, shipbuilding market, history, global trend, Growth and Survival, boom, vision.

1.0 INTRODUCTION

Sea is considered as the greatest blessing from almighty to any maritime nations with many aspects, especially in economic activities and in transportation goods. Since evolving of human civilization, its activity through sea has played a dominated role in shaping the world. In spite of the revolutionary development in the air and road transportation, the sea remains as unparallel and principal means of communication. As far as world's trade is concerned, almost 85% of goods are being transported by the water-based transportations. Bangladesh is a maritime nation with 720-km long coastline and about 200000 sq km of Exclusive Economic Zone [1]. It lies at the apex of the Bay of Bengal and has 700 rivers that come down from the surrounding countries. Water craft or ship as the cheapest mode of transportation always plays vital roles for any riverine nation. At present about 10,000 inland and coastal ships have been plying all over the country, which carry more than 90% of total oil product, 70% of cargo and 35% of passengers². More than 150000 skilled and semi-skilled workers are employed in this labor-intensive sector. All inland and coastal ships are constructed and repaired locally in Bangladeshi shipyards.

Bangladesh consider as the leading ship breaking nation in the world. Two million people are related directly or indirectly with shipbuilding industry. Bangladesh has successfully exported dozen of ocean going ships to a high end market like Denmark, Germany, etc competing with giant competitor like China, India and Vietnam. About dozen of local shipyards are capable of making ships up to 10000 DWT as per international standards Bangladesh has the scope to emerge as an export oriented shipbuilding nation within a decade. The objective of this article is to evaluate the status of Bangladesh shipbuilding industry in contest of global market.

2.0 ADVANTAGES OF SHIP

Ship has got unique characteristics and a good number of advantages in carrying the trades. Few of them are given below:

- a. The ship can carry a huge volume of cargo at a time. No other transport other than ship can carry that huge cargo at a time⁽²⁾.
- b. The overall fuel consumption is very less in comparison with any other transport⁽³⁾.

- c. It is more economical to carry goods by ships than by any other means
- d. Ship is the most environments friendly mood of transportation.
- e. Patrol, gas, liquid and others dangerous goods cannot safely transported by any other mood of transport.

3.0 ADVANTAGES OF SHIPBUILDING

On the other hand, shipbuilding has few wonderful returns toward a nation. Few of them are as follows:

- a. Shipbuilding industry catalyzes the industrialization. This was the case when South Korea initiated and committed on shipbuilding in 1970s. More recent case is China^[4]. Because the nation recognized the shipbuilding industry is a basic industrial sector that promotes a sustainable economy.
- b. The industry is characterized relatively as labor intensive, which absorbs large numbers of labor.
- c. The technology of the industry is obtainable and relatively easy to learn and handle under the background of internalization and globalization nowadays^[5].
- d. The requirements of raw materials, components as well as appliances for ships by the industry further boost other major industries, for instance, shipbuilders are one of biggest buyers to steel works and machinery producers.
- e. The development of the industry needs large investment on facilities and infrastructures, which will absolutely benefit other sectors.

4.0 SHIPYARDS AND SHIPBUILDING

Ships come out from the shipyards, but the demand of the ship basically depends on shipping market. So, the fluctuations in volume of world trade inevitably have predominant impact on the shipbuilding business. Besides, technological changes or innovations on navigation is influencing factor, One sample is the case of motor ships in replace of sailing vessels in early days, another is containerization in 1960s^[6]. Both changes largely initiated huge demands for ships due to improved efficiency on transportation. In turn, such improvements in technologies or innovations greatly

facilitate world trades, which result in much more demand for ships. However, the characteristic of the shipbuilding business is that the changing of demand does not simultaneously goes with the changing of supply. When shipbuilding market is booming, huge demand will initiate a new round of investment for adding the shipbuilding capacity, but the construction of shipbuilding capacity requires time, which is normally longer than the booming period of shipbuilding market, therefore, when added shipbuilding capacities are completed, the market may have collapse. In this scenario, new investment or added capacities become sunk costs and have to be kept to run. Particularly, when shipbuilding market is in down side, governments usually offer supports to shipbuilders, because shipbuilding industry is always considered as strategic industry to nations. This is to say, the diminishing of supply, that is shipbuilding capacity, mostly lags behind the decreasing of demand for ships. Governmental supports for the shipbuilding industry further accelerate the phenomenon so that the equilibrium of shipbuilding market is hard to reach in short time. This largely explains over-capacities in shipbuilding industry during the past decades.

5.0 SHIPBUILDING MARKET

Shipbuilding industry is combination of three markets. They are new building, ship scrapping and ship repairing market.

a. **New Building Market** Ship-owners buy new ships at new building market. Once an order of new ship is given to shipyard, usually, a new tonnage is launched in one year after ordering date. Sometimes, new ships requires longer time to construct which is dependent on the construction complexity of ship type as well as the length of order book of the particular shipbuilder. However, new ships will join the Freight market to compete with existing ships that trade at same market after certain period of ordering by ship owners. This is to say; new building market is thought to be one of aspects in related with tonnage supply to shipping industry. Indeed, it is one of forces to drive the shipping cycle^[7]. In reality, when ship owners operate the ships at the prime time of Freight market, higher freight rates and strong demand of transportation lead to enormous profits to existing ship owners which motivate the requirement for additional ships so that they could pursuit benefits further. Additionally, optimistic sentiment and expectation leads speculative investment or

purchasing of ships at second-hand ship market. Then, the passion will soon spread to new building market with the price of second-hand ships increasing too high in comparing to the prices of new ships. As a result of over ordering of new tonnages at new building market, after certain years, many new ships enter Freight market, supply gradually exceeds the demand, the shipping market collapses with low freight rate. It takes time for the market to restore equilibrium of shipbuilding market as well freight market. Once freight market picks up again, the shipping cycle repeats itself, so does new building market. It is worth mentioning freight revenues play a major role in driving new investments on ships and finally drive shipping cycle. The result of fruitful income earned by ship owners is transferred to New Building Market; this is to say, the booming of New Building Market mainly reflects booming Freight market.

b. Ship Scrapping Market This market is, almost equally important to shipping cycle in terms of adjustment of overcapacity tonnages. Firstly, in normal years, this market is mainly for disposal of old tonnages, which are outdated or older, usually averagely 20-30 years. As a principle, the price of scrapped steel plays a role to determine the number of ships that are scrapped. Secondly, when Freight market is in downturn or extremely bad, which possibly might be caused by some events such as oil crisis in 70's, in the context, this market performs as an only outlet for the tonnages that are commercially obsolescence^[8]. Best sample is the tankers that were equipped with turbine engines that cost more fuels than ordinary diesel engines. When the price of fuel soared significantly, such ships were no more commercially variable.

c. Ship Repair Market Basically, ship repairing yards offer maintenance services to ship owners so that the ships can be always kept in proper condition for business in line with both regulations of IMO or flag states and minimum standards required by classification societies. On this aspect, this market has less impact to shipping cycle than both new building market and scrapping market, but still as a main component of shipbuilding industry. However, Ship repair market is related to Scrapping market, when the price of scrapped steel is low, ship owners might consider either to have 4th or even 5th special surveyed for further trades or might have the ships converted for trading at another market that is potential for higher revenues, thus, this market is an

impacting element to shipping cycle, too^[9]. In terms of shipbuilding, Ship repair market is usually a place where come from latent building capacity, This is to say, the shipbuilders, sometime, are working both at new shipbuilding and ship repair market. When necessary, they could convert the facilities of ship repair to shipbuilding. This is the case when the shipbuilding market is booming.

6.0 HISTORY OF BANGLADESH SHIPBUILDING

Indigenous Shipbuilding in this region dates back to a long time. It is one of the early industries developed in Bengal based on its tradition of building boats and sea going vessels. Many countries of Asia and Europe used to regularly buy ships built at Chittagong. Ibne Batuta came to Bengal in the 14th century and went back in a wooden ship built in a dock located at Sonargoan, Dhaka. Such historic ships are being preserved in European Museums. According to the European Traveller Mr. Caesar Frederick, Chittagong was the Centre of building ocean-going vessels during the middle of the 15th century. During the 17th century, a fleet of ships of the Sultan of Turkey was built at Chittagong. During the Mughal period, Bengal is said to have taken the lead in building ships and boats. The Mughal Naval Force had a large number of ships built at Chittagong. The British Navy used warships built at Chittagong in the famous Battle of Trafalgar in 1805. In 1818 the wooden hull frigate Deutschland was built in Chittagong and delivered to German Navy. During the first half of the 19th Century, the Shipyards at Chittagong built ships up to 1000 DWT. During Pakistan period Public Sector Enterprises dominated the Shipbuilding Industry. At present, Private Sector has emerged as the major player of Bangladeshi Shipbuilding. There are more than fifty Shipyards concentrated at Dhaka, Chittagong, Narayangonj, Barishal and Khulna regions; where inland costal and fishing fleet are being built. In 1979 FAO funded contract for supply of 08-food grain carrying vessels to Bangladesh Inland Water Transport Corporation (BIWTC) was secured by High-speed Shipyard, Narayangonj, through international tender. Mitsui Engineering and Shipbuilding Industry of Japan entered into a joint venture in Shipbuilding with High-speed Shipyard and construct 04 deep-sea fishing craft. Recently some shipbuilding Industries including Ananda Shipyard and Slipways Ltd, Dhaka and Western Marine Shipyard Ltd, Chittagong have come up

with modern shipbuilding facilities that enabled them to receive export ordersⁱⁱⁱ. However in 2008 Ananda export her first ocean going ship to Denmark and securing the name of Bangladesh in the list of ship exporting nations in the world.

7.0 PRESENT TRENDS OF WORLD SHIPBUILDING INDUSTRIES

The volume of total ships, ships tonnage and amount of cargo transportation by sea are increasing gradually from the early stage of world civilization. The graph showing cargo-increasing rate of sea-borne trade transportation in the world for the year 2002-07 is given in Figure 1. The western are the pioneers of modern shipbuilding industries. But, due to the labour-intensive nature of business, it forced the industry to be shifted to the developing and least-developed countries. Many of such industries were established in Singapore, China, Japan, Vietnam, Korea, Philippines, Malaysia, etc. But their backup industries like manufacturer of engines, generators and other machineries/equipments remained in the hand of the west. The East, however, continued its effort to flourish the industry, including modernizing the shipyards and dockyards.

8.0 OPPORTUNITY FOR BANGLADESH DUE TO PRESENT SHIPBUILDING TREND

The traditional shipbuilding nations used to build ships with high quality and all the ship owner countries were highly dependent on them. Traditional shipyards used to maintain the quality and standard of the ships and for machinery or equipments they used to depend on the world-renowned engine/machineries manufacturing industries. They have the capabilities to build ships of different dimension and DWT. But due to the rapid increase in worldwide ship demand, those industries have

become over burdened and their schedules have already been booked up to 2020. As per present statistics, the sea borne cargo growth is increasing 6-8% per year and demand of new shipbuilding is increasing at the rate of 4-5% per year. But the existing shipbuilding industries are not in a position to handle this additional pressure. Normally the ship owners or buyers are always interested to build the ships from those reputed industries. But as traditional shipbuilding nations are overloaded and the rate of demand is increasing rapidly day by day, they have become selective to build new ships^[10]. They are not interested to build smaller ships of 25,000 DWT or less. So the buyers/principals of new ships of less than 25,000 DWT need to have look for an alternative markets. This is the reason that allowing other nations likes Bangladesh and India to penetrate the shipbuilding industry. The graph showing the increasing trend of global demands both for cargo and for new shipbuilding for the last 6 years (2002 to 2007, only cargo) has been given Figure 1 and Figure 2 respectively. World new shipbuilding contract by volumes in number of vessels and million DWT (2003 to 2008) has been shown in Figure 3 and Figure 4 respectively. It is expected that this increasing rate of shipbuilding trend will continue to another era, i.e. approximate up to 2022.

9.0 STRATEGY FOR GROWTH AND SURVIVAL IN SHIPBUILDING INDUSTRY

The concept of the shipbuilding as the strategically important industry is nothing new. Countries that wish to facilitate the process of industrialization always select shipbuilding as catalyst, since the industry have the effects of push or pull for other industrial sectors. In the other word, the thriving of the shipbuilding industry offers opportunities for other industrial sectors such as steel

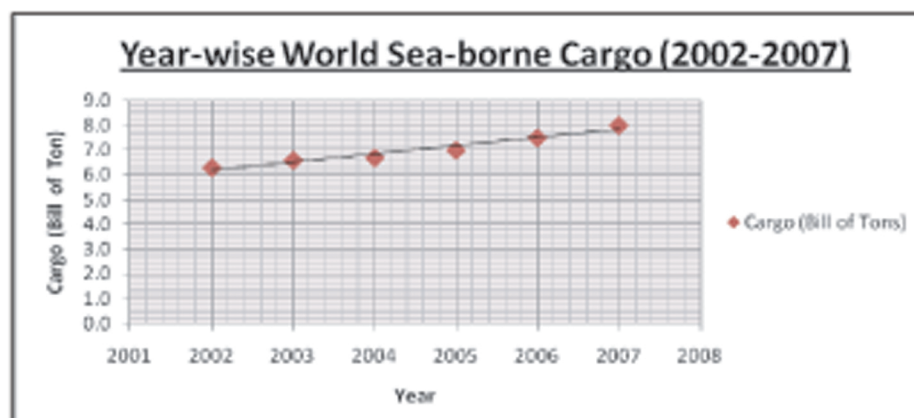


Figure 1: Year-wise Sea-borne Cargo Travel in World Market, (2002- 2007)

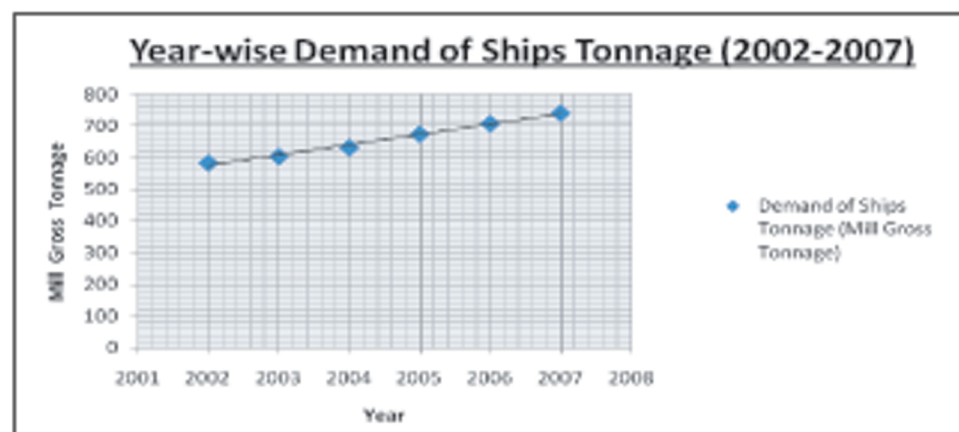


Figure 2: Year-wise Demand of Ship Tonnage in World Market, (2002- 2007)

manufacturing and mechanical manufacturing to develop. The Shipbuilding Industry has attained a balance across the spectrum of ship classes. The Asian countries like China, Japan and Korea have achieved a monopoly in the construction of large commercial ships, oil tankers, bulk carriers, container ships and roll-on/roll off vessels. This monopoly is supported by a considerable supply of trained, experienced labour and regional availability of steel, engines and other ship components. The volume of ship construction in these yards promotes investments in automation, which result in the decrease of ship building cost. The outcome in the current market is that Asian capacity is fully utilized through 2011. Europe including Italy, Spain and Finland has maintained its control of high-tech civil and commercial construction including ferries, research vessels, cruise liners and medium sized naval vessels. Europe maintains its own stable of first and second tier suppliers including a unique sector of craftsman to support the out fitting of luxury cruise ships. Europe also seems to have significant export sales of medium size complexity naval vessels, which provide additional workload to allocate overhead, protect the workforce and promote investment. The US has a limited share of the market, specializing in highly capable, highly complex naval vessels. There is no significant export market for US naval or commercial ships. Like many other industries, shipbuilding has shifted to the east over the last 30 years or so- and during this period Western Europe's shipyards have seen their market share eroded, first by Japan, then by South Korea and, more recently, by China. Unable to compete on price European yards have been obliged to specialized, focusing their expertise on gas and chemical tankers and cruise ships.

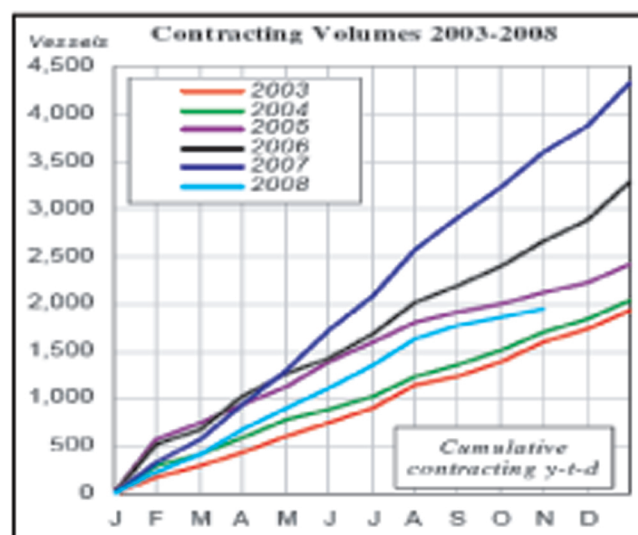


Figure 3: World New Shipbuilding Contract by Volumes in Vessels, 2003- 2008

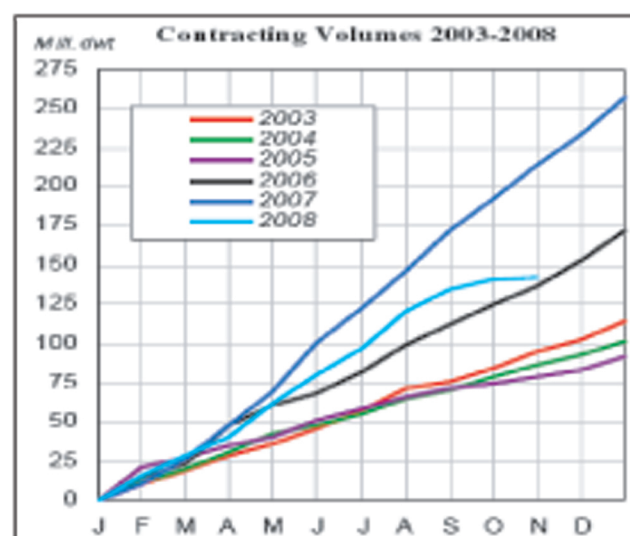


Figure 4: World New Shipbuilding Contract by Volumes in DWT, 2003- 2008

10.0 INTERNATIONAL SHIPBUILDING BUSINESS

According to the International Trade Centre (ITC) calculation based on COMTRADE statistics, world export of ships, boats, and other floating structures was worth US \$ 106.79 billion in 2007. The annual growth in value between 2006 and 2007 was 19%. Present status of important shipbuilding countries is given in Table 1. World new shipbuilding contract by country in DWT and in number of vessel in the year of 2008 has been shown in Figure 5 and Figure 6 respectively.

Table 1: Export Volume & Annual growth of New Shipbuilding according to ITC

Exporters	Export Value in 2007 in US\$ million	Annual growth in value between 2006 & 2007	Country wise Share in World Export
World	106790.10	19%	100%
South Korea	26631.96	24%	24.94%
Japan	15522.86	10%	14.54%
China	12220.11	51%	11.44%
Italy	5980.11	51%	5.60%
Germany	4915.01	32%	4.60%
Poland	3592.76	14%	3.36%
U.K	3332.92	17.8%	3.13%
U. S. A	3160.37	17%	2.96%
Spain	2829.68	- 4.4%	2.65%
Netherlands	2772.92	12.9%	2.60%
France	2685.69	15%	2.51%
Finland	2352.48	4.6%	2.21%
Norway	1821.78	2%	1.71%
Croatia	1404.12	18%	1.31%
India	1289.96	25%	1.21%
Others	16647.37	NA	15.23%

11.0 BOOM IN SHIPBUILDING INDUSTRY

There had been a boom in shipbuilding industry across the world up to 2007. Demand for new orders had spiraled because of following reason:

- New Regulations imposed by IMO, made it almost impossible to have the older ships upgraded and thus had to be replaced by new ships
- Increasing price of fuel had made shipping business extremely competitive and older energy inefficient ships were found obsolete.

c. Globalization led to increase international shipping trade between the East and West several folds and also helped to expand European Union.

d. Countries become global villages. Now any industry or investors can continue his business anywhere or anytime in the entire world. Goods will be manufactured in one side of the world and sold to consumer markets on the other side^[11]. So world turnover, movement and activities have been increased manifold in the last few years. As a result demand of ship and shipbuilding activities have been increased.

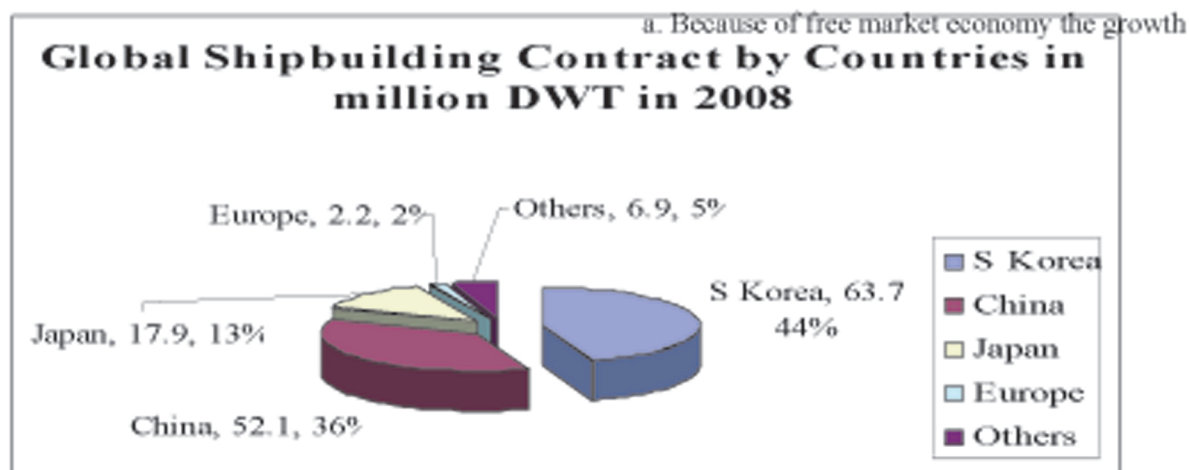


Figure 5: Global New Shipbuilding Contract by Countries in million DWT, 2008

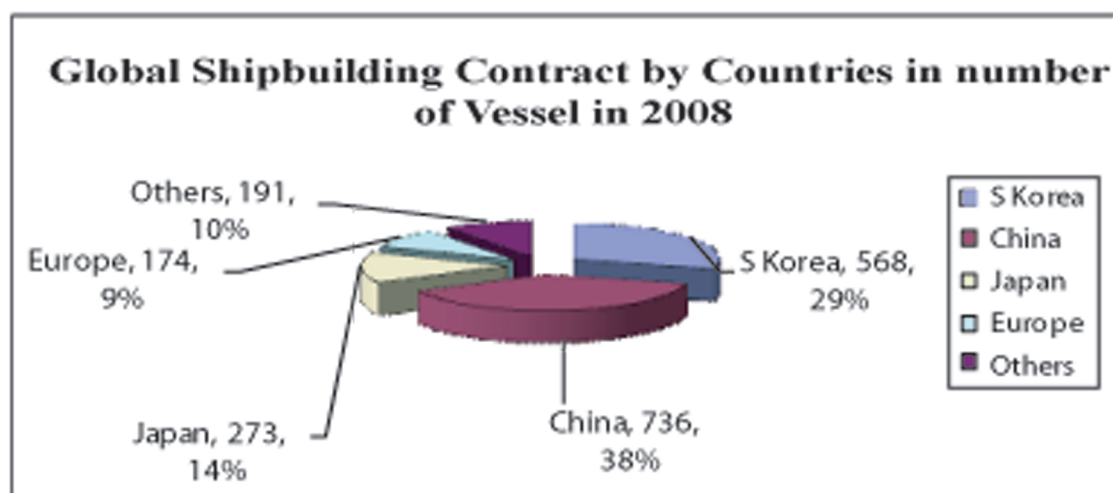


Figure 6: Global New Shipbuilding Contract by Countries in No of Vessel, 2008

13.0 NATURE OF PRESENT WORLD SHIPBUILDING MARKET

Shipbuilding is a technology based labour and capital intensive industry. Everyday changes are taking place in the areas of ship types, sizes, speed, construction methods and materials, navigational and communication equipments, parts and offshore terminals, cargos and cargo handling system etc. In developed countries new innovations are turned into new products quickly and those are technology based. In the near future e-navigation shall open the doors to ways of tracking and routing vessels at sea. It may lead us to a satellite-based global vessel traffic management and control system with safety and efficiency. Invention may come up in future to curb fuel consumption for protecting environmental impacts.

in global trade particularly due to the rapid expansion of cheap and reliable overseas manufacturers and suppliers, especially in China and other countries, has caused many western companies to transfer their own manufacturing facilities to overseas. Goods will be manufactured in one side of the world and sold to consumer markets on the other side. This will lead to a rapid expansion of the container transport and liner business. As a result the global shipbuilding is booming with continued high rate of expansion. But the major bottlenecks of shipbuilding industry are the acute shortage of manpower including specialized personnel's in the technical/engineering sector. In this situation the shipbuilding industry of developed and developing countries may build technology based high valued bigger and faster ships.

Table 2: World Carbon Steel Transaction Prices US\$/Metric Ton (MEPS Steel Product Price Levels across 2008 - 2009)

World Steel Price US\$/Ton	Hot Rolled Steel Coil	Hot Rolled Steel Plate	Cold Rolled Steel Coil	Steel Wire Rod	Medium Steel Sections
Jan 2008	639	847	716	621	871
Feb 2008	699	887	772	687	905
Mar 2008	800	978	890	758	970
Apr 2008	915	1065	985	852	1042
May 2008	998	1160	1080	920	1105
Jun 2008	1073	1225	1144	1005	1184
Jul 2008	1099	1307	1186	1067	1234
Aug 2008	1093	1300	1179	1062	1227
Sep 2008	973	1243	1046	977	1154
Oct 2008	865	1150	940	811	1045
Nov 2008	716	1000	802	676	898
Dec 2008	565	901	659	609	780
Jan 2009	575	806	666	626	791
Feb 2009	556	719	637	574	753
Mar 2009	505	643	594	526	714
Apr 2009	487	638	576	500	678

b. The International Maritime Organization (IMO) has imposed ban on single hull tanker and passenger vessel. This may be another opportunity for new shipbuilding nations. But due to the recent Global Financial Turmoil demand for new orders has decreased considerably. The freight market crashed

overnight sending slivers through the spine of the owners. As the shipping market is in disarray, the effect started to be felt in the new building sector. As a result giant of this sector who obtained order for new building are not being completed to execute the contract already received. It is learned that some owners have retrenched employees and a few owners have declared, "Lay off". Of course it may happen that problems in respect of production and marketing being confronted by some one may turn into an opportunity for the others. It is obvious that the on going recession has been a threat for the traditional shipbuilding nations. So Bangladesh has to identify the opportunities that prevail in the present global atmosphere.

14.0 VESSEL ORDER ENTIRE WORLD MARKET AND STATUS OF BANGLADESH

Vessel order in entire world and Bangladesh market in last 20 years has been shown graphically in Figure 7. Again shipbuilding contract comparison between major shipbuilding nations and Bangladesh has been shown in Figure 8. From those two graphs, it is clear that shipbuilding contract is growing smoothly by keeping pace with world market. On the other hand, vessel order from foreign countries in Bangladeshi shipyards (including types, quantity and DWT) has been shown in Table 3 and graphical presentation of order book by shipyards has been shown in Figure 9^[12]. A list of world potential shipbuilding nations has been shown in Table 4 in which Bangladesh needs to compete with other nations in future to remain in this sector.

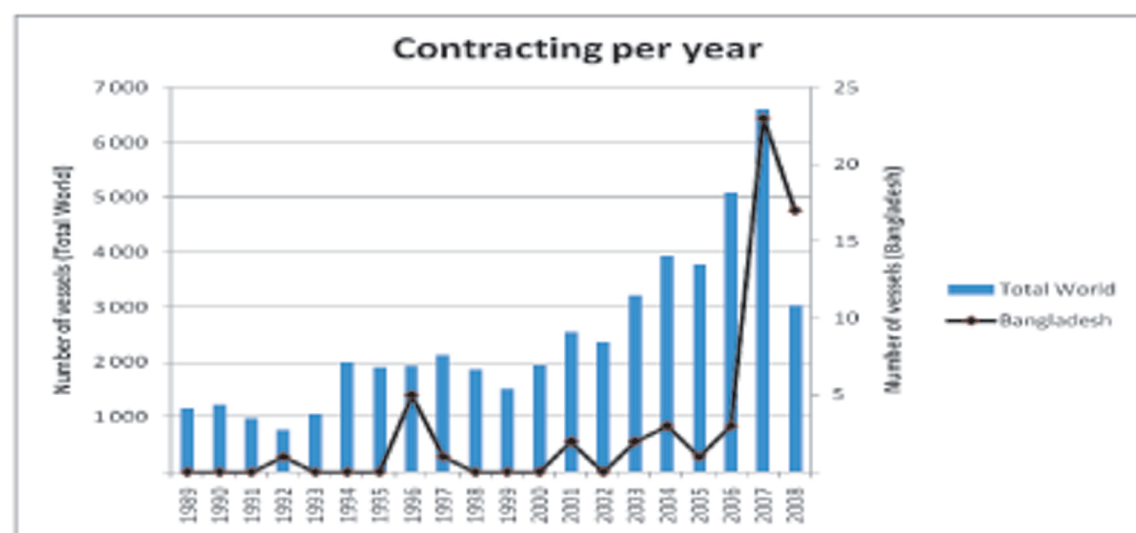


Figure 7: Vessel Order (Entire World Market and Position of Bangladesh).

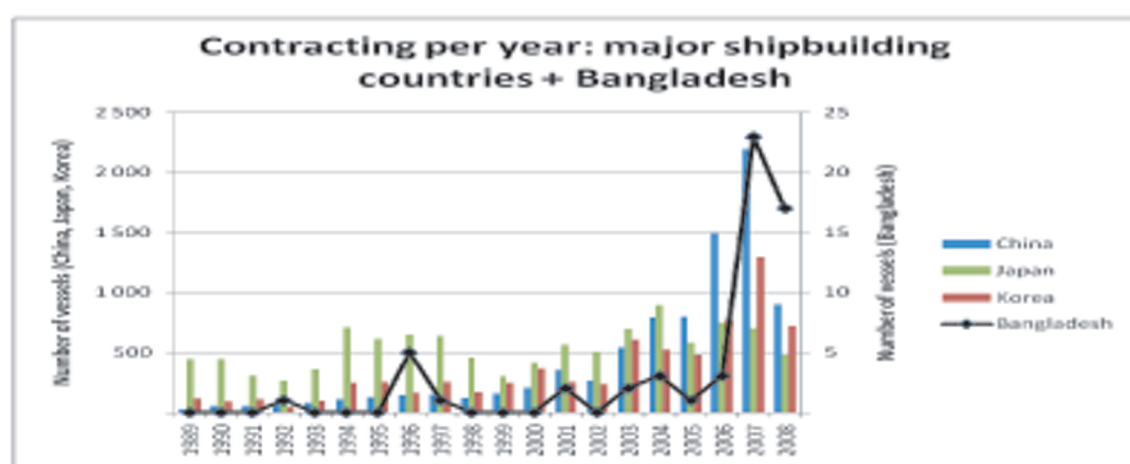


Figure 8: Shipbuilding Contract Comparison between Major Shipbuilding Nations and Bangladesh.

Table 3: Export Quality Vessel under Order (Types, Quantity & DWT) in Bangladeshi Shipyards from Abroad

Name of the Shipyard	Type of Vessel	Quantity	DWT	Owner
Ananda Shipyard Limited	Multipurpose ship	8	7250	Komrowski, Germany
Ananda Shipyard Limited	Multipurpose ship	6	5500	Lehman, Germany
Ananda Shipyard Limited	Container ship	3	2900	Stella, Denmark
Ananda Shipyard Limited	Multipurpose ship	6	6100	Wessels, Germany
Western Marine Shipyard Limited	Multipurpose Cargo vessel	05	4100	Denmark
Western Marine Shipyard Limited	Multipurpose Cargo vessel	12	5200	Grona, Germany
Western Marine Shipyard Limited	Floating Reception vessel	01	230	Finland

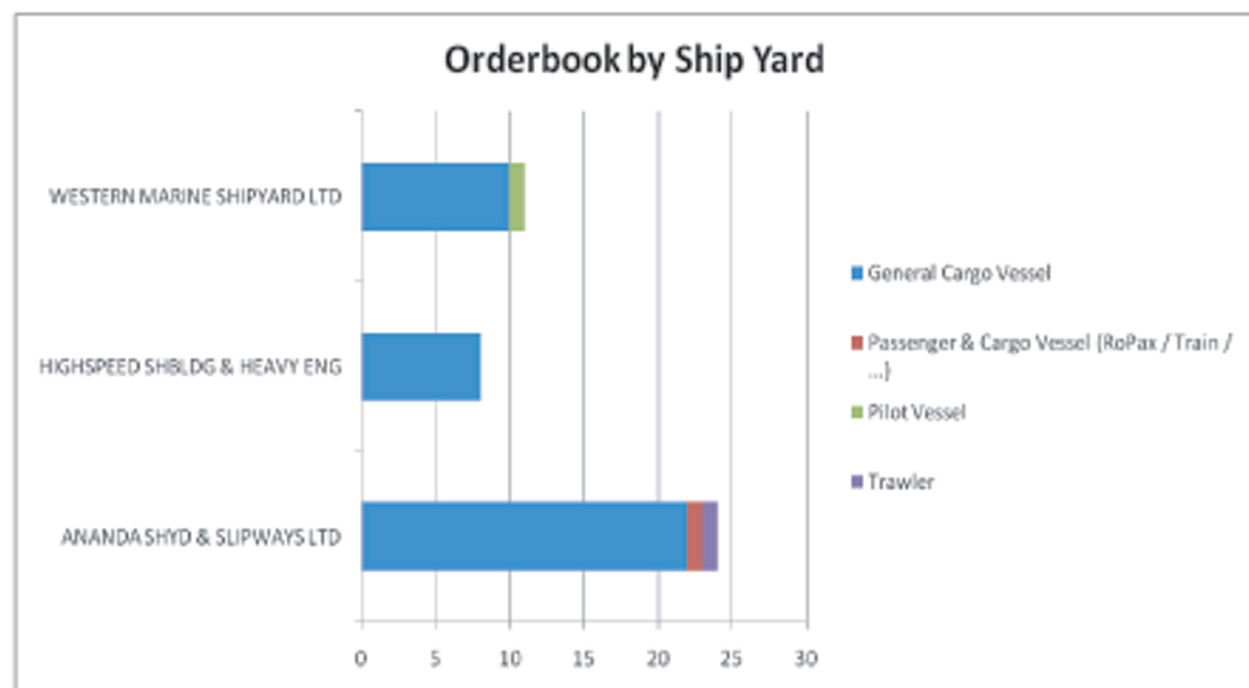


Figure 9: Graphical Presentation of Order book by Shipyards

15.0 ANALYSIS OF PAST TREND

Shipbuilding encompasses the shipyards, the marine equipment manufacturers and a large number of service and knowledge providers. It is an important and strategic industry in a number of countries around the world. Shipyards offer a wide range of technologies, employ a significant number of workers and generate foreign currency. Shipbuilding is therefore an attractive industry for developing nations. Japan and Korea used shipbuilding to rebuild its industrial structure. China is now in the process of repeating these models. In the past, shipbuilding industry of the East enjoyed superiority and made the region leader of civilization, and then shipbuilding becomes a European Industry in which Britain took the lead. This is followed by Japan and now South Korea takes the lead and by any numerical standard, Korea is still the leading shipbuilding nation in the world. The countries, where labor costs are going up, are shifting their role of shipbuilding from small sized to medium and large size ships^[13]. The other emerging forces are Vietnam and India. In fact, emergence of Vietnam is largely a result of efforts by European countries to relocate their shipbuilding industries to low labor cost countries. India is another rising giant in shipbuilding industry and receiving orders of hundreds of millions of dollars^[14].

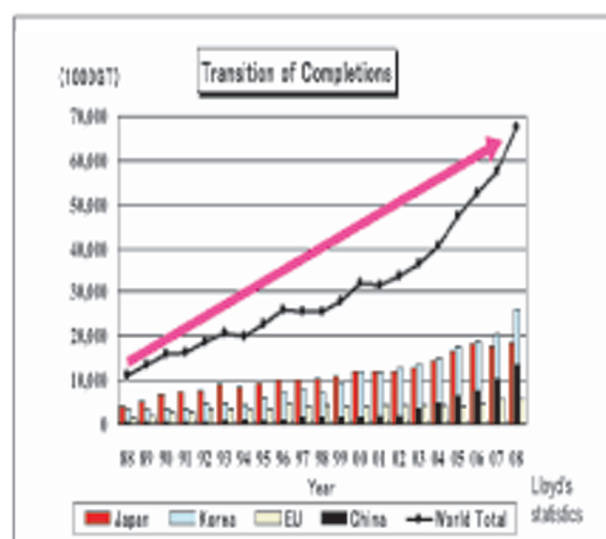


Figure 10: World Shipbuilding Demand Always Increases.

16.0 DEDUCTION FROM WORLD AND LOCAL SHIPBUILDING MARKET ANALYSIS

Shipbuilding is both promising and challenging industry in the World. Until very recently the average increasing rate of ships in tonnage was approximately 21 million GT (Gross Tonnage) per year. Considering US\$ 7,620 as construction cost per GT, total global shipbuilding market size is US\$

1,600 billion (according to the statistics of COMTRADE). If only 1% market share can be captured by Bangladesh it will be equal to US\$ 16 billion. In worst case if Bangladesh can grab one per cent of the global order for only small ships market (which is about US\$ 400 billion), the amount will be worth US\$ 4.0 billion^[15]. Bangladesh's opportunity to emerge as a shipbuilding nation under global standards has created in the last few years, as other traditional shipbuilding nations showed little interests in making of small ships. Two leading local shipyards, Ananda and Western Marine have bagged orders to make over 40 small vessels worth about US\$ 0.6 billion mainly from European buyers. From the analysis and on the basis of the prediction, it may say that Bangladesh is going to be addressed as shipbuilding nation within 2015 and placed within twelve in the global order in the year of 2021.

17.0 MAN-HOUR AND PRODUCTIVITY FOR BANGLADESHI SHIPYARDS

After detail analysis and calculation by the author, the productivity of Bangladeshi Shipbuilding labour is 11.43; which has been shown in Table 4 as compare with other nations. And that is the lowest in the world. But mere training and automation of work will definitely improve the productivity; as it had happened previously for Korea and Japan. On the other hand average hourly labour charge in Bangladesh is only US\$ 1.00; which has shown in Table 5 as compare with other nations. This is also the lowest in the world. So, the relative labour rate of Bangladeshi Shipyards is 0.45; which has shown in Table 6 as compare with other nations. And which is again the lowest in the world. Ultimately Bangladeshi shipbuilding industry remains at advantageous position in the world^[16].

Table 4: Shipbuilding Productivity of Different Shipbuilding Nations

Country	Productivity
Japan	1
European countries	2
United States	4
India	10
Bangladesh	11.43 (Calculated by Author)

Table 5: Average Hourly Labour Rate of Different Shipbuilding Nations

Countries	Average Hourly Labour Charge in US\$
Bangladesh	1.00 (Evaluated by Author)
India	2.00
China	7.00
S Korea	23.00
Japan	26.00
USA	25.00
UK	27.00
France	26.00
Italy	24.00
Germany	36.00

Table 6: Relative Labour Rate of Different Shipbuilding Nations

Country	Relative Labour Rate	Country	Relative Labour Rate
Bangladesh	0.45 (Calculated by Author)	Canada	11
India	1	Japan	12
China	1 to 2	Italy	13
Singapore	3	France	13
Hong Kong	3	Denmark	13
Taiwan	3	Norway	14
South Korea	6	Sweden	14
U.K.	10	Finland	15
USA	10	Germany	15

18.0 COST ANALYSIS OF EXPORT SHIP MANUFACTURE IN BANGLADESHI SHIPYARDS

Effort was made to collect the financial data to evaluate the percentage of cost breakdown and distribution of foreign and local contribution of a

sample ship exported by Bangladeshi shipyard. The analysis and result has been shown in Figure 11 and 12 respectively. Additional financial cost of ships manufacture in Bangladesh is about 15 to 25% (Bank Interest 3 to 6% + Bank Guarantee 8 to 16% + L/C Commission 4 to 8% + other charges 1%) higher than the other competing nations like China, Korea, Japan, India, Vietnam, etc. Again tax on imported shipbuilding machineries and components enhances the costing further extent. On the other hand, India has only 10% financing cost and a 30% cash subsidy and is all together about 30-40% ahead of Bangladesh. So, only low labor cost in Bangladesh cannot do everything to survive in the

world shipbuilding industry. Again, at present Bangladeshi component manufacturers and shipyards can manufacture 50% of the total material, machineries and equipments for the local inland and coastal vessels built in Bangladesh and the rest can be procured either new from foreign market or second hand market at Bhitari. This proportion for an international classed vessel to be built in Bangladesh is at present 10-15%, which if properly ventured by experienced foreign manufacturer can be taken to 45%. Share of the local contribution for export quality ship at present by the Bangladeshi shipyards is about 40% of total ships' cost. It can be upgraded up to 70% as well.

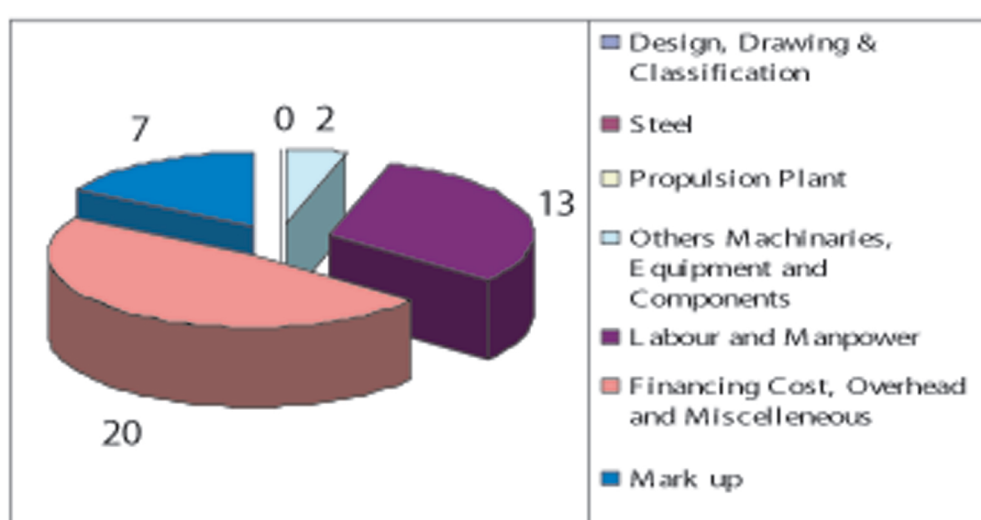


Figure 11: Breakdown of Cost of a Sample Export Quality Combined Cargo Ship Manufactured in Bangladeshi Shipyard (2850 DWT, Total Cost US\$ 7 Million)

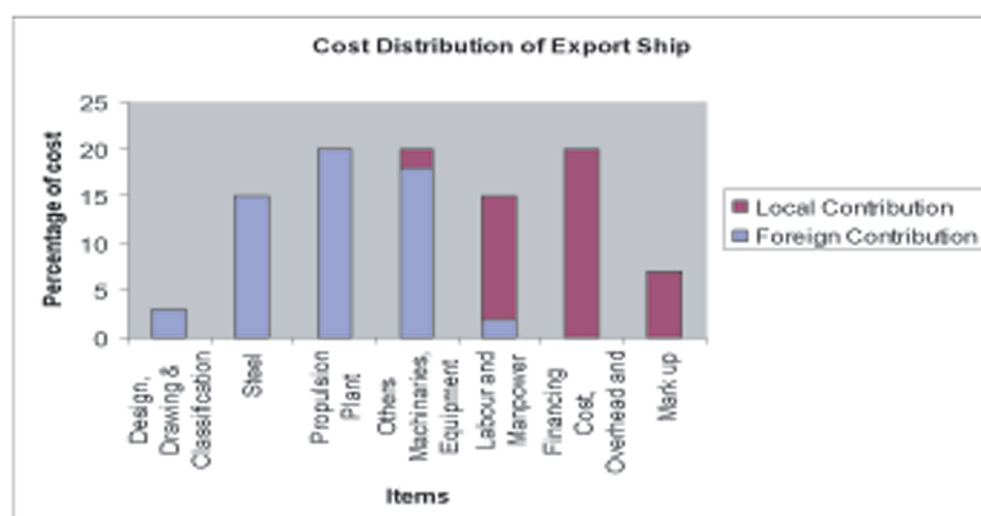


Figure 12: Percentage of Local and foreign Contribution of Cost of a Sample Export Quality Combine Cargo Ship Manufactured by Bangladeshi Shipyard (2850 DWT)

19.0 FORECAST OF LOCAL AND GLOBAL SHIPBUILDING IN GROSS TONNAGES

Here author has done detail time series analysis and calculation to forecast the future of Bangladeshi and global shipbuilding in term of capacity to ship manufacture in million gross tonnage per year on the basis of local and global shipbuilding capacity at present and past trend time series and performance analysis, future prediction and some mathematical assumption. Growth of

export quality shipbuilding capacity trend of Bangladesh along with world in million gross tonnages has been shown in Figure 13. So it may say that in the year of 2015 shipbuilding capacity of Bangladesh and world will be 0.44 and 52.5 million gross tonnages respectively^[20]. So Bangladesh is going to achieve the capacity of 0.84% of global shipbuilding share within 2015.

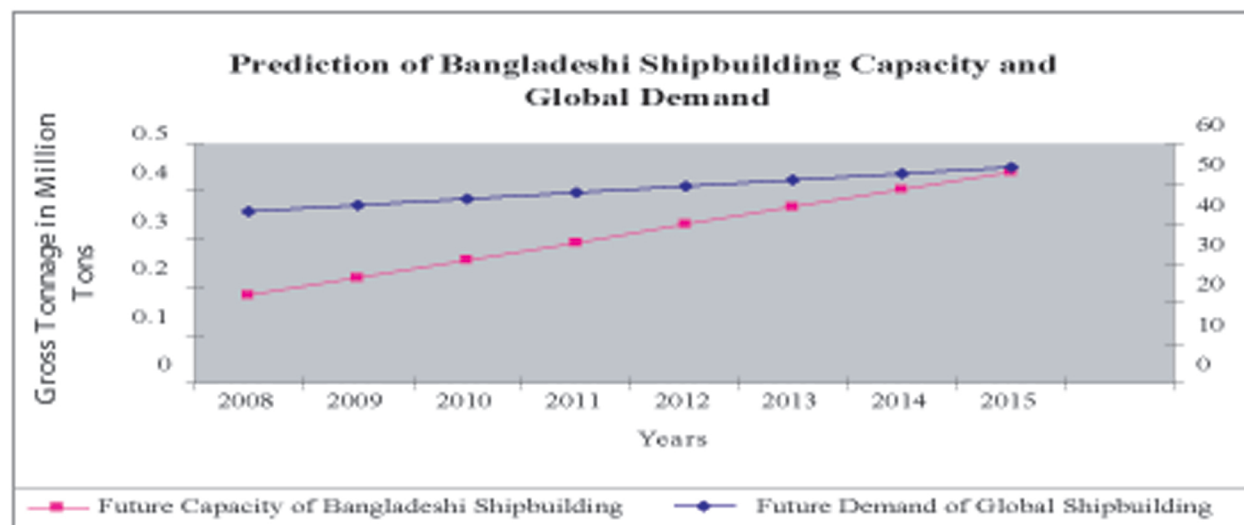


Figure 13: Growth of export quality shipbuilding capacity trend of Bangladesh along with world in million gross tonnages.

20.0 CONCLUSION

Shipbuilding is a low-tech and capital intensive strategic industry, which could generate net value addition for Bangladesh same as of readymade garment (RMG) industries within next few years. The present trend or the shipbuilding boom is expected to continue for at least another era. The opportunity that is now knocking must not be lost due to lack of setting priority or understanding its prospects. Again Bangladeshi shipbuilding is not in competitive and international standard and also is in vulnerable stage. If this sector gets the same facilities as given to the RMG sector, the net benefit will be much higher yield in comparison to that of RMG. Shipbuilding detonated as promising, challenging and billion dollar industry in the World. Total global shipbuilding market size is US\$ 1600 billion. If only 1% market share can be captured by Bangladesh it will be equal to US\$ 16 billion. Bangladesh had an excellent history in shipbuilding since ancient. But this sector was disappeared

because of technological changes in the world. Shipbuilding is an important and strategic industry, because it has one of the highest multiplier effects among all other industries. Britain upto WW I, USA upto WW II, Japan after WW II, South Korea and China at present leading the global shipbuilding industry and enrich their other SMEs and backward linkage industries. Shipbuilding is therefore an attractive industry for developing nations. Shipbuilding industry of Bangladesh has all the potentials to flourish and penetrate the global markets. We can hope that Bangladesh will earn more than 5 billion US\$ per year within 2016 and that will increase country's GDP by 3%. From strategic analysis it can be predict that Bangladesh will be addressed as shipbuilding nation within 2016 and ranked within ten in global order in the year of 2021; which is very much in-line of government vision 2021.

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