A Study on Indonesia Shipbuilding Competitiveness

Challenge and Opportunity

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Abstract: This paper aims to review current condition of Indonesia shipbuilding industries, a study of brief picture about challenge and opportunity Indonesia shipbuilding industries to gain competitiveness against the others. At the first, characteristic of globalized shipbuilding industries will be discussed, with the main issues about the market, policy, shipbuilding growth and country shares etc. Since the Indonesia's cabotage laws introduced in 2008, growth of Indonesia shipping fleet exceed expectation, but different condition happened to shipbuilding industries. Cabotage law still cannot encourage development of national shipbuilding industries, where the most of merchant vessel in Indonesia still imported or manufactured by foreign shipbuilding industries. With great potential of maritime, competitiveness of national shipbuilding industries still on questionable, though Indonesian government policy given more space to national shipbuilding industries to growth, the challenge now is how Indonesia shipbuilding industries to gain all benefit and improve their competitiveness. Strong support of the government and attention to shipbuilding industries is very dispensable in case. The key factor influences on competitiveness Indonesia shipbuilding industries also been discussed in this paper

1. Introduction

Shipbuilding industry has become more global now than local, cause by increasing globalization demand and easy ways to move raw materials, components, finished product across the world's. Shipbuilding industry is the oldest industry in this world, and at least, shipbuilding can be separated by two big segmentation based on product; commercial ships and naval ships. Development of shipbuilding industry is very depending on economic conditions, although shipbuilding industry has surviving whether in bad economic condition, but current global economic condition and political crisis also influence severely hit development of shipbuilding industry [4]. Shipbuilding industry is highly intensive capital, so strong government support and political stability conditions is the one of requirement to surviving in this industry. Highly state support in China shipbuilding industry, become the main factor how China shipbuilding industry rapid growth in past few years and lead the market until now. Indonesia as the one of great potential maritime, still behind even compare to southeast Asia country, where the Philippine become the fourth with 6 million gross tonnage or 1% market share over the world in 2014 [9]. The development of shipbuilding industries in globalization era, force the government to examine their competitiveness to face global market. As we know Japan, is the leadership country dominated in shipbuilding in more than three decades, from 1950, until last 1990, slow but sure japan lost their competitiveness advantage against to Korea, with their emerging shipbuilding industry, Korea has advantage from low labor cost, strong government support with announce that shipbuilding as strategic industries and cheaper currency exchange rate. In 2003, Korea has taken over shipbuilding leadership from Japan, and from that time market share of Japan decreased dramatically. When recession in global economy crisis at 2008 – 2010, China emerging shipbuilding industry take over leaderships and now firmly the world's largest shipbuilder with around 45% of the world's total orders, and its quality and technology have improved significantly. This is also reason why Indonesia government in past few years begin to examine state owner enterprises to assess their competitiveness, as in [14]-a strengthening of industrial competitiveness would lead to an economic growth, while a deterioration of competitiveness may imply problems for industrial policy.

This paper aims to see whole aspect to set position of Indonesia shipbuilding industry with a review of all sector from global shipbuilding industries development and study the brief picture about challenge and opportunity face by Indonesia shipbuilding industry to improve their competitiveness against the others. Global shipbuilding industry characteristic will be discussed, with the main issues about market, policy, shipbuilding growth, development of shipbuilding industry globalized, country shares and etc. This point of discussed refer to see position of Indonesia shipbuilding industry with illustrate the challenge to face and opportunity gain by Indonesia to improvement their shipbuilding industry.

2. Define the Competitiveness

We Basic definition of industrial competitiveness has change follow international economic where gradually shifted from static price competition towards dynamic improvement, which benefiting firms that are able to create knowledge faster than their competitors [10]. Increase number of firms as competitive edge, is no longer solution to obtain cost reduction, but rather by developing the entrepreneurial rents [15], innovative ways in production process, access the market in new and the unconventional way or to produce new, improved or redesigned good or services with significant contribution to perceive customer benefit as perspective.

Competitiveness in shipbuilding industry, can be analyzed by some aspect, industry structure, regulatory framework and competitive environment to define competitive performance of shipbuilding industry sector. Industry structure define measurement of shipbuilding industry size in a country, for example: China shipbuilding industry has average size companies compare to Indonesia where has characteristic of large number of small medium enterprises all over the area, only few large shipbuilding industries can be located in Indonesia. Industry structure also define the labor cost, material cost, knowledge development and capital owned by shipbuilding industry to gain competitiveness. Regulatory framework includes competition policy and other regulatory field influence the competitiveness of shipbuilding industry. Competitive environment is influenced both demand and supply of the market and development sectors of ships product. The other area need to be assess is business strategies and policy responses, where every policy and strategies also take a part affect grow of shipbuilding industry more rapid or otherwise condition would implied

SWOT analysis is the best method to illustrate our shipbuilding industry position against competitor, SWOT analysis can use to evaluate the strength, weakness, opportunity and threats involved in an industry. And from this analysis, we can develop the strategies to address the issue appears in SWOT analysis. In this paper, we will use the extend developing method with TOWS analysis, where this tool which is used to generate, compare and select strategies with concerned or highly focused on treats and opportunities.

3. Global Shipbuilding Condition

Since the wood replace by iron and steel, leadership in global market of shipbuilding industry has been take over few times from Great Britain to japan, then to South Korea and finally to China. The condition and reason factor influence this take over presented in table 1 [12]. China has been targeting to become leadership of global market shipbuilding industry in 2015, and China able to accomplish their target half of the time they need, because the main factor is recession of global economy in 2008 – 2009, but however China actually have advantage as emerging shipbuilding industry market, with big potential of human resources and massive support from China government to help and supporting China to become leaderships of global market in shipbuilding industry as expected.

Great Britain success took over leadership of shipbuilding industry market in 1950, even they took over 80% of market shipbuilding production combined with Europe country even though they not capable to defend position as leadership because they failed and too slow to increasing their productivity with new technology implementation and production management method in this industry, unlike their competitors in Scandinavia, Germany, and Japan.

Table 1: Leadership in Global Shipbuilding

Duration of the leadership	**Country**	**Stage of business cycle**	**Causes**
1860’s – 1950’s	G. Britain	Lost leadership	Failure to modernize shipbuilding industry
mid1950’s – mid1990’s	Japan	Post-maturity, weakening of competitive power	Ageing and high cost human resources. Reduced by shipyards R&D budget to less than 1%. The gap between the demand and supply for steel, increased prices of steel.
From mid1990’s	S. Korea	Post-growth, maintenance of competitive power	High cost human resources. The gap between steel demand and domestic supply increased steel prices. The appreciation of Korean Won has worsened the competitiveness of Korean shipbuilding.
Since 2010, earlier than it was planned	China	Acceleration of growth	The lowest labour cost. Ambitious State programmes for the development, growing shipyards capacity, governmental subsidies.

In the 1950, with the growth of Japan economic after second world war, leadership of the market took over by Japan with competitive advantage because well-coordinated state shipping and shipbuilding programs that initiate by the government. Japan dominated the world for more than three decades and together with the Europe country control 90% of global market of shipbuilding. There's some reason behind Japan fall to maintain theirs position as leadership. First, Japan shipbuilding industry face difficulty to recruiting new young engineers and suffered for high labor cost. Second, Japan shipbuilding industry are not flexible and cannot adapt very well to changes in global market that demand bigger and bigger vessel by requisition of their customer, and they fail to face this condition. Third, 60% of shipbuilding project that only focus fulfills demand area domestic in japan, which don't show development of the new technology and new production management method. And the latest report of 2010 about Japan shipbuilders confirm that Japan shipbuilding industry only work for Japanese owner at 82,4%, competitiveness of Japan shipbuilding industry also hit by the gap between demand and supply for material, increase time of delivery and exchange rate of their national currency, which Yen that strengthening against US dollar [12].

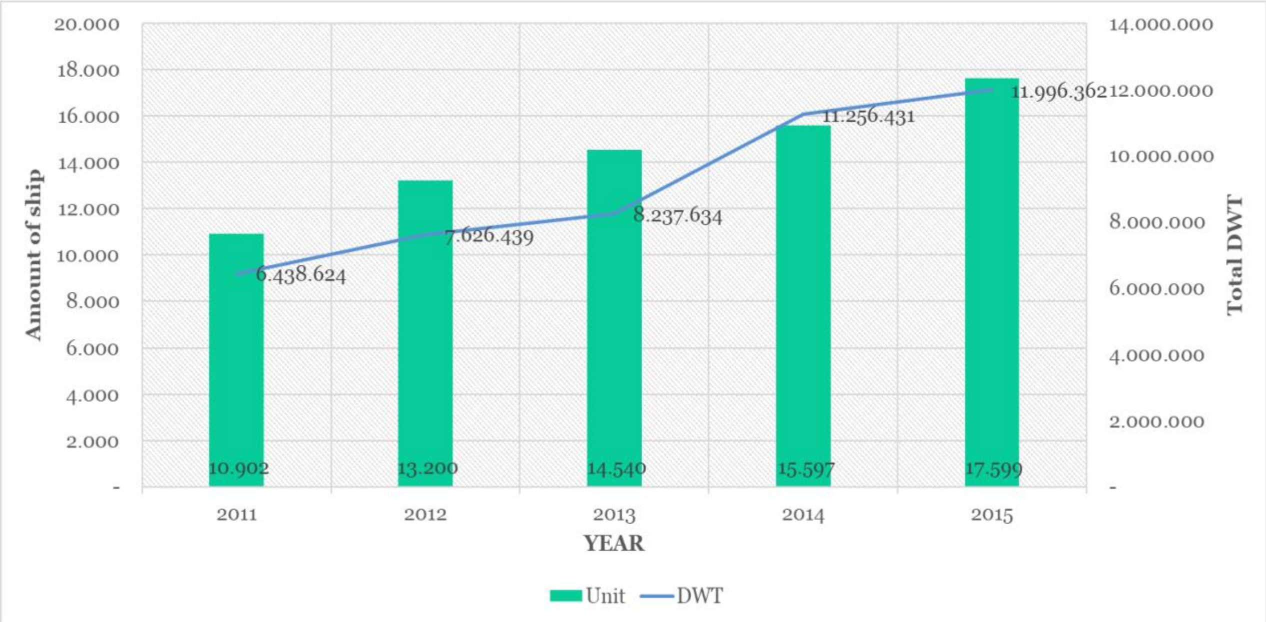

Figure 1: Number of shipping fleet in Indonesia

In the middle of 1990, South Korea whom focus to low cost shipbuilding, they focus on product like large tankers, large/ultra large containership, LNG/LPG vessel, offshore drilling rigs and even on cruise ships that it is still part of specialized market in Europe area shipyard product. Despite the fact South Korea still has many competitiveness advantages with some expert resources, but otherwise show they competitiveness is diminishing because the high cost of human resources, insufficient quantities of raw material like steel where fulfil by domestic industry and ever-rising prices of imported material components. The appreciation rate of South Korea currency, won also take a part to worse the condition of their competitiveness [16].

Although China has been entered the market of shipbuilding with low price ship product since 1980, however China shipbuilding industry start become serious competitor begin at 2005 – 2006. China order book enlarge from 1,9 billion CGT in 1998 to 62 billion CGT in 2008 and China gain order book of shipbuilding grow more than two times faster than growth order book of world wide in total [3]. Growth of shipbuilding industries in China cannot be separated from strong support from government and with huge investment, cooperation with strategic supporting industries for shipbuilding equipment like MAN B&W, Wärtsilä, and other ship equipment manufacturers improve position of China shipbuilding industry incredibly against competitor. In 2010, China begin the domination in the world of shipbuilding market. China has strategic agenda of their shipbuilding industry by change their structure of the product towards more sophisticated, upgrading the new technology, merger shipyard to developing the specialized giant shipbuilding industry. China also aware about expansion the industry and improve their competitive requires more qualified technical employees and researches, but Chinese labor cost per unit product compare their competitor still far by the lowest, nearly 50% lower than labor cost of Japan, and 30% of South Korea [16]. Combined action arranges by China with improving of the credit conditions and provide bank guarantee give the excellent example how significantly factor in the market can impact the global shipbuilding competition.

4. Indonesia Shipbuilding Current Condition

Indonesia has 250 shipbuilding industries, where 78% of total amount located in Sumatera (26%), Kalimantan (25%) and Java (37%) [7]. Total capacity production Indonesia Shipbuilding Industry reach 0,9 million deadweight tonnage with utilization only reach 35%. KEMENPERIN (Ministry of Industry) in create roadmap outlook for shipyard industries, target in 2025 national shipyard must have ability to build many types of ship with maximum capacity 200.000 DWT and would be supported by local ship component industries with though and high competitiveness.

Indonesia shipbuilding industry sector only contribute 0,034% from total GDP [7], far away compare to South Korea which reach 4,5% from total GDP. After *Instruksi Presiden No 5 Tahun 2005* practice in Indonesia about cabotage, amount of shipping fleet with Indonesian flag increase from 6.041 unit (Jun, 2005) to 13.224 unit (Feb, 2014). Growth of shipping fleet impact on shipyard industries growth every year. (see figure 1) [17]. The increase of shipping fleet in Indonesia upside down with the condition of Indonesia shipbuilding industry, because most of shipping fleet in Indonesia is imported or manufactured by foreign shipbuilding industry and this is because they have more competitive price than build the ships in Indonesia. The applied of cabotage law also don't determine to protect national shipyard demand, and the limited capacity of shipyard facility also worsen position Indonesia shipbuilding industry to compete.

Indonesia still depends on demand create by Government, this can be seen after year cabotage law practice in Indonesia, demand of the market going slow and steady, and this condition worsen by global ship demand cause by the global economic crisis in 2008, when vessel demand decreased, dragging down prices and shortening order book covers over the following seven years. This also can be seen, in growth of world GDP in past few years, the tendency of GDP growth is almost steady or change very moderately. In Indonesia, demand from government still dominant, where in 2015 – 2019 ministry of transportation plan to purchase 609 ships with total investment 57 trillion rupiah, and from the outlook ministry of transportation, this year target, procurement of 103 unit of ships (*perintis type*), 33 unit already finish. Next waiting target for *perintis* ship type 50 units, navigation ships 15-unit, semi-container ships 15 units and cargo ship 15 units must be fulfilling in 2017. Until 2019, medium-term development plan from state (*Rencana Pembangunan Jangka Menengah Nasional – RPJMN*) review demand outlook for state shipping is 46 units in 15.000 DWT capacity, 37 units for 40.000 capacity, 26 units container ship class with 208 teus capacity and 500 units demand for demand citizen shipping fleet. But, Indonesia shipbuilding industry prospect in 2018 predicted will be more sluggish, cause slack of demand along budget saving from the government. Slow economic growth and low commodity price in global also causing demand from private sector go weak. This threatening makes production facility that own by shipyard will be not utilized in maximum capacity.

Indonesia has advantages for low labor cost, but lack of expert resources and low productivity compare to others, where this also happen in China at 2009. But, what makes different is China shipbuilding Industry has been globalized. From technology aspect, Indonesia research and development of ship technology still far away but has competitive advantage against country in Southeast Asia. Transfer of technology program and naval product from Indonesia shipbuilding industry is the one specialized product by Indonesia that can be paired for the first time with competitor and satisfied the customer from foreign country. Strategic Sealift Vessel is the one of imported main product as pride for Indonesia government, because design and technology has developing by local resources and prove that we still have a chance to improve our competitiveness in shipbuilding market.

Exernal Factor		Internal Factor	
		Strength Low labor cost & huge amount of human resources an Archipelago country with strategic location Complete facility and utility to support shipbuilding production Huge amouunt of shipyard firm in Indonesia	**Weakness** Access to skilled employee Access to finance Lack of knowledge ship technology and production method Depend on imported material to support
	Threats	**Strategy ST**	**Strategy WT**
	Exchange rate of indonesia currency	Improvement utility and facility to be more efficient to reduce cost and create competitive product price	Guarantee from bank to prevent shipbuilding industry from collapse, include material and ship component
	Imported second-hand ship market	Opening joint venture or join operation to gain more demand in shipbuilding product	Open access like credit or shipbuilding leasing with low interest rate
	Treat from China shipbuilding industries	Policy to protect domestic shipbuilding industry to stay competitive with against competitor	Tansfer of technology and recruiting researchers to developing the innovation of shipyard technology
	Political stability issues	Create well coordinated communication to make support and defend from political issues	Create the rule without conflict of interest to support local human resource can compete with foreign employee
	Opportunity	**Strategy SO**	**Strategy WO**
	Policy to support shipbuilding industry with clustered integration industry	Gain training to increase the productivity of labor	Create local employee certification to produce more expert resources
	Regulation to increase demand and utlity of shipbuilding industry in indonesia (Tol Laut, Cabotage & Permendag 82)	Create well-coordinated communication, integrated business controlled by government to keep demand, and supporting business one and other different companies	Create policy to support research and development of shipbuilding
	Tax incentive for shipbuilding industry	Give tax incentive to make sure not burden the shibuilding industry	Give policy to maintain interest rate of credit for shipyard too stay low and competitive with others
	Positive growth of Indonesia economy past few years	Government support industry to strengthen with industrial merger, and create big chances to compete with competitor	Open foreign investment, to increase local support shipbuilding component manufactures

Figure 2: TOWS of Indonesia shipbuilding

4.1.Competitive Analysis

From shipbuilding production process point of view, there's some advantage in Indonesia shipbuilding industry. Indonesia has lower labor cost, but this lower cost still not right when paired with labor productivity. Indonesia productivity reach 19 CGT per employee per year in 2010, compare to China 32 CGT per employee per year in 2009, but China position still below Korea 140 CGT per employee per year and Japan 240 CGT per employee per year, this is show how far Indonesia position on productivity of labor on shipyard industry.

From the geographical aspect, Indonesia has strategic position as an archipelago country, with area of sea 2/3 more than land area. Indonesia economic outlook also growth in positive area in past few years, though the condition of global economic condition still steady. Demand from the government also help the national shipbuilding industry to still operate for few years forward. Some national shipbuilding industry that owned by state, have a differentiation product that knowing by the global market, although is naval ship product. Regulation and policy in Indonesia, with *Permendag no 82* also prove that Indonesia government support national shipbuilding industry to gain competitiveness against treat from foreign industry.

4.2.TOWS Analysis

From the figure 2, there are sixteen designs of strategic to be discussed, and from this strategy, can be grouping into 3 main issues.

Industry structure

- Improvement utility and facility to be more efficient to reduce cost and create competitive product price
- Opening joint venture or join operation to gain more demand in shipbuilding product
- Gain training to increase the productivity of labor
- Transfer of technology and recruiting researchers to developing the innovation of shipyard technology
- Create policy to support research and development of shipbuilding
- Open foreign investment, to increase local support shipbuilding component manufactures

Regulatory framework

- Policy to protect domestic shipbuilding industry to stay competitive with against competitor
- Give tax incentive to make sure not burden the shipbuilding industry
- Government support industry to strengthen with industrial merger, and create big chances to compete with competitor
- Create the rule without conflict of interest to support local human resource can compete with foreign employee
- Create local employee certification to produce more expert resources

Competitive environment

- Create well-coordinated communication to make support and defend from political issues
- Create well-coordinated communication, integrated business controlled by government to keep demand, and supporting business one and other different companies
- Guarantee from bank to prevent shipbuilding industry from collapse, include material and ship component
- Open access like credit or shipbuilding leasing with low interest rate
- Give policy to maintain interest rate of credit for shipyard too stay low and competitive with others

4.3.Competitive Strategy

TOWS analysis gives many of solution to us with seeing from brief picture shipbuilding industries condition, but we must face the main challenge from our shipbuilding industry condition by stage of impact from the threats. First, improvement the utility, optimum production also will lead us to gain maximum profit, to gain this benefit, joint operation always the best ways because some shipbuilding firms have different capacity. PT PAL Indonesia, as one of state owner enterprises in shipbuilding industry have been looking to create joint operation with DAMEN lead with building naval project frigate ship type in Indonesia, order by Indonesian Navy. Shipbuilding holding company is also best option to expand market and gain competitiveness, strengthen industries position against treat from the outside, but this also must support with clear regulatory and stabilize political issues.

Second, financial support from the bank and support by the government policy. Shipbuilding is high capital industry, support from financial also can improve their production work and lead industry to have a big chance to survive. Indonesia inflation last few year still high compare to ASEAN country, in 2015 government try to low interest rate for people cooperative business, but in 2017 average interest rate for people cooperative business still in 18% average. Corporate loan still on 10% to 15%, and funding for project based or capital work funding on average 13,5% - 15%. High interest rate exceeds 10% burden shipyard condition, when shipyard need rate between 3% - 6%, or as benchmark, China shipyard credit rate is 5% to more competitive. Indonesia shipyard depend of support of industrial component, most of 60% - 70% component of ships is imported, and this burden the development of national industries to compete, and buying imported component and part always use US Dollar, some regulatory from the government which use rupiah for domestic trade also can cause future problems. This doesn't help shipbuilding industry to competitive, cause uncertain business condition and just make price ship in Indonesia is more expensive 10% - 30% than China, and Indonesia market share (0,3%) in ASEAN less than Philippine (2,6%) and Vietnam (1,1%). Incentive and investment on ships component industry, is must be concern to reduce cost of shipbuilding. More localized component, more cost can be reduced.

Third, is developing of knowledge in shipbuilding industries. Technology now is the part of our life, shipbuilding industry must adapt and more flexible in change of method or new designed product to meet customer requisition., if there no improvement, competitor will take advantage to it. Researcher form educational institution and management improvement for shipbuilding industry also must be support by government and industry. For example, technology of oil and gas vessel still depend on foreign technology, none of localized people can master the technology. This is because minimum effort and budget of researcher to focus on our strength to find new innovation of technology and apply the technology for our concern and benefits.

5. Conclusions

From this paper we can conclude that industrial competitiveness not always depend low cost product with low cost operation but developing the technology and product to adding value to customer also can be factor to be examine competitiveness because we can give better solution with customer perspective. Indonesia shipbuilding industry current condition must learn from history from the past, analyzes their current condition to examine what strategic planning in long term and short term to surviving from this industry threats. With the potential of our maritime, Indonesia government must give strong support totality in development national shipbuilding industry, give their opportunity to growth together with focus aim to take leadership in Southeast Asia for the short-term target. Technology sector and research also development of our product must be focus to improve in next few years. Knowledge development not always focus on product, but apply the new modern ways, and always evaluate and adapt change of the new technology can save the industry to surviving the challenge.

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