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The Role of Chittagong Port Authority to Develop Other National Ports in Bangladesh to Provide Maritime Logistics Support in South Asia

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Abstract

Chittagong Port is the principal seaport in Bangladesh that has contributed to the national economy with the opportunity to be a world class regional port in South Asia. Driven in particular, cooperation among the three national ports Chittagong, Mongla and Payra are essential to do maritime logistics business in the region after serving the nation proudly. In here, Chittagong Port Authority (CPA) has the opportunity to help others in the process of port development for increasing the efficiency and productivity by providing financial and technical assistance because of its financial and technical capabilities as a pioneer seaport in the port world. This paper examines the role of CPA to bolster and develop underutilized Mongla Port and newly established Payra Port where qualitative research methodology is applied to explore the ways by which CPA can assist, link and integrate with others effectively especially in developing port infrastructure and inland transport networks. In addition, the research found the prospectus of Mongla and Payra to supply port services to the neighbors India, Nepal and Bhutan as well as serve South-West part of China with the aim of increasing regional connectivity and promoting international trade in those basically landlocked areas and countries of Asia

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1. Introduction

Chittagong Port is the principal seaport in Bangladesh that has contributed to the national economy with the opportunity to be a world class regional port in South Asia. Driven in particular, cooperation among the three national ports Chittagong, Mongla and Payra are essential to do maritime logistics business in the region after serving the nation proudly. In here, Chittagong Port Authority (CPA) has the opportunity to help others in the process of port development for increasing the efficiency and productivity by providing financial and technical assistance because of its financial and technical capabilities as a pioneer seaport in the port world. Maritime logistics and port connectivity are playing important roles in promoting regional economic development that is closely associated with the efficiency and quality of shipping and port activities (Lee *et al.*, 2016). Ominously, Bangladeshi seaports are not yet considered efficiently to the global standard in terms of technical or non-technically especially operational efficiency, infrastructural bottleneck, backward transport networks, poor information technology usage, financial delay in investment and poor port management (Sarker and Rahman, 2015). Mention that strong relationship between the port and port city or city is weakening both in economic and geographical terms (Zhao *et al.*, 2017). Moreover, a port is the heart of the transport system to interface among various transport modes to enhance connectivity to their hinterlands and forelands (Lee *et al.*, 2016; Rodrigue and Notteboom, 2010). In essence, port development is required in Bangladesh for facilitating the domestic import-export trade plus support the South Asian region for economic growth and trade development that will be treated as a maritime transport business.

This paper started with a special discussion on “Country moves with us” where the importance of port facilities for Bangladesh is described that turned to the next section of research methodology where qualitative research methodology is followed to get the empirical reflection of experts on port management. After that related works of literatures on port performance, competitiveness and governance stated with short literature on South Asian maritime transport system, including Bangladesh’s port facilities, intermodal freight transportation and inland transport networks for understanding gaps in the literature for developing ports of Bangladesh for increasing maritime logistics support to South Asia. Furthermore, research attributed the statement and feelings of the respondents in the qualitative research findings section. Based on the literature review and qualitative research findings, one section added for analysing the role of CPA to develop all ports of Bangladesh that inspired the next section for creating a regional common platform for transport connectivity. Finally, the paper concluded with the future directions that will help to extract important points for port development in Bangladesh.

Moreover, port authorities have a stake with innovation for improving operations, gaining competitive advantage, achieving and maintaining a ‘license to operate’, and finally achieving resilience against a changing environment (Taneja *et al.*, 2012). This paper examines the role of CPA to bolster and develop underutilized Mongla Port and newly established Payra Port where qualitative research methodology is applied to explore the ways by which CPA can assist, link and integrate with others effectively especially in developing port infrastructure and inland transport networks. In addition, the research found the prospectus of Mongla and Payra to supply port services to the neighbours India, Nepal and Bhutan as well as serve South-West part of China with the aim of increasing regional connectivity and promoting international trade in those basically landlocked areas and countries of Asia.

2. Country Moves with Us

Chittagong port has the slogan of “Country Moves with Us” that featured its importance in the national economy and social responsibility to all citizens of Bangladesh. Driven in particular, Bangladesh is moving forward with the performance of Chittagong port inevitably. Most of the import-export trade of Bangladesh is performed by seaports where Chittagong port is managing above 90% of trade and the country as dependents on the performance of Chittagong port (CPA, 2016). Brightly, the Chittagong port master plan that researched by HPC (Hamburg Port Consultancy) where they projected the container traffic in 2.7, 4.4, 5.1 and 5.4 million TEUs (Twenty feet Equivalents Unit of Containers) for the year 2020, 2025, 2030 and 2040 respectively that will be doubled within the next 20 years (HPC, 2015). From the research of Kharel (2009), it is found that Nepal and Bhutan are striving to get reasonable port access in the South Asia where they are paying 42% excess cost with the penalty of a time burden for using the ports of India. In here, they are using the congested and inefficient ports of India, where Chittagong and Mongla ports of Bangladesh are potential alternative ports for them. Moreover, freedom of transit is appreciated for all in South Asia, especially for landlocked countries Nepal and Bhutan to access Bangladesh markets and seaports predictably. Furthermore, the opportunity remains for China, India and Myanmar use the ports of Bangladesh to decrease the

transport cost and developing their countries dark areas that are basically land locks or undeveloped.

In order to handle all modes of transport, both coming from the sea or hinterland, it is crucial to develop a port in which the speed of handling is set on the highest level (van Zetten, 2016). The most important value-added and investment level in port-related manufacturing and logistics support by creating space in the supply chain to show better port performance (De Langen *et al.*, 2007). If there is no cooperation between the actors in the port community, the assessment of rates on performance could not be generated and may not be useful in the process of port development (Duran and Cordova, 2012). In this situation, as a leader and pioneer in the port management, CPA has to show the path to other national ports to increase the productivity, compete with others and enable the maritime transport as a part of port governance to the modern world. To unfold, ports have to serve the nation together where port cooperation is appreciated because the fate of the nation is highly dependent on the import-export trade where the country is moving forward with the best performance of port superciliously.

3. Research Methodology

Social research is a collection of methods and methodologies that needs to apply systematically for producing scientifically based knowledge and it's an exciting process of discovery where persistence, personal integrity, tolerance for ambiguity are required to complete the research successfully (Neuman, 2011). Preliminary, to analyse the basic two research *questions* (*How CPA can play a vital role to develop underutilized Mongla Port and newly established Payra Port? How CPA can assist, link and integrate with others effectively?*) With the related experts who are in driving position as port users, traders and port authority representative, all replied that research is essential to develop the port sector of Bangladesh. But nobody is interested to provide answers officially. It was clear that the researcher will not get too many respondents because of limited experts and non-interested persons in the research field. After that this issue is discussed with an academic teacher and how to proceed to get the minimum responses to cover the objectives of the research. At last, avoided the mixed research methodology qualitative and quantitative where followed the qualitative research methodology of Neuman (2011) and followed the field research for taking the interview of people acting in the research area. Finally, qualitative research methodology is applied to get the real thought of the actors who are related to the performance and motion of the Bangladesh port sector. The qualitative process always striving the get new things or innovation from the respondents that will contrast with the literature review and secondary source information appropriately.

Extraordinarily, UNCTAD (United Nations Conference on Trade and development) published their first research paper on "Port Cooperation" in 1996 where cooperation between ports within the country or region had attributed highly and till date this paper is the great direction for port in managing their activities by providing or getting helps each other. This paper is the main documents in selecting the areas where CPA can work with other national ports for bolsters own capacity and guide others how to bring the standards as like a CPA to attract the port users and international traders. In this connection, three major indicators are chosen for this research which is port performance, competitiveness and governance and by increasing the international standard level of those indicators, it is possible to provide maritime logistics support nationally, regionally and internationally.

Furthermore, CPA has to play a vital role to support Mongla and Payra in the aim of developing their capacity that based on the literature of UNCTAD (1996) and extracted the below types of cooperation in developing the overall port sector of Bangladesh.

1. Institutional. Arrange to support other ports by inspiring governments, international development organization like ADB(Asian Development Bank), AIIB(Asian Infrastructure Investment Bank), World Bank and others exclusively for capital investment in the port infrastructure, equipment purchase and facilities development.
2. Industrial. Organize other ports and grouping with international associations like IAPH or regional port association in getting technical assistance and emergency troubleshooting.
3. Commercial. Guide how to negotiate with the international investor for long term investment in the Bangladesh port sector and show how they will be benefited from this investment gradually.

Overall, in addition of secondary literature review including the UNCTAD (1996) research paper, qualitative research methodology applied to know the role of CPA for cooperating others for serving South Asia by providing integrated maritime logistics support efficiently and economically.

4. Literature Review

To follow the research methodology, the port cooperation paper of UNCTAD (1996) is reviewed to find out the gaps in port development. The basic approach of this research is to develop the port sector of Bangladesh by using the performance, productivity and strategic position of Chittagong port. The direct literature of Chittagong port is rare where related literature are attributed accordingly. Mention that port development is not increasing land and other facilities, it is crucial to attracting the port users by showing that port authority increased the land and others by creating synergies in developing connections in the port clusters (De Langen and van der Lugt, 2017). The issue of competition and cooperation among the various players are always important on the cost-profit trade-off involving risk evaluations in port management. In some geographical context, the researcher found the tendency towards cooperation between ports in both organically and as part of a deliberate strategy to promote the competition within a shared hinterland (Brooks *et al.*, 2017). The literature review mainly focused on the three basic indicators which are port performance, competitiveness and governance that discussed one after another.

4.1. Port performance

The requirements of seaport services are growing day by day to cope with the increased demand of cargo and information flow (Carbone and de Martino, 2003). As container traffic keeps growing and physical expansion is constrained by the limited supply of available land around most ports, port facilities will need to become more productive if they are to remain competitive where assessing how ports perform is useful not only for transport planning but also for informing port management, policy, and regulation (Dappe and Suarez-Aleman, 2016). In addition, Cariou *et al.* (2014) addressed the challenges in cargo handling operations particularly in a container that needs of going beyond by ports within their seaport activities. Mention that port reform initiative helped some countries for their significant improvements in port performance where others are re-thinking or yet not started the process because of its complexity and adjusted over time (Brooks *et al.*, 2017; World Bank, 2007). Port productivity and performance are related to the effectiveness of the supply chain as a whole where ports and users can take advantage of complementary strategies and capabilities to improve the port performance technically (Radhika, 2012). In the empirical analysis, Zhao *et al.* (2017) provided their concept on the port characteristics where maritime connections, hinterland connectivity and port efficiency are the major variables in port networks. Talley (2007) concluded that technically efficient optimum throughput, cost efficient optimum throughput and effectiveness optimum throughput are the economic objectives of a port that will satisfy to all including stakeholders of a specific port.

In the context of port performance, Dappe and Suarez-Aleman (2016) identified three major viewpoints which are operational, economic, and financial. In here, the operational perspective refers to the quality of the outputs provided in port services and facilities efficiently and timely. After that, economic angle takes into account factors such as the mix of inputs used, the technology used to transform inputs into outputs along with the port's productive scale. Twofold objectives of port are strategic productivity and growth that related to efficiency and expansion of the port performance respectively (Duran and Cordova, 2012). Lastly, the financial perspective addresses the mix of financial resources and profitability indicators. However, ports are complex places where performance is influenced by many factors including size, location, ownership, infrastructure, facilities and others, but people or human resources are the most vital resource to get optimum performance (Hubburd, 2016). In addition, smart port always adapted smart people to show their efficiency in port operations and management. Throughput volumes are the main indicator in measuring port performance in the port industry, but it is not the regional economic impact of the port and its attractiveness to the port-related industries in the region (De Langen *et al.*, 2007). A port may reduce the time related costs by reducing the congestion and turnaround time of the vessel that process the quality of the port service as a part of port performance, in general (Talley, 2007).

4.2. Port competitiveness

Port competitiveness has focused on the analysis of specific services that rendered by ports or port activities where actors are involved often motivated by opposing interests and non-convergent objectives (De Martino and Morvillo, 2008). Historically, port authorities were created at the national or regional level for integrating the port activities also for port development (Brooks *et al.*, 2017). The port authority is a part of the port community that composed of a set of actors that are related to logistics lines also leads and drives the port community (Duran and Cordova, 2012). Hales *et al.* (2017) showed the significant effects of five variables of Volume Competitiveness (VC) and Investment Competitiveness (IC).

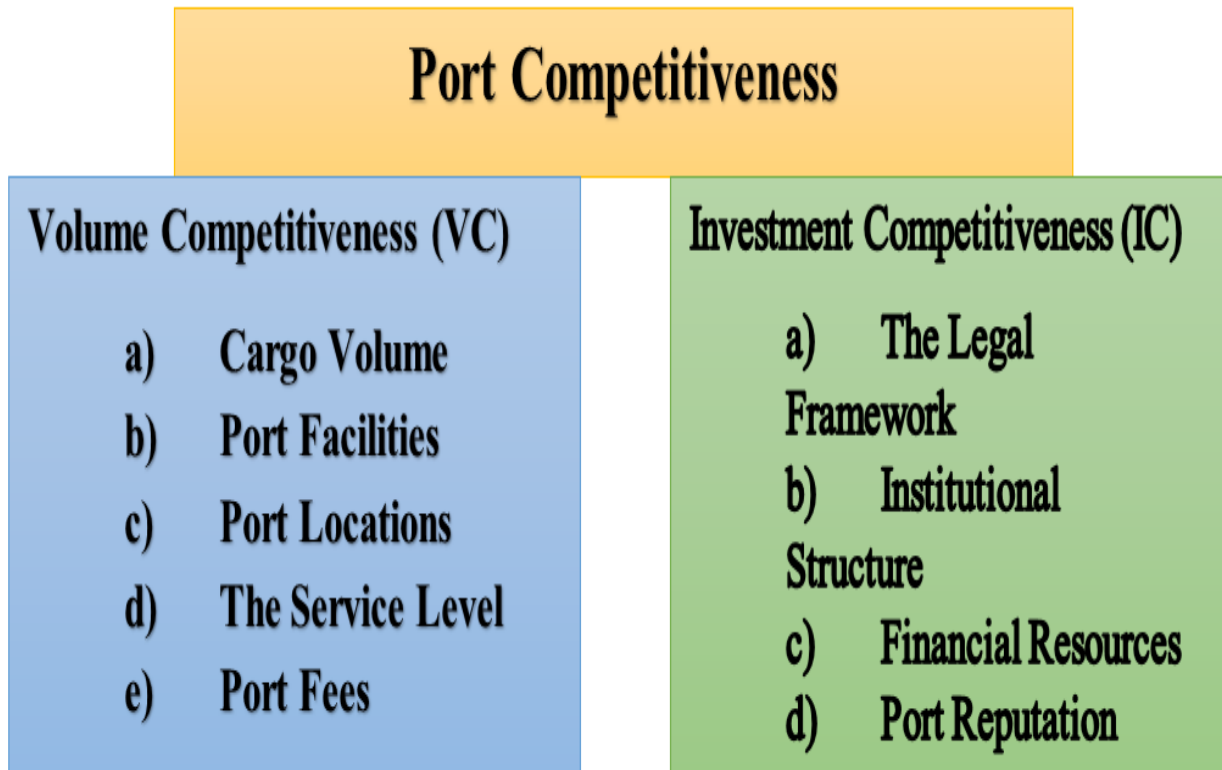


Fig.1. Port Competitiveness (Hales *et al.*, 2017)

Identification of drivers of port competitiveness and identification of together with the measurement of the drivers in economies of scale in shipping especially be proactive in making hinterland strategies by port authorities, governance changes in framework and management level of port authority, degree of competition for attracting customers and investor, inter-firm networks in building relations between local and international stakeholders and in the aim featuring green and sustainable port planning efficiently (Parola *et al.*, 2017). The variables that are stated by Hales *et al.* (2017) and Parola *et al.* (2017) are common factors that need to consider by all for port competitiveness and taking the initiative to develop and compete in the business rivalry of the port sector in the South Asia or Bay of Bengal.

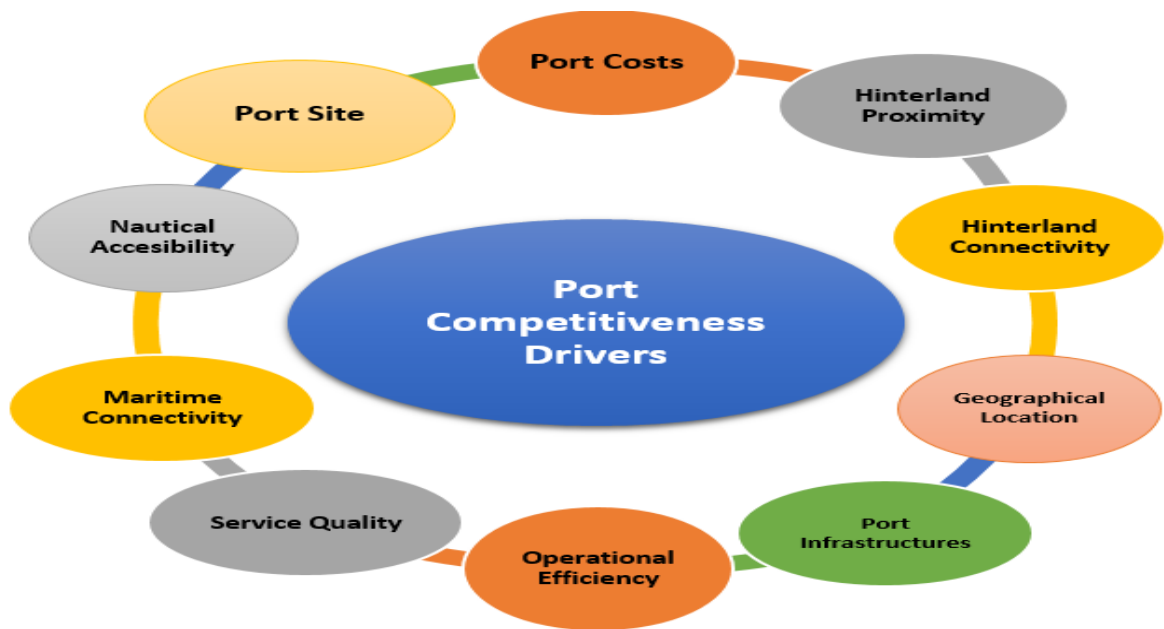


Fig.2. Drivers of Port competitiveness (Parola *et al.*, 2017)

4.3. Port governance

The port policy generally and port governance more specifically reflected the changes in government and politics within a nation always (Brooks *et al.*, 2017). Public port authority acts as both landlord and regulatory bodies where port operations are performed by private companies denoted as the best model of port governance (World Bank, 2007). Port governance always increased the port effectiveness and competitiveness in the change port management. The change in governance structures constitutes an important pillar in view of the achievement of sustainable development of ports including economic, social and environmental challenges. A port that denoted as major engines for driving economics, it is a significant lever for governance to manage trade and catch economic benefits nicely (Monios and Bergqvist, 2015). Enormous containerization of maritime cargo, container port industry is very competitive in serving the hinterland by filling all kinds of demands where South Asian countries port tariffs are reasonable, but associated cost or indirect cost with the port tariffs are very high where inefficiencies play a more significant role in shippers' port choices (Dappe and Suarez-Aleman, 2016). Extension of ports often failed due to the lack of attention to the potential negative environmental impacts (van Zetten, 2016).

The intermodal transport development has a great impact on further economic globalization that changed the overall transport system and supply chain where functional integration is impossible without intermodal transport chain (Maslaric *et al.*, 2016). Nowadays, ports are facilitating the intermodal transportation directly to the shipper/consignee as a part of integrated maritime logistics support and increasing the hinterland. National and regional interests, as well as those of port cities are often at odds with each other. Most importantly, inland transport network is an obstacle by the governments on the false plea of safety, security and religious politics (Rahmatullah, 2010; Alam, 2014). Lastly, due to the ongoing commercialization of port authorities and progressively pressure of stakeholders, port performance indicators are in new shape with the socioeconomic interest in a port (De Langen *et al.*, 2007). Consequently, port authorities are in charge of hardware dimensions of port development for ensuring and enabling efficient management of supply chains through policy actions that should be aimed at improving infrastructure and inland connections by keeping the criteria of environmental, social and economic sustainability to promote the hinterland and ensure (De Martino and Morvillo, 2008). International organizations like the IMF (International Monetary Fund), World Bank believe that South Asia presents a bright spot amid the gloomy global outlook (Wong, 2016). In Bangladesh, Chittagong and Mongla ports are managed by port authorities where major

approval authority is the Ministry of Shipping under the government where CPA exercises a high-level degree of operational and financial autonomy (Dappe and Suarez-Aleman, 2016). The South Asian port sector attracted significant interest from private investors in the late 2000s. Development of port facilities at Chittagong port as Bangladesh's largest port has been slow. Although occupancy at the CPA container berths is high and rising, there is a pressing need for more investment in a capacity where Mongla has had excess capacity for many years (Dappe and Suarez-Aleman, 2016). Intermodal freight transportation is lagging behind in Bangladesh and there is no established intermodal network except the Chittagong–Dhaka container transportation with the general rail network. Recently added the RICT (Riverine Inland Container Terminal) that named "Pangaon" in Dhaka but it also handling in Chittagong port yard. Ports are an integral part of the supply chain for managing and coordinating the materials and information flow (Carbone and de Martino, 2003). Despite the predilection for promoting port privatization, full privatization has not been without its problems and critics (Brooks *et al.*, 2017). Due to the complexity of seaports and large number of firms in a port, port performance indicators are useful to measure whether the development of the port is satisfactory or not and learn how to improve the performance also communicate the performance of the port to a wide range of stakeholders (De Langen *et al.*, 2007). Wong (2016) advised to enhance the capacity of port management exclusively to strengthen the networks of the hinterland. The development of global supply chain bounded to change the traditional role of ports (Loading and discharging operations)and enhanced the capacity to a new role as efficient distribution of products across the supply chain and integrated logistics service providers as a part of global distribution channel (Radhika, 2012). Port investor always looking forward to tie with the port cities to get all kind of logistics facilities and security for supporting the maritime trade because port-city relationship exhibits substantial significance in the development of port by attracting international investor and their hinterland while also sufficient spatial economic disassociation and environmental tension (Zhao *et al.*, 2017). In relation to, Talley (2007) advised to consider the operations, economic and port management objectives in port performance.

In summary, the above-mentioned literature demonstrated the port performance, competitiveness and governance are appreciated in the port development to build strong relationships among the stakeholders by port authorities. In addition, the intermodal network is very weak in Bangladesh and South Asia, for this reason, Bangladeshi ports are unable to expand their hinterland and go to the neighbours area's in the lack of regional cooperation and desire of transport integration among the South Asian countries apparently.

5. Qualitative Research Survey Findings

The five main basic research questions are guiding this paper as the theme of the qualitative research survey with the aim of open-ended questions. In order to explore as per questionnaire, 21 interviews were conducted from June 2016 to August 2017. After field testing and setting the research questions, an invitation sent to 60 persons who are expert in the shipping field, port management and port users. In here, questions are asked to the respondents in the aim of acquiring the knowledge on port development in Bangladesh as below:

5.1. Role of CPA in developing other national ports

Possibly, the existing development status of Bangladeshi ports where the role of CPA is appreciable because of their participation in establishing third seaport Payra and full finance in constructing the inland riverine container terminal "Pangaon". However, the role of CPA in logistics and supply chain is very crucial in terms of efficiency, competitiveness and value-added productivity. The port has a congestion problem where vessel turnaround time is comparatively high. However, technique of handling cargo and container by expert persons of port authority is appreciated by port community of the world. There are lots of opportunity for CPA to work in the port and maritime logistics parts especially in the development of Rail, Road, Inland waterways, Coastal, Airport and time-trend.

Mongla port is the underutilized port in Bangladesh where the government established new seaport Payra to facilitate the demand of deep seaport as well as serving the neighbouring countries of South Asia especially Nepal, Bhutan and Seven sisters of India. All argued for financial, technical assistance must be provided to other seaports for the development and as a part of corporate social responsibilities, in addition, exchange of human resources and deploy them in other ports for training and develop the employee of Mongla and Payra ports. All respondents advised to CPA for taking leadership in developing port sector and provide financial assistance to other ports from their profit and contingency fund also arrange finance from a financial institution or government to invest in the port infrastructure, purchasing equipment and other development works by which other ports can show the productivity and attract users.

In addition, CPA is technically sound in managing port operations, vessel management and port affairs where they can assist other ports by giving technical assistance for increasing the efficiency. One respondent suggested that CPA must create the environment and situation by liaison with the government and private sector for developing other national ports for captivating the continuously growing volume of freight and container and need to think together.

5.2. Integration among the seaports of Bangladesh

This is the time to integrate all seaports of Bangladesh and decrease the dependency on Chittagong Port where CPA has to play a vital role to develop all seaports. Respondents were tensed about the labour productivity, performance of equipment and wretched condition of road and highways, poor railway connection etc. They thought



that CPA has to work on the quick development of all ports to cope with the containerization and mechanization of port with the port hinterland freight distribution system and support the foreland by establishing floating terminal in the Bay of Bengal. In addition, they appealed to the government to consider the port planning and development as a priority activity to facilitate all trades of the country.

Moreover, integration is highly required to fulfil the standard demand of OBOR (One Belt and One Road) and competition may be raised among the seaports of Bangladesh, India and Myanmar enthusiastically, therefore, integration among the ports of Bangladesh is appreciated to help each other in the process of development. However, the need to comply with the basic goals of various forums like *BBIN* (Bangladesh – Bhutan- India- Nepal forum for transport connectivity), *BCIM* (Bangladesh–China–India–Myanmar forum for Regional Cooperation), *BIMSTEC* (The Bay of Bengal Initiative for Multi-Sectorial Technical and Economic Cooperation), *SAARC* (South Asian Association for Regional Cooperation) and *ASEAN* (Association of Southeast Asian Nations) etc. Lastly, all claimed to set the deep seaport in Chittagong and initiative must be taken by the management of CPA.

Fig.3. Inland transport connectivity and the role of Chittagong Port as a development partner of other national port Mongla and Payra (The Daily Star, 2011).

Overall, all respondents discussed that integration of all seaports leading by Chittagong port will make a chance to provide transit facilities to the neighbours by rail, road and river. In addition, CPA will finance the inland connectivity infrastructure cost where good port transport network will be developed where respondents were optimistic in the process of port development. Mention that this transit issue is forecasted as derived demand of using Bangladeshi seaports especially by India, Nepal and Bhutan (Saha, 2015: The Daily Star, 2011)

5.3. Challenges in developing the port sector of Bangladesh by CPA

It is not easy to develop the port sector by CPA as Bangladesh is facing huge obstacles in developing the port sector. Latest experience in setting deep seaport in the Sonadia. Most of the respondents were argued that CPA is facing huge challenges in developing port sector of Bangladesh. Recent participation in building inland container terminal “Pangaon” nearby capital city Dhaka is appreciated by all, in addition, direct involvement of establishing 3rd seaport “Payra” in 2013. However, CPA is facing the challenges in developing own capacity and striving to increase the container jetty, terminal and handling equipment. Furthermore, below challenges are discussed arguably.

Respondents found too many challenges in developing port sector of Bangladesh and stated as below:

- Geopolitical and foreign policies are affecting to take strategic decisions in port development of Bangladesh especially negative approaches of neighbouring countries by which deep seaport construction is delaying and not sure its finance in the Bay of Bengal.
- Poor quality of road and highways along with old model of truck and trailers that consuming passage time also environmental degradation by CO₂ emissions highly.
- Shortage of liaison among the port authority, City Corporation and city development authority to make common development of Chittagong port.
- An inefficient transit regime with a lag behind of transport infrastructure and not having the future trade forecast for the region and country that is not facilitating or increasing the cargo and container handling capacity of Bangladeshi ports individually.
- Research on port development regarding Bangladesh and South Asia is fully absent and undermined for a long time and not considered by all where ADB is trying to forecast some data and related research is conducting by the World Bank in minimum scale.
- To create synergies in port sector by making common standard for all ports and render guarantee reliability to port users.
- There is no benchmarking statistical data for port authority for taking a decision how much development is required in terms of infrastructure and others and port has to follow the full government process of procurement that time bounded.
- Continuous pressure to CPA for managing all cargo and containers where other ports are under-utilized. In this connection, cooperation from the government, port users and others are limited to divert the vessel or container in an alternative way.
- The political will of the government in the port development and consideration of development projects and finance over there as the government has to perform in all cases.
- Environmental sustainability where priority may be given to the intermodal instead of multimodal that pollutes the environment and need to use various modes of transport in different point or node. In addition, internalization is a great challenge to face the congestion, local pollution, accidents, GHG & CO₂ emission, Energy efficiency etc.
- The desire of neighbours and world port investor for capital investment and making regional port in Bangladesh where Chittagong is viable in all aspects.
- Development of rail transport network with the spatial transportation and introduction of Double Decker container transport line in between the major cities of the country.
- Full privatization of port sector or develop the port under the banner of PPP (Public Private Partnerships) to reduce the pressure of capital investment by port authority.

The most important statement received that “every challenge is achievable subject to the dedication of all port authorities and positive approach of the government by putting the port sector in their political circle”. Forecasting the increase in port throughput, due to infrastructural enhancement, major challenges for many different reasons.

5.4. Sustainability of port sectors in Bangladesh

The experience of CPA will help to take national approaches to sustain in the volatile port sector and the role of government is highly appreciated. “Port Cooperation” is the main theme of port sustainability that may exceed from the national boundary to abroad by making liaison with neighbours ports or international forums of port authority or associations. The turnaround time of an incoming vessel in Chittagong port is very high in South Asia but average performance in managing container vessel is good. But there are some records of collapsing the total supply chain of

the port that is harming the brand name of Chittagong Port as well as for the country. Due to the breakdown in managing container flow, ocean freight is increased by the international carrier unjustifiably. On the other hand, CPA is used to manage such a crisis from their vast experience in the port sector. Critically, the bad performance brought the negative opinions in the mind of respondents where they argued for good port management by experienced people in Chittagong port and suggested to make contingency or back up plan for avoiding such situation that bounded to pay extra by the port users unexpectedly.

Respondents described the worst situation of Mangle port and its authority (MPA). They found an idle and unskilled person who is managing the port only by name without adding any value-added service to the port users. Several times, the government had taken necessary initiatives to bring the efficiency and attract the business community to use the port in a minimal tariff, but due to poor category service, interest on Mongla port is uncertain. Most of the respondents advised to take over the MPA by CPA and manage accordingly. To sustain with the current trends of port activities, respondents suggested to take a long term development plan and may lease the Mongla port to the international terminal operator who will handle the operations as well as manage the customer by fixing the hinterland.

Environmental sustainability is a growing concern of port industry and needs to promote intermodal transportation, which one is environmentally friendly and make long term sustainable development of port in developing energy and operational efficiency plan at port yard and inland transportation. All appreciated the steps by CPA for taking Carbon Tax from vessels under the port protected areas of CPA.

5.6. Inland Transport Networks Development

Two important issues are key factors in port development, one is inland transport network development and another one is specific IFT (Intermodal Freight Transportation) system development for facilitating the inbound and outbound freight by applying just in time approach. Greatly, 21 respondents argued for road modes for developing inland transport networks in Bangladesh urgently where CPA may play vital role in assisting government and other port authorities by providing financial assistance or arrange finance for inland transport network development by using the surface or spatial transportation rather than choosing rail and waterways modes exceptionally as road is speedy transport mode in Bangladesh till date.

All respondents are favoured for the urgent development of road and highways because of congestion and passage time is very high that resulted in high freight for sending cargo to port and vice versa. In addition, intermodal freight transportation system will not be implemented without good condition of road and highways. After that freight rail network development is priority area where CPA is able to invest for starting Double Decker container line from Chittagong port to Dhaka and inspire rail authority in constructing dedicated rail track for freight transportation as rail is cheap and safe transportation system and suitable for intermodal transportation. Lastly, they argued for inland waterway transportation and happy to know that container is transporting by waterways from Chittagong to nearby Dhaka.

For better utilization of existing trucks and trailers, it is utmost requirements to renovate all roads and highways with bridge and culvert. Emphasize given on the access roads to ports and major cities and industrial areas. Most of the respondents deliberated their opinion on transit facilities to the government and stated that present condition of road and highways are not suitable to provide such facilities to anyone. Even so, it is hard to mitigate the domestic's demand for port transportation facilities to cover all import-export trade timely. One respondent stated that only for bad road communication, Mongla port is underutilized. Therefore, need to invest in the infrastructural development of road and highways where CPA may invest to create better facilities to/from the access port easily.

CPA has an own ICD (Inland Container Depot) in Dhaka and container is in operations from Chittagong port to Dhaka and respondents worried about the time that is taken by the rail hugely and not appropriate in container transportation . For any container transportation, it is taking 5 to 6 days where road haulage time is maximum 2 days. Overall, current rail transportation is not feasible by all and needs to improve the freight rail networks. Furthermore, we have the best connection of inland waterways. The recent development of RICT nearby Dhaka and open the door to private investors for constructing private RICT may improve the inland waterway transportation. Some respondents argued for common transport networks in three seaports to exchange the equipment and preserve special funds for emergency response in breakdown in any ports and quick renovation of inland transport networks. In addition, for smooth operations of break-bulk cargo in the Bay of Bengal, quality coaster or inland vessel is required to decrease the turnaround time and it is essential to establish floating terminal for avoiding multiple handling of cargo & container

in the port jetty. It will attract the coastal shipping among the Asian countries and direct entry to the inland terminal. Some of the respondents attended in the open-ended questions where they suggested CPA to take the full responsibilities to build integrated intermodal freight transportation network of road, rail and inland waterways for domestic container transportation and establish dry port nearby cross border to provide maritime logistics support to the neighbours for doing “Transport Business” and arrange same for other national ports.

6. Compare and Contrast

With the aim of developing seaport, many governments had created port authority especially to progress the port development commercially (De Langen and van der Lugt, 2017). Based on the literature and qualitative research survey, the below points are considered to bring the standard of maritime logistics of Bangladeshi seaports in the aim of serving nationally, regionally and internationally: The shipping industry is showing the potential to improve the energy efficiency that started from ocean passage to shipyard (Terminal, jetty and other places) and it’s a part of port performance in the present world (Johnson and Anderson, 2016). Another factor that is influencing to the port authorities to inspire the shipping companies to use natural gas (LPG-Liquefied Petroleum Gas, LNG- Liquefied Natural Gas and others) instead of fossil fuel. To cope with the challenges and opportunity of the 21st century Maritime Silk Road for better connectivity and economic cooperation, it is essential to develop the country itself to stay in the Bay of Bengal meaningfully and had the opportunity to serve the landlocked region, India’s northeast, China’s southern, Nepal and Bhutan that would be the value addition to the regional development and economic growth (Karim, 2015).



Fig.4. Foreland connectivity of Bangladeshi Seaports developed by the author (Map was taken from Google).

Bangladeshi seaports are well connected with the regional hub port Colombo, Sri Lanka, Klang and Tanjung Pelepas of Malaysia and Singapore. This research found the opportunity to stay within the region that means tag with Chennai and Visakhapatnam of India, in addition to Colombo, Sri Lanka. Strategically, it will increase the regional bonding in South Asia and open the opportunity to the Indian ports for using Bangladeshi seaports as a maritime load centre for Seven Sisters of India, Nepal and Bhutan. As India is a good development partner of Bangladesh and interest to use Chittagong and Mongla port for their basically landlocked parts, it will be a great opportunity for Bangladeshi port for developing port facilities by the leadership of Chittagong Port actively.

Alam (2014) stated that Bangladeshi ports are able to serve as the gateway to reach the land lock Nepal & Bhutan, India's seven sisters for facilitating the global trade. Moreover, he added that subject to port development, it is possible to connect ports with Southern China and it will be the great one in between the overland surface road and maritime Silk Road. Environmental sustainability in any seaports that need innovation where research is required to make it successful. Safety and security are great concerns for hinterland operations by ports where port has to clear the all obstacles for attracting the port users or trader within the established hinterland (Chen *et al.*, 2017). However, to overcome the challenges and problem areas will need the political will to facilitate the changes because the government are continuing fighting financial fires and ports are perhaps not a key priority in many cases (Brooks *et al.*, 2017). Overall, structural, operational and organizational changes are required for strengthening the capacity of CPA to build the port sector in the viewpoint of port performance, competitiveness and governance.

Finally, Chittagong port has the first mover key advantages in the Bay of Bengal or South Asia to provide maritime logistics support and offer free access to all where port development is essential. Developed ports are added some new indicators like emissions of greenhouse gases, investment flow and economic impact of a port but remember that depending on the port structure, different performance indicators are relevant for different ports (De Langen *et al.*, 2007). The concept of integration in port sector is highly concerned with the intermodal activities that focused on the conditions of efficiency and effectiveness of intermodal container transportation, and organizational integration that is undertaken by foreland & hinterland connections (De Martino and Morvillo, 2008). Lastly, activities, resources and inter-organizational relationship between the players in the network are critical and essential in the port's value created by port development. Wong (2016) found that outlook for ports is less positive than before because of global trends that ensure an operating environment that is really competitive, risky and mired in slower growth. This is true that port infrastructure still relatively backwards and not in a standing position with the international developed port standard comparatively. Greater uncertainty in the operating environment, governing policy, sufficient infrastructure development to make model port in South Asia, still Chittagong port is lagging behind accordingly In this connection, it is a good way to develop other national ports and divert the cargo and container to reduce the pressure towards CPA. Overall, port development is essential and it may be done by CPA or Bangladesh government urgently. In here, trade forecast, regional development and recent institutional cooperation's are the national and international pressure to develop Bangladeshi seaports inevitable and urgently.

7. Regional Common Platform for Transport Connectivity

South Asia is an important place for moving business trends to Asia where the location of Bangladeshi seaports are important strategically and key factors for all to do foreign business as well as export and import trade profitably. Port infrastructure development is highly important to regional economic development (De Langen and van der Lugt, 2017). For a common platform in providing seaport access to all in a specific region, it is important to cooperate with each other irrespective of profit or port rivalry where it may be treated as social responsibility. Goals are too general to provide sufficient directions for the authority and reform as and where required and increase the ability to safeguard public interests of the country and region proudly. The absence of transit agreements for a long time among the South Asian countries fractured the regional integration process (Alam, 2014). In addition, underpinning all trend of greater devolution, privatization and communication and approaches the desire to govern ports in a way that makes them more profitable and efficient, and, increasingly, a way that makes them more sustainable and green (Brooks *et al.*, 2017).

Bhatta (2004) examined that regional economic integration depends on the commonality of the political purposes by the member countries where India has to favour and sacrifice to all for emerging as a regional entity in the international political system. However, recent initiative of India and Bangladesh in developing transport connection in the region are moving ahead towards increased regional participation in trade and commerce (Alam, 2014).In

relation to improving the global transport system, the availability of transport operations to contribute to the value creation for accomplishing the qualitative attributes of demand such as reliability, punctuality, frequency, availability of infrastructure and security (Carbone and de Martino, 2003). To assess the disruption risk of Asian ports, Lam and Su (2015) identified that climate change, oil spill, security and social and political instability are increasing the concerned to all. As trade volumes are growing significantly, port disruptions are comprehensive studies for putting the operational performance. The reliable freight transport system is essential for modern world economy where marginal supply chains are involved with the seaports activities greatly (Lam and Su, 2015).

Overall, the regional common platform for transport connectivity is highly depends on two factors: openness of India to open the so-called “Chicken necks” land connection among the India, Nepal, Bhutan and Bangladesh that will allow to get free access by all including China and Myanmar: another one is the free access opportunity in Bangladeshi seaports subject to the development of inland transport networks by Bangladesh.

8. Conclusion

Chittagong port is the principal seaport of Bangladesh who is managed by the CPA and be able to serve all modern seaport facilities to the port users for driving above 90% import-export trade of Bangladesh (CPA, 2016). Port authority during leading leadership role, set the larger role for terminal operators who bear market’s considerable risk and face the demands of an increasingly stringent environment regime (Taneja *et al.*, 2012). Bangladesh acutely needs the deep seaport in the Bay of Bengal to increase the supply side against the increased demand of port facilities, in addition, to support the neighbours or region for doing port transport business as a part of economic sustainability (Karim, 2015; Saha, 2015). Historically, the port is the entry point of international trade for a country that helps to attract the international trader to do business and it’s a key logistics performance indicator. A recent development in port sector by containerization and mechanization, port has to set as per new dimensions that required by international shipping company and terminal operators. In this context, De Langen and van der Lugt, (2017) argued for the operational perspective of a public sector port authority for promoting general interests and handled the port operations by third parties as a part of port development. Nowadays, port authority is increasingly commercial role to bring the developer or work as a port Development Company due to the containerization and mechanization of port activities also developing inland connections with the urban cities and major industrial areas.

Remarkably, the continuous charges in the international maritime transportation and further movement of cargo and container towards the hinterland, structured the total transportation solutions to the port users, traders and stakeholders accordingly. Due to poor connection in between the Bangladeshi seaports and hinterland as well as inadequate standard port facilities of Mongla port, Chittagong port has to manage the excess pressure of freight and facing challenges in providing maritime logistics support to mitigate the demand of domestic port facilities where opportunity remains to serve South Asia by using the geographical advantages or positional standing in the Bay of Bengal greatly. This paper aimed to explore how CPA assists other national ports and port infrastructure that will be developed with the port efficiency and productivity and all ports will serve the nation equally in against the domestic demand of maritime logistics or port services. In line with such motivation, Mongla and Payra will develop accordingly to supply port services to the neighbours India, Nepal and Bhutan as well as serving South-West part of China with the aim increasing regional connectivity and promoting international trade in those basically landlocked areas and countries of Asia. Overall, future directions will help to CPA for playing a vital role in port development and related infrastructure development in Bangladesh for doing “transport business” in South Asia.

9. Future Directions

On the basis of literature review, qualitative research survey and innovations for seaport, research attributed the below future directions for port sectors of Bangladesh as well as for CPA that will help them in the process of port development in Bangladesh:

a) Bangladesh is the only country in the Indian subcontinent in which the private sector does not play a meaningful role in the container port sector (Dappe and Suarez-Aleman, 2016). Therefore, port privatization scope needs to inspire or utilize and make joint ventures with a local and international investor in the port sector as a cheap way to develop the port economically.

b) PPPs model has advantages in funding where ports are able to build and updates the assets such as handling equipment, container storage facilities, channel dredging and others including infrastructural development (Hales *et*

al., 2017). To attract international investor in the port sector, it is good to appointment international terminal operators. Nowadays, terminal operators are managing not only the terminal but also managing the customers of hinterland and increasing the hinterland by offering various port services at an affordable price.

c) Port users are always think the port facilities, but it is also a factor in selecting port that has good inland transport connections with the shipper/consignee premises. Thus, emphasize should be given to the inland transport network development.

d) Most of the containerized cargo is managing at the dry port and must have the rail network to connect in between the port and dry port, in addition to road connection. Bangladesh has to build dry ports with smooth inland connection with ports in major cities for domestic cargo and in cross border areas to serve the neighbours.

e) Having the opportunities to provide the maritime logistics support, Bangladesh has to open the door of ports and promote the regional connectivity by the transport sector.

f) Government has to follow up the Logistics Performance Indicator (LPI) of the World Bank and must take necessary reform initiative to increase the value of LPI for attracting the world trader to do business with Bangladesh and use the Bangladeshi seaports in the competitive port tariff.

g) Geopolitics is a problem to investment in the port sector where India and China is a key factor to build a deep seaport in the Bay of Bengal (Karim, 2015). Government has to take deep seaport initiative in Chittagong and share with the development partner countries for investing in the deep seaport projects.

h) With much talk, the floating crane is the innovation for ports that increased productivity and promote the modal shift for handling a large volume of containers (Taneja *et al.*, 2012). CPA has to take an initiative to set a floating container terminal for handling feeder vessel towards Mongla, Payra and RICT Pangaon to save the time and decrease the number of handling at the port area.

i) Maritime governance is playing a key role in developing the prestigious standing in from of the world (Roe, 2013). To integrate all seaports of Bangladesh, it is essential to create maritime commission for monitoring the port productivity, governance and facilities.

j) Research is a developmental feature to focus on the gaps and necessary guidelines and directions to take initiative for future development. Research on port development is essential as this chapter is far lagging behind in Bangladesh including South Asia.

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