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Emergence of inland container depots (ICDs) and inland container terminals (ICTs) as a container decongestion strategy of Chittagong port authority

Md. Mashiur Rahaman[1], Md. Reaz Hasan Khondoker[2], Parag Dey[3] and M. Ziauddin Alamgir[3]

[1]*Department of Naval Architecture and Marine Engineering*
Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
[2]*Department of Naval Architecture and Marine Engineering*
Military Institute of Science and Technology, Dhaka, Bangladesh
[3]*Department of Port and Shipping Management*
Bangabandhu Sheikh Mujibur Rahman Maritime University, Dhaka, Bangladesh

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Abstract

Container congestion at a port disrupts the logistical flow of container to and from that port's hinterland area. To reduce the container congestion at Chittagong port the Inland Container Depots (ICDs) were emerged adjacent to port or port city Chittagong. Since their establishment they have been playing a significant role in handling export, import and empty container and thus contributing to decongestion at port. A number of Inland Container Terminals (ICTs) also have been emerged with a view to reduce container congestion of Chittagong Port though their existence is still in experimental level. Due to cope up with the increasing demand of handling container, Chittagong port needs more Marine Terminals, ICDs or ICTs. This study has revealed that, ICTs are more economically viable if they can start their operation in full swing. In that case the future projection of current as well as proposed number of ICDs will face challenges in respect of economic viability. The study recommends that the plan of establishing new ICDs at Chittagong area to be revised and all necessary steps to be taken to make the ICTs in Dhaka area fully operational.

Keywords: Chittagong port, container congestion, hinterland, ICDs, ICTs.

1. Introduction

Chittagong port, the premier port of Bangladesh has been experiencing 14% growth rate annually in respect of handling containers. Since Bangladesh has been a significant part of international trade, export-import trade of this country has also increased. Not only that, but also the trade pattern has been changed. Containerization has drastically changed the

formation of trade. Both the exporters and importers are now most likely to have their consignment through container because; containerization facilitates the intermodal door to door service. In that point of view container congestion has been one of the common phenomena since the growing trend of container handling by Chittagong port. To reduce the congestion, the port adopted a strategy by giving license for establishing Inland Container Depots (ICDs) to private entrepreneurs in Chittagong area. Addressing the same issue, a number of Inland Container Terminals (ICTs) have been emerged in Dhaka area. But it seems that, the ICTs have more implication other than container decongestion strategy of Chittagong port. Two key variables i.e., independent and dependent variables have been taken into consideration for this study. The independent variables are- factors fostering container congestion at Chittagong port, impacts of congestion, barriers to decongestion and prospects of newly constructed Payra Port and proposed Sonadiya Deep Sea Port. The dependent variables are- the emergence of private ICDs in Chittagong area and ICTs in Dhaka area and their future projection. These independent and dependent variables have been conceptualized and a relationship has been established among them.

Container handling growth rate is increasing annually, but the port's container yard is fixed. Ultimate result is natural congestion at port premises. Moreover, some factors are fostering container congestion at Chittagong port. Port Congestion is a Multi-Faceted Issue (WSC 2015). These issues have been identified by World Shipping Council. Acknowledging those issues researcher has pointed out some causes liable for container congestion at Chittagong port. For this identification, researcher also has taken the opinion of experts in relevant field to justify these issues in respect of Chittagong port. Some of these factors fostering container congestion at port are common for day-to-day operation while others are occasional.

Global wave of industrialization is reforming Bangladesh from an agricultural country to industrial one. Bangladesh has become mostly industrialized by the end of the 20th century. Some positive factors like favorable political and legal environments, various natural resources adequate supplies of relatively low cost and adaptable labors, capital investment trends etc. have expedited industrialization in Bangladesh. Garments industry which includes Knitwear and Readymade Garment (RMG) is the largest export sector in Bangladesh (Rahman 2015). Garments industry booming in Bangladesh has made a great contribution in converting Chittagong port, one of the three ports in Bangladesh most likely from bulk handler to container handler. Gradually the newer port users are the interested party, the stake holder of garments industry. Rationale is that, the industry may import its raw materials in bulk form. When it exports its finished goods to different parties in different territories, bulker cannot be used for the cost constraints. So, it looks for container for shipping the cargos in a cost effective and timely manner. Moreover, commodity shipped by container supports the intermodal door to door service. Resulting issue is expediting the replacement of bulk handling jetty by container yard. However, most of the raw materials for garments industry are also now imported through container rather in bulk form. According to a report published by Bangladesh Garment Manufacturers and Exporters Association (BGMEA) in December 2015, there are 7,000 Garment factories are in operation (Labowitz 2016). It also says that during the last two decades industry has been expanded by 65%. Expanding demand of shipping of the final products of this export-oriented industry is to be met by our sea ports, especially by Chittagong Port. Now the questions come by addressing the issue of intermodal door to door service regarding shipping those final products or consignments to the consignees. Standing on this point containerization is obvious for making those shipments convenient port users. Not only that, frozen food is the second largest export industry in Bangladesh (Ahamed 2014). The public sector corporation and the private organizations have setup about 148 numbers of shore-based export-oriented fish processing plants at Dhaka, Chittagong, Khulna, Jessore, Satkhira, Bagerhat, Cox`s Bazaar, Chandpur, Kishoregonj,

Patuakhali. This sector is also increasing significantly. Refrigerated container or reefer containers are being used to export the frozen fisheries final products of this industry. Reefer containers are also being used for carrying imported frozen fruits and other food products. The total scenario is illustrating that currently port customers are being increased rapidly with the issue of mainly RMG sector. Moreover, the users are most likely to dispatch or get their consignments carried by container. The result is that port is under pressure to handle containers more and more with the course of the increasing demand of gradually increased customers. Efficiency of Chittagong port is yet to improve. A comparison in Table 1 is enough to depict the fact.

Table 1
Port efficiency of Chittagong port

Efficiency	CPA	South Asia	Leading Practice
Handling speed: Boxes /crane hr	12-15	25	30-35
Dwell time (Days)	13-17	6-8	3-4

Source: *KCT: Pre-Feasibility, 2014 by the World Bank*

According to the port authority, comparing to the existing needs Chittagong port has some deficiency in respect of container handling equipment. "Right equipment at right berth" theory is still to be re-examined. Appropriate container handling equipment are still to be procured. Exact container handling equipment according to the nature of the terminal is still to be introduced. All of these is slowing down the container handling procedure and contribute in container congestion at port. Too much complexity in paper works in customs department makes delay in container clearance from port premises. The CNF agents allege that in this era of modern technology the customs department of Bangladesh National Board of Revenue is still running their operation with a massive paperwork. For clearing a container from port premises, they have to go through a long list of paper procedures. There is also shortage of customs officials also. Moreover, inefficiency hinders the container examination procedure and consumes time. Thus, customs department cannot keep pace with the throughput of port. Failure of customs in clearing the container quickly from port premises creates bottleneck where container flow to hinterland is stopped. These customs related events leave the containers being stranded and create congestion at port. Chittagong port was not closed for a single day since it came under the strong administration of Bangladesh Navy. But stake holder outside the port can be a extreme factor of port congestion when they step down for strike. It is uncertain and related with political influence by different associations. Association may be of several parties such as trailers operators', truckers', labors' etc. For example, CPA has experienced the largest ever container congestion for the strike of the private trailer operators on September 2016 (Hossain 2016). Labor productivity in Chittagong Port is not up to standard. Sometimes less skilled and less educated people are dealing with container handling regarding stuffing and unstuffing. They sometimes make complexity in the workflow for their inadequate knowledge and thus make help the process delay. These incidents ultimately add effects to port congestion. In port, one ocean carrier's efficiency may be affected by other ocean carriers while using the same marine terminal. In that case it may happen that an ocean carrier has a container ready for customer pick up, but another carrier may have disrupted the terminals' supply chain network up to exit gate. Consequently, the ready carrier cannot go for further procedure through the disrupted supply chain and the ultimate result is congestion. Sometimes Chittagong Port faces this incident.

2. Barriers to decongestion at Chittagong

Though the port planners and policy makers are working hard to reduce the container congestion at port premises some barriers are hindering the matter. If these barriers could be

eliminated, container decongestion strategies of port would work properly. It is one of the crucial barriers to container decongestion of Chittagong Port. Transportation infrastructure for connecting hinterland with marine terminal through road or railways is very poor. This poor infrastructure cannot support both the inbound and out bound trailers, trucks or rails. For connecting hinterland Chittagong Port is highly dependent on roadways which cannot provide that much support due to their high traffic. In respect of port's hinterland connection railways have to perform a significant portion of container flow. But Chittagong port has the facility of transporting only 10% of total containers towards hinterland via Kamalapur ICD which is a part of CPA. No other private ICDs are linked to port through railways which are both cost effective and efficient. There is also lack of on-dock rail capacity. Chittagong port and Customs are completely two different entities operating under different umbrellas. When the port is striving for increasing throughput, the customs department is backing hold the whole procedure by their conventional and complex system of clearing container. This mismatch in strategies is one of the main barriers to decongestion policies.

Table 1
Private ICDs in Chittagong

SL	Name of Off-dock	Location	Distance from Port
1	Esack Brothers Industries Limited (Container Yard)	Middle Halishahar, Bandar, Chittagong	0.74 km
2	Chittagong Container Transportation Co. Ltd. (Unit 1 & 2)	Middle Halishahar, Bandar (Near Port Stadium), Chittagong	1.5 km
3	K&T Logistics Ltd.	CEPZ, Chittagong	1.0 km
4	QNS Container Services Ltd.	Sector 6A, CEPZ, Chittagong	1.5 km
5	Ocean Containers Ltd.	Kathgor, North Patenga, Chittagong	7.5 km
6	Vertex Off-dock Logistic Services Ltd.	Kathgor, North Patenga, Chittagong	6.0 km
7	Shafi Motors Ltd.	Fauzderhat, SagorikaAvenue,Chittagong	7.0 km
8	BM Container Limited	Sitalpur, Sitakundu, Chittagong	16 km
9	Port Link Logistics Centre	Bhatiary, Chittagong	14 km
10	Summit Alliance Port Limited (East and West)	Kathgor, North Patenga, Chittagong	8.0 km
11	KDS Logistics Ltd	Ghoramara, Sonaichari, Sitakunda, Chittagong	19 km
13	Incontrade Limited	Laldiar Char, East Patenga, Chittagong	8.0 km
14	Golden Containers Limited	North Kattali, Pahartali, City Gate, Chittagong	7.5 km
15	Eastern Logistics Limited	Katgor, North Patenga, Chittagong	6.0 km
16	Haji Saber Ahmed Timer Co. Ltd. (Container Yard)	Kalurghat Industrial Area Chittagong	14 km

Source: Bangladesh Inland Container Depot Association

According to CPA, the port has a container yard space of 5, 93,389 Sq m. with the holding capacity of 36,357 TEUs and the number of container berths is 9 a total of 20 (Facilities of Chittagong Port Authority). It is the highest holding capacity of container till now. The port is not able to expand towards the city side. Although it has a master plan to increase its capacity by constructing the Bay Terminal adjacent to the bay, till then expansion constraint is a barrier to decongestion of port.

It is completely a psychological barrier to decongestion at port. Dhaka-Chittagong inland waterway is very favorable for container transportation through inland container vessel. Container transportation from Dhaka to Chittagong through inland waterway would be more

cost effective and timely comparing to the road and rail transport. Out of the total 95% cargo around 70% is Dhaka based of which maximum is transported by road and rail. Average statistics shows 50% of the containerized cargo passes through road & 10% through rail towards Dhaka (Chowdhury 2016). It makes the Dhaka-Chittagong highway always busy & congested. Assessing the demand and also feasibility of construction of a river-based container terminal at Dhaka, CPA and BIWTA jointly started the project in January 2006. The honorable Prime Minister of Peoples Republic of Bangladesh inaugurated the activities of the terminal on 7thNovember, 2013. Though the yearly handling Capacity of this terminal is 116,000 TEUs, till now it has handled only 2410 TEUs (Up to 25 April, 2016) (Chowdhury 2016). Perhaps the cargo owners are reluctant to switch to a new pattern leaving their familiar one assuming the uncertainty. Or they have taken the strategy of "wait and see".

Political instability as well as political violence forces the roadways to be blocked. Sometimes the drivers of the trucks and trailers are forced to stop their working; otherwise, their lives may be threatened. In this situation container congestion increases at port premises. Financial year 2014-15 was such a politically violent year for Bangladesh when the wave of turmoil reached up to the gate of Chittagong Port and this political turmoil forced the containers to be stranded at port premises.

3. Inland Container Depots (ICDs) in Chittagong

3.1 Overview

Private ICDs in Chittagong area listed in Table 1.

3.2 Issues involved in the emergence of ICDs in Chittagong

From the above presented data it can be analyzed the rationale of the emergence of ICDs in Chittagong area. Time line shows that, from 1985 to 1998 the role of ICDs was to handle only empty containers. They had removed empty containers from port and stored those at their premises. Then they had dispatched empty containers port for export stuffing and then onward shipment or direct shipment. Gradually the role of ICDs has increased according to the increase in port congestion. Up to 2006 ICDs had handled both export container and import container. ICDs started handling selected number of containerized bulks imported goods since 2007. Now ICDs are allowed to handle 37 items containerized bulk cargo. According to BICDA excluding the current 16 ICDs, CPA is planning to generate license for 20 more ICDs (Sikder 2016). As The container handling growth rate of Chittagong Port is about 14% annually it is very rationale. Therefore, it can be said that in responding to container congestion at Chittagong port ICDs has been emerged as decongestion strategy of CPA.

Another noticeable issue is that, the distance of ICDs from the port has been increased the more the time has elapsed. And another noticeable trend is that the newer ICDs are most likely to be located far from Chittagong area and nearer to Dhaka area closed to Dhaka-Chittagong high way. Perhaps demand of 70% Dhaka based consignee/consignor is fostering this trend.

4. Inland Container Terminals (ICTS) in Dhaka area

4.1 Overview

One of the main factors for realizing the importance of ICTs in Dhaka area would be the necessity of container transportation by inland waterways. To meet the growing demand of transporting containers between Dhaka and maritime ports (both Chittagong Port and Mongla

Port along with considering future operation of Payra Port), utilization of inland waterways has become inevitable. Railway suffers from capacity constraint and the road does not have bearing capacity to accommodate trailers, so all the studies conducted recently recommended for inland waterways. An Inland Container Terminal which is known as Pangaon Inland Container Terminal has already been developed through a joint venture project of BIWTA and Chittagong Port Authority (CPA) with an annual handling capacity of 116,000 TEUs and it is to be followed by another 3 private inland container terminals. Along with CPA owned Pangaon ICT there are 3 private ICTs (shown in Table 2) are being developed by private investment (Rahaman and Hasan 2015).

Table 2
Present status of ICTs in Dhaka area

Terminal	Planned capacity (TEUs)	Land area	Waterfront access (m)	Status of operations
SAPL (Summit Alliance Port Ltd.)	Phase 1: 60,000 TEUs; Phase 2: 60,000 TEUs	Phase 1: 15.15 acres; In the process of acquiring 22 acres	215 m Phase 1: 80 m; Quay: 4.5~5 m Draft alongside	Started operation
Rupayan Group	Phase 1: Full; 375,000 TEU	30-acre Phase 1; Additional land acquired	2 × 90 m quay Expansion +90 m	Approval granted Land purchased Design completed Under construction About 40% complete
Ak Khan Group	1st phase: 140,000; 2nd phase: 70,000; Final: 336,000 (in total)	1st phase: 30 acres; In total 50 acres	1st phase: 2 jetties With length of 90 m each.	Approval granted Land purchased Land filling initiated Design completed

4.2 Issues involved in the emergence of ICTs in Dhaka

Container traffic to and from Bangladesh is growing very fast at 14% percent per annum. In 2014-2015 total containers handled at maritime ports of Chittagong and Mongla were 1,909,199 with 97 percent share of the Chittagong Port. 70 percent of containers handled at maritime ports are destined for or originating from Dhaka/Narayanganj area being the main consumption and distribution centre (Sustainable Transportation and Infrastructure-Inland Waterways & Ports). Due to lack of appropriate intermodal distribution system of containers, further traffic growth is restricted. In absence of a dedicated railway line for freight and container movement between Dhaka and Chittagong, container movement by rail is to share with preferential passenger movement. The existing road does not have the bearing capacity to carry containers; presently 90 percent of the containers are stripped/ staffed in Chittagong Port, ICDs in Chittagong and Mongla Port and transported as conventional general cargo. Only 10 percent of containers are loaded on rail and transferred to Kamlapur Inland Container Depot in Dhaka, managed and operated by Chittagong Port Authority (Sustainable Transportation and Infrastructure-Inland Waterways & Ports).

The roadway is not suitable for tractor trailers for which stuffing/unsnuffing at port premise is inevitable. Therefore, congestion is also inevitable. Best alternative remain is to transport the containers by river. This will not only be cost-effective but also will remove congestion both in port premises and road and reduce dwell time of container in the port. Table 3 represents the rationale of emergence of ICTs in Dhaka area. Though railway infrastructure can be improved in capacity, the Kamalapur ICD cannot be because of its expansion constraints. This issue has fostered the emergence of ICTs in Dhaka area and natural infrastructure have support it. The scarcity of land and current road congestion will obviously lead the country to transport more and more cargo through waterways, switching from roadways. The present

state of transport investment shows that the public, as well as private sector, has given much emphasis in this area. But the pace of development is still far less than what is required and could improve substantially with more care from the government**.**

Table 3
Comparison among different modes of transport regarding transportation of 1 TEU container between Dhaka area and Chittagong port

Modes	Expenditure	Time required
Road	US$ 337.5 (regardless of weight)	24 hours (including road congestion and shifting system imposed on trucks and trailers)
Rail	US$ 187.5 (regardless of weight)	12 hours (including preferential passenger shuttle compliance)
Inland Waterway	US$ 165 (up to 15 ton) US$ 195 (above 15 ton to 20 ton) US$ 225 (above 20 ton to 25 ton) US$ 265 (above 25 ton)	24 hours (including all waiting times for tide and navigability)

5. Container congestion at Chittagong Port considering Payra Port and Sonadiya Deep Sea-Port

Considering the handling of future trade volume and export/import growth, the Govt. decided to build a new sea port and an act was passed on national parliament on 5 November 2013. Honourable Prime Minister inaugurated the 3rd sea port of the country at Lalua Union, Kalapara Upazila of Patuakhali district on 19 November 2013. Both the two maritime ports of Chittagong and Mongla in Bangladesh are situated along the banks of the rivers. These have certain restrictions in permissible drafts and length of vessels to berths that hinder to meet growing demand of sea borne trade. Having the 710 km of coastline of Bangladesh, development of a seaport that will have the capacity to serve vessels up to 14 m draft and LOA (length over all) of 300 m was discussed in the Parliamentary Standing Committee on Ministry of Shipping (Ref.-4). According to the decision taken at the 14th Meeting of the Committee, an expert committee was constituted with officials of CPA and BIWTA. The expert committee selected the site of Payra on the Rabnabad channel in Patuakhali District (Sustainable Transportation and Infrastructure-Inland Waterways & Ports).

This port is expected to reduce the congestion of Chittagong Port by inviting the deeper draft and larger vessels. If so, the main line shipping operators will choose that port instead of Chittagong port. The smaller vessels will also switch to that port from Chittagong because of the high ships' turnaround time in Chittagong port. Then the current congestion of Chittagong port will be reduced drastically. Considering the strategic location and the current shipping trend of "Economies of Scale" (larger vessels) Bangladesh has been dreaming for a hub port of the region having deep draft berths in a suitable location. In one hand trade volume would soon cross the capacity of Chittagong port and on the other, with the construction of a deep-sea port the export volume will be increased several times more (Abedin 2013). Beside this, neighboring countries and specially land lock counties like Nepal Bhutan and Sven sisters of India would also be interested to use DSP for their import and export trading. All these opportunities and needs encourage Bangladesh to go for constructing a deep-sea port (DSP). In the above context, Bangladesh Government intended to have a techno-economic feasibility study for construction of a deep-sea port (DSP) in the country by assessing the overall impact on the economy in general and the two existing ports in particular. Main objective of the study was to prepare a feasibility study for developing a DSP in Bangladesh on commercial basis, recommending the optimum location, facilities and details of infrastructure and services to be provided.

Following the procedures Bangladesh Government appointed the Pacific Consultants International (PCI), Japan, in association with Asian Engineering Consultants Corporation (Thailand), Dextrous Consultants, JPZ Consulting Ltd., Dev Consultants Ltd. (Bangladesh) for the study. The PCI submitted its final Report in 2009. The study found Sonadiya at Cox's Bazar as the best site to construct a deep-sea port (Sustainable Transportation and Infrastructure-Inland Waterways & Ports).

The rationale of the port was- by the year 2020 container traffic to and from Bangladesh would increase up to 2.78 million TEUs while general cargo except clinker and liquid bulk would increase to 11.09 million tons, which is not possible to be handled by Chittagong port and Mongla Port. So, the need of construction of a deep-sea port was realized by the study. The DSP container volume as projected in the study is shown in the Table 4 (Sustainable Transportation and Infrastructure-Inland Waterways & Ports).

Table 4
Target Container Volume for Each Port (in 1,000 TEU)

Port	2015	2020	2035	2055
DSP	0	1,780	7,142	17,572
Chittagong	1,833	1,500	2,000	2,000
Mongla	33	47	89	211

Table 5
Container handling growth of Pangaon ICT

Year	Inbound	Outbound	Total	Growth
2014	433	551	984	---
2015	656	591	1247	26.73
2016	701	701	1402	179.00

Source: *Pangaon ICT Authority*

From Table 4 it is observed that inauguration of a deep seaport will reduce or remain the demand of container volume constant in respect of Chittagong port. In the meantime, if the vessels switch to Payra Sea Port, then the demand of container volume will obviously reduce. This will result in unbelievable change in today's congestion at Chittagong port. Today's highly congested port will be getting rid of container congestion.

6. Future projection of ICDs in Chittagong area and ICTs in Dhaka

Future projection of ICDs in Chittagong area and ICTs in Dhaka area can be depicted from the above analyzed variables. The above discussions regarding the variables of this study coincide at a point. That is- ICDs in Chittagong area has been emerged only as a container decongestion strategy of Chittagong Port. If the container congestion is reduced in this port, then those ICDs will lose their illumination gradually because of their long-listed challenges which have been discussed in the later portion of this Chapter.

One of the main challenges is that, the all of the ICDs are very adjacent to the port except two. Therefore 70% Dhaka based container consignment will not feel any difference between using port premises and ICDs when there will be no container congestion at port premises. And in near future it is going to be happened due to the prospects of Payra Port and Sonadiya DSP. Moreover, the full swing operation of the ICTs in Dhaka area will captive that 70% Dhaka based container consignment of Chittagong Port. Therefore, no significance of those ICDs in Chittagong area will be realized in near future. Emergence of ICTs in Dhaka area has

not only been realized as a container decongestion strategy of Chittagong Port, but also been realized as a potential driver of container movement to and from Dhaka area. The trend has already been observed. The container handling growth of Pangaon ICT forecasts that the Dhaka based exporters and importers will switch to this sector.

Another potential issue of emergence of ICTs is that, not only the Chittagong port, but also all maritime ports in Bangladesh can be well connected with those ICTs and thus can be transhipment hubs of them. It will be feasible due to the infrastructure of Inland Waterway Transportation (IWT) System in Bangladesh. But there will be needed a little improvement of this mean. Following table forecasts the future IWT container traffic.

Table 6
Projection of IWT container traffic (000 TEU)

Year	Setting Sail	The World Wears Bangla
2021	1,299	1,588
2022	1,402	1,763
2023	1,514	1,958
2024	1,635	2,175
2025	1,766	2,415
2030	2,469	3,790

Source: *The World Bank Study on Chittagong Port Efficiency, 2014*

World Bank estimated this forecast in its Report "KCT Pre-Feasibility Study" under Bangladesh Trade and Transport Facilitation Program, September 2014 (Para 3.3 Page 15). The Report indicated three forecasts: Scenario A: Anchored, Scenario B: Setting Sail and Scenario C: World Wears Bangla. Scenario A did not include any container traffic in inland waterways up to 2030. Setting sail assumes growth potential of inland waterway is unlocked and modal share of IWT (containers in TEU) rises from 5 to 45%9 over the period 2014-2018 and maintains share at that level. The World Wears Bangla allows for GDP growth to accelerate over previous trends but is below the Government of Bangladesh target of 8-10 percent (Sustainable Transportation and Infrastructure-Inland Waterways & Ports).

7. Conclusion

The reason of emergence of private ICDs in Chittagong area underlies only on reducing container congestion of Chittagong port. The lesser the congestion at Chittagong port the lesser the importance of those ICDs is realized. And if the newly constructed Payra port and proposed Sonadiya DSP would be able to start full swing operation, then container congestion of Chittagong port will obviously reduce. Therefore, today's importance of ICDs will be fade away by the future unlikelihood economic viability of ICDs with a number of inevitable shortcomings. On the other hand, the though the ICTs have not been able to attract the users, in near future they will play a great role in container transportation to and from Dhaka area which is the 70% of total consumption and distribution center of container handled by Chittagong Port. Moreover, all maritime ports in Bangladesh will be transshipment hubs of these ICTs for the containers destined to Dhaka area. Therefore, it can be said that emergence of ICTs is not only for decongesting Chittagong port, but also for supporting the users in Dhaka area in a cost-effective manner as container distribution centers.

References

Abedin J. 2013. "Sonadiya Deep Sea Port- Whither The Benefits".Armed Forces Day journal 2013.pp; 90-99.

Ahamed M. "A Report on Frozen Food and Fisheries Sector of Bangladesh."Japan Bangla Business Centre. Accessed October 11, 2016. http://jbbc.co.jp/wp-content/uploads/2014/08/A-Report-on Frozen-Food-and-Fisheries-Sector-of-Bangladesh-.pdf

Chowdhury A. 2016 "An Unpublished Power Point Presentation on Pangaon Inland Container Terminal." Pangaon Inland Container Terminal, Chittagong Port Authority.

CPA (Chittagong Port Authority). "Facilities of Chittagong Port Authority." CPA. Accessed January 24,2017. http://sm6.siteground.biz/ ~cpa94870/facilities-of-cpa

General Economics Division Planning Commission Government of Bangladesh "Sustainable Transportation and Infrastructure-Inland Waterways & Ports." Volume 3. Accessed January 03, 2017.http://www.bangladeshdeltaplan2100.org/wp-content/uploads/2016/02/Sustainable-Transportation-3-IWTFinal-June-2016.pdf

Hossain A.2016. "Chittagong port witnesses largest-ever container congestion". Dhaka Tribune. Accessed December 24, 2016. http://www.dhakatribune.com/bangladesh/2016/09/30/ctg-port-witnesses-largest-ever-container-congestion

Labowitz S. 2016. "New data on the number of factories in Bangladesh." NYU Blog. Accessed January 14, 2017. http://bhr.stern.nyu.edu/blogs/-data-on-number-of-factories-bd

Rahaman M., Hasan R. 2015. "Potential Multimodal Transport in Bangladesh and Relative Obstacles." Journal of Traffic and Transportation Engineering. Accessed January 15, 2017. http://www. davidpublisher.org/Public/uploads/Contribute/56404e5b82d04.pdf

Rahman A. 2015. "Impact of Garments Industry in Bangladesh Economy." East West University. Accessed April 14, 2016. http://dspace.ewubd.edu/bitstream/handle/123456789/1651/Md._ Atiqur_Rahman.pdf sequence1

Sikder R. 2016. "A Brief History of Inland Container Depots in Chittagong." BICDA.

WSC (World Sipping Council). 2015. "Some Observations on Port Congestion, Vessel Size and Vessel Sharing Agreements." WSC. Accessed December 16, 2016. http://www.worldshipping.org/ industryissues/transportationinfrastructure/Observations_on_Port_Congestion_Vessel_Size_and_VSAs_Updated_July_6_2015.pdf