



Performance Assessment of Mongla Seaport in Bangladesh

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Abstract: The objective of this study is to assess the performance of Mongla sea port in Bangladesh during 2001-2010 periods. It also attempts to identify the problems and prospects associated with the seaport. Data indicate that the port incurred losses for several consecutive years at the beginning of the 21st century. However, the scenario has been changing since 2008. On an average, the port handles about 20 percent of total trading activities of Bangladesh through applying 40 percent of its total capacity. The study findings indicate that heavy siltation in Pussur channel, lack of dredging work at the channel, inadequate hinterland facility and lack of government attention are the main problems which ultimately hamper the performance of the port. In spite of having the said problems and being underutilized, Mongla seaport has potentialities to contribute in regional and national economy of the country. The study results indicate that if some development projects are implemented, about 70 percent of its capacity could be utilized which could make a profit of about 4 million US\$ per year.

Keywords: Mongla Seaport, Performance, Problem, Prospect, Economic Development, Bangladesh

1. Introduction

Globalization and successive breakdowns in trade barrier have stimulated incredible growth in marine transportation. A seaport plays an important role in international trade and economic growth of a country. It acts as a gateway connecting continents and transferring goods between maritime and land-based modes [1, 2]. A seaport provides vital opportunities, such as increase in flow of trade, foreign exchange, employment, transportation, formation of main transport routes and other infrastructures [3]. Literature focuses on five principal roles of a seaport: i) cargo and passenger handling, ii) providing services for ships such as bunkering and repair, iii) shelter for ships in case of heavy sea and storm conditions, iv) bases for industrial development and v) terminal forming part of a transport chain [1]. More than 90 percent of the international trade in the world is being conducted through seaports [1, 3, 4].

Studies consider tonnage worked, berth occupancy revenue, cargo handling revenue, labor and capital equipment expenditure, arrival late, waiting and service time, turnaround time and tonnage per ship as indicators to measure the performance of a port [5]. Number of cargo and container handling, cost of cargo handling, turnaround time and export-

import trend are some operational indicators to measure port performance [1, 4, 6]. Furthermore, some studies [7] measure port performance through the characterizing factors of a port, such as infrastructure, equipment, governance structure and integration in logistic networks. Besides, financial statements and its ratio analysis are some important financial indicators to measure port performance [8, 9].

Literature finds siltation problem as the most serious problem of a seaport [10]. According to [11], poor hinterland facility is a big problem for a port since it hampers the general activities of a port and reduces its performance level. On the other hand, [12] depict that insufficient human resource and equipment, irregularities in dockworker management, illegal occupation of land, irregularities in import and export, corruption, bribe givers, bribe receivers, congestion, illegal collection of tolls in the name of various charges, misappropriation of money in the name of fake workers are some probable problems that may exist in a seaport.

In contrast, a port has great potentialities to contribute in global supply chain. The logistic activities associated with a port generate employment opportunities [2, 13]. A study [14] highlights on the necessity of transitory storage in ports and the presence of well-organized transport services to make

ports potentially attractive location for logistic activities. Another study [13] argues that ports are the engines behind regional economic development since it attracts a variety of economic activities. Similarly, [15] states that port investment is a key issue in transport economics about planning port development, financing and assessing the return on investment. Investment in seaport increases employment opportunities, land value, GNP, infrastructural opportunities and technology development [3].

Like many other countries of the world, Bangladesh also has to depend mostly on the seaports for international trade. Mongla seaport (MSP) is situated in the south-west part of Bangladesh. The port provides facilities and services to the shipping lines and other concerned agencies with shore based facilities. It plays a strategic role in national defense, economy and trade of Bangladesh. Since its establishment in 1950, this port has been playing an important role in international trade and commerce of the country. However, it has been passing a critical time since the beginning of the 21st century. Only 10 percent of the capacity of MSP was used at the beginning of the century [16]. Another source [17] states that only 20 percent spare capacity of MSP is used. The performance of Mongla seaport has declined over the time. In contrast, the port has a great prospect to contribute in the economy. If this port runs efficiently, regional and national economy will be benefitted and many other countries in the world, particularly the SAARC countries will be benefitted through using this port.

Since port performance is dependent on its various characterizing factors, any disturbances or shortfalls may hinder a port's performance level. In Mongla seaport, ship arrival, revenue income, numbers of containers and conventional cargo throughput per ship day and equipment availability have declined remarkably [18]. With the fall of number of ships in MSP, port revenue has started to decline [19]. In addition, it is an under-utilized port though its cost of good holding is much lower compared to the Calcutta seaport of India. It is because of shorter turnaround time and lower confinement & demurrage than that of Calcutta seaport. Moreover, lack of railway service largely discourages other countries such as Nepal, Bhutan and India to use this port [20]. In Bangladesh, the two seaports named Chittagong seaport and Mongla seaport could be good options for transit with India, Nepal and Bhutan [16, 20]. This study attempts to analyze the Mongla seaport from economic viewpoint. More specifically, evaluating the performance of Mongla seaport is the main objective of this study. The authors also try to trace out the prevailing problems and future potentialities of the port in this study.

2. Material and Methods

This study considered export, import, ship arrival, turnaround time, revenue income and expenditure as indicators for measuring performance of Mongla seaport. It also attempted to perform a trend analysis on the performance measures over last 10 years for the port. Several

visits to the port, survey of related literatures and consultation of port related documents helped the authors to identify the said performance measures and to collect the required information.

The authors consulted with Mongla Port Authority (MPA) officials and workers for tracing out the prevailing problems of the port. This study has used stratified random sampling in selecting interviewees. Mongla port officials and workers are the two strata. The authors have randomly selected 25 interviewees from 113 officials and 20 interviewees from 1,264 workers to conduct face-to-face interviews. The collected data through face-to-face interview regarding problems of Mongla seaport have been ranked according to severity based on the views of the interviewees.

Moreover, the authors tried to identify the prospects of Mongla seaport through reviewing port related publications and official documents. The opinions of the MPA officials and workers regarding prospects of the port are also considered. Accordingly, the collected data through face-to-face interview regarding prospects of Mongla seaport have been ranked according to importance and applicability based on the responses of the interviewees.

Finally, considering the ongoing development projects of Mongla seaport, the authors tried to present a hypothetical capacity utilization scenario that may be attained after project implementation. Moreover, several hypothetical profit earning scenarios based on various capacity utilization scenarios have been portrayed to represent the implementation effect of the development projects of Mongla seaport.

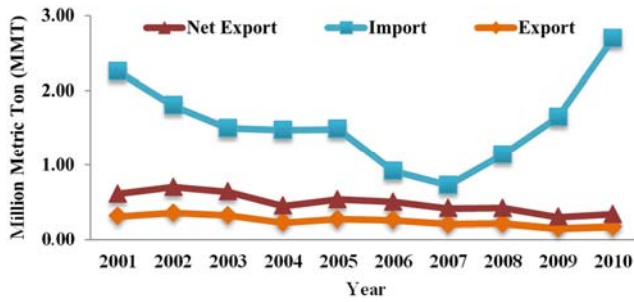
3. Results and Discussion

3.1. Performance of Mongla Seaport

This study considers export, import, ship arrival, turnaround time, vessel and container handling, revenue income and expenditure to represent performance of Mongla seaport.

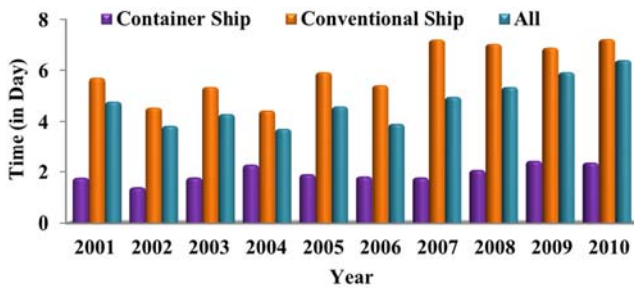
3.1.1. Export-Import

Most of the export and import of Bangladesh take place through Chittagong seaport (CSP) and Mongla seaport (MSP). CSP handles about 80 percent of export-import cargo, whereas MSP handles only 20 percent of export-import cargo. Figure 1 shows the overall export-import scenario through MSP during 2001 to 2010. The trend shows a very frustrating trade volume through MSP. Though volume of import has started to increase in the latter half of the considered period, however the export trend is not satisfactory. Yearly average import through MSP during the considered decade is 1.32 Million Metric Ton (MMT) only, whereas the corresponding figure for CSP is 22.54 MMT [21]. Similarly, yearly average export through MSP is only 0.24 MMT, whereas the corresponding figure for CSP is 2.98 MMT [21].



Source: Authors' Compilation Based on [21]

Figure 1. Export-Import through Mongla Seaport.



Source: Authors' Compilation Based on [21]

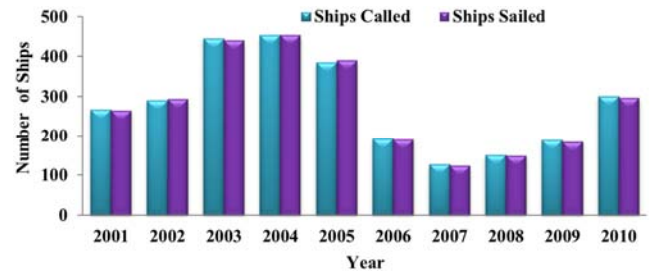
Figure 2. Turnaround Time of Ships.

3.1.2. Turnaround Time of Ships

Turnaround time (TAT) refers to the time taken for a ship to enter the port and come out after unloading and loading the cargo. Less TAT indicates good performance of a seaport. Figure 2 elucidates the TAT of Mongla seaport during 2001 to 2010. The data indicates that turnaround time of a conventional ship is much higher than that of a container ship. The average turnaround time for all ships is 4.80 days. However, for container and conventional ships, TAT is 1.94 days and 6.01 days respectively. Figure 2 also indicates an increase in average turnaround time of the ships over the period.

3.2. Number of Ships Called and Sailed

The income of a seaport is largely dependent on the number of ships called and sailed through that port. Regular arrival of ships in a seaport reflects good performance. Figure 3 shows the number of ships called and sailed in Mongla seaport during 2001 to 2010. The figure indicates that the number of ships called and sailed in MSP is almost similar in every year. According to the data, the number of ships called and sailed has started to increase since 2008 after a sequential fall during 2005-2007.



Source: Authors' Compilation Based on [21]

Figure 3. Number of Ships Called and Sailed.

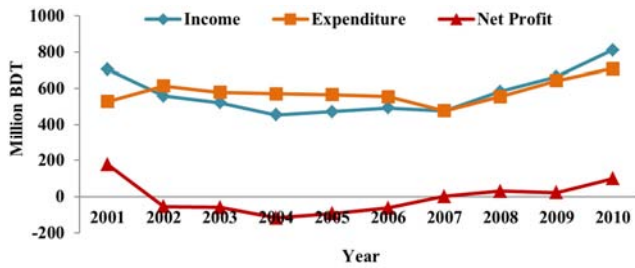
3.3. Vessel and Container Handling Performance

Vessel is a big ship which generally carries containers and containerized cargo. Table 1 shows that the total number of vessel handled in MSP during 2001-2010 is less than 500. The corresponding number for CSP is about 20 thousand. It means that vessel handling in MSP is about 40 times less than that of CSP. Besides, the total number of containers (TEUs) handled in CSP is near about 9 million, whereas it is less than 0.25 million in MSP. The average number of container handling in MSP is 36.38 times less than that of CSP. Thus, vessel and container handling performance of MSP is very frustrating in comparison with that of CSP.

Table 1. Vessel and Container Handling in MSP and CSP.

| Period | Number of Vessel in MSP | Number of Vessel in CSP | Number of Container in MSP | Number of Container in CSP |
|---------|-------------------------|-------------------------|----------------------------|----------------------------|
| 2001-02 | 69 | 1,736 | 20,927 | 6,25462 |
| 2002-03 | 65 | 1,768 | 23,737 | 6,34167 |
| 2003-04 | 51 | 1,745 | 27,148 | 6,54471 |
| 2004-05 | 46 | 1,764 | 25,649 | 6,88771 |
| 2005-06 | 44 | 1,892 | 25,571 | 7,83353 |
| 2006-07 | 47 | 1,957 | 25,342 | 8,76186 |
| 2007-08 | 39 | 1,945 | 20,885 | 9,58020 |
| 2008-09 | 47 | 2,099 | 21,201 | 10,69,999 |
| 2009-10 | 33 | 2,167 | 20,651 | 11,61,470 |
| 2010-11 | 44 | 2,178 | 27,123 | 12,14,312 |
| Total | 485 | 19,251 | 2,38,234 | 86,66,211 |

Source: Authors' Compilation Based on [9, 21]



Source: Authors' Compilation Based on [23]

Figure 4. Revenue, Expenditure and Net Profit.

3.4. Revenue, Expenditure and Net Profit

The main income sources of Mongla seaport include earning from giving port's land lease to manufacturing units, vessel charge, cargo revenue and other charges related with ship arrival at port. Side-by-side, the main expenditure items of Mongla seaport are operating cost, energy and fuel cost, depreciation cost, cost for infrastructural development and maintenance. Figure 04 illustrates the revenue, expenditure and net profit of Mongla seaport during 2001 to 2010. The port incurred losses until 2006 and it reached to breakeven point in 2007. It may be noteworthy to mention that the port

has been enjoying profit since 2008. The initiation of importing car through this port since 2010 has been helping the port a lot to earn more profit.

3.5. Problems of Mongla Seaport

An intensive review of literature identifies a list of problems that might be associated with a seaport (Table 2). However, not all of the listed problems are equally applicable or severe for all ports. Some problems affect the regular activities of a port depending on severity. Therefore, this study tries to check the applicability and severity of the listed problems for Mongla seaport. The interviewees (MSP officials and workers) were asked to rank the problems according to severity. This study attempts to construct a rank of the problems based on the opinions of the interviewees. A problem which is endorsed by 80 percent or more interviewees is considered as a very severe problem. If 40 percent to less than 80 percent interviewees endorse a problem, then it is considered as a less severe problem. If less than 40 percent interviewees endorse a problem, then it is not considered as a severe problem for Mongla seaport.

Table 2. Problems of Mongla Seaport.

| Sl. No. | Problems | Officials (N=25) | | Workers (N=20) | |
|---------|------------------------------|------------------------|----------|------------------------|----------|
| | | Frequency ¹ | Severity | Frequency ¹ | Severity |
| 1 | Siltation problem | 25 | *** | 20 | *** |
| 2 | Dredging problem | 24 | *** | 20 | *** |
| 3 | Hinterland problem | 21 | *** | 17 | *** |
| 4 | Less government attention | 20 | *** | 15 | *** |
| 5 | Less local industrialization | 17 | ** | 15 | *** |
| 6 | Obsolete equipment | 17 | ** | 11 | ** |
| 7 | Lack of efficient manpower | 14 | ** | 09 | ** |
| 8 | Lack of port owned craft | 11 | ** | 09 | ** |
| 9 | Corruption | 10 | ** | 09 | ** |
| 10 | Labor unrest | 07 | * | 05 | * |
| 11 | Inadequate port facilities | 05 | * | 04 | * |
| 12 | Crime at surroundings | 03 | * | 02 | * |

N.B.:

¹ Frequency refers to the number of interviewees who endorse the problem.

* refers to not a severe problem (endorsed by less than 40 percent interviewees).

** refers to a less severe problem (endorsed by 40 percent to less than 80 percent interviewees).

*** refers to a severe problem (endorsed by 80 percent or more interviewees).

Source: Authors' compilation based on Interview

According to the study findings, siltation is the major problem of Mongla seaport which decreases depth of a river and creates a barrier to vessel movement. The depth of Pussur channel has decreased from 8.5 meters to 6 meters during normal time and to 4.5 meters during low tide [22]. Poor navigability at the Pussur channel causes decrease in ship arrival alarmingly, which becomes more acute due to irregular dredging at the channel. Consequently, revenue income of Mongla seaport has decreased over the time. Hinterland connection of Mongla seaport is also very poor. As a result, it requires more time for vessels to arrive or to go out from Mongla seaport with merchandise. The failure to construct the Padma Bridge has lengthened the distance

between Mongla and Dhaka. Moreover, the port users are losing their attraction from Mongla seaport as it has no rail and airway facilities. The political decision of the country has been delaying the transit contract among SAARC countries. Since the role of government is crucial in the said bridge, railway, airway and transit issues, the interviewees considered government attention as a severe problem for Mongla seaport.

The interviewees think that an industrialization effort in nearby regions of the port might contribute positively to port performance. Shutting down of numerous local manufacturing units and absence of enormous efforts for establishing new industrial units have contributed to decrease

cargo supply at a great extent. As a result, the volume of cargo export through Mongla seaport has declined gradually. Use of obsolete equipments in Mongla seaport hampers cargo and container loading and unloading timely and smoothly, which increases turnaround time and variable cost of port users. The interviewees also consider the lack of efficient manpower as another notable problem of Mongla seaport. More than 50 percent vacancy out of total 2,800 posts hampers to carry on the regular port activities smoothly. According to the dataset of MPA, about 40 percent of the crafts of MSP are now out of use. It creates difficulties to provide necessary craft based services to the foreign ships and generates image crisis among the clients of the port. Corruption has added new dimension to the problems of the port. It hampers the efficient utilization of allotted budget for the port. The World Food Programme (WFP) earlier blacklisted MPA and stopped sending food grain ships in this port. Later, the Bangladesh government also reduced importing food grain through this port due to corruption. The study findings indicate that all these problems are ultimately

contributing to the worse performance of Mongla seaport.

Moreover, labor unrest has been affecting negatively to the performance of Mongla seaport. Consequently, prospective customers have been losing attraction to use Mongla seaport. The interviewees also mention inadequate port facilities and crime at surrounding areas of the port as some other notable problems of Mongla seaport. The opinions of the interviewees indicate that Mongla seaport has been facing both internal and external problems. As a result, the port has remained underutilized and failed to contribute in the country's economy efficiently.

3.6. Prospects of Mongla Seaport

In spite of being an underutilized port, Mongla seaport has a great potentiality to contribute in the international trade of Bangladesh. The authors have identified several potentialities of this port through reviewing literatures and conducting interviews with the selected sample interviewees (Table 3).

Table 3. Potentialities of Mongla Seaport.

| Sl. No. | Prospects | Frequency ¹ (N=45) | Importance |
|---------|--|-------------------------------|------------|
| 1 | Attractive trading facilities | 40 | *** |
| 2 | Potentiality for Padma Bridge construction | 38 | *** |
| 3 | Potentiality in vehicle import | 35 | *** |
| 4 | Transit facility | 34 | *** |
| 5 | Development of shrimp cultivation | 30 | ** |
| 6 | Industrialization in the south-west region | 27 | ** |
| 7 | Natural security by the Sundarbans | 26 | ** |
| 8 | Regional economic development | 24 | ** |
| 9 | Contributor to GDP and national income | 23 | ** |
| 10 | Competition with Calcutta Port | 18 | * |

N.B.:

¹ Frequency refers to the number of interviewees who endorse the potentiality. (N=45)

* refers to not important (endorsed by less than 40 percent interviewees).

** refers to less important (endorsed by 40 percent to less than 80 percent interviewees).

*** refers to more important (endorsed by 80 percent or more interviewees).

Source: Authors' compilation based on Interview

Mongla seaport has potentials because of its good geographical location surrounded and secured by 'The Sundarbans' along with good channel from port jetty to Bay of Bengal. The port also has a very good connection with river way through which goods can be transported throughout the country at a lower cost compared to other means of transportation [21]. The anchorage facility at Pussur channel is quite good and goods can be loaded and unloaded from both sides of the ships.

Another notable prospect is the construction of Padma Bridge. Once the proposed bridge is constructed and the corresponding highways are established, the distance between Dhaka and Mongla will be only 170 km which will obviously attract the traders to use Mongla seaport instead of Chittagong seaport. This will also increase the number of car import through this port as it has storage capacity for about 3,500 cars. Furthermore, the port has potentialities to be used as a transit port with Nepal, Bhutan and some other countries.

If dredging of 13 kilometers of the channel between the port jetty and Herbaria is completed timely, the port will be more operational in the event of the transit facilities to India, Nepal and Bhutan. The construction of a rail network could add new dimension to transit and consequently trading activities will increase by capturing the market of Calcutta seaport which is now a competitor of Mongla seaport.

Mongla seaport has a very good potentiality to encourage the shrimp cultivation and its export. It also has a very good prospect to accelerate the industrialization, especially jute industry in the south-west region of Bangladesh. Besides, proper utilization of Mongla seaport will support the medium scale enterprises situated in the south-west region of Bangladesh to sustain and earn profit. In addition, it will accelerate the development of cement manufacturing firms dependent on this port and establishment of new cement manufacturing firms. Thus, if existing problems of this port can be solved and the port runs swiftly, it will obviously

ensure the economic development of the south-west region of Bangladesh. Consequently, it could contribute to GDP, national income and the overall economic development of the country.

Table 4. Probable Profit of Mongla Port.

| Scenario | Project | Space capacity utilization (%) | Trading capacity utilization (%) | Profit per year (million BDT)** |
|----------------|-----------------|--------------------------------|----------------------------------|---------------------------------|
| Base scenario* | Without project | 20 | 40 | 99 |
| Scenario 1 | Project 1 | 25 | 45 | 140 |
| Scenario 2 | Project 2 | 35 | 43 | 120 |
| Scenario 3 | Project 3 | 30 | 50 | 200 |
| Scenario 4 | Project 4 | 30 | 47 | 150 |
| Scenario 5 | Project 5 | 25 | 45 | 140 |
| Scenario 6 | All 5 Projects | 65 | 70 | 300 |

N.B:

* Base scenario refers to the scenario in 2010-2011.

** Approximate figures based on some assumptions.

Source: Authors' compilation based on Interview

Recognizing the potentialities of Mongla seaport, the government of Bangladesh has undertaken five development projects of about 42.16 billion BDT¹ to develop the facilities of Mongla seaport [20]. The projects are: i) Procurement of Cutter Suction Dredger, Pilot and Dispatch Boat, ii) Navigational Aids to Mongla Port, iii) Dredging at Outer Bar in the Pussur channel, iv) Dredging in the Harbor channel and v) Procurement of Container & Cargo Handling Equipment.

These development projects will gear up the regular activities of the port. The successful implementation of the said projects will increase ship arrival, capacity utilization and profit. The authors attempted to figure out the output of the said projects in terms of capacity utilization based on some assumptions. This study also attempted to calculate the approximate profit that may be earned by Mongla seaport after successful completion of the projects (Table 4).

A rough calculation indicates that around 65 percent space capacity and 70 percent trading capacity of Mongla port could be utilized if the above-mentioned five projects are implemented. The said implementation will help to generate 0.3 billion BDT profit per year. Therefore, it may be said that Mongla port has huge potentialities in expansion of international trade as well as in economic development of Bangladesh.

4. Conclusions

This study tries to explore the overall performance of Mongla seaport during 2001-2010 periods. It finds that the overall performance of the port is not good, though it has been doing better in recent time periods. A lion share of the capacity of the port is found unutilized. Therefore, this study tries to discover the problems of this port which might be responsible for capacity underutilization. This study finds that siltation, dredging, hinterland and lack of government attention are the leading problems of the port.

This study also reveals that the port has enormous potentialities which could be attained after addressing the

cited problems. It also finds that the port might earn a handsome profit after implementing several development projects. Therefore, this study recommends for taking immediate steps by MPA and government of Bangladesh for on time implementation of the development projects for utilizing the capacity of the port optimally, for earning profit and ultimately for local and national economic development of Bangladesh.

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¹ BDT is the currency of Bangladesh. 1 US\$ = 77.68 BDT (as on 20 December, 2013).

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Biography



Dr. Mohammed Ziaul Haider is a Professor of Economics at Khulna University, Bangladesh. He completed his B.Sc. (Honors) and M.Sc. in Economics from Jahangirnagar University, Bangladesh and Masters and Ph.D in Economics from Tohoku University, Japan. Professor Haider has supervised about 100 undergraduate and graduate level students' thesis/research works. He has published more than thirty peer-reviewed articles in renowned journals. Dr. Haider has worked as a consultant/project director in research projects funded/managed by various organizations including ADB, ILO, IFC, SANDEE, GTZ, SDC and so on. (For details, please visit <http://sites.google.com/site/haidermz>).



Md. Ashraf Islam has received his BSS (Honors) and MSS in Economics degrees from Khulna University, Bangladesh. He has interest in different fields of research including research on maritime transport. During his graduation study, he has worked on many research works in different fields of Economics. His undergraduate thesis was "Problems and Prospects of Mongla Seaport" under the direct supervision of Professor Dr. Mohammed Ziaul Haider, Economics Discipline, Khulna University, Khulna, Bangladesh. He has interest to do further research work on this field to discover the potentialities of maritime transport in Bangladesh.