ASSESSING THE ECONOMIC EFFICIENCY OF KERALA'S MAJOR SEAPORT

Sreeja K
Research Scholar (JRF),St. Peter's College, Kolenchery, Ernakulam, Kerala,India.

Abstract
From the past history itself seaports plays a vital role in the overall development of a country through maritime trade. An effective seaport can keep logistics costs competitive and can broaden its access to markets. Being the only major port in Kerala, the Cochin Port has been occupying a vital role in the overall development of the State. While an entity like sea port becomes strategically significant, its better performance and sustenance become inevitable. The study examines the financial efficiency of the seaport based on the benchmarks given by the United Nations Conference on Trade and Development (UNCTAD). It covers a period of ten years from 2005-2006 to 2014-2015 in two stretches of five years each. It is found that the main financial indicators such as Tonnage worked and Contribution per ton of cargo show a diminishing trend over the period.

Key Words: Seaport, Financial Indicators, Kerala, Compounded Annual Growth Rate.

Introduction

Historically almost all goods transported worldwide have been carried by sea. Seaport is an important economic sector as it has a direct impact on the growth of the country. Maritime transportation plays a major role in the national and international trade and economic growth. The seaborne trade represents more than 90 percent of the international trade in the world (UNCTAD, 2012). A seaport is defined as a terminal and an area within which ships are loaded and / or unloaded with cargo and includes the usual places where ships wait for their turn or are ordered or obliged to wait for their turn no matter the distance from that area (Esmer, 2008) . The globalization of the world economy has led to an increasingly important role for transportation (Cullinane & Wang, 2010). Ports are complex and multipart organizations in which institutions and functions often intersect at various levels (Talley, 2007) .

Port services are key elements of a country's economy. They provide the necessary infrastructure for the development of industry, business and international trade. In this case, evaluating and improving their performance is essential to achieve international competitiveness (Junior, Junior, Belderraina, Correia, & Schwanz, 2012). Ports are essentially providers of service activities, in particular for vessels, cargo and inland transport (Wang, Song, & Cullinane, 2003). In the highly competitive environment of the port industry, port businesses should be provided with a strategic place for positioning of the economic growth of the country (Pardali & Michalopoulos, 2008). A port becomes a wheel of economy if it runs efficiently. Presently the function of a port is not only limited but has expanded to a logistical platform. The efficiency of a port is important in international trade since a seaport is the nerve of foreign trade of a country.

Ports form a vital link in the overall trading chain and, consequently, port efficiency is an important contributor to a nation's international competitiveness (Tongzon, 2001). The world trade has also accelerated the cost of shipping as increased due to the introduction of economy of scale and the development of technology in shipping. Port efficiency is an important requirement in order to survive in the competitive world of shipping industry. Seaports are complex dynamic systems consisting of numerous interacting elements. Full utilization of the available resources and efficient management of operations are the two major goals of seaports (Chin & Tongzon, 1989) . (Robinson, 2002) Stated that port authorities have to identify their current competitive advantage whether it is in its assets, strategic location or existing supply chains and work from there in order to improve the provision of its services. It has to capture, deliver and sustain its competitive advantage while delivering the highest value-added services possible.

The Cochin Port is the only major port in Kerala. It spreads over 827 hectares with a water frontage of 7.5 Km. (Economic Review, 2012). Being an all weather natural port, it is located strategically close to the busiest international sea routes from the Gulf to Singapore and Europe to the Far East circuits. Initially, the Port was formally opened for vessels up to 30 feet draught. Cochin was given the status of a Major Port in 1936. The Administration of the Port got vested in a Board of Trustees in February 1964 under the Major Port Trusts Act 1963.

2. Objectives of the Study
- To identify the various financial indicators of the Cochin Port.
- To analyze the performance of these financial indicators.

3. Study Setting and Methodology

The UNCTAD has given seven financial indicators (Table 1) and eleven operational indicators for evaluating port performance. The study taken the seven financial indicators of the Cochin Major Port. The period selected for review the financial performance is taken from 2005-06 to 2014-15 i.e., for 10 years. The total period under review has been divided into Period I (2005-2006 to 2009-2010) and Period II (2010-2011 to 2014-2015). The major sources of data were collected from the various issues of the Administration Report of the Cochin Port Trust (from 2005-2006 to 2014-2015) and the official website of Indian Ports Association. The data were analyzed using the tool Compounded Annual Growth Rate (CAGR).

Table 1 Summary of Financial Performance Indicators Suggested by UNCTAD

Financial Indicators
Tonnage worked
Berth occupancy revenue per ton of cargo
Cargo handling revenue per ton of cargo
Labor expenditure per ton of cargo
Capital equipment expenditure per ton of cargo
Contribution per ton of cargo
Total contribution

Source: UNCTAD

4. Results and Discussions

1. Tonnage Worked

Tonnage worked refers to the total tonnage of cargos handled by the Port during a year. The different types of cargos handled in the port include Liquid Bulk, Mechanized Dry Bulk, Conventional Dry Bulk, Break Bulk and Container Cargo. The growth (CAGR) in the tonnage of different cargos handled during the Period I and Period II are given in Table 2. The CAGR of Liquid Bulk, Mechanized Dry Bulk, Conventional Dry Bulk, Break Bulk and Container Cargo during Period I are -0.10 per cent, 8.70 per cent, 4 per cent , 8 per cent and 23.70 per cent respectively. The corresponding growth rates in the Period II are 0.50 per cent (Liquid Bulk), 0.20 per cent (Mechanized Dry Bulk), 9 per cent (Conventional Dry Bulk), 1 per cent (Break Bulk) and -7 per cent (Container II). This is an indication of the poor performance of the port in Period II in terms of the tonnage Cargo. Altogether, the CAGR of the total tonnage worked in Period I is 3.50 per cent as against -0.10 per cent in the Period worked. Evidently, the Liquid Bulk and Conventional Dry Bulk carried show an increase trend and the others show a decreasing trend. Surprisingly, the decline in Container Cargo (CAGR - from 23.70% to -7%) is unbelievable as the port has been transformed due to high level of competition from neighboring ports.

Table:2 Tonnage Worked

Period		Average Liquid Bulk	Average Dry Bulk		Average Break Bulk	Average Container Cargo	Average Total
			Average Mechanized Operation	Average Conventional Operation			
Period I	CAGR (%)	-0.10	8.70	4.00	8.00	23.70	3.50
	R^2	0.00	0.33	0.520	0.227	0.819	0.548
Period II	CAGR (%)	0.5	0.20	9.00	1.00	-7.00	-0.100
	R^2	0.022	0.028	0.834	0.013	0.001	0.128

Source   : Analysed figures of data collected from Administration Report of Cochin Port Trust.

2. Berth Occupancy Revenue per Ton of Cargo

It is calculated as the total berth occupancy revenue produced, divided by tonnage worked. The growth (CAGR) in the Berth occupancy revenue, Berth Occupancy Revenue per Ton of Cargo for the Period I and Period II are given in Table 3. Berth occupancy revenue variable shows an increasing trend (i.e. from -0.10% to 14.7%) while compared to Period I and Period II. Likewise the Berth occupancy revenue per ton of cargo also shows an upward trend of -0.04 per cent to 4.40 per cent in these Periods. Even though the Tonnage worked has a diminishing trend, it does not affect the growth of Berth occupancy revenue per ton of cargo.

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Table 3: Berth Occupancy Revenue per Ton of Cargo

Period		Average Berth occupancy revenue	Average Tonnage worked	Average Berth occupancy revenue per ton of cargo
Period I	CAGR (%)	-0.10	3.50	-0.04
	R^2	0.077	0.548	0.454
Period II	CAGR (%)	14.7	-0.00	4.40
	R^2	0.972	0.128	0.420

Source : Analysed figures of data collected from Administration Report of Cochin Port Trust.

3. Cargo Handling Revenue per Ton of Cargo

It is the total revenue produced from transferring cargo to or from ships, from or to storage areas, divided by tonnage worked. The calculated value of CAGR is displayed in Table 4. Cargo handling revenue has a reducing trend when compared to CAGR of Period I and Period II (i.e. from -0.10% to -4.00%). Even if there is a reducing trend in Cargo handling revenue, the CAGR of Cargo handling revenue per ton of cargo remains the same in both Period(i.e. -4%).

Table 4: Cargo Handling Revenue per Ton of Cargo

Period		Average Cargo handling revenue	Average Tonnage worked	Average Cargo handling revenue per ton of cargo
Period I	CAGR (%)	-0.10	3.50	-4.00
	R^2	0.007	0.548	0.380
Period II	CAGR (%)	-4.00	-0.10	-4.00
	R^2	0.301	0.128	0.297

Source   : Analysed figures of data collected from Administration Report of Cochin Port Trust.

4. Labour Expenditure per Ton of Cargo

It is the total direct labour expenditure for transfer of cargo to or from ships, from or to storage areas, divided by tonnage worked. The growth rate (CAGR) of Labour Expenditure, Labour Expenditure per Ton of Cargo is presented in Table 5. From this it can be measured that the CAGR of Labour Expenditure is increasing from -5.00 per cent to 18.3 per cent in Period I and Period II. And simultaneously the growth rate of Labour Expenditure per Ton of Cargo also shows an increasing trend of 8 per cent to 18.9 per cent.

Table 5: Labour Expenditure per Ton of Cargo

Period		Average Labour expenditure	Average Tonnage worked	Average Labour expenditure per ton of cargo
Period I	CAGR (%)	-5.00	3.50	8.00
	R^2	0.776	0.548	0.680
Period II	CAGR (%)	18.3	-0.10	18.9
	R^2	0.965	0.128	0.989

Source   : Analysed figures of data collected from Administration Report of Cochin Port Trust.

5. Capital Equipment Expenditure per Ton of Cargo

Capital Equipment Expenditure per Ton of Cargo is the total amortization and interest allocated to and maintenance and operating costs incurred for the berth group, excluding the costs of transit sheds and warehouses, divided by tonnage worked. Table 6 contains the CAGR of Capital Equipment Expenditure, Capital Equipment Expenditure per Ton of Cargo. While analyzing the CAGR of Capital Equipment Expenditure, it displays that in Period I has an increasing rate of 21 Per cent than that of Period II (19.2%). And the CAGR of Capital Equipment Expenditure per Ton of Cargo shows an increase in Period II as compared to Period I (i.e. from -1.00% to 19.90%).

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Table 6: Capital Equipment Expenditure per Ton of Cargo

Period		Average Capital Equipment expenditure	Average Tonnage worked	Average Capital Equipment expenditure per ton of cargo
Period I	CAGR (%)	21.00	3.50	-1.00
	R^2	0.429	0.548	0.100
Period II	CAGR (%)	19.2	-0.10	19.90
	R^2	0.960	0.128	0.979

Source : Analysed figures of data collected from Administration Report of Cochin Port Trust.

6. Total Contribution

Total Contribution can be calculated by the Berth Occupancy and Cargo Handling Revenues minus Labour and Capital Equipment Expenditure. The CAGR of Berth Occupancy Revenue, Cargo Handling Revenue, Labour Expenditure, Capital Equipment Expenditure and Total Contribution are displayed in Table 7. Berth occupancy revenue variable shows an increasing trend (i.e. from -0.10% to 14.7%) while compared to Period I and Period II. Cargo handling revenue has a reducing trend when compared to CAGR of Period I and Period II (i.e. from -0.10% to -4.00%). The CAGR of Labour Expenditure is increasing from -5.00 per cent to 18.3 per cent in Period I and Period II. While analyzing the CAGR of Capital Equipment Expenditure, it displays that in Period I has an increasing rate of 21 Per cent than that of Period II (19.2%). Even though the CAGR of these revenues and expenditures are varies altogether, the total contribution does not show an increase in Period II. That is in Period I, the CAGR is 1.60 Per cent but in Period II it becomes nil.

Table 7: Total contribution

Period		Average Berth occupancy revenue	Average Cargo handling revenue	Average Labour expenditure	Average Capital equipment expenditure	Average Total contribution
Period I	CAGR (%)	-0.10	-0.10	-5.00	21.00	1.60
	R^2	0.077	0.007	0.776	0.429	0.026
Period II	CAGR (%)	14.7	-4.00	18.3	19.2	0.00
	R^2	0.972	0.301	0.965	0.960	0.00

Source : Analysed figures of data collected from Administration Report of Cochin Port Trust.

7. Contribution per Ton of Cargo

Contribution per Ton of Cargo is the Total Contribution divided by Tonnage worked. The CAGR of Contribution per Ton of Cargo is shown in Table 8. While comparing the Contribution per Ton of Cargo during Period I to Period II there occur no visible growth rate (i.e. -1% and 0%).

Table 8: Contribution per Ton of Cargo

Period		Average Total contribution	Average Tonnage worked	Average Contribution per ton of cargo
Period I	CAGR (%)	1.60	3.50	-1.00
	R^2	0.026	0.548	0.046
Period II	CAGR (%)	0.00	-0.10	0.00
	R^2	-	0.128	-

Source : Analysed figures of data collected from Administration Report of Cochin Port Trust.

5. Conclusion

In this paper, performance evaluation of seaport has been described. A port's economic objective can be obtained only through the maximum utilization of all the resources. Its performance cannot normally be assessed on the basis of a single value. Here, in the case of Cochin Port, all the financial indicators are pointing out either sluggish growth or negative growth during the periods. Therefore, the Port has to take all required steps to control the expenses and enhance the cargo handling to increase revenue. The Port authorities should take appropriate actions to conquer the situation. If not, this will unfavorably distress the growth of the Port and the bordering Ports will take benefit of the circumstances.

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