

**A COMPARATIVE STUDY ON GARDEN REACH SHIP BUILDERS &
ENGINEERS SHIPYARD AND COCHIN SHIPYARD LTD**

project report submitted in partial fulfillment of the requirement for the award of degree of

MASTER OF BUSINESS ADMINISTRATION (MBA)

In

PORT AND SHIPPING MANAGEMENT

By

ANANDU A VIJAY

Registration No: 1803304004



under the guidance of

Dr. A. MOUROUGANE

Associate Professor & Head

School of Maritime Management

INDIAN MARITIME UNIVERSITY

(Central University, Government of India)

East Coast Road, Uthandi, Chennai Campus

July 2020

DECLARATION

I **Anandu A Vijay**, Registration No. **1803304004** student of **School of Maritime Management, Indian Maritime University, Chennai Campus** pursuing **Master of Business Administration in Port and Shipping Management** declare that this report titled **“A COMPARATIVE STUDY ON GARDEN REACH SHIP BUILDERS & ENGINEERS SHIPYARD AND COCHIN SHIPYARD LTD”** has been prepared by me towards the partial fulfillment of the requirement for the award of degree of **Master of Business Administration in Port and Shipping Management** under the guidance of **Dr. A Mourougane**, Associate Professor & Head, School of Maritime Management, Indian Maritime University, Chennai Campus.

I also declare that this project report is my original work and has not been copied from any other report previously submitted for the award of any Degree, Fellowship, or Other in similar title.

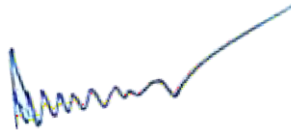


Place: Chennai

Anandu A Vijay

Date: 31 July 2020

Reg. No: 1803304004



Forwarded by: **Dr.A.MOUROUGANE**

Project Guide & Head
School of Maritime Management
Indian Maritime University Chennai
Campus.

ACKNOWLEDGEMENT

My heartfelt and sincere thanks to **Dr. A Mourougane**, Associate Professor & Head, School of Maritime Management, Indian Maritime University, Chennai Campus who gave me the golden opportunity to do this wonderful project on the topic “**A COMPARATIVE STUDY ON GARDEN REACH SHIP BUILDERS & ENGINEERS SHIPYARD AND COCHIN SHIPYARD**” which also helped me in doing a lot of research and I came to know about so many new things.

I pay him deep sense of gratitude for guiding me in each step of the project, alleviating inspiration, encouraging and kind supervision in the completion of my project in spite of his busy schedule.

And I am also thankful to faculty members, library staffs, my family members, my friends and my well-wishers who were very cooperative during my project in providing appropriate guidance and support without whom this project would not have been completed successfully.



Anandu A Vijay

TABLE OF CONTENTS

| Chapter No. | Contents | Page No. |
|--------------------|--|-----------------|
| | DECLARATION | ii |
| | ACKNOWLEDGEMENT | iii |
| | TABLE OF CONTENTS | iv |
| | LIST OF TABLES | vii |
| | LIST OF FIGURES | vii |
| | LIST OF ABBREVIATIONS | viii |
| | EXECUTIVE SUMMARY | ix |
| I | INTRODUCTION | 1-12 |
| | 1.1 Introduction of Shipbuilding | 1 |
| | 1.2 Shipbuilding Industry – Around the World | 2 |
| | 1.3 Indian Shipbuilding industry - A GLANCE | 5 |
| | 1.4 Scope of the study | 8 |
| | 1.5 Review of literature | 8 |
| | 1.6 Objectives of the Study | 11 |
| | 1.7 Methodology of the study | 11 |
| | 1.8 Limitations of the study | 12 |

| | | |
|------------|---|---------------|
| II | PERFORMANCE OF GARDEN REACH SHIP BUILDERS AND ENGINEERS LTD (GRSE) | 13- 19 |
| | 2.1 Introduction | 13 |
| | 2.2 Five Years Financial Performance | 15 |
| | 2.3 Types of Vessels Build | 17 |
| | 2.4 SWOT Analysis | 18 |
| | 2.5 Summary | 19 |
| III | PERFORMANCE OF COCHIN SHIPYARD LTD (CSL) | 20-26 |
| | 3.1 Introduction | 20 |
| | 3.2 Financial Performance | 23 |
| | 3.3 Major Expansion Plans | 24 |
| | 3.3.1 Dry-dock | 25 |
| | 3.3.2 ISRF | 25 |
| | 3.4 SWOT Analysis | 25 |
| | 3.5 Summary | 26 |
| IV | COMPARATIVE ANALYSIS OF THE SELECTED SHIPYARDS | 27 -38 |
| | 4.1 Introduction | 27 |
| | 4.2 Service and Products | 27 |
| | 4.3 Infrastructure Facilities | 28 |
| | 4.4 Competitive Strengths | 29 |
| | 4.5 Financial Performance | 32 |

| | | |
|----------|-------------------------------|--------------|
| | 4.6 Types of Vessels Build | 33 |
| | 4.7 Turnover | 34 |
| | 4.8 Manpower | 36 |
| | 4.9 Net Worth | 37 |
| | 4.10 Summary | 38 |
| V | SUMMARY AND CONCLUSION | 39-42 |
| | 5.1 Findings | 39 |
| | 5.2 Suggestions | 40 |
| | 5.3 Summary | 40 |
| | 5.4 Conclusion | 42 |
| | BIBLIOGRAPHY | 43 |

LIST OF TABLES

| Table No. | Title | Page No. |
|------------------|---|-----------------|
| 1 | 1.2(A) Top Four Shipbuilding Countries | 4 |
| 2 | 1.2(B) Top Shipbuilders Around the World | 5 |
| 3 | 2.2 Five Years Financial Performance GRSE | 16 |
| 4 | 3.2 Financial Performance CSL | 24 |
| 5 | 4.5 Comparison of Financial Performance During the Year 2018-19 | 32 |

LIST OF FIGURES

| Figure No. | Title | Page No. |
|-------------------|--|-----------------|
| 1 | 1.3 Location Map of Major Shipyards in India | 7 |
| 2 | 3.1 Location Map of Cochin Shipyard | 21 |
| 3 | 4.7 Turnover Comparison | 35 |
| 4 | 4.8 Manpower Comparison | 36 |
| 5 | 4.9 Net worth Comparison | 37 |

LIST OF ABBREVIATIONS

| SL No. | Abbreviated Name | Full Name |
|---------------|-------------------------|---------------------------------------|
| 1 | GRSE | Garden Reach Shipbuilders & Engineers |
| 2 | CSL | Cochin Shipyard Ltd |
| 3 | DWT | Dead-weight Tonnage |
| 6 | FDI | Foreign Direct Investment |
| 7 | GDP | Gross Domestic Product |
| 8 | GST | Goods and Services Tax |
| 9 | IT | Information Technology |
| 10 | SEZ | Special Economic Zones |
| 11 | SPCs | Special Purpose Companies |
| 12 | MOD | Ministry of Defence |
| 13 | PSV | Platform Supply Vessel |
| 14 | TMT | Thermo-Mechanical Tensioning |
| 15 | AHTSV | Anchor Handling Tug Supply Vessel |
| 16 | CAD | Computer Aided Design |
| 17 | ISRF | International Ship Repair Facility |
| 18 | CDO | Central Design Office |
| 19 | IMS | Integrated Management System |

EXECUTIVE SUMMARY

World's GDP growth, seaborne trade growth and active fleet growth are interrelated to one other. Seaborne trade growth and active fleet growth in the forthcoming future will be consistent, continuous and stable like the past couple of years. The newbuilding orders have declined year on year since the global economic crisis swept the globe. The shipping industry is gripped with surplus capacity which have lowered the freight rates to unsustainable levels and the second-hand prices have declined. These have led to the imbalance in the supply and demand of the maritime transport.

Demand of eco-friendly ships and shipping services is expected to foster the global shipbuilding market due to due to increasing seaborne trade, economic growth and rising energy consumption. Countries like Japan and Korea, several reforms have been initiated by the government to support shipbuilding industry.

India holds 6.3% market share in the world in number of vessels 0.5% market share in terms of dead-weight tonnage. The Indian shipbuilding industry is gripped with several challenges like tax burden, excess cost of bank guarantee, excess cost of working capital, huge debt problem, funding gap, poor support industries deprived with incentives, lack of educational institutions and research & development facilities, and project delay and time overruns etc. Governments around the world have designated the shipbuilding industry as a strategic sector and have supported the shipbuilding sector through various ways like industrial subsidies, financing schemes and easing taxations. These support measures have helped the shipbuilding industry in the respective countries to achieve and prosperity.

The shipbuilding industry has to have strong group of customers so that their order book is full and to maintain competitiveness. Moreover, it should have enough facilities and technology to cope with other developed nations like the China, Japan and South Korea. Their diversified nature in terms of products and services also makes them take a stand. Along with proper governmental support and supportive reforms to the industry, the shipbuilding industry in India also can take a lead.

CHAPATER - I

INTRODUCTION

1.1 INTRODUCTION OF SHIPBUILDING

Shipbuilding is one of the oldest, most vast and extensively competitive markets in the world. Though shipbuilding industry has immense experiences in surviving ups and downs of the economy, the current global crisis has severely affected the shipbuilding industry. Persistent and stable political conditions backed by a strong government is required in this industry due to its highly capital-intensive nature. There is still high scope for shipbuilding industry to further expand in the coming decade. Nations like Japan, Korea and China are increasing their domestic demand which is expected to attract the shipbuilding market internationally. World's GDP growth, seaborne trade growth and active fleet growth are interrelated to one other. Seaborne trade growth and active fleet growth in the forthcoming future will be consistent, continuous and stable like the past couple of years. However, the expansion of shipbuilding industry may be affected by higher amount of competition, regulatory environmental measures undertaken, enhanced globalization and political and financial instability.

Government support is necessary in the shipbuilding industry in such a time of global financial crisis. The middle class is upgrading their lifestyles in the developing economies of Asia, Africa, and Latin America where disposable incomes will boost the growth in demand for imports of commodities and finished goods. Long-term growth opportunities for all commercial and container ships in particular is a possible consequence for the maritime sector if there is such a significant rise in consumer spending in developing markets. Shipbuilding is the technique of constructing ships and other vessels. Ships are built by shipwrights in shipyards generally. Naval engineering is the science of shipbuilding and ship repairs of both commercial and military vessels. Ship breaking is the process of dismantling the ship.

The United States of America shipbuilding industry once held a dominant position in the world market. The period of World War II there were 57 major private shipyards, most of which were at the top in terms of innovation and use of new technology. New concepts such as multiple

production of standardized designs, welding in the hull construction, prefabrication of large sub-assemblies etc. were developed then, which was subsequently adopted by foreign shipyards. The peak was short lived and this situation changed rapidly at the close of the war. After the war ended, the volume of business dropped to tremendously. The number of major shipyards decreased from 57 to the current level of 15. Employment opportunities dropped by a whopping 80 percent. In addition, demand has fluctuated erratically as years go by. Foreign shipyards, particularly the Japanese, rose to become the industry leaders of ship production and naval engineering.

US shipyards are lagging behind in productivity when compared to other foreign nations and have been in a poor competitive position in the world shipbuilding market for decades. Currently most of American shipping companies' ships are purchased from foreign shipyards due to their prompt delivery less time consuming and lower costs. Americans have witnessed the worst decline of their world shipbuilding market share to a meagre 3.5 percent. It has been generally accepted that there are certain institutional advantages that foreign shipbuilders possess that result in greater efficiency and when compared to US as these are not applicable there. Industrial revolution influenced ship building too. It introduced use of new materials like iron and naval architecture that altered the phase of shipbuilding. Iron was adopted in to construction of ships in discrete areas in a wooden hull to provide more strength. Later its scope of utilization expanded and was to be used in the form of riveted plates that were made waterproof, it was used to build the hull itself.

1.2 SHIPBUILDING INDUSTRY – AROUND THE WORLD

Post the World War II, shipbuilding expanded into a key and highly strategic industry throughout the world. The importance of the industry can be accounted to various factors

- Involvement of skilled workers in large numbers, required in the shipyard, along with supplementary industries that contribute towards ship building such as steel mills, railways and engine manufacturers etc.
- A nation's necessity to manufacture and repair its own fleet that support its primary industries

Shipyards offer huge employment opportunities due to the use of diverse technologies and is a substantial generator of income globally. Due to this, the shipping industry, has veered towards

over-investment (especially state supported) and is conspicuous by the absence of global rules. Industrial structures and related trade has historically been rebuilt around shipbuilding. The backbone of several economies such as Japan, in the 50s and 60s, South Korea in the 70s and more recently China, have all revolved around shipbuilding as a strategic industry with large state supported investments. Croatia, on the other hand has gone in for privatisation in this area.

Due to this, the world shipbuilding market suffers on many aspects. Over-capacities, depressed prices (a brief reprieve seen in 2003–2005 due to strong demand for new ships that exceeded actual cost increases), low profit margins, trade distortions and widespread subsidisation have adversely affected the industry. To counter this, OECD came up with possible solutions. However, they have all failed to take off or be implemented, be it the 1994 international shipbuilding agreement, or the round of negotiations from 2003-2005 finally putting an end to formal negotiations in 2010 as no agreements were finalised. Shipbuilding has declined in countries (like in UK from the 60s) due to high labour costs in addition to removal of state subsidies and unsupported domestic industrial policies. Despite the British yards continuing having the capacity to built all types and sizes of merchant ships.

Other European countries, through protective measures and industrial support policies have reduced this decline. In the US, the Jones Act (which places limitations on the boats that can be utilized for moving household cargoes) has guaranteed proceeded with shipbuilding however at a diminished rate, but such assurance has neglected to punish shipbuilding wasteful aspects. Thus, contract costs are more higher than those of some other nation building oceangoing boats. South Korea is the world's biggest shipbuilder and followed by the nation China. The worldwide market for enormous compartment ships is under the hand of South Korea's huge three shipbuilders, Hyundai Heavy Industries, Samsung Heavy Industries, and Daewoo Shipbuilding and Marine Engineering.

TABLE 1.2.(A) TOP FOUR SHIPBUILDING COUNTRIES

| GLOBAL SHIPBUILDING INDUSTRY | | | |
|-------------------------------------|----------------|--|---|
| Rank | Country | Completed Gross Tonnage in 2018 | Market Share by New Orders in 2018 |
| 1 | South Korea | 49600 | 40% |
| 2 | China | 43900 | 36% |
| 3 | Japan | 13005 | 7% |
| 4 | Others | 5000 | 17% |

Source: www.shipping.nic.in

Demand of eco-friendly ships and shipping services is expected to foster the global shipbuilding market due to increasing seaborne trade, economic growth and rising energy consumption. Countries like Japan and Korea, several reforms have been initiated by the government to support shipbuilding industry. However, factors such as risk of cyber breaches and environmental regulations can hinder the market growth. The global shipbuilding industry is under the domination of three companies: HHI; DSME; and SHI. In terms of new orders, HHI leads the industry and second one is DSME. In future a merger is expected between these two shipbuilders.

TABLE 1.2 (B) TOP SHIPBUILDERS AROUND THE WORLD

| SL.NO | Name of Shipbuilders | Country |
|--------------|-----------------------------|----------------|
| 1 | Hyundai | South Korea |
| 2 | CSIC | China |
| 3 | Imabari Shipbuilding | Japan |
| 4 | Japan Marine United | Japan |
| 5 | CSSC | China |
| 6 | Samsung | South Korea |
| 7 | Fincantieri | Italy |
| 8 | Oshima Shipbuilding | Japan |

Source: www.shipping.nic.in

1.3 INDIAN SHIPBUILDING INDUSTRY – A GLANCE

Ministry of Shipping is the nodal centre responsible for the entire Shipbuilding and Ship repair Industry including allied areas such as management of major ports, national waterways and inland water transport. Division of Shipping is likewise answerable for making approaches and projects regarding these matters and their usage too. India's geopolitical situation in the Indian sea normally will make a heavier interest on the maritime fleet in future. Sea Transport thusly, is a basic foundation for social and monetary turn of events, impacting the pace, structure and example of improvement of a nation like India. Indian shipbuilding got a genuine misfortune and had a long spell of stopping stage because of loss of autonomy and with the coming of iron-fabricated steam ships. Indian shipyards are to a great extent protected from the blast in delivery and shipbuilding industry. Expansion of Indian shipbuilding industry has been very modest in terms of shipping tonnage not exceeding 10% of total requirement by 1990 since only the

Hindustan Shipyard, Visakhapatnam was producing medium sized ocean-going vessel on a regular basis.

A water-shed for Indian shipbuilding industry saw the Government of India introducing a subsidy scheme in then year 2002 for both public and private sector shipyards. The subsidies from government was aimed at addressing the distortions of the domestic economic environment which impacted on domestic shipbuilders adversely and assessing the effect of direct and indirect support given to the shipyards in other countries. This government support has been utilised well by the Indian shipbuilding industry in making its presence felt especially with the upward trend seen in global shipbuilding.

After turn of century, private shipbuilders played a crucial role for emerging India as a leader in the offshore segment of shipbuilding. India has gained a strong base in the niche offshore segment even though India has an insignificant role in the global shipbuilding business. Shipbuilding business in India has recorded a nine-fold increase in overbook within a period of four years. The Indian private shipyards focused in the offshore segment primarily depends on exploration and production (E&P) spending by the oil companies. The E&P spending has become strong globally due to depleting oil reserves and high oil prices.

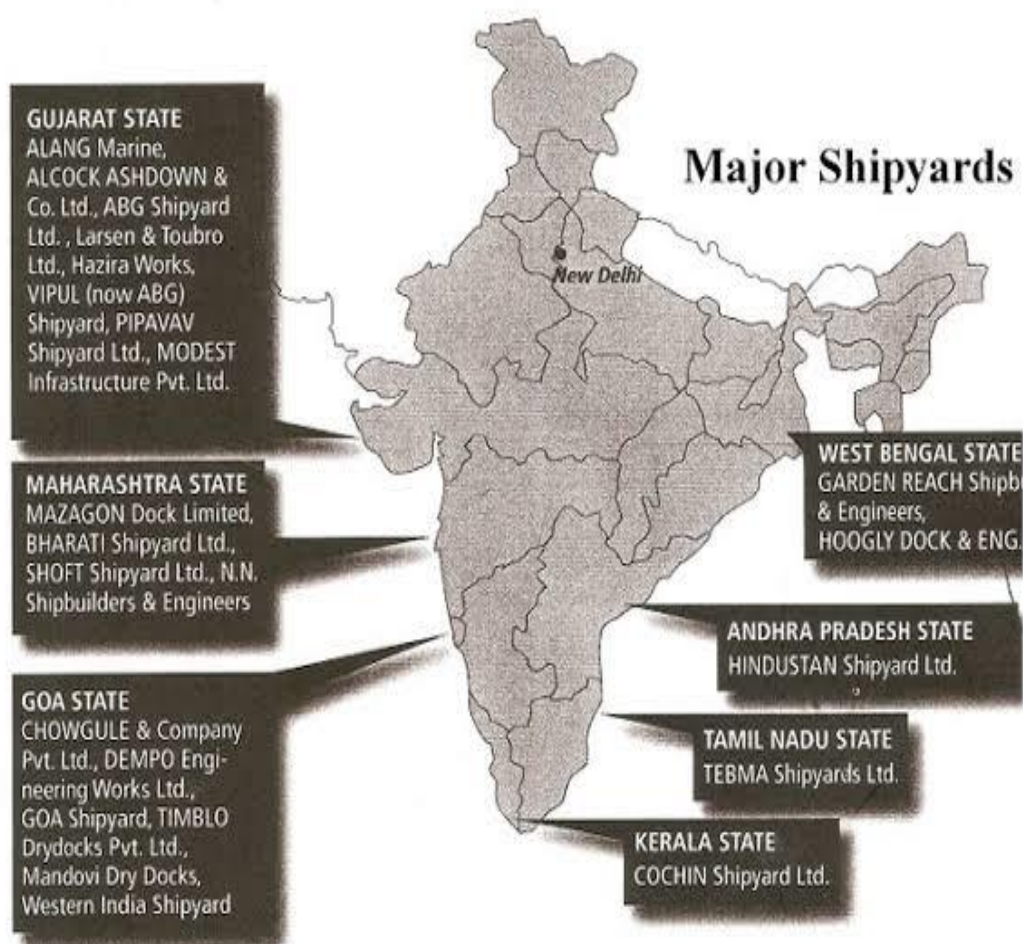
One of the major opportunities for the Indian shipbuilders the huge replacement demand which is expected to come over the next few years. In 1970's when oil industries flourished most of the ships were acquired during this period and 73% of the Anchor Handling Tug Supply Vessel (AHTSV) fleet and 62% of the Platform Supply Vessel (PSV) fleet is more than twenty years old one. As per the recent order book for offshore vessels (AHTS and PSV) forms only 10% of the current global fleet. So, these factors highlight the potential for Indian private shipyards.

A remarkable growth in overbook of Indian shipyards is recorded, so therefore timely execution and delivery would fuel in its growth. Delayed and substandard deliveries would cause negative impact on the long term run of domestic industries and also would affects its goodwill. The demand of the offshore vessels reduced as the crude oil price fall in late 2008. Government of India has also initiated many policies for encouraging private shipbuilders. Th e Government has granted infrastructure status to the shipyard industry in April 2016 in a Gazette released by the Department of Economic affairs in the ministry of finance through an altered 'Harmonized Master List of Infrastructure' in order to avail long term financing at cheaper rates for the sector players of private shipbuilders in India. This policy will give a number of advantages to private shipyards of L&T, Reliance Defence and Engineering Shipyard and ABG Shipyard. Similarly, this

would help ship industry to avail structure dynamic of long-term project loans, long-term funding from infra funds with a lower interest rates and longer tenure equivalent.

For capacity assessment of shipyards rationalisation of guidelines have been promoted. Several exercises were conducted by the ministry along with Indian Coast Guard and Indian Navy in order to support rationalisation of guidelines for capacity assessment of shipyards. Rationalisation and promulgation based on financial criterial has laid a base for issuing RFPs to a number of shipbuilding projects that has been pending. This initiative has reported an improvement of shipyards for the issue of RFPs for shipbuilding projects of the several ships and craft of the Navy and Coast guard more objective and encouraged participation by a more number of Indian shipyards.

FIG 1.3: LOCATION MAP OF MAJOR SHIPYARDS IN INDIA



Source: www.mapsofindia.com

1.4 SCOPE OF THE STUDY

Understand the current state of shipbuilding industry help to carried out major problems in domestic shipyards which leads exploring methods for improving the situation. We all know that there is negligible development in shipbuilding in India as there no players in that field of shipping. Moreover the country needs the importance of shipbuilding industry and its close association with manufacturing and development of other ancillary industry and its need especially in the Indian context. Shipbuilding involves many other industries like the steel which can greatly improve the investment in the countries economy. It also delves into the operational perspective such as planning, product strategy, design, production, shipyard layout etc... helps to recognising the drawback areas in shipbuilding and discuss various issues. Thus the major drawbacks in the shipbuilding industry especially confined to the flaws or the lack of requirement of technology or any aspect inside the yard too. Domestic operational practices and global industry best practices have been studied detail. So that we can also know the presence of shipbuilding in India and its contribution towards the economy. This becomes the focused part of the industry i. e. To improve the current situation by adopting some strategies as well as some tactical and operational decision therefore overcoming the inefficiency and also contributing major share in shipbuilding industry along with major players like the South Korea, Japan and China.

1.5 REVIEW OF LITERATURE

V.N. Girjavallabhan (2018) “Application of one Side Submerged ARC in Shipbuilding”

The Cochin shipyard has one sided submerged arc welding with flux copper backing which used for welding panels, while submerged arc welding with flux asbestos backing which is used in building dock for joining prefabricated units. The author states the setup of the joints is in two cases:

- The required welding procedure qualification tests
- Common weld defects occurring in these methods and the advantages of each process

Monique N. Mathews (2016) “Cinderella on the move”

The Naval sector of India has an ambitious plan for the next 15 years, as the government has made up plans to the revival of the navy and has invested huge funds. The plan includes moving towards indigenous shipbuilding that will make up 80% of it to be domestically produced. The primary work is in progress and the building up of scorpion’s submarine, 3,75,000-ton indigenous aircraft carrier at the CSL. The Vishakhapatnam based Naval Science and Technology Laboratory is doing production of lightweight torpedoes. The growing cooperation with U.S in the development projects is having a positive vibrant on the navy.

Bedi (2016) “Indian Navy receives Landing Ship Tank”

In the early month of November 2006, India’s third largest domestically built large landing ship Tank (LST-L) was handed over the Indian Navy by the Garden Reach Shipbuilders and Engineers (GRSE) in Kolkata. It is 124.8m long 17.5m wide LST-L, designed by the directorate of Naval Design and build at a cost of INR 4 billion and have an innate content of 90% with a displacement of 5600 ton when fully loaded. Shardul was a modified version of Magar -class design fitted with good facilities that go on board the sea King MK42 along with domestically build light helicopter Dhruv. It was armed with four anti- aircraft guns and two WM18 rocket launcher mountings build by private defence contractor Larsen and Turbo (L&T). Similarly INS Kesari and INS Airavat were in advanced stage at GRSE.

Nisith Ranjan Mandal (2015) “Buckling mitigation of stiffened panels through thermomechanical tensioning”

A method of distortion mitigation by countering the comprehensive forces was produced due to welding of stiffness was developed and investigated in overall. This method was known as Thermo-Mechanical Tensioning (TMT). It was founded to be effective one. More number of experiments was carried out in the Cochin Shipyard Limited (CSL). The more use of thin plates at the panel fabrication resulted in the increase of buckling distortion. The competitiveness in cost and time shall be increased by mitigating the distortion during design time. It is observed that TMT shall be applied as an active process control method for avoid buckling in the stiffened panels.

Alan Haig-Brown(2013) “Specialised propulsion systems: High speed PSV diesel power”

The Platform Supply Vessel (PSV) sea Tantalus was the first in a series being build at the Cochin Shipyard. It was a compacted PSV with an 82.2m long, 17m wide and 7.6m depth. Build to the DNV class with an “clean design” notation. The new vessel have a speed of 14 knots and have a 1000 cum of fuel, 1050 cum of water and 250 cum of lubricate oil. It is deliver in the March of 2013 with a short interval by the arrival of sister vessels known sea Titus, sea Tortuga and sea Triumph. The scheduled delivery was expected in the fourth quarter of 2013. It have fire fighting capability for meet fi-fi-f1 notation. Its Notation means it would act as a oil recovery during the time of oil spill. It also carried low flash point liquids (LFL).

Mike Brown (2012) “H-181'-'H-186': Garden Reach's hovercraft”

This article implies the main features of innovative 21m , 800 TD petrol and interception hovercraft that is build by the yard with the collaboration of UK’s Griffon Hovercraft. The GRSE is one of the oldest shipyards and a specialist in building high technology warships and commercial vessel have build six vessels till date that were owned by the Indian Coast guards. It have been design to take multirole in patrolling intertidal waters and open sea, interception, search and rescue. The vessel can be handle a load of 10 crew, 25tonne machinegun and power being provided by twin MTU183 engines.

Darlene J. Gravett (2008) “GRSE pays Indian MoD dividends”

The Garden Reach Shipbuilders and Engineers Limited (GRSE) is a public sector undertaking become the first shipbuilder in India to build a status of Miniratna (category 1) which make the company various powers and autonomy to incur capital expenditure on new projects and purchase of equiptment without getting the permission or approval from the government. It have paid INR 12.38 crores (\$2.7 million) as a dividend to the Ministry of Defence (MOD). The company announced a record pre-tax profits of INR 101.27 crores. It has started to planning to build a tie up with the local shipyards to continuing its expansion.

Sukumar Guha (2007) “Finger-type fitting-out jetty, Calcutta”

The paper shows the scheme and salient features of the finger-type fitting-out jetty constructed for Garden Reach Shipbuilders and Engineers Ltd. Calcutta. The jetty is located within the

premises of Netaji Subhas (NS) Dock of Calcutta Port Trust, and it was used to carry out sophisticated and intricate technological works needed for specialized types of vessels. The paper gave brief idea about the various structural components of the jetty which are innovatively designed so that a construction technique can be adopted for maximum economy, reliability and quality control, considering the existing conditions at site and its geotechnical areas.

P.Valpolini (2006) “India begins work on Project 71 aircraft carrier”

India has invested huge funds in multi-projects in the shipping sector, i.e. Indian Navy. By November 2006, it was expected that the 37,500-ton project 71 aircraft carrier would begin. Cochin Shipyard Limited (CSL) is the hub for the multi projects which is located in the southern part of India in the state of Kerala. For this purpose the CSL received an amount of INR 32.61 billion from the Government. Apart from this the project has faced a delay in the past two years 2014 due to the steel acquisition problems. The government owned public sector company had promised to supply 1000 tons of steel but as it failed in the process, it was compensated by importing 1000 tons of steel from Russia.

1.6 OBJECTIVE OF THE STUDY

- 1) To study and analysis the performance of GRSE Shipyard
- 2) To study and analysis the performance of Cochin Shipyard Ltd
- 3) To study and compare the selected shipyards
- 4) To suggest to improvise the performance of the selected shipyards

1.7 METHODOLOGY OF THE STUDY

This study used the secondary data to compare the shipbuilding yards in terms of technology and financial status and suggests few ideas in improving the shipbuilding industry. The various data collected, analysed with help of information contained in the research paper, report, journals, websites, reference, books, newspapers and magazine.

1.8 LIMITATIONS OF THE STUDY

- The study is limited to comparison to two shipbuilding yards and not the entire industry.
- Since there is no primary study of the subject there is a lack of practicality in the comparison.
- Technical aspect of shipbuilding is not covered in the project

CHAPTER -II

PERFORMANCE OF GARDEN REACH SHIP BUILDERS & ENGINEERS LTD (GRSE)

2.1 INTRODUCTION

Garden Reach Shipbuilders and Engineers (GRSE) Ltd is Located in Kolkata, West Bengal, it is one of the primary India's driving shipyards which builds and fixes mainly Naval vessels. Government of India nationalized GRSE in the year of 1960 and it was also granted the Miniratna status in September 2006. The main Indian shipyard to manufacture 100 warships, it has a huge Computer Aided Design (CAD) place for design and modelling of various ships, and four workshops for plate readiness and steel creation. Principally taking into account the boat and warship building prerequisites of the Indian Navy and Indian Coast Guard, GRSE is an organization in India under the regulatory control of the MoD, they are additionally occupied with designing and motor creation exercises. A significant majority of our revenue from operations comes from its shipbuilding division. It has two river jetties for berthing smaller vessels up to 60 metres (200 ft) in length too.

VISION

To become Global Leader in Warship Construction

MISSION

- To be self-sustaining design potentialities and convey best in class of manufacturing process.
- To fabricate Quality Warships at competitive costs, surpassing client's desire as far as conveyance time and item support.
- To accomplish continued development through consumer loyalty, item advancement, fare potential and representative fulfilment.

CORPORATE OBJECTIVES

- Establish a self-reliant design house
- Productivity Improvement
- Quality Improvement
- Business Development through purposeful advertising endeavours
- Marketing Deck Machinery things, Portable steel scaffolds and Diesel engines
- Creating GRSE Brand
- Supply Chain Management/ Material Management
- Human Resource Development
- CSR & Sustainability

VALUE SYSTEM

Fairness

By empowering vendors, contractors, colleagues and clients to work with it over and over, GRSE endeavors itself to construct a strong reputation for reasonable managing and is stepping great on the way of getting outright straightforwardness in all its dealings.

Community Involvement

GRSE plans to continue being a lively participant both in improving the standard of life for the communities during which it operates and society as an entire.

Generosity

Generosity is that the principle that every member of the organization shares within the Company's success. Rewards and recognition are to become commonplace to reinforce employee motivation, loyalty thereby resulting in higher productivity.

Innovation

GRSE plans to imbibe constant innovation as a core value system strongly in its current and future plan of actions. This is to gauge emerging customer needs and designing best-in-class solutions

to address them. Innovation allows a company in many ways. In the face of ever-increasing competition, it helps to take advantage of emerging opportunities before other competitors and improve the quality of life for its customers.

Pursuit of Excellence

Rather than resting on its past laurels, the company is also driven by the competitive nature of business being foreseen in the near future. Therefore, it strives to develop better products & services and upgrade operational efficiency and productivity of everyone in the organization to enhance customer satisfaction.

Concern for Employees' Welfare

GRSE plans to carry this value system well into the future. This is recognition of the fact that employees continue to work in organizations that care for them. Care would mean supervisors listening to their ideas/concerns. It would also entail a career growth and rise within the organization by providing the employees opportunities to acquire new skills and upgrade themselves. Care would include addressing the needs of managers as well- ensuring the supply of human, technological and financial resources to accomplish the targets assigned to them.

2.2 FINANCIAL PERFORMANCE

The company's performance was healthy during the year 2018-19, because of their great request book position. Gross Revenue has expanded from 1,52,889.40 lakh in 2017-18 to 1,55,766.09 lakh in 2018-19, an ascent of 1.88%. Value of Production has risen from 1,34,552.25 lakh in 2017-18 to 1,37,877.46 lakh in 2018-19, an increment of 2.47%. Net Profit (PBT) shows an increment of 40.09% from 12,774.96 lakh in 2017-18 to 17,896.02 lakh in 2018-19. Book Value per Share has grown from 89.18 in 2017-18 to 90.64 in 2018-19. Net Worth has expanded from ' 1,02,153.54 lakh in 2017-18 to ' 1,03,830.71 lakh in 2018-19, an increment of 1.64%.

TABLE 2.2 Five Years Financial Performance

(in Lakh)

| particulars | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|
| Equity share capital | 12384 | 12384 | 12384 | 11455 | 11455 |
| Reserve and surplus | 84391 | 101042 | 95767 | 90698 | 92376 |
| Net worth | 96775 | 113426 | 108151 | 102154 | 103831 |
| Capital employed | 90810 | 110613 | 98112 | 10154 | 103831 |
| Gross block | 56381 | 56640 | 60454 | 47233 | 39959 |
| Net fixed asset | 36574 | 34370 | 35834 | 38917 | 30225 |
| Working capital | 54236 | 76243 | 62278 | 60249 | 68476 |
| Sales | 230805 | 30668 | 22162 | 239529 | 93721 |
| Value of production | 161266 | 166075 | 92784 | 134552 | 137877 |
| Value added | 47402 | 48182 | 30018 | 41923 | 44217 |
| Profit (loss)before tax | 7602 | 24915 | 2089 | 12775 | 17896 |
| Provision for tax | 3257 | 8710 | 865 | 3535 | 6901 |
| Profit (loss)after tax | 4345 | 16205 | 1223 | 9240 | 10994 |
| CSR reserve | 2 | - | 94 | - | - |
| General reserve | 435 | 1607 | 15619 | 6065 | 6065 |
| Proposed dividend on equity | 2477 | 5322 | 5408 | 5080 | 7961 |

| | | | | | |
|-----------------------------------|------|------|------|------|------|
| Tax on proposed dividend | 504 | 1083 | 1101 | 1034 | 1636 |
| Gross profit/capital employed | 0.08 | 0.22 | 0.02 | 0.13 | 0.17 |
| PBT/Production(VOP) | 0.05 | 0.15 | 0.02 | 0.10 | 0.13 |
| Production/(VOP)/capital employed | 1.78 | 1.46 | 0.86 | 1.32 | 1.33 |
| Value added /production (VOP) | 0.30 | 0.29 | 0.34 | 0.31 | 0.32 |
| No. of employees | 2834 | 2592 | 2401 | 2214 | 2100 |

Source: GRSE annual report 2018-19

2.3 TYPES OF VESSEL BUILD

Shipbuilding division in GRSE is primarily engaged within the construction of warships / vessels for clients mainly within the defence sector, Indian Navy and Indian Coast Guard and interceptor boats for MHA and State Governments towards coastal security. it's gained sufficient expertise in large, medium and little size ships required by Indian Navy and Indian Coast Guard, especially, and usually enjoys excellent reputation for ships that it's built.

Vessels built by GRSE:

- Frigates
- Anti-Submarine Warfare Corvette
- Missile Corvette
- Landing Ship Tank
- Landing Craft Utility
- Survey Vessel
- Fleet Replenishment Tanker
- Fast Patrol Vessel
- Offshore Patrol Vessel

- Inshore Patrol Vessel
- WJ-FAC, Hover Craft
- Fast Interceptor Boat

2.4 SWOT ANALYSIS

SWOT Analysis is a technique for better understanding about Strengths and Weaknesses, and also for identifying both the Opportunities and the Threats of a company. It represents a methodological tool especially designed to help workers and companies optimize their performance, maximize potential, manage competition, and minimize risk. It's about making better decisions, both macro and micro.

STRENGTHS

These are the characteristic limit of the Company which it can use to made vital favorable position over its rivals. The subsequent are the perceived strengths of the Company:

- (a) Good infrastructure for shipbuilding helps in simultaneous construction and fitting out of the various large ships.
- (b) Highly skilled and Competent human resource at each levels.
- (c) Fully computerized SAP-ERP network encompassing the whole gamut of operations.
- (d) Financially strong Company.
- (e) Strong relationships with main customers like Indian Coast Guard and Indian Navy.

WEAKNESSES

The following are the inherent limitation or constraint which creates a strategic disadvantage:

- (a) Constraints of a riverine shipyard due to limitations of the depth and width of navigable channel.
- (b) Location of the Company in thickly populated residential areas having narrow roads.
- (c) Challenging industrial environment around the shipyard.

OPPORTUNITIES

The Opportunities available together with GRSE are listed below:

- (a) Acquisition plan of Indian Coast Guard and Indian Navy focusing towards major expansion of fleet size.
- (b) Acquisition plan of IWAI.
- (c) Export potential especially for large and small size warships and patrol vessels to West Asia, South East Asia, Latin America and African countries.
- (d) Refit and Repair of Ships for Indian Coast Guard and Indian Navy possesses significant business potential.

THREATS

These are unfavorable conditions in Company's environment, which creates a risk or causes damage to the interests of the Company.

- (a) Heavy competition from Private Shipyards.
- (b) Less availability of supporting local vendors for shipbuilding activities.
- (c) Competition from small players for Engineering Products.

2.5 SUMMARY

The GRSE was appropriated by the govt of India in 1960 and delivered the primary ever indigenous warship inbuilt India INS Ajay to Indian Navy in 1961. GRSE is playing a key role in defence preparedness to supply the foremost modern warship aimed toward self-reliance. It has recently completed major modernization of its infrastructure facility and has doubled its capacity. GRSE has the highly experience and technically trained workforce for construction of ships. GRSE is diversified, dividend paying and profit-making Company and therefore the first Shipyard within the country to export warships and deliver 100 warships to the Indian Navy and Indian Coast Guard. GRSE plans to continue being a lively participant both in improving the standard of life for the communities during which it operates and society as an entire. GRSE is one of the global leaders in warship building with self-reliant design capabilities and state of the art manufacturing processes to build quality warship at competitive prices.

CHAPTER - III

PERFORMANCE OF COCHIN SHIPYARD LTD (CSL)

3.1 INTRODUCTION

Cochin Shipyard Ltd (CSL) is that the biggest shipbuilding and maintenance facility in India. The shipyard provides services including building platform supply vessels and double-hulled oil tankers and is building the first indigenous aircraft carriers for the Indian Navy, the INS Vikrant, at present. In the year 1972, Cochin Shipyard was commenced as a Government of Indian company and the first most phase of facilities came into existence in the year 1982. The Government of India has announced plans of divestment to increase capital of Rs. 15 billion (15,000 million Rupees) for its expansion through an Initial Public Offering (IPO) towards the end of the fiscal year in August 2012. However, only August 2017, when the company conducted its IPO and listed its shares on the BSE and NSE did this materialise.

Around one hundred graduate marine engineers are trained each year by the shipyard. MV Rani Padmini was the first ship built by Cochin Shipyard in the year of 1981. India's largest double-hull Aframax tankers each of 95,000 DWT has delivered by CSL. Also under construction are eight platform supply vessels for the Norwegian Sea tankers Management Company. Cochin Shipyard is now engaged in building of India's first indigenous aircraft carrier. First aircraft carrier of the Indian Navy to designed and built in India is INS Vikrant, (formerly, the Project 71 "Air Defence Ship"). This yard can build and repair the most important vessels in India. A hundred trained marine engineers graduate from the shipyard who later join ships both Indian and foreign as 5th Engineers.

LOCATION MAP

Cochin Shipyard Ltd (CSL) is the one of the biggest green field Ship building yard in India and it placed neighboring on the Port of Cochin in the West Coast of India. The yard is situated in 170 acres of land, out of which 60 acres is for future expansion.

FIG 3.1 LOCATION MAP OF COCHIN SHIPYARD



Source: www.cochinshipyard.com

VISION

Become as an internationally preferred shipyard to build world class Merchant and Naval ships, offshore vessels and structures. To Be the market leader in India for ship repairs, including up-gradation and conversions

MISSION

To build and repair ships and off-shore structures with international standards and to provide value added quality engineering services. Enhance corporate growth in competitive environment. To adopt and undertake practices to be a responsible corporate citizen.

OBJECTIVES

- To maintain and enhance shipbuilding and ship repair activities through capacity augmentation and technology up-gradation.
- To continuously endeavor to expand/diversify activities of the shipyard including fixing new facilities.
- To perform research & development in existing and emerging technologies in shipbuilding processes.
- To enhance quality services according to international benchmarking,
- To motivate employees through various specific training programs and provide best practices with clean and safe environment.
- To ensure positive customer-oriented initiatives.

CSL HISTORY

- ❖ Cochin Shipyard was draw up within the year 1969 when a team of specialist surveyed different areas in India before choosing Cochin for the start of the primary Greenfield Shipbuilding Yard within the country
- ❖ The first phase of the yard facilities were completed in the year 1982. It had been built under technical collaboration with M/s Mitsubishi Heavy Industries (M.H.I), Japan. Authorized incorporation of the company was in the year of 1972.
- ❖ The yard incorporated the shipbuilding operations in 1978, ship repair in 1981, Marine Engineering Training in 1993 and Offshore Upgradation was on 1999
- ❖ Cochin Shipyard's recent success in securing export orders has been achieved through sustain improvement in productivity and also aggressive marketing undertaken within the previous couple of years
- ❖ The shipyard began ship repair tasks in the time of 1982 and have attempted repair exercises of a wide range of vessels including upgradation of ships of oil exploration industry. The yard

has, throughout the years, created sufficient capacities and solidarity to deal with complicated and modern ship repair activities.

CSL CREDENTIALS

Shipbuilding

Has built various sorts of vessels including Oil Tankers, Bulk Carriers, Tugs, Dredger, Platform Supply Vessels, Passenger Vessels, Anchor Handling Tug Supply vessels etc. Reputed international clientele. CSL presently constructing Aircraft Carrier and Passenger Vessels and Technology Demonstration Vessels etc.

Ship repair

It is the only yard in the nation which has undertaken dry-dock repairs of Aircraft Carriers INS Vikramaditya and INS Viraat . Can undertake sophisticated and complicated repairs to all or any sorts of vessels including Oil Rigs, Naval and Coast Guard Vessels, Offshore Vessels, Dredgers, Fishing Vessels, Passenger Ships, Port Crafts, and various other Merchant Vessels.

Quality

Cochin Shipyard enhance its Integrated Management System through getting certified under the ISO 9001:2015 - Quality Management System and also ISO 14001:2015 - Environmental Management System standards in September 2018. CSL is going to be upgrading its Health and Safety Management system to the newest ISO 45001:2018 by September 2019.

Offshore

Have undertaken a wild variety of complex and sophisticated offshore upgradation contracts.

3.2 FINANCIAL PERFORMANCE

The Company posted yet another year of impressive performance. Diversified product profile and operational segments supported the Company to attain a turnover of ₹2,962.16 crores for the year as against ₹2,355.12 crores in the year 2017-18. The profit before tax was ₹751.38 crores for

the year as against ₹604.86 crores in the previous year. The net profit was ₹481.18 crores as compared to ₹396.75 crores for the previous year.

TABLE 3.2 FINANCIAL PERFORMANCE OF CSL

(In Crs)

| PARTICULARS | 2018-19 | 2017-18 |
|---|----------------|----------------|
| Gross Income | 3190.27 | 2544.28 |
| Profit before depreciation, finance cost, & tax | 799.83 | 654.8 |
| Finance costs | 14.30 | 11.41 |
| Depreciation & Write off | 34.16 | 37.51 |
| Profit Before Tax | 751.38 | 604.86 |
| Tax Expense | 270.20 | 208.11 |
| Net Profit | 481.18 | 396.75 |

Source: CSL annual report 2018-19

3.3 MAJOR EXPANSION PLANS

CSL is embarking on major expansion plans. The Company will be able to undertake repair of a broader range of smaller vessels and significantly increase ship repair capacities due to the new International Ship Repair Facility. Satisfactory progress has been made on these expansion projects.

3.3.1 Dry-dock

CSL is within the process of fixing a dry-dock. The new dry-dock measuring 310 × 75/60 × 13 m with a 600T Gantry crane are going to get a capability of handling vessels upto Suezmax, Jack-up rigs, Aircraft Carriers of 75000T displacement, LNG vessels etc.

3.3.2 ISRF

The International Ship Repair Facility (ISRF) going to expand and modernise the prevailing ship repair facility in CSL. The ISRF includes 6000T shiplift for ships upto 130 × 25 m with six transfer work stations and allied facilities. Approximately the total outfitting berth is in 1500 meters.

3.4 SWOT ANALYSIS

SWOT Analysis is a technique for better understanding about Strengths and Weaknesses, and also for identifying both the Opportunities and the Threats of a company. It act as a methodological tool which helps both workers and companies to optimize their performance.

Strengths

- Competitive, highly skilled and knowledgeable manpower with an average of 20 years experience at all levels of hierarchy with a 'state of art' design facilities.
- A very good product mix comprising of defence ships, commercial ships, offshore support ships etc.
- Good supply chain network
- Strategic location in this main sea route

Weakness

- Lack of Government support by way of orders/subsidy etc.
- No tariff barriers on import of ship affecting domestic industry
- Non availability of raw materials and major equipment in India.

- Restrictive labor practices

Opportunities

- Growing demand in coastal shipping, inland waterways
- Shifting of international new building to low cost countries like India
- Low labor cost

Threats

- Severe International Competition
- Withdrawal of subsidy for shipbuilding
- Levy of service tax on ship repair other than for Government vessels
- Lack of level playing grounds with foreign yards by way of Government support, level of taxation etc.

3.5 SUMMARY

In 1969 the Cochin Shipyard came into existence and conceived as the first Greenfield Shipyard in India. The shipyard has advanced systems of shipbuilding and has grown to be the greenest the biggest and the most modern shipyard of India. It is the only Indian yard with the experience and facilities for repairing an aircraft carrier. Cochin shipyard also make advanced fast control vessels for the coast guard of India. CSL has successfully react to changes in the shipbuilding needs of the markets and have evolved from constructing bulk carriers to smaller and more technically feasible vessels such as Passenger Vessels and Offshore Support Vessels. CSL have also undertake repairs of varied range of vessels including upgradation of ships of the oil exploration industry also as periodical maintenance, repairs and life extension of ships. CSL is presently one among the foremost performing shipyards in India.

CHAPTER- IV

COMPARATIVE ANALYSIS OF THE SELECTED SHIPYARDS

4.1 INTRODUCTION

Comparative analyses are significant tool to both the business and its potential investors. The analysis is a method for better plan or forecast and allows the business to identify and correct assumptions to avoid uncertainties. The item-by-item comparison of two or more comparable alternatives, products, processes, systems or sets of data helps the business to understand their activities more clearly. The major objective of comparative analysis is to better understanding about the performance of company through comparison. The project about comparative analysis of two companies of same industry. In this regard the companies which were chosen to analysed are comparative analysis between Garden reach ship builders and engineers ltd and Cochin shipyard ltd. The companies are well reputed in the market and deal in a very wild range of vessels.

4.2 SERVICE AND PRODUCTS

Garden Reach Ship Builders and Engineers Ltd (GRSE) is mainly focusing to meet warship building requirements of the Indian Navy and Indian Coast Guard. They are also involved in engineering and engine production activities along with their ship building (Warship) proficiency. The engineering division of GRSE produces pre-fabricated portable steel bridges, deck-machinery items and marine pumps. A significant majority of revenue from operations is a contribution of its shipbuilding division.

Cochin Shipyard LTD (CSL) which is highly reputed and well known for building high quality ships and is the first Greenfield and India's most modern shipbuilding yard. Cochin Shipyard features a proven expertise and is perfectly positioned to supply a versatile range of products. CSL handles upgradation works and repairs all type of vessels which includes ships from oil industries. It started offering ship repair service since 1982.

According to the services and products offered by both the shipbuilding yards i.e., GRSE and CSL both of them have a good share in the shipbuilding industry but the major operational difference

between them is, CSL has delivered and repaired more high quality ships and catered to the market of Oil industry which is always a high demanded one. So, therefore from the comparison of these two on their services and products CSL has more take over the GRSE as they do more commercial shipbuilding and ship repair which caters to the economy of the nation as well as the shipbuilding industry.

4.3 INFRASTRUCTURE FACILITIES

The mainstream activities that are facilitated by the supporting structure will have either direct or indirect impact in the production of goods and services. As infrastructure is directly related to productivity, effective infrastructure is vital for enhancing reputation.

GRSE consist of following Infrastructure

- One Dry Dock which measuring 180 X 29 X 10 M of 10,000 DWT launching capacity
- One Inclined Berth which also measuring 180 X 23 M of 4,500 DWT launching capacity
- Over the Dry Dock and Inclined Berth have Portable shelters
- Facility pf Module Hall for the purpose of constructing pre-outfitted blocks of up to 200 tonnes
- Paint and Blast Cell
- Two more additional River Jetties
- Central Pier and Amenity Block
- Two humidity-controlled and air-conditioned shops with six bays ranging
- Capability of constructing crafts up to 20 M
- Two River Jetties which able berthing of vessels up to 60 M in length

Infrastructure facilities in CSL are

- Plate Bending Roll
- Horizontal Boring Machine Lathes
- Drilling Machines
- Shaping Machine
- Vertical Milling Machine

- Plano Miller
- Horizontal Drilling Machine
- Dynamic Balancing Machines Grinding Machines
- Slotting Machine
- Building Berth
 - Measures 180 X 25 M
 - Equipped with 2 X 40/10 tonnes Cranes and supporting fabrication shops

GRSE is currently at a position to build a greater number of warships using their Advanced Modular Integrated Shipbuilding technology, which leads to be the best in the world due to their infrastructure facilities. CSL specialize in the continual and sustainable improvisation of the infrastructure has been an important element within the quality and timely completion of the final products and services.

Comparing both the shipyards on the basis of infrastructure facilities, in case of GRSE it requires and has very high level of technology and infrastructure as it produces navy ships which naturally requires very strong and effective technology and in case of CSL, as it produces high quality ships for commercial industry it obviously has the required technology. GRSE has quality facilities over CSL and it produces more powerful and strong navy ships also they possesses required level of high technology and infrastructure.

4.4 COMPETITIVE STRENGTHS

Competitive advantage means superior performance of a business over its competitors. Offering clients better and greater value allows a company to achieve superior margins compared to its competition and generates value for the company and its shareholders. These factors allow the productive entity to generate more superior margins compared to its market rivals.

Competitive strength of GRSE are attributed to a variety of factors that includes:

- Integrated Shipbuilding Facilities and Modern Manufacturing Platform to deliver quality products

GRSE has a significant edge over other domestic defence shipyards due to its state-of-the-art facilities and vast technical expertise. Modernization of its facilities and adoption of Information Technology, over the years, has helped the Company significantly improve its manufacturing and other functional processes. The facilities in the Company can simultaneously produce eight large ships and twelve medium/ small ships.

- Central Design Office

The Central Design Office (CDO) in GRSE has undertaken design research and development with efficient skilled workers. The CDO team used various software under it such as Aveva Marine, Auto CAD for drafting, NAPA in Naval Architectural design and also in the structural analysis. The CDO team achieved remarkable success with designs. Beginning from product conceptualization, system integration, design till project management, it has provided number of solutions to the customers

- Dedicated Relationships with Indian Coast Guard and Indian Navy

The company has a strong relationship with the Indian Coast Guard and Indian Navy since INS Ajay - the first indigenous warship constructed by GRSE for the Indian Navy in the year 1961. Till 30 Mar 2019 the Company has also delivered 32 ships to Indian Coast Guard and 67 ships to the Indian Navy.

- Experienced Workforce

The Company has a technically qualified and experienced workforce, including a professionally qualified senior management team. CSL have possess experienced workforce in varied field such as shipbuilding, design and engineering, operations, order management, human resources, finance and after-sales services. The Company also having a large number of experienced and talented engineers.

Competitive advantages can be found in CSL are:

- Shipbuilding

It built various types of vessels including Oil Tankers, Bulk Carriers, Tugs, Dredger, Platform Supply Vessels, Passenger Vessels, Anchor Handling Tug Supply vessels etc.

- Ship Repair

It is the only yard in India which has undertaken dry-dock repairs of Aircraft Carriers INS Viraat and INS Vikramaditya. It can undertake sophisticated and complicated repairs to all types of vessels including Offshore Vessels, Port Crafts, Oil Rigs, Dredgers, Naval and Coast Guard Vessels, Fishing Vessels, Passenger Ships and all other Merchant Vessels.

- Offshore

Have undertake a wild variety of complex and sophisticated offshore upgradation contracts.

- Quality

Cochin Shipyard improved its Integrated Management System (IMS) by getting certified under the ISO 14001:2015 - Environmental Management System and ISO 9001:2015 - Quality Management System standards in September 2018. CSL also conforms to OHSAS 18001:2007 - Occupational Health and Safety Management System.

Though GRSE produces strong and technologically advanced navy ships, its range of customers is negligible when compared to CSL as it produces a variety of ships to a variety of customers and can be stronger economically. CSL has more quality contracts and offshore facilities when compared to GRSE. So, CSL has taken over GRSE in terms of competitive advantage.

4.5 FINANCIAL PERFORMANCE

TABLE 4.5 COMPARISON OF FINANCIAL PERFORMANCE DURING THE YEAR 2018-19

| Particulars | 2018-19 (In crs) | | % Change (Increase/Decrease) |
|------------------------------|------------------|---------|---------------------------------|
| | GRSE | CSL | |
| Revenue from operation | 1378.77 | 2255.85 | 63.6 % |
| Other income | 98.23 | 127.15 | 29.4% |
| Total Revenue from Operation | 1476.23 | 2383 | 61.4 % |
| Cost of material consumed | 542.5 | 983.6 | 81.3 % |
| Employees benefit Expenses | 298.59 | 271.39 | (9.1 %) |
| Finance cost | 7.96 | 11.41 | 43.3 % |
| Depreciation | 27.08 | 37.51 | 38.5 % |
| Other Expenses | 112.4 | 158.27 | 40.8 % |
| Provisions and Contingencies | 37.43 | 58.26 | 55.6 % |
| Profit Before Tax | 450.2 | 862.56 | 91.5 % |
| Provision for Tax | 59.02 | 88.4 | 49.7 % |
| Profit After Tax | 391.18 | 774.16 | 97.9 % |
| Profit/Loss for the Period | 342.38 | 774.16 | 97.9 % |

Source: Annual report both GRSE & CSL 2018-19

When comparing to GRSE, the company CSL has higher total revenue earned from its operation with an increment of 61.4% during the period. The expenses incurred for cost of material consumed by CSL is more than GRSE by 81.3%. It implies that CSL used more number of raw materials for production of finished goods. GRSE possesses with higher number of manpower, so it leads to increment of employees benefit expenses of GRSE about 9.1% when compared to CSL. Analysis of depreciation cost of both companies shows that CSL faces higher cost than GRSE. This implies that CSL has more equipments for production activities. CSL has paid more tax than GRSE with an increment of 49.7%. Finally, the statements of CSL and GRSE show that CSL is more profitable than GRSE with a percentage of 97.9%.

The comparison helps to understand that the company CSL has more potential to generate profit. CSL has shown an impressive performance in terms of financial statements which is all due to the factors like competitive advantage, its variety of services and products. Hence overall in terms of financial highlights CSL has a take ahead.

4.6 TYPES OF VESSEL BUILD

Shipbuilding means that erection of ships and other floating vessels. It is the complex of activities concerned with the design and fabrication of all marine vehicles.

Vessels built by GRSE:

- Frigates
- Anti-Submarine Warfare Corvette
- Missile Corvette
- Landing Ship Tank
- Landing Craft Utility
- Survey Vessel
- Fleet Replenishment Tanker
- Fast Patrol Vessel
- Offshore Patrol Vessel
- Inshore Patrol Vessel

- WJ-FAC, Hover Craft
- Fast Interceptor Boat

Vessels built by CSL are:

- Indigenous Aircraft Carrier for the Indian Navy
- Technology sophisticated Vessel (Special Purpose Vessel) for DRDO
- 500 passengers cum 150 MT cargo vessel for A&N Administration
- Tuna Long liner Cum Gil netter Fishing Boat for Tami Nadu
- Brows & pontoons for Indian Navy
- Marine Ambulance Boat for Kerala Government
- Floating Border Outpost vessels for Ministry of Home Affairs

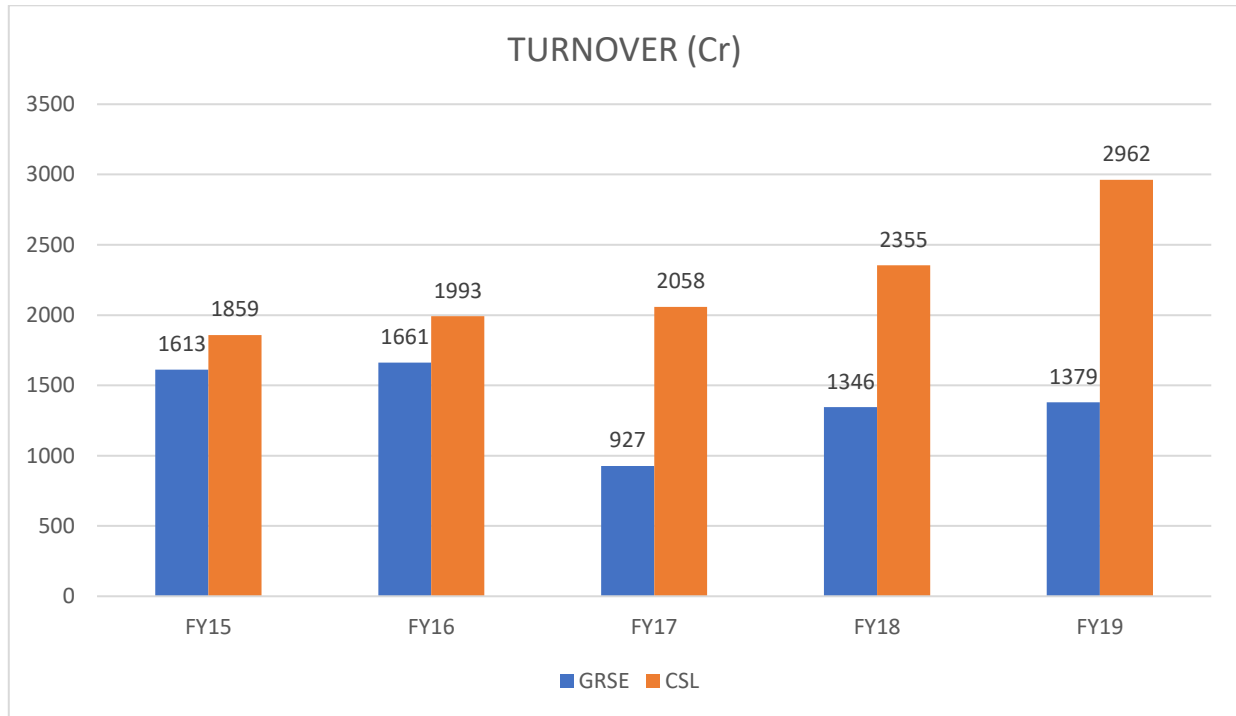
GRSE shipyard has attained enough experience and expertise in every part of the shipbuilding industry which is necessary for navy and Indian Coast Guard which specifically has an advantage of perfect reputation for ships which it is constructing. The Company has built some of the largest ships in India and is presently building the prestigious Indigenous Aircraft Carrier for the Indian Navy. CSL have successfully react towards changes happening in the shipbuilding markets.

GRSE producing a variety and large number of ships only under the category of naval ships but where as in terms of CSL it produces ships from bulk carriers to passenger vessels and even offshore vessels. They have adapted to the fluctuating market which GRSE doesn't has and will never have as navy ships don't have a commercial market. Hence in terms of types of vessel built CSL has an advantage over GRSE.

4.7 TURNOVER

The concept Turnover is that calculates how speedily business running its operations. Most often, turnover helps to understand how quickly a company gain cash from accounts receivable or how quick the company sells its inventories. The usual measures of corporate turnover consider the ratios involving accounts receivable and its inventories.

FIG 4.7 TURNOVER COMPARISON



Source: Author (Data compiled from respective annual reports)

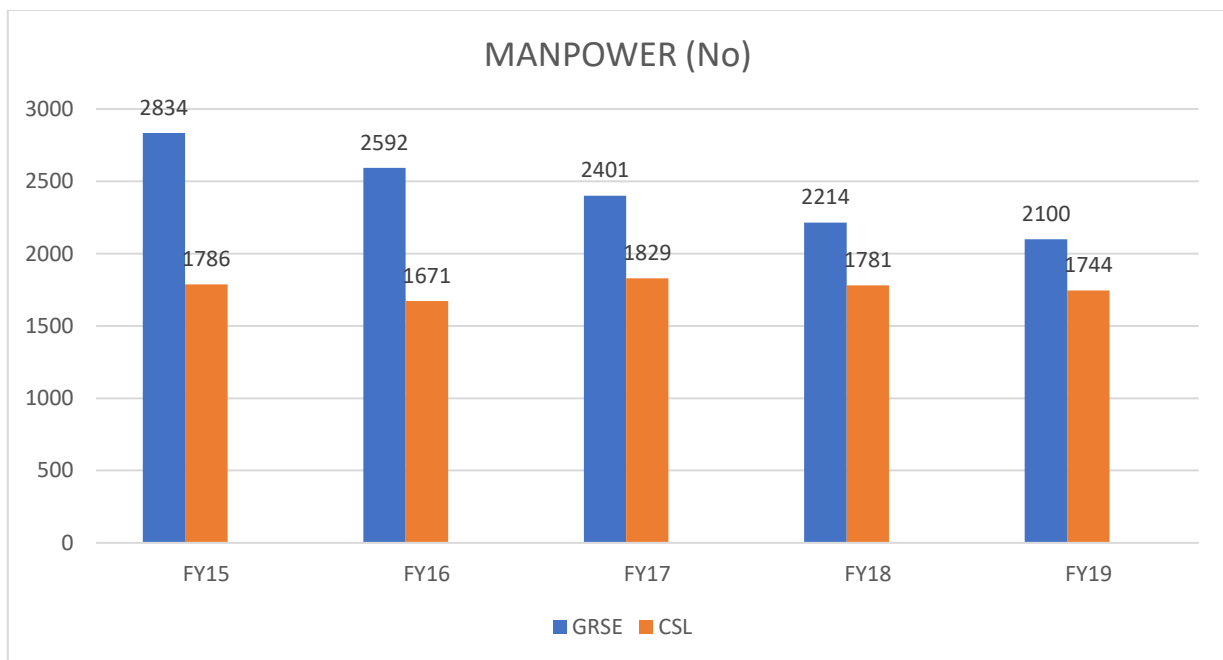
The bar graph demonstrates the total Turnover of the companies GRSE and CSL from the financial year 2015 to 2019. In an overall, it is clear that the company CSL always shows an upward trend throughout the period while GRSE shows variations throughout the financial years.

More specifically, the company CSL shows steady growth from the financial year 2015 to 2018, however in the financial year 2019 company CSL surprising growth reaching its turnover to 2355 crores. On the other hand, the company GRSE has Turnover of 1613 crores in the financial year 2015 which dipped to 927 crores in the financial year 2017 and then raised to 1379 crores in the financial year 2019.

4.8 MANPOWER

Manpower is proportional to productivity. The more number of people are ready to work, the projects can be completed quickly or the additional projects a company can take on. Conversely, a shortage of sufficient manpower prevents businesses from finishing tasks. If in a business entity, the number of workers available are more than the work it shows that the business have manpower surplus. In this type of organization, some people will remain without work. This would be an extra cost to the business, but sometimes organizations hold some additional manpower with them to use when there is an unexpected need arises.

FIG 4.8 MANPOWER COMPARISON



Source: Author (Data compiled from respective annual reports)

The bar graph illustrates the total Manpower of the companies GRSE and CSL from the financial year 2015 to 2019. Overall it can be seen that the company GRSE drop steadily while the company has a fluctuating trend.

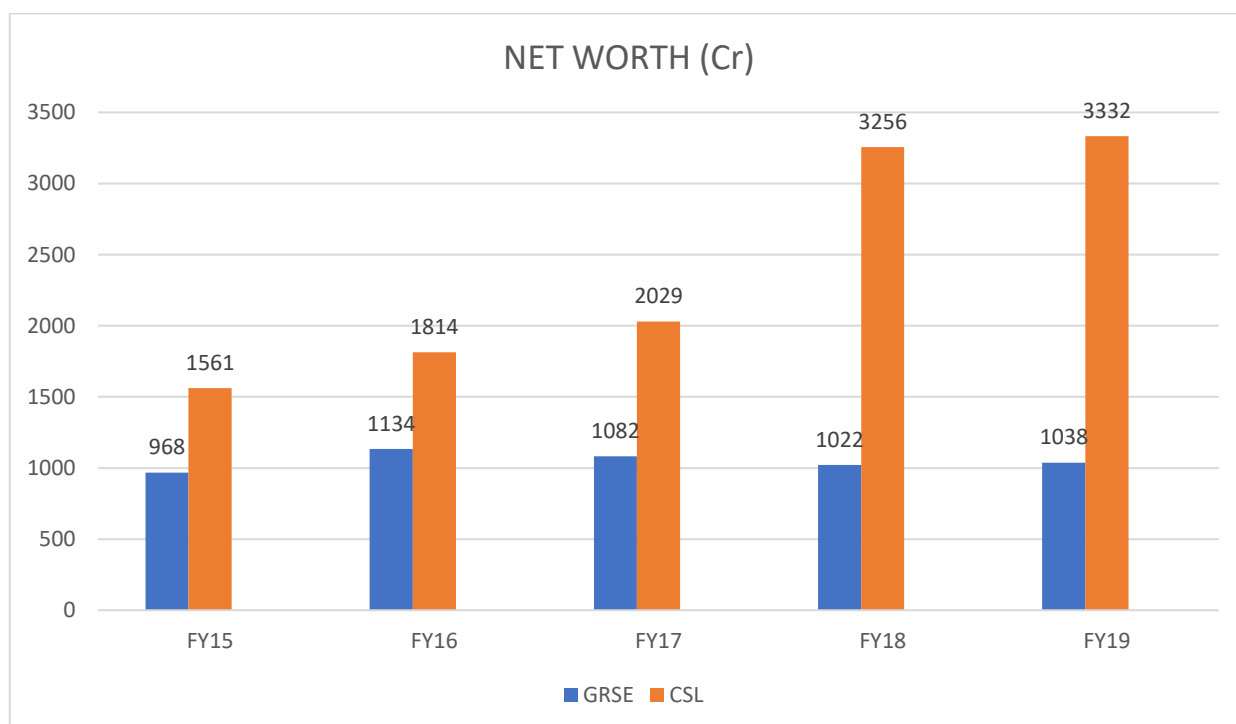
More specifically in the year 2015 the company GRSE has a Manpower of 2834 which dipped to 2100 Manpower in the financial year 2019. However, the company CSL has a Manpower of 1786

in financial year 2015 and increased to 1829 in the year 2017 and finally decreased to 1744 in the financial year of 2019.

4.9 NET WORTH

Net worth is the measure of the wealth of a business, corporation, or person as well as various sectors and countries. The net worth can be defined as the difference between assets and liabilities. It is an important tool to gauge a company's health and also helps to provides a snapshot of the firm's current financial position. Similarly, a negative or low net worth will relate with a lower credit rating and weaker financial strength.

FIG 4.9 NET WORTH COMAPRISON



Source: Author (Data compiled from respective annual reports)

The above chart depicts the Net worth of the companies GRSE and CSL. In an overall, it is clear that the company CSL is worthier than the company GRSE, especially in the financial year 2019 CSL reached its peak point of Net worth.

More specifically, the company CSL always shows an upward trend especially in the year of 2018 company CSL has dramatic change in its Net worth by reaching 3256 crores. The company GRSE has fluctuations in its Net worth.

4.10 SUMMARY

Both the companies are dealing in shipbuilding and ship repair for many years. In various perspectives CSL and GRSE Shipyard shows its difference. The GRSE is primarily focusing on shipbuilding requirements of Indian navy and also Indian coast guard. But whereas CSL produces variety of ships from bulk carriers to passenger vessels and even offshore vessels. On the basis of infrastructure GRSE is stronger than CSL because they construct Navy ships, so obviously it should possess greater infrastructure facilities. CSL has engaged in constructing various type vessels so they have more competitive advantage over GRSE. GRSE having a turnover of 1378.77 crores and CSL having 3190.27 crores, CSL has shown an impressive performance in terms of financial statements. GRSE is equipped with a greater number of manpower but in terms of net worth the company CSL shows steady growth from the financial year 2015 to 2019 over GRSE shipyard. So, all these comparative factors show that CSL has a strong backbone in Shipbuilding business over GRSE. All these factors make CSL to provide quality services and also can retain their customers and can find new ones as well.

CHAPTER - V

SUMMARY AND CONCLUSION

5.1 FINDINGS

- The world shipbuilding market is expecting to grow in future due to increase in demand of seaborne trade and also economic growth, shipping services, energy consumption and demand of eco-friendly ships.
- The world's largest shipbuilder is South Korea and followed by China.
- India's geopolitical position in the Indian ocean naturally helps in heavier demands on the naval fleet in future.
- GRSE is a shipbuilding company primarily focusing to the shipbuilding requirements of both Indian Coast Guard and the Indian Navy.
- Having modernised its infrastructure facilities, GRSE is first shipyard to build and deliver 100 warships.
- GRSE's business operations are concentrated in single location (Kolkata). This means the shutdown or loss of its operations at its shipyard due to unexpected changes can theoretically have an adverse impact on operations, business and finances.
- GRSE over 90% of its revenues are from building vessels. So, GRSE have a substantial reliance on the Indian Coast Guard and Indian Navy for revenue.
- In 1981 MV Rani Padmini was the first ship to leave the Cochin Shipyard.
- Both defence and non-defence spaces got shipbuilding and ships repair services from Cochin Shipyard.
- CSL is the only yard in India which has undertaken dry-dock repairs of Aircraft Carriers INS Viraat and INS Vikramaditya.
- In terms of Turnover company CSL always shows an upward trend while GRSE shows variations throughout the financial years of 2015-2019.
- CSL is worthier than the company GRSE, especially in the financial year 2019 CSL reached its peak point of Net worth.

5.2 SUGGESTIONS

- Cochin Shipyard should increase the level of technology to reduce working burden and error of employees, thereby increasing the productivity and efficiency
- Every Shipyards have to ensure that state and central government supports regarding subsidy and higher rate of subsidies which attracts them to invest more.
- CSL has to introduce more personnel training sessions which enables the employees to handle the higher level of automation
- Proper disposal of the constructed waste materials whereby it shows the concern towards the environment which has become a highly noted aspect of any ship building yard.
- GRSE should provide various training for upgradation of modern technological aspects among employees
- Shipbuilders must develop comprehensive strategies and detailed plan to becoming more competitive.
- GRSE have to use the land area across the entire ship building yard by utilizing abandoned and idle buildings which proves a efficient utilization of resources
- Every Shipyards should understand the changes quickly by taking fast and efficient decisions that would boost the growth of the company.

5.3 SUMMARY

A shipyard otherwise it is named as dockyard, is a place for the builds and repairs of ships. These are may yachts, military vessels, cruise liners or other cargo or passenger ships. Although Asia has its importance, the shipbuilding industry is more centralized in Europe, where countries have larger and fewer companies. All the construction works were being done beside the sea or tidal rivers for easy access of their ships.

Shipyard contains specialized cranes, dust free warehouses, dry docks, painting facilities. However, a vast area is essential for the building of the ships. The Government of India launched the venture Cochin shipyard Ltd (CSL) in the year 1972. It is a forebear in the shipbuilding and repairing industry. CSL have the capacity to satisfy the demands of the commercial customers outside countries such as the Clipper Group (Bahamas), Vroon Offshore (Netherlands), National

Petroleum Construction Company (Abu Dhabi) and SIGBA AS (Norway). The Company has built and repaired a number of the most important ships in India and is presently building the distinguished Indigenous Aircraft Carrier for the Indian Navy. Over the years, CSL has successfully react to changes in the shipbuilding needs of the markets and have evolved from constructing bulk carriers to smaller and more technically feasible vessels. CSL also take care of repairs of different range of vessels which covers upgradation of ship, periodical maintenance and repairs of life extended ships.

GRSE is a Indian shipbuilding company that comes under the MOD (Ministry of Defence). GRSE mainly set apart their major revenue for shipbuilding. Their major job is building the ships for Indian navy and Indian coast guard. GRSE is wide and major profit-making company within the nation and also the first shipyard that export warships to other countries. Apart from its ship and warship building potential, company is also engaged in constructing of engine production and various other engineering activities. Most of the things produced by GRSE are distributed to central and state governments and other entities owned and operated by such governments.

With an infrastructure that combines economy, scale and adaptability, the Cochin Shipyard Ltd (CSL) is one of the leading shipbuilding and repair yard in India. Diversified operational segments and merchandise profile helped the CSL to gain a turnover of ₹2,962.16 crores for the year as compared to ₹2,355.12 crores within the fiscal year 2017-18. , the company CSL shows steady growth from the financial year 2015 to 2018, however in the financial year 2019 company CSL surprising growth reaching its turnover to 2355 crores. On the other hand, the company GRSE has Turnover of 1613 crores in the financial year 2015 which dipped to 927 crores in the financial year 2017 and then raised to 1379 crores in the financial year 2019. Based on the Net worth of the companies GRSE and CSL, clear that the company CSL is worthier than the company GRSE, especially in the financial year 2019 CSL reached its peak point of Net worth.

5.4 CONCLUSION

Today Cochin Shipyard is a very crucial juncture of growth and development. While sharpening its core competencies in the field of shipbuilding and ship repair, the Company is look forward for new avenues, facilities and more business opportunities. Cochin Shipyard simultaneously focused on coastal shipping and defence vessels. The deep-sea fishing inland waterway segment and coastal shipping prove to be a significant potential in the future. However, GRSE shipyard has a diverse and rich variety of vessels delivered as per their orders. The numbers in order book and the delivery history clearly induces confidence in customers that further boost the business both these shipyards which are the best facilities available in the country. It is driven by innovation and techniques in the production processes coupled with enhanced efficiency and utilization of capital for resource optimization. They are continuing to utilize existing capabilities through strong design team, process standardization, improving procurement process in line with global standard and developing reliable partnerships.

Therefore, from this we can conclude that any shipbuilding yard or on the whole, the shipbuilding industry has to have strong group of customers so that their order book is full and to maintain competitiveness. Moreover, it should have enough facilities and technology to cope with other developed nations like the China, Japan and South Korea. Their diversified nature in terms of products and services also makes them take a stand. Along with proper governmental support and supportive reforms to the industry, the shipbuilding industry in India also can take a lead.

BIBLIOGRAPHY

Journals

- 1) David, Eyres. (2012). *Ship construction* (7th ed.). Great Britain, Butterworth-Heinemann.
- 2) Daniel, Todd. (1985). *The world shipbuilding industry* (1st ed.). England, Croom Helm.
- 3) Volker, Windeck. (2012). *A liner shipping network design* (3rd ed.). New York, Springer fachmedien Wiesbaden.
- 4) Hwasook, Nam. (2011). *Building ships building a nation* (8th ed.). United States, University of Washington press.

Websites

- 1) <http://www.Cochin Shipyard.com/>
- 2) <http://www.Garden Reach Shipbuilders & Engineers.com/>
- 3) <http://www.maritimegateway.com/>
- 4) www.shipping.nic.in