A STUDY ON GROWTH OF ICD IN INDIA
(With Special Reference to Container Corporation of India)

A dissertation submitted to the School of Maritime Management, Indian Maritime University in partial fulfilment for the requirements for the award of degree in **MBA-International Transportation and logistics Management.**

Submitted
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DECLARATION

I, **ALAN SHA (Reg. No. 2003305002)**, student of School of Maritime Management, Indian Maritime University – Chennai Campus, hereby declare that this project report titled **A STUDY ON GROWTH OF ICD IN INDIA (WITH SPECIAL REFERENCE TO CONTAINER CORPORATION OF INDIA).** submitted in partial fulfilment of the requirement for the degree of **Master of Business Administration in International Transportation and Logistics Management** is my original work carried under the guidance of my project guide. It has not formed the basis for the award of any Degree/Diploma of any University/Institution. The information submitted is true and original to the best of my knowledge.

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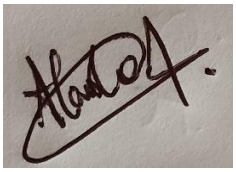

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CERTIFICATE

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INDIAN MARITIME UNIVERSITY, CHENNAI.

This is to certify that the project report entitled "**A STUDY ON GROWTH OF ICD IN INDIA (WITH SPECIAL REFERENCE TO CONTAINER CORPORATION OF INDIA).",** submitted to the School of Maritime Management, Indian Maritime University, Chennai Campus., in partial fulfilment for the award of the degree of Master of Business Administration in International Transportation and Logistics Management, is a record of work carried out entirely by **Alan Sha,** Reg. No. **2003305002.**

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EXECUTIVE SUMMARY

*Title of Dissertation**: A Study on growth of ICD in India (with special reference to container corporation of India)***

Degree: **Master of Business Administration, International Transportation and Logistics Management**

It is a rundown of the practical knowledge and critical information collected from secondary sources of data and data gained during an internship training at Container Corporation of India. The report includes information on the emergence of containerization, which in turn led to the coming up of Inland Container Depots on hinterlands. The functioning of an ICD was observed by closely analysing the activities of Container Corporation of India.

This work gives detailed insights into the multimodal mode of transportation and the rising use of dry ports in the logistics sector. With reference to CONCOR, the activities taking place at an Inland Container Depot was identified and studied theoretically. The documentation process flow of Export-Import terminal and Domestic terminals was gathered to analyse the easiness of usage of dry ports for manufacturers and traders.

The paper brings out issues prevailing in the current regulatory environment and suggests some strategies as way forward.

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ABBRIEVIATION USED

BLC- Bogie Low Carrier

BLL- Bogie Low Longer Container

BoE- Bill of Entry

BPC- Brake Power Certificate

CBIC- Central Board of Indirect Tax and Customs

CFS- Container Freight Station

CHA- Customs House Agents

CONCOR- Container Corporation

CPDA- Central Parties Deposit Account

CWC- Container Warehouse Charge

DGS- Director General of Shipping

DTMS- Domestic Terminal Management System

EGM- Export General Manifest

ETD- Explosive Trace Detection

ETMS- Export Terminal Management System

EXIM- Export Import

FCL-Full Container Load

FMCG- Fast Moving Consumer Goods

GDP- Gross Domestic product

HC- High Cube

ICD- Inland Container Depot

ICEGATE- Indian Customs Electronic Gateway

IWB- Inland Way Bill

LCL- Less than Container Load

MIS- Management Information System

OTL- One Time Lock

RFID- Radio Frequency Identification

SAFTA- South Asian Free Trade Area

CHAPTER 1
INTRODUCTION

1.1 Significance of the Study

Trade is an unavoidable part of any economy, as it raises living standards, creates jobs, and so contributes to a countries economic development. Internally within the country as well as across countries, trade can take place. Globalization leads to an increase in international trade, which provides opportunities for a higher standard of living, more employment, and access to a wider range of products. Because all countries have resource limits and an advantage over resources, trade is necessary for an economy's survival. Our commerce with Arab countries for oil goods is a good example of this. As a result, an economy cannot exist without trade. Trade is all about exchanging anything for which we put our labour in exchange for a monetary reward.

Realizing the importance of trade our country has signed several trade agreements with other countries such as Asia Pacific Trade Agreement (ASTA), Association of South East Association Nation (ASEAN), Global System of Trade Preference (GSTP), South Asia Free Trade Agreement (SAFTA) etc. Primary objective of forming trade agreements is to create a better ecosystem for having good trade between nations. Either by exporting and importing goods trade happens between nations. Major trading partners with India are US, China, UAE, Saudi Arabia etc. Of this export that India has is highest with United States and imports are higher with imports it is China. Logistics helps in the flow of goods from to the end consumer. In between this process their plays a variety of factors supplier which facilitates logistics such as roads, railways, sea port, airport, warehouse etc. Logistics plays a crucial role because without successful implementation of logistics a product can reach its end consumer. By facilitating the movement of products from its origin to the ended, logistics considerably helps in the economic development of the country. Logistics is all about transporting the right product in the right time at the right place and also to the right consumer. There are three primary modes of transportation of goods; rail, road, air, sea. 90% of the trade is happening through sea. Some cargo can't fit to other modes of transportation because of its size, volume and weight. Sea mode of transporting goods is very suitable for such kind of goods. Transporting large volume of cargo with cheapest rate is the attract feature that sea transport possess. But it has certain limitation in terms of transit time when compared to other mode of transportation. It has been

found that this mode of transportation is very environment friendly and has worldwide coverage. Goods like coal, iron ore, petroleum products use sea transport Air mode of transportation only accounts a small proportion of our total trade. It is primarily for cargo which is of high value. This is one of the most expensive modes of transportation. Some of the features of air mode of transportation are less transit time, less documentation, reliability in landing etc. This mode is suited for perishable goods like food, flowers, pharmaceutical etc. Rail mode of transporting goods is cheaper because of the minimum usage of fuel by the train. It is also considered as a green option for transporting goods. However, it is very economical for long distance travel but in the case of short distance it tends to costly. But the rail transportation requires the facility of road transportation for further movement of the cargo after arriving at destination and it also need the help of a crane to lift the container also. However, it is cheaper and tends to attract many customers. Road transportation ensures single custom document process and provides door to door delivery of cargo. It is also costly when compared to rail and sea but not expensive as air mode of transportation. It has certain limitation in the form of size and volume they can carry. It is widely used in countries like Europe, Africa, and North America etc.

1.2 Multimodal Transport

Multimodal is the incorporation of more the one mode of transportation. Eg: using rail mode of transportation with the help of trucks. It is done to reduce the time from the point of origin to the point of destination. With one contract we can transport our goods through different modes in multi modal transport system. It will help in reducing the transport time and cost to a great extent and thereby improves the competitiveness of our product in global market. Effective of different modes of transportation in stipulated time by cutting inventory cost makes it affordable to the customers. Not only it creates cost cut but also in enable environment sustainability. In multimodal the use of modal interface such as transhipment, handling can be effectively managed by freight forwarding company and its agents which also creates the job easy for the exporters and importers for the shipment of their product. Multi modal transportation are suitable for complex shipments after analysing the cost proportion of each transport mode and better for countries which do not have any sea border.

Some of the important advantage brought by multimodal transportation is the following.

❖ Multi modal transportation creates economies of scale through negotiation such as better usage of existing usage and reduction of human resources.

❖ Multi modal transportation can be done through a single bill of lading irrespective of the combined mode of transportation.

❖ Multi modal transportation helps in reducing the transit time to a great extent.

❖ Multi modal service is more preferred by customers all time because of its specialty of door to door delivery.

❖ Multi modal operator or a freight forwarder makes it easy for the importer and the exporter to manage their shipments.

1.3 Containerisation

During the middle of 20th century the idea for containerization evolved. Malcolm McLean, known as father of containerization was a transport entrepreneur who developed the idea of containers which later revolutionized the transport and international trade. Earlier there was no standardization in the shipping process which also incurred a huge amount of labor cost for dismantling and assembling of cargo before loading into the ship for a variety of technical reason. By modifying a tanker vessel basic structure Malcolm MacLean provided solution to this long term problem. Evolution of containers has made an easy task with the handling cargo. From its origin to the destination a cargo has to undergo several procedures between factories, transport, warehouse etc. In case a heavy break bulk cargo it was difficult to carry the entire amount of cargo at a time because of the limitation of manpower and the capacity they can do. But through containers which are sealed, reusable metal box which holds cargo inside it brought a change to the entire scenario. It acts as a warehouse itself for our containers because of the protection they are offering to the cargos. As containerization becomes more automated, the intervention of manpower in handling containers reduced to a great extends. Later ISO designated standards for containers in terms of their dimension, ratings and international markings. Standardization helps in carryings goods in cost efficient manner with uniform practice and procedures.

Evolution of containers has impacted in following ways:

❖ ISO standard enables the container usage in a standardized way all over the world by providing guidelines for its dimension, rating, international marking etc and each container is assigned with unique identification number.

❖ Containers can carry a huge variety of goods such as food grains, garments, chemical products, machinery etc.

❖ Containers will help in reducing the cost to a great extend when compared to traditional methods because of a variety of reason such as reduction labor, protection to the goods, standardization in operation etc.

❖ Turnaround time for a ship at port can be reduced because of the ease in handling of containers using equipment such as crane.

❖ Container itself acts as a warehouse for the goods by protecting the goods in a metal box which is sealed which makes it to spend very less on packaging.

❖ Containers reduces the chance of theft or losses that can happen to a good because the contents inside the containers are unknown which is also sealed and can open only by customs authorities at the destination port.

1.4 Global Scenario

Containers came into the market for international conveyance of sea freight almost five decades ago. They may be regarded as well accepted and they continue to achieve even more acceptance due to the fact that containers are the foundation for a unit-load-concept. Containers are relatively uniform boxes whose contents do not have to be unpacked at each point of transfer. They have been designed for easy and fast handling of freight. Besides the advantages for the discharge and loading process, the standardization of metal boxes provides many advantages for the customers, as there are protections against weather and pilferage, and improved and simplified scheduling and controlling, resulting in a profitable physical flow of cargo. Regarding operations, we need to distinguish whether we refer just to a container (which in that sense is called a box) or we specify the type of container Correspondence Containers came into the market for international conveyance of sea freight almost five decades ago. They

may be regarded as well accepted and they continue to achieve even more acceptance due to the fact that containers are the foundation for a unit-load-concept. Containers are relatively uniform boxes whose contents do not have to be unpacked at each point of transfer. They have been designed for easy and fast handling of freight. Besides the advantages for the discharge and loading process, the standardization of metal boxes provides many advantages for customers, as there are protections against weather and pilferage, and improved and simplified scheduling and controlling, resulting in a profitable physical flow of cargo.

1.5 Evolution of Ports and Container Terminal

Century ports were considered as instruments of colonial or state powers. Competition in between the ports was minimal in nature. Port related costs were considered as insignificant as inland transportation and ocean transportation costs were very high. In 21st century there are many changes regarding port operations. As there is an intense competition from global players such as ports, international logistics chains. New technology and innovative systems were implemented in the ports for efficient operations. Requirement for new port infrastructure emerged to improve the degree of specialization which in turn required specialized workforce for port operations. There is an increase in Interdependency and interrelation between the world economies, which tend to increase in trade in between countries. As procurement of raw materials and conversion into finished products has become globalized, there is an increase in competition across the markets. After globalization of production, ports are the value- adding entities to the supply chain. A port is a link between various continents for assembly, production and final distribution of goods. The major challenge for ports is to relate customer needs and also improve their competitive positions by providing cost efficient port services. There is a lot of difference between break-bulk operations and containerized operations, decrease in ship's time at port. After containerization the personnel required for handling cargo have decreased which in turn led to berth productivity and also capital-intensive port operations. Containerization is widely spread across shipping distribution is mainly through spoke and hub network. The process of storing and clearing of containers is highly de-centralized. Strategic location for primary origin of containers and final destinations of containers is important to maintain the traffic. Other factors that are important are safety of ships, terminal facilities, efficiency in handling containers, frequent feeder service, and cargo handling charges should be attractive. India has 12 major ports in India. Major ports are Kolkata

Port, Paradip Port, New Mangalore Port, Cochin Port, Jawaharlal Nehru Port, Mumbai Port, Kandla Port, Vishakhapatnam Port, Chennai Port, Tuticorin port, Ennore Port, Mormugoa Port and Port Blair Port. Out of them, the Mumbai, JNPT, Kandla, Mangalore, Cochin and Mormugoa are located at western coast while Kolkata, Vishakhapatnam, Paradip, Chennai, Tuticorin and Ennore are located on East Coast. Port Blair is located in Andaman and Nicobar Islands.

1.6 Inland Container Depot (ICD)

Inland Container Depot is a space for containers which is located at hinterland which is far away from the sea port. It is also known as dry ports because of the feature that it is located away from sea. ICD is a facility used by the shipping company, which uses their containers to store in this facility before and after they are moving to the ports. Current trend in international trade is containerization of cargo. But its advantage can be fully enjoyed by customers only when the arrangement for clearance of the goods done in a faster way. ICD is a place where several services for the importers and exporters are combining such as sea custodians, freight forwarders, custom brokers, customs facility etc. ICD is a facility arranged to the exporters and importers to store their container temporarily before they are moved before or after the port. Since it is a dry port, all the facility which found in sea port can get from ICD including customs clearance. ICD is also a space for providing repair and servicing facilities for containers. ICD helps in reducing the limitation of the sea port which have a limited space and time for the storage and clearing facility.

Fig 1.1: Container yard in an ICD[1]

[1] Source: https://indiashippingnews.com/concor-icd-at-balliquepem-continues-to-await-customs-certification/

Role and functions of an ICD:

❖ ICD helps the customers to clear their cargo in the hinterland and once completed the cargo need not subjected to go customs procedure again.

❖ ICD permits the customers the storage of container temporarily in their premises before or moving into a sea port.

❖ ICD provides the facility of Less than Container Load (LCL) and thereby reduces the chance of movement of empty containers.

❖ ICD helps in minimizing the work of port by helping the customers in clearing and storage of their cargo.

❖ The evolution of ICD made it faster for the customers to avail the goods as soon as possible after arriving at port.

❖ Shipping line can store their container for a period up to 6 months in ICD facility.

❖ ICD provides warehousing facility for cargo holder including cold storage and reefer storage.

❖ Container maintenance and servicing can be done at ICD.

❖ ICD helps in transporting the goods to their designated place through rail or road.

Apart from these basic functions ICD also provide services like completion of documentary procedures, office of shipping line agent, road haulage brokerage, computerized cargo tracking services, clearing and fumigation services etc. When buyers wish to import products through a specific ICD, they must notify vendors in advance so that the containers are indicated to that specific ICD. When such containers arrive at a gate way port (Seaport), the Steamer agent arranges for them to be transferred to the ICD in question, either by rail or road, through the Container Corporation of India or any other authorised agency. After receiving the containers in the ICD, they are carried to the Container Freight Station, where importers must file the Bill of Entry and other paperwork, just as they would for clearance through gateway ports or airports.

India has a total of about 129 ICDs in total. Container Corporation of India is the authority entrusted with the movement of container throughout the country. In India Maharashtra has the

highest number of ICD. Biggest ICD is in Delhi which is ICD Thuglakabad. According to a research from 2017, the most valuable product categories exported through ICDs were textiles and textile, chemicals, fertilizers, medicines, soaps, cosmetics, and so on. Mechanical and electrical equipment and parts, base metals such as iron, copper, nickel, plastics, and rubber were among the major product categories imported through ICDs in terms of value. According to 2016-17 data, ICD which having the biggest share in terms of value was ICD Thuglakabad Delhi followed, ICD Bangalore and ICD Tuticorin.

1.6 Container Freight Station (CFS)

Both import and export container freight stations (CFS) have been established for the purpose of examining and assessing containerized cargo. The Commissioner of Customs appoints them as custodians of imported goods under Section 45 of the Customs Act, 1962. Until the imported products are cleared for home consumption, warehoused, or transhipped, they must be kept in the custody of a person approved by the Commissioner of Customs.

Duties of CFS:

❖ LCL cargo are received and consolidated for export.

❖ At the destination, the container is de-consolidated, and the consignment is dispatched for ultimate delivery.

❖ Prepares a container loading schedule.

❖ Containers are stuffed and de-stuffed (for both LCL and FCL cargo)

❖ Identifies containers by marking and sealing them.

❖ It is used as a temporary storage facility for freight, both empty and loaded containers.

❖ Empty containers are transported to container yards (CY) and loaded containers are transported to the port/terminal.

❖ Before and after shipping, stacks, sorts, tracks, and tallies containers.

❖ Container maintenance and repair

❖ Transportation to and from the port/terminal by road/rail

❖ Customs clearance procedures, such as classification, examination, and assessment of products, are organized.

❖ Maintains the security of items until they are shipped or picked up.

❖ Deals with break bulk (non-containerized) cargo that originates or terminates in the port or terminal's immediate hinterland, as well as rail-borne traffic to and from inland sites.

1.7 Objective of the study

❖ Study on how containerisation has affected the entire international logistics.

❖ Study on shifts in multimodal transport.

❖ Emergence of dry ports, ICD as a result of containerisation.

❖ Factors checked upon on setting up an ICD.

1.8 Scope of the study

This study has been done to identify the shift that has happened to the international trade and transportation of goods after the emerging of containers. Specifically, this study focuses on the rise of the need for dry ports within land routes. How ICDs helped in bringing an easiness of flow of goods within land to ports and vice versa. port plays an important part in its economic development, and most governments invest millions of dollars in their ports' infrastructure and superstructures to promote trade. Because of its important function as an off-dock terminal, the activities of Inland Container Depots have gotten a lot of attention during the last three decades. They promise to relieve congestion at the Port. The study's major goal was to determine the importance of ICDs in the economy. Determine the extent to which ICDs and CFSs are able to facilitate India's overseas trade through containerized cargo movement. Look at the procedures for creating and closing ICDs and CFSs. Evaluate ICD and CFS performance in providing containerized cargo handling and customs clearance facilities to facilitate commerce, and iii. Examine the regulatory environment for ICD and CFS operations.

The study uses CONCOR ICD as model to understand the concept of dry ports. The findings also show how the Indian railway has helped in bringing up networks within the land to transport goods from numerous ports to hinterland.

1.9 Limitation of study

The study's findings must be seen in the context of some limitations;

❖The study has been conducted using secondary data. The main limitations are that the scarcity of data and its volume which was restricted to its official website only.

❖Inadequate sample size for statistical analysis

❖Time constraints

1.10 Chapterisation

❖ Chapter 1: Gives an introduction and overview of multimodal transportation in logistics and other related factors.

❖ Chapter 2: This chapter presents the summary of various articles published during various years

❖ Chapter 3: This chapter gives an idea about the growth of ICD and Company profile of CONCOR

❖ Chapter 4: This chapter brings out the analysis and discussion on how ICDs function from the secondary data sourced.

❖ Chapter 5: This chapter sums up the studies done about ICD and provides some suggestions for the efficient functioning of an ICD.

CHAPTER 2

LITERARTURE REVIEW

A literature review was a technique used throughout the research process. It began as a comprehensive literature review on the subject of intermodal transportation, narrowing eventually to inland access to seaports and inland intermodal terminals, and culminating in a presentation of the dry port idea and its benefits for system actors. For the section of the study connected to the evaluation of the concept, an additional literature study on transportation related modelling was done. Published materials, such as information on the Internet or yearly reports, were particularly valuable in filling up some empirical gaps.

2.1 Articles on dry ports and ICD

2.1.1 A Facility Location Model for Inland Container Depots

Container transportation activities have expanded inland, allowing for a more comprehensive service across the maritime network. As a result, container transportation companies are investing heavily in the construction of inland container depot (ICD) networks. It is critical to maximise both capital and operating efficiencies by strategically locating such facilities. There are currently no models at the regional network level to assist container operators in the placement of ICDs on their networks. This study investigates the problem of ICD location and offers a comprehensive ICD location model. This thesis provided a practical formulation of the ICD location problem based on a detailed investigation of the container transportation business, with an emphasis on ICD operations. It underlines the importance of incorporating endogenous demand and market competition in the container transportation industry. The formulation combines the multinomial logit model of discrete choice analysis with endogenous demand and market competitiveness to quantitatively analyse the shipper's behaviours and preferences.

2.1.2 The location of depots for returned maritime containers

Because of the impact of container depots on logistic costs, the container depot site problem is frequently considered as a cost minimization problem. However, these depots, which hold returned empty maritime containers until they are needed, have an impact on the ecology in the locations where they are located. A biobjective model is considered in this paper for developing a hinterland depot network. The entire cost of the network and the environmental impact of the container depot commissioning and maintenance, as well as the transport operations in and out of the depots, are the two objectives used. The capacity of a depot has been described as a fuzzy restriction because it is not a precise value. The goal of this study is to offer a new criteria optimization model for determining the best location of empty container depots in a hinterland. This model considers the entire operation costs, as well as the overall environmental impact the depots' heavy transit activities in and out network, as well as the setup and management of the depots. Due to the uncertainty of the data, fuzzy data was required. The problem was solved using multi objective optimization. The environmental impact was also calculated using Fuzzy-AHP. The results in Valencia's hinterland have produced data. a group of prospective solutions that are better than Given both objective functions and the current condition.

2.1.3 Based on an optimization–simulation model, the effect of inland container depots on import container terminal performance at the Koja container terminal in Jakarta[2]

Container terminal operators in Indonesia have faced a difficulty in recent years: increasing container volume and acquiring land for terminal growth. In order to meet the growing demand for terminal services, the operator employs Inland Container Depots (ICD), which are one of the quickest and cheapest solutions available, however they do have some drawbacks when compared to port development. When ICD is utilised to solve capacity difficulties, issues such as capacity and location must be addressed. The functioning of the ICD will improve the terminal's capability, but the connecting roads, which are also utilised by non-container traffic, will have an impact on the transfer of containers from the port to the ICD. The value of Yard Occupancy Ratio determines the container flow from the terminal to the ICD (YOR). To deal with this problem, a method that combines the choice to move containers from the port with

[2] Source: https://aip.scitation.org/doi/abs/10.1063/1.5042894

the selection of ICD locations is necessary. The formulation of analytical equations is complicated by differences in cycle time equilibrium of terminal activities and connecting highways. To account for differences in operating time cycles, a stochastic condition of arrival, service time, terminal operation process integration, and ICD placement selection, discrete event simulation is used. The proposed strategy was put to the test using the case study of Koja Container Terminal. The simulation model was built for a one-month simulation period. In order to calculate the effects of ICD operation on the container terminal, parameters such as demand and ICD capacity were examined in the model. The best terminal – ICD configuration was chosen by maximising the cost difference between containers with and without ICDs. Container handling costs (discharge, transfer, lift on, lift off, customs inspection, and storage charges) and container time costs make up the total container cost (waiting time and potentially demand unserved). Because increasing the number of ICDs will raise handling costs while decreasing time costs, there are optimal ICD numbers for a given level of demand. The optimal amount of ICDs will reduce the total container cost charged to users for demand levels above the terminal capacity, according to the Koja container terminal's experimental results. Although terminal traffic will improve, dwell time will remain unchanged. Terminal – ICD (Yos Sudarso) and ICD (Yos Sudarso) are the best configurations for this ailment (LLRE Martadinata). Optimization based on discrete event simulation can be used to find the best ICD terminal system design for a given demand level and to assess the impact of ICD on terminal performance, ICD, and Connecting Road. The ICD's operation will lower container costs, but it will not give enough dwell time for terminal enhancements.

2.2 Other related researches

2.2.1 Management of empty containers in a port using the long-run average criterion

The management of importing empty containers in anticipation of future shortages of empty containers or exporting empty containers in response to reduce the redundancy of empty containers in this port is related to one of the major logistics issues faced by distribution and transportation companies: the management of empty container allocation in a port. Under a general holding-penalty cost function and one-time period delay availability for full containers just arriving at the port, we evaluated the problem to be a nonstandard inventory problem with

positive and negative requests at the same time. The essential finding is that for the discounted infinite-horizon problem via a finite-horizon problem, there exists an optimal pair of critical policies, say (U, D). That is, when the number of empty containers at the port is less than U, or when the number of empty containers in the port is larger than D, importing empty containers up to U or exporting empty containers down to D, and doing nothing else. Furthermore, we get the same conclusion on the average infinite horizon.

2.2.2 Through a regional logistics system, the private and social cost efficiency of port hinterland container distribution[3]

The discussion over freight transportation and logistics is increasingly involving the issue of sustainable development. The mitigation of negative environmental and human health effects of distribution operations, as well as the realisation of a major modal shift in transportation preferences, are key objectives of sustainable or "green" freight logistics systems, while also achieving internal generalised cost efficiency and service quality. To achieve these objectives, a variety of actions must be implemented. These policies and initiatives require commercial and governmental entities to take various initiatives and policies. Combining diverse activities into an integrated bundle of measures is usually more effective than introducing single instruments in isolation. The connection between sustainability and port hinterland container logistics is explored in this article. The approach and findings of an empirical study based on implementations of a network programming tool known as the "interport model" are presented and examined in detail. The model allows for the analysis of all potential effects on inland container flows and their related internal and external costs as a result of public and private initiatives in port hinterland container logistics. The objective of the empirical study is to assess the impact of a set of concurrent policy options and operational measures on the competitiveness and long-term viability of hinterland multimodal distribution of import and export containers handled at the Campania region's seaports in Southern Italy. Before reaching their final inland destinations or seaports, the loading units can transit through nearby dry port facilities (also known as "interports") and/or additional regional railway terminals. The most pressing issue appears to be the integration of customs and intermodal logistics at seaports and interports through full implementation of the "extended gateway" idea as a method of

[3] https://www.sciencedirect.com/science/article/abs/pii/S0965856412001085?via%3Dihub

increasing rail's part of the mode split and improving the system's overall cost efficiency. Furthermore, the simultaneous implementation of a social marginal cost charging strategy may help to make regional interports a feasible option for expanding the regional seaport cluster's hinterland reach.

2.2.3 The impact of Covid-19 on logistics[4]

The COVID-19 epidemic has had a direct impact on logistics organizations, which are involved in the transit, storage, and flow of commodities. Logistics enterprises, being a vital element of value chains both inside and beyond international boundaries, support trade and commerce and assist businesses in getting their products to customers. As a result, supply chain interruptions induced by the pandemic might have an impact on competitiveness, economic growth, and job creation. The impact of COVID-19 was first felt in China owing to the role it plays in global manufacturing, with Wuhan, the pandemic's epicentre, playing a particularly major role (more than 200 Fortune Global 500 firms have a presence there). China is also a significant buyer of international commodities and agricultural goods. Manufacturing disruptions in China reverberated throughout global supply systems. Cargo was backed up at China's major container ports, travel restrictions caused a lack of truck drivers to pick up containers, and ocean carriers cancelled sailings. The consequent component scarcity from China hampered global industrial firms. Globally, major sectors such as automotive, electronics, pharmaceuticals, medical equipment and supplies, and consumer products were impacted. The virus expanded around the world, resulting in lockdowns and border closures that hampered the transportation of products. Additional measures, such as social separation at warehouses, were implemented to maintain worker safety, which led to freight jams.

[4]Source: Report on CONCOR ICD/WFD,2021

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Methodology

Empirical research is research that is based on the researcher's direct observation and measurement of occurrences. The information obtained thus far can be compared to a theory or hypothesis, but the outcomes are still based on real-world experience. Although secondary data from a literature review may provide the theoretical framework, the data acquired is all secondary data. In this we study using case study empirical research.

Case studies entail extensive research and investigation of individuals or groups. Case studies lead to a theory and broaden the scope of a phenomenon's investigation. Case studies, on the other hand, should not be used to determine cause and effect because they cannot make accurate predictions due to the researcher's bias. Another reason why case studies are unreliable for descriptive research is that an atypical respondent may be included in the sample. The act of describing them results in shaky generalisations and a shift away from external validity.

In this project, Container Corporation of India (CONCOR) has been used as reference.

3.2 Inland Container Depot: Emergence

3.2.1 Emergence of ICD

Container congestion at a port stifles the flow of containers to and from the port's hinterland. Inland Container Depots (ICDs) were established next to the port or port city at a location in land to relieve container congestion at the port. Since their inception, they have played an important role in the processing of export, import, and empty containers, helping to port decongestion. A number of Inland Container Terminals (ICTs) have also been established with the goal of reducing container congestion. In order to meet the growing demand for terminal services, the operator employs Inland Container Depots (ICD), which are one of the quickest and cheapest solutions available, however they do have some drawbacks when compared to port development. When ICD is utilised to solve capacity difficulties, issues such as capacity

and location must be addressed. The functioning of the ICD will improve the terminal's capability, but the connecting roads, which are also utilised by non-container traffic, will have an impact on the transfer of containers from the port to the ICD.

3.2.2 Operations of an ICD

ICDs are a popular user facility for handling and temporary storage of laden and empty shipping containers for import and export. Cargo can be transhipped from such terminals, and items can be cleared by Customs at the ICD. Because no customs clearance is necessary at gateway ports, trade flows grow and seaports become less congested. The container is unsealed and examined in the presence of customs officials at the ICD. A set number of parcels are opened during examination, and this percentage is decided by risk criteria that are assessed by the Customs department using risk assessment methodologies.

1. **Container Yard:** The container yard takes up the most space in the ICD. It's a stacking area where export containers are stacked before being dispatched to the port, import containers are held before Customs clearance, and empties are waiting to be moved. Similarly, specific stacking sections are set aside for particular containers such as refrigerated, hazardous, overweight/over-length, and so on.
2. **Rail siding** (In case of rail based terminal): terminal is the location where container trains are received, despatched, and handled. Similarly, overhead cranes and/or other lifting equipment are used to load and unload containers from rail carriages at the siding.
3. **Warehouse**: Containers are stuffed/stripped or reworked in a covered space/shed where export cargo is received and import cargo is stored/delivered. Exports of less than container loads (LCLs) are combined, import LCLs are unloaded, and cargo is physically examined by Customs. Consignments for export and import are usually handled in distinct regions of a warehouse or in other warehouses/sheds.
4. **Gate complex:** The terminal's gate complex controls the entry and exit of road vehicles transporting freight and containers. Documentation, security, and container inspection procedures are all carried out here.

3.2.3 Benefits of ICDs

The following are the advantages of having an ICD:

- ❖ Long-distance cargo concentration locations and their unitization
- ❖ Providing transportation services.
- ❖ Customs clearance services are accessible near the production and consumption centres.
- ❖ Demurrage have decreased.
- ❖ At gateway ports, no customs clearance is necessary.
- ❖ Shipping lines issue through bills of lading, resuming full responsibility for cargo.
- ❖ Empty container traffic has decreased overall.
- ❖ Transport costs are competitive.
- ❖ Inventory costs were reduced.
- ❖ Trade flows have increased.

3.2.4 ICDs' Design and Layout

The design and layout should be cutting-edge, with mechanical and electrical systems that meet worldwide standards. The smooth flow of containers, freight, and vehicles through the ICD is critical to a good layout. The layout and design should take into account the beginning amount of business, the expected volume in ten years, and the types of facilities that exporters would demand. The original layout should be flexible enough to adjust to changing conditions. Elements such as (rail) siding, container yard, gate house and security features, boundary wall (fencing), roadways, pavements, office building, and public amenities should all be included in the design. Track length and quantity should be sufficient to handle rakes and, if applicable, stabling trains. ICD would require a minimum of four hectares of land. However, a proposal could be judged to have less space for technical advancement and other unique aspects supporting such a departure. Customs officials require perimeter fencing and lights to meet their requirements. Because the gate is the focal point of site security, it must be carefully planned. The administration building will be sized according to the needs of possible residents.

It will be the focal point of creation and processing of all documentation relevant to cargo and container handling. Fixed provisions for sanitation and potentially a food service facility should be built. It is critical to have a solid communication system, computerization, and web-based EDI connectivity.

The following infrastructure should be available at ICDs:

❖standard pavement for heavy duty equipment to utilise in the terminal's operational and stacking areas. When just chassis operations are required, the pavement standard may be restricted to that of a roadway.

❖ICD office building, Customs office, and a separate block for user agencies with basic facilities

❖Separate warehousing facilities for exports and imports, as well as long-term storage of bonded cargo.

❖There is enough parking space for automobiles waiting to enter the terminal.

❖Boundary wall constructed in accordance with Customs specifications.

❖Internal roadways for circulating and service areas.

❖Electronic weighing scale.

❖Computerized document processing with the capacity to connect to EDI.

3.3 Company Profile

3.3.1 CONCOR

Container Corporation of India, incorporated in 1988 under the Ministry of Railways, is India's leading multimodal logistics service provider, with the largest market share and the largest network of 84 ICDs/CFS in the country, providing road and rail transport links between ports and the hinterland.

After discovering that rail transportation will be less expensive than other modes of transportation for medium and long-distance freight, a strong initiative for containerized cargo transport spawned the concept of containerized door-to-door transport. In 1966, the Indian

Railways introduced domestic door-to-door service via ISO containers. Container Corporation of India was established as an ultimate body for promoting and overseeing containerization in India in order to increase containerized freight transport by taking over existing network of 7 Inland Container network from Indian Railways. CONCOR's primary activities are divided into three categories: carrier, terminal operator, and warehousing operations. CONCOR is predominantly reliant on rail as a carrier due to the company's tight relationship with Indian Railways, which accounts for 94 percent of the company's inland transportation. They provide extra services in the form of road in addition to rail to meet the need for door-to-door services. CONCOR has a pricing competitive advantage because to its reliance on rail for products transportation, which is particularly inexpensive compared to other modes. CONCOR began operations as a terminal operator in 1989 with seven inland container depots (ICDs), which have since grown to 69 terminals. CONCOR's warehouse facilities include warehousing, container parking, and repair services etc. CONCOR also provide add on services in the form of

• Transit warehousing facility

• Bonded warehousing facility

• Less than Container Load (LCL) consolidation

• Air cargo clearance using bonded trucking

Currently CONCOR have 60 terminals of which 6 of them purely for export import, 17 for domestic purpose, 34 terminals as combined both international and domestic, 2 as strategic tie up and 1 as a distribution node. For the better coordination and management of activities CONCOR has classified their activities on area wise:

Area 1 North: Delhi, UP, Haryana, Punjab, Rajasthan, Himachal Pradesh, M.P, Uttarakhand

Area 2 West: Maharashtra, Goa, and Gujarat

Area 3 South: Tamilnadu, Karnataka & Kerala, Andhra Pradesh, Telangana

Area 4 East: Bengal, Bihar, Odessa, Jharkhand, Chhattisgarh & North Eastern states

3.3.2 Corporate objectives of concor.

➢To be a customer-centric, performance-driven, results-oriented organization that focuses on providing customers with good value for money.

➢To make the most efficient use of resources, to provide high-quality services, and to be known for raising the bar for excellence.

➢To be on the lookout for new and better ways to provide innovative services on a continual basis. It will priorities consumer convenience and contentment, learn from its competition, and strive for continuous improvement.

➢ Set quantifiable performance targets to support the organizations objectives and mission, and operate as a professional, competent, and dedicated team to achieve excellence in all areas of business and operations for the organization.

➢To uphold the highest standards of business ethics and offer social value to the community as a responsible corporate organization by fulfilling social commitments.

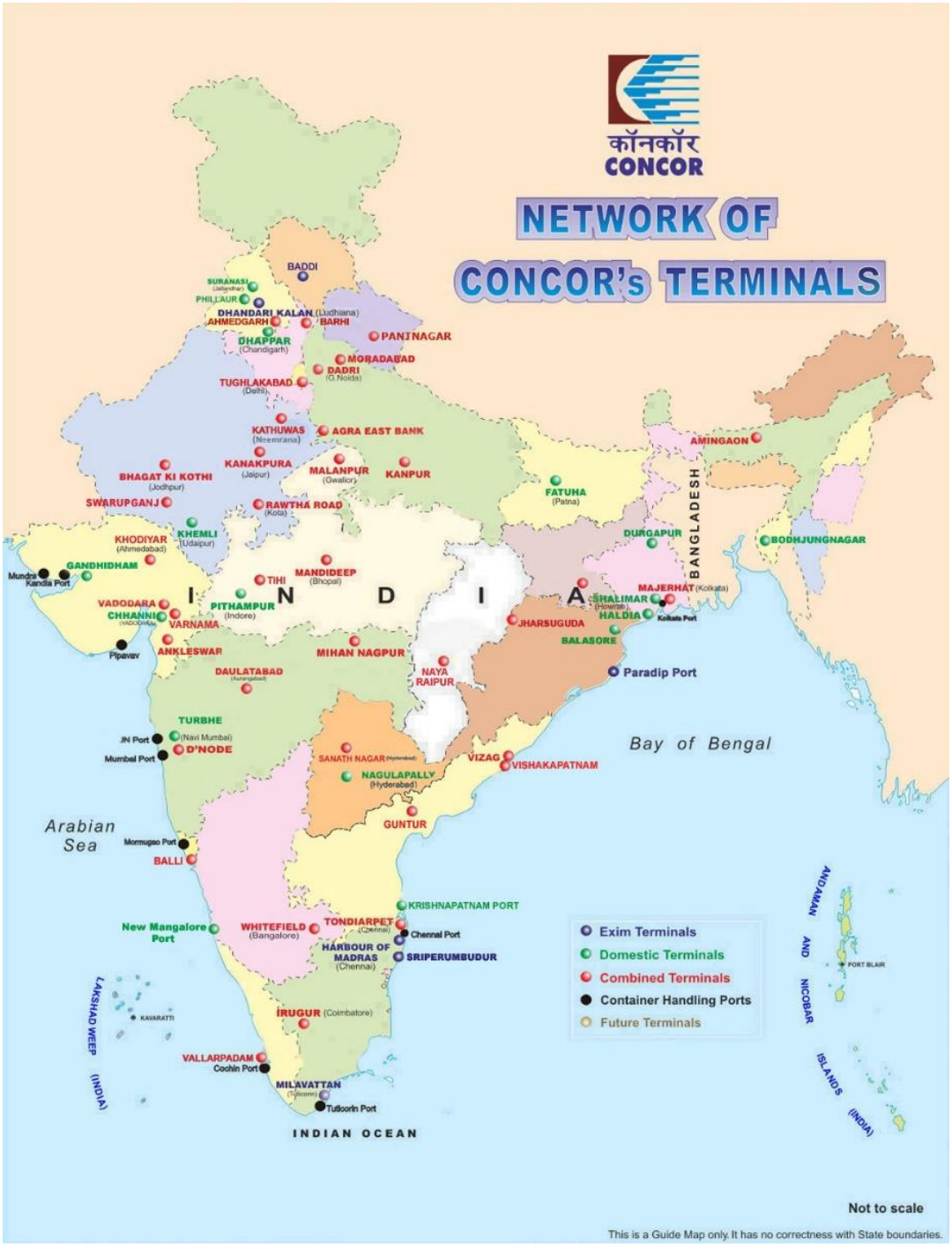

Fig 3.1: Network of CONCOR India[5]

[5] Source: https://concorindia.co.in/company.asp

3.3.3 Why CONCOR?

CONCOR began operations with seven inland container depots in 1989. (ICDs). Since then, it has grown to 63 ICDs, including 18 export import container depots and 14 exclusive domestic container depots, as well as roughly 30 terminals that serve both local and international purposes. CONCOR's customs-bonded inland container depots are dry ports in the hinterland that serve to bring all port cargo to the hinterland. Customs clearance is provided to the customer's doorstep. The terminals are usually always connected to the Indian railway system. Unless their size or location necessitates road connections, railway networks are preferred. The rail link allows us to make things easier. Transporting enormous amounts over vast distances at the lowest possible cost. So concor can be one of the excellent example to conduct a empirical research on ICD.

3.3.4 ICD in CONCOR

ICD in CONCOR facilitates the movement of containers either through road or rail. Because of their long-term relationship with railway ICD has developed its primary mode of transportation through rail and a small portion is done through road which is mainly to facilitate door to door delivery. ICD Whitefield is one of the biggest dry ports in the country and handles both international and domestic operation. Almost 85-90% of the operations are international and 10-15% of operation constitute domestic.

The establishment of ICD has created more advantage to the importers and exporters to use the in-house custom facilities thereby avoiding long waits in sea port to clear the goods. Each ICD has one Additional Commissioner, two Deputy Commissioners, and six Assistant Commissioners. Apart from that in order to facilitates the smooth functioning of the ICD there are dedicated departments working behind the operations of ICD i.e., EXIM Departments, Domestic Departments Accounts Department, MIS Department, Rail Department, Marketing Department.

Recent initiatives of reefer container service, development of IT infrastructure, central monitoring through CCTV makes it a perfect place for the customers to have business with.

CONCOR primary activities are

- ❖ carrier operation
- ❖ Terminal operation
- ❖ Warehouse operation

CONCOR AS A CARRIER

CONCORs primary dependence is on rail mode of transportation which accounts for almost 85% of their transportation activities. Apart from rail mode CONCOR also provide road mode of transportation which is more like a supplementary activity to facilitate door to door delivery. As in the name itself, CONCOR is associated with the transportation of containers. Because of their long-term relationship with railways, they enjoy the benefit of transporting lion share of containers through rail which helps them in gaining competitive advantage by getting cost advantage from their competitors. CONCOR uses there on containers for domestic operation but for international operations shipping line containers are used to carry goods. Different types of containers handled by CONCOR are the following.

Commonly found containers in ICD are

- ❖ 20 ft containers
- ❖ 40 ft containers

However, in this classification itself there comes two divisions- normal and high cube containers.

- ❖ 20 ft normal containers
- ❖ 20 ft high cube (HC)
- ❖ 40 ft normal containers
- ❖ 40 ft high cube (HC)

High cube containers are used to carry light weight and high-volume cargo which is over height up to 2896 mm (9 ft 6 in) when compared to normal containers which have height of 2591 mm (8 ft 6 in).

CONCOR AS A TERMINAL OPERATOR

CONCOR has mainly two types of operation:

I. International operation: EXIM department is designated for export import movements of cargo from the country.

II. Domestic department: Domestic department deals with the movement of cargo within the country. All international cargo movements require clearance facility which provide through CFS. Transportation of cargo is mainly done through rail and road.

CONCOR AS A WAREHOUSE OPERATOR

Another important function of the CONCOR is to act as a warehouse operator. Warehouse is a facility which offers temporary storage facility for the storage of cargo. ICD Whitefield has in total 13 warehouses for the facilitation of this function. With a total warehouse size of 40,525 square meters, 13 warehouses deal with FCL-Export, LCL-Export, LCL-Import, FCL-Imports, Bonding, Domestic, and other services. CONCOR, as a CFS operator, provides value to the logistics chain by providing value-added services such as:

- ❖ Providing the service of a transit warehouse for cargos of import and export and also domestic cargos.
- ❖ Providing clearance of goods at the CFS warehouse.
- ❖ Leasing of the warehouse to private parties.
- ❖ Custom controlled warehouse for cargos which are unable to pay duties.

There is different classification of warehouse in this 13 warehouse that ICD Whitefield has.

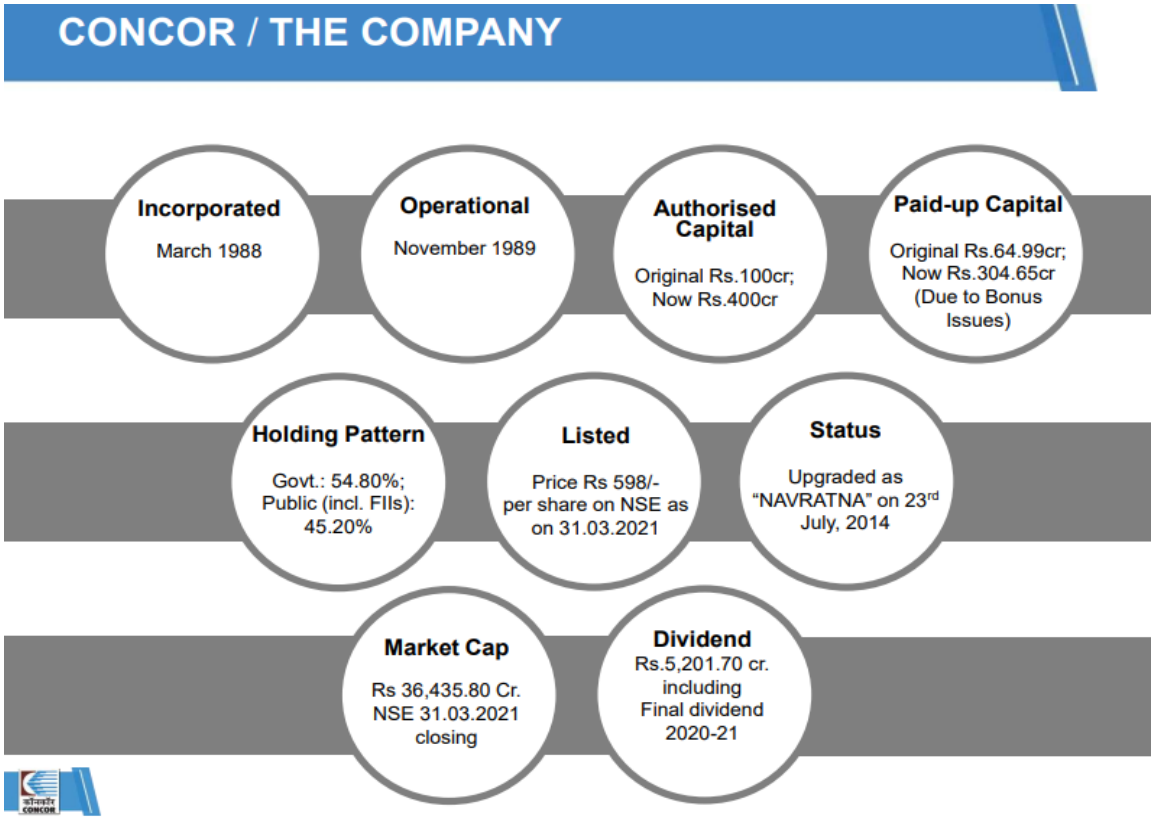

Fig 3.2: an overview about concor[6]

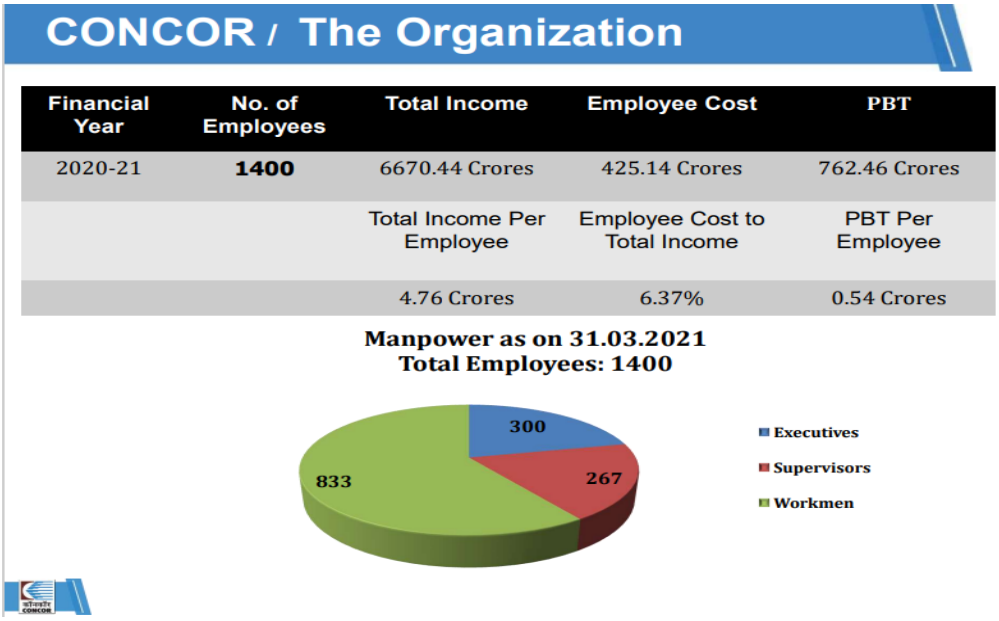

Fig 3.3 concor performance 2020-21[7]

[6] Source: https://concorindia.co.in/company.asp
[7] Source: https://concorindia.co.in/company.asp

3.3.5 CONCOR' S Terminal Network

STATE	Nos.	STATE	Nos.
Andhra Pradesh	3	Maharashtra	4
Assam	1	Madhya Pradesh	4
Bihar	1	Odisha	3
Chhattisgarh	1	Punjab	6
Delhi	1	Rajasthan	5
Gujarat	7	Tripura	1
Goa	1	Tamil Nadu	6
Haryana	1	Telangana	2
Himachal Pradesh	1	Uttar Pradesh	4
		Uttarakhand	1
Karnataka	2	West Bengal	4
Kerala	1	**Total**	**60**

Table 3.1: State wise division of terminals[8]

Container corporation of India has 60 ICDs spread across 22 states of the country. The terminals are divided into 4 areas; North, South, East, and West. The majority of these terminals were built on land leased from the Indian Railways. The majority of this land had been idle or designated as surplus land, and CONCOR's interventions have radically transformed the appearance of these areas. Modern container handling terminals have been designed with cutting-edge handling equipment and user amenities. CONCOR's in-house engineering group planned and built container handling terminals. Invariably, the design is modular in nature. This means that the terminals were designed with the minimum amount of money spent in mind

[8] Source: https://concorindia.co.in/company.asp

while still providing the optimum services. As the volume of business handled at the terminals has increased, the available area has been enlarged by adding facilities like as warehouses and pavement, as well as renovating existing facilities to meet higher volumes. The use of heavy duty paving utilising M-50 concrete blocks is one of CONCOR's key technological contributions in the area of terminal development. This paving is not only simple to install, but it also saves money in the long run due to the low maintenance and upkeep requirements. The employment of cutting-edge technology has also led in the development of cutting-edge warehousing facilities. The usage of pre-fabricated structures in Bangalore resulted in warehouses becoming operational within three months of construction beginning. Refrigerated warehouses, multi-tier stacking facilities, and specific handling spaces for big goods, hazardous cargo, and other features have helped CONCOR's ports become the country's most advanced logistical hubs.

CHAPTER 4

ANALYSIS & DISCUSSION

4.1 Benefits in Concor after implementing ICD

- Consolidation facilities for Less Than Container Load (LCL) cargoes in the hinterland are provided by ICDs, which reduce the overall transit of empty containers.
- By offering all of the amenities in the hinterland, ICDs ensure that the costs of exporting and importing goods stay competitive.
- By constructing feeder infrastructure for ports, ICDs assist in growing a country's exports.
- ICDs aid in the decongestion of critical port areas.
- Only when we have a solid network of ICDs can we completely profit from containerization. When exporting cargo via ICDs, exporters can take advantage of containerization.

4.2 Procedures for setting up of inland container depots (ICD)

By my observation in concor and my review form secondary data an audit conducted by CAGI (Comptroller and Audit General of India) I have come to following procedures for setting up an ICD.

An Inter-Ministerial Committee (IMC) under the chairmanship of the Ministry of Infrastructure's Additional Secretary (Infrastructure) the Department of Commerce, has been established to oversee the approval process and to ICDs and CFSs are monitored for proper operation. It is made up of delegates from the Department of Revenue, the Ministry of Shipping, the Ministry of Railways, and the Department of Transportation Commerce Ministry. The Committee evaluates proposals presented by both individuals and organisations. For the establishment of new businesses, both public and private sector entrepreneurs are needed ICDs/CFSs.

The Studies looked into the current framework, if any, for building up Inland Container Depots (ICDs) and Container Freight Stations (CFSs) in the country and the efficacy of the project approval process by looking through Ministry level files and correspondence. The Studies

looked into whether any need/impact analyses are done, and whether the nodal department collects and updates data on the operational status and functioning of ICDs/CFSs.

4.2.1 There is no structure for establishing ICDs/CFSs.

The Department of Commerce (DoC) serves as the focal point for infrastructure development linked to ICDs, CFSs, and Air Freight Stations (AFSs) and manages inter-departmental concerns. The IMC was established in March 1992 by a Ministry of Commerce resolution to serve as a Single Window Clearance for requests to establish ICDs, CFSs, and AFSs.

The IMC's mandate includes establishing limits and guidelines for the approval of all new ICDs and CFSs. The Customs department provides relevant clearances, EDI nodes, and customs personnel after the IMC approves the plan and the DoC issues the Letter of Intent (LoI).

Studiers of company observed that two sets of guidelines for setting up of ICD were available on the website of the DoC. However, none of the guidelines mention the notification or memorandum through which they have been formalised or the date from which these came into effect.

There is no policy document or framework laying out concepts and objectives that would help IMC members evaluate applications, and the present rules spell out a checklist of processes to be followed while issuing approvals that are more procedural in nature. Furthermore, outside the approval process, the IMC and its constituent ministries have no clear roles and responsibilities, leaving the industry uncontrolled.

The study would like to direct the government's attention to legislations relating to major and minor ports, as well as land ports, that provide a framework for establishing, establishing an administrative structure, and establishing a regulatory framework for such ports.

4.2.2 Lack of reliable data on number and status of ICDs and CFSs in the country

The DoC, which was the nodal Ministry under which the IMC was operating, did not have basic data relevant to the establishment and operation of ICDs and CFSs, such as their number, location, operational status (i.e. functioning or closed), installed capacity, performance in terms of operating capacity, and so on. DoC provided a list of ICDs and CFSs that became operational after the foundation of IMC in 1992 and indicated that they did not have data earlier to that year in response to Studies' request for full data on the number of ICDs established before and

after the creation of IMC. The Central Excise and Customs Board Studies received no data from Customs (CBEC), now CBIC. As a result, Studies addressed local Customs formations for information on ICDs and CFSs operating under their authority, and discovered significant differences between DoC data on operational ICDs/ CFSs and data collected through local Commissionerate's. During a test check of records, the Studies discovered at least 27 instances of inaccurate reporting and non-updating of status.

4.2.3 New ICDs and CFSs are approved without a review of the capacity developed and utilised.

The IMC approved new ICDs and CFSs without analysing the capacity developed and utilised. Almost half of the ICDs and CFSs tested were functioning at less than half of their installed capacity, while another third was operating at 50-70 percent of their capacity, according to the audit. Despite the fact that only 74% of the aggregate cargo handling capacity of the five CFSs attached to Kolkata port was being used, a new CFS was given permission to begin operations.

Following the launch of the new CFS, audit discovered that volumes handled by one of the previous CFSs declined dramatically in roughly the same proportion as volumes handled by the new CFS increased. In 2012, capacity utilisation in 13 of the port's 27 CFSs was reported to be between 60 and 65 percent, while capacity utilisation in 16 of the port's 29 CFSs was around 56 percent. During the period 2012-17, the IMC approved ten new CFSs in Maharashtra and twelve new ICDs in Tamil Nadu, including six in Chennai.

Audit concluded that there is a proliferation of ICDs and CFSs in certain regions and in and around major port areas of the country and one of the main reasons for underutilisation of capacity created is setting up of multiple ICDs/CFS in close vicinity to each other. It has also resulted in overstretching of the resources of the Customs department.

4.3 Effectiveness of ICDs in facilitating trade in containerised cargo

By my observation in concor and my review form secondary data an audit conducted by CAGI (Comptroller and Audit General of India) I was able to make following conclusion on the Effectiveness of ICD

4.3.1 ICDs functioning without adequate infrastructure

Custodians operating the ICDs and CFSs are responsible for providing the required infrastructure and security to the import/export goods being handled at their respective premises under various provision of Handling of Cargo in Customs Area Regulations (HCCAR) 2009. Among the test checked Basic handling equipment such as cranes for loading and unloading containers and reach stackers for lift-off operations were not available in ICD Kottayam, according to the audit.

Despite the fact that the ICD was expected to handle 9000 TEUs per year, only 9159 TEUs were handled throughout the five-year period from 2012 to 2017. Only 25 exporters have used the ICD services at the time of the assessment. Audit discovered that minimal infrastructure criteria under HCCAR 2009 had not been met in ICD Verna Goa, including a violation of the minimum space requirement. The designated area under ICD was 1.2 hectares, significantly less than the minimum 4 hectares required for ICD.

4.3.2 Lack of clearly defined regions and space for the storage of hazardous products

The custodian must demarcate separate spaces for unloading and storage of import and export cargo, as well as offer separate space for fumigation of products, according to HCCAR 2009. The custodian must follow the Hazardous Waste (Management, Handling, and Transboundary Movement) Rules 2008 and other relevant government regulations when handling and storing hazardous items. During the audit, it was discovered that some ICDs / CFSs had failed to provide delimited zones as required by HCCAR 2009, as well as a separate location for handling hazardous products.

4.3.3 EDI connectivity interruption

The Indian Customs EDI System (ICES) 1.5 is an integrated software system utilised by both the department and importers/exporters to automate Customs workflow. Import and export clearances are facilitated more quickly with the use of EDI connectivity. The audit discovered that no record books for local connectivity failures were kept, and that network breakdowns were common in a few ICDs. The magnitude of the EDI outage was not disclosed by DG (Systems).

4.4 A regulatory framework for ICDs' activities

My study in concor concluded there is a lack of regulatory framework for ICDs' activities which can be due to following reasons

4.4.1 The movement of export and import cargo is not properly monitored.

The export transhipment module (ETM) in the customs EDI system (ICES) enables for electronic container movement monitoring via electronic communications exchanged between Customs and Port authorities, ICDs, and shipping companies. All carriers (shipping lines, ICDs, and other carriers) involved in container transhipment must file a bond/bank guarantee with their application for an export transhipment permit in the ICES application, which allows the container with export cargo to be transhipped from the ICD to the gateway port. When the export general manifest is submitted, indicating that the cargo is ready to move, the bond that was initially debited is automatically credited. Monitoring is done manually in the manual system by reconciling landing certificates for imported goods and transference copies for exported cargo. Cargo monitoring aids in the prevention of theft and container pilferage. The ETM was not operable at test examined ICDs under the Commissionerate of Noida, Kanpur, Belapur, Chennai port, and Kolkata port. Even after 90 days, transposition copies of shipping bills for exports had not been received in nine Commissionerate's where a manual approach of monitoring was used.

4.4.2 Un cleared cargo pending

According to the data on undisposed containers acquired by Audit from 85ICDs/CFSs test checked, 7877 containers with a total storage space of 1.17 lakh square metres were awaiting disposal as of 31 March 2017. 3397 containers (57%) had been awaiting disposal for more than three years. Pendency was primarily caused by delays in Customs issuing no objection certificates, delays in clearance certificates from participating agencies such as plant quarantine and pollution control agencies, delays in implementing orders for cargo destruction, and delays in re-exporting containers, according to an analysis of uncleared cargo.

4.4.3 Dumping of Hazardous waste

Imports of metal scrap and garbage are regulated by the Foreign Trade Policy Handbook of Procedures 2009-14. The Import Policy under Schedule I of the ITC regulates the import of seconds and faulty rags, PET bottles, and garbage. The Hazardous Wastes (Management, Handling, and Transboundary Movement) Rules 2008 govern the import of metal scrap and

used rubber tyres with specific approval from the Ministry of Environment and Forestry, as well as clearance from state pollution control boards.

As of 31 March 2017, an audit identified 469 containers of hazardous waste lying undisposed in 85 ICDs and CFSs, with periods ranging from one to seventeen years. Live bombs and war material scarp were discovered in three ICDs in Rajasthan, 92 containers of used tyres, metal scarp, and hazardous chemicals were discovered in one CFS under Mumbai Customs Zone II, 15 containers of hazardous cargo were discovered in ICD Tughlakabad, and 50 containers of mixed waste were discovered in ICD Moradabad.

Audit discovered that the modus operandi for the import of hazardous waste included the import of cargo without required documents, the import of municipal trash through high sea sales, and the import of municipal waste by mis-declaring the cargo.

4.4.4 Importers are given an unfair advantage under Section 23 of the Customs Act.

An importer may abandon title under Section 23 of the Customs Act of 1962. under certain conditions, to imported goods as long as the commodities have not been assessed for clearance within the country or for the deposit of items in a warehouse. In situations of test checked ICDs and CFSs, the audit discovered that as of December 31,

Importers have abandoned 838 containers in March 2017 after filing bills of entry an examination of similar abandoned cargo cases revealed that some importers were habitually leaving shipments while continuing to do business. Import comparable goods The audit found no documented explanations for the importers to purposefully abandon high-value goods Imported products parts involved.

4.4.5 Internal Audit

Shortfalls in bond/bank guarantees and insurance by custodians, shortfall cost recovery costs, cargo theft and pilferage, and manual filing of bills of entry and shipping bills are all examples of these problems. Furthermore, Audit discovered that local Risk Management Committees (LRM) were not established in at least 12 ICDs where data was collected, as required by a CBEC circular from 2007. Non-constitution of post compliance audit (PCA) wings, delayed review of documents selected for PCA audit, and no internal audit were all discovered throughout the audit.

4.5 CONCOR Performance analysis

From the secondary data sourced, the performance indicators like financial report, dividend pay-outs over a period, and other parameters was observed.

4.5.1 Financial graph

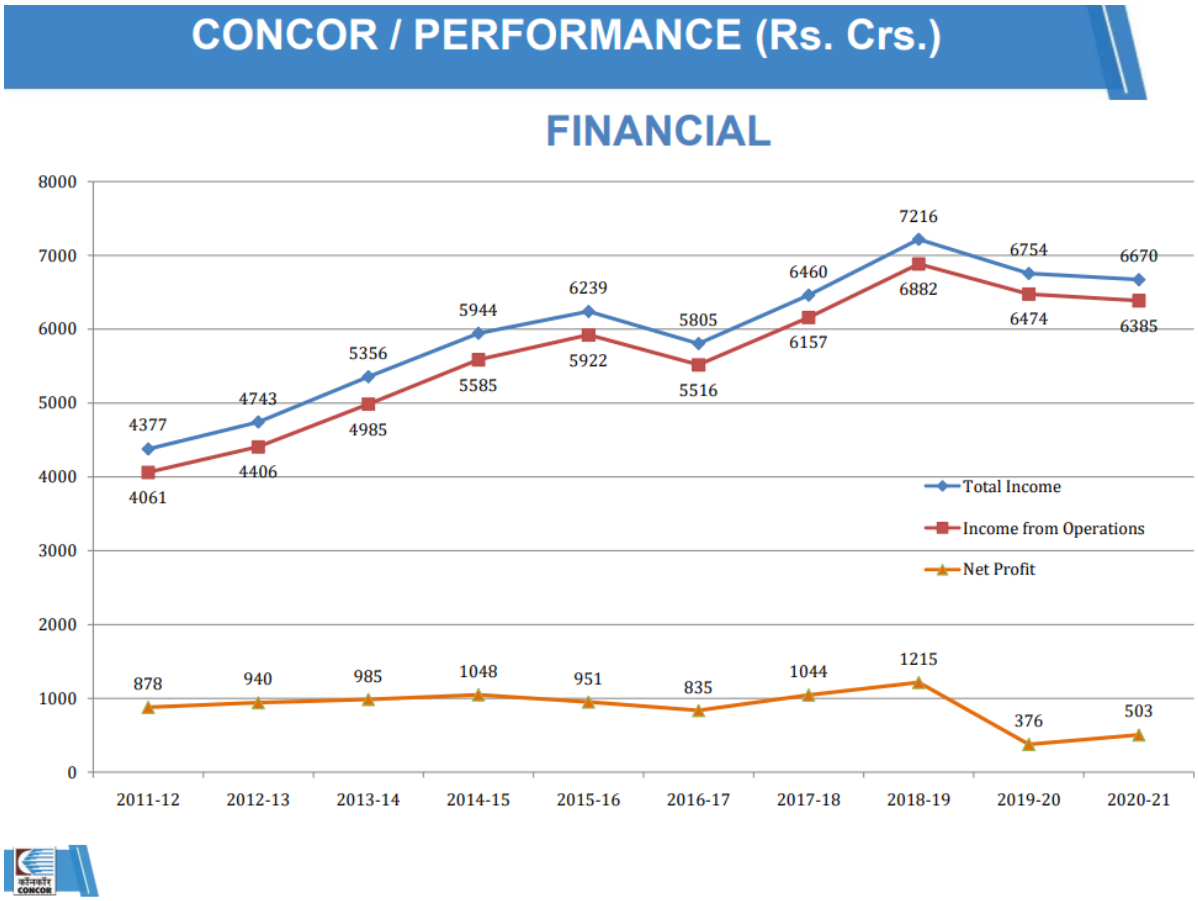

Fig 4.1: Net profit chart 2011-21[9]

[9] Source: https://concorindia.co.in/company.asp

4.5.2 Dividend pay-out

DIVIDEND

YEAR	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21
DIVIDEND PAID # (Rs. In Crore)	206.98	227.47	239.82	261.27	263.21	369.97	416.76	520.95	219.35	304.65
DIVIDEND AS A % OF EQUITY	165%	175%	123% *	134%	135%	152% $	171%	171% @	72%	100%
DIVIDEND # AS A % OF NET PROFIT	24%	24%	24%	25%	33%	43%	39%	43%	60.69%	60.53%

*POST ISSUE OF BONUS SHARES IN THE RATIO OF 1:2
Excluding Dividend Distribution Tax.
$ POST ISSUE OF BONUS SHARES IN THE RATIO OF 1:4
@ POST ISSUE OF BONUS SHARES IN THE RATIO OF 1:4

Table 4.1: Dividend pay-out chart[10]

[10] Source: https://concorindia.co.in/company.asp

4.5.3 Physical Performance

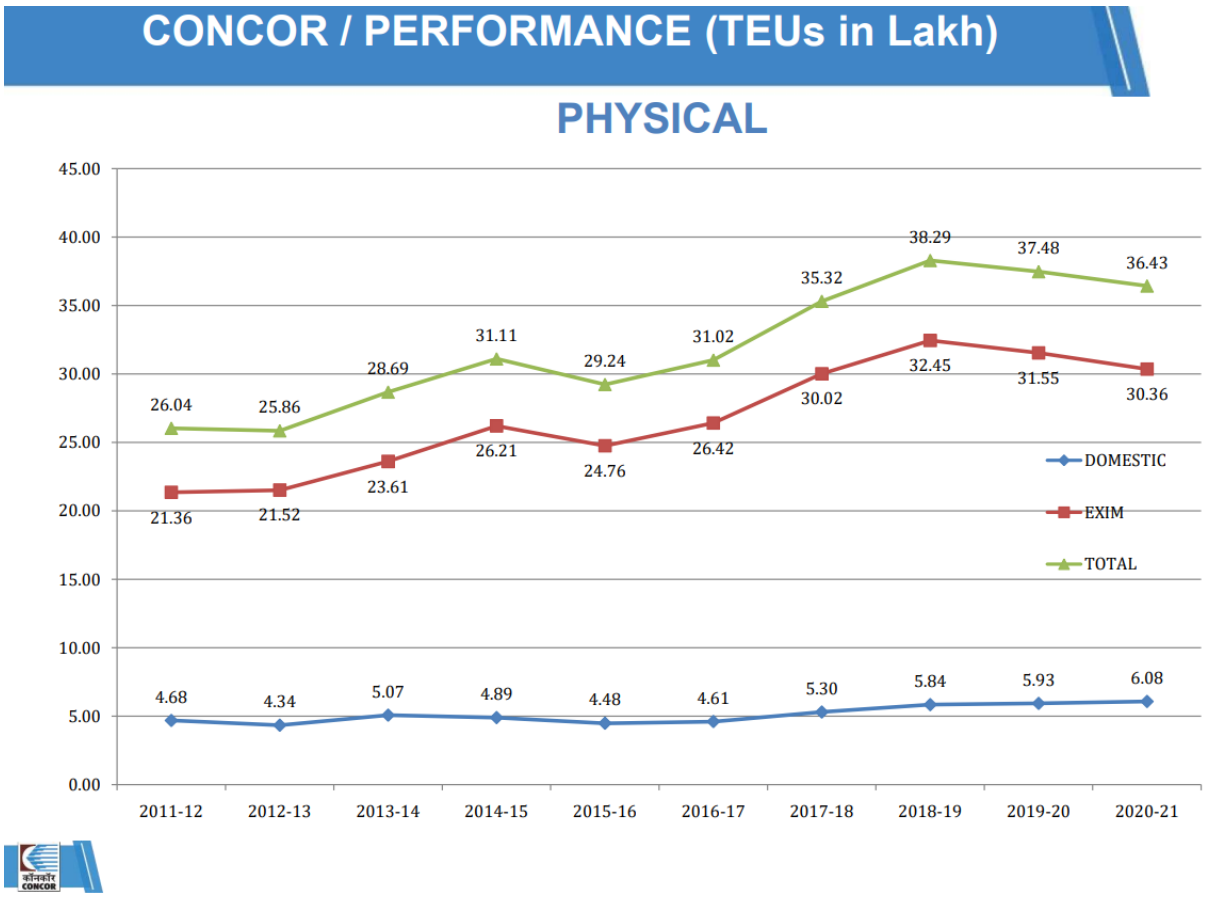

Fig 4.2: Physical Performance graph [11]

[11] Source: https://concorindia.co.in/company.asp

4.5.4 Table on key performance indicators.

CONCOR / KEY PERFORMANCE PARAMETERS

	FY' 2018-19	FY' 2019-20	FY' 2020-21
EXIM HDLG (TEUs)	32,45,259	31,54,596	30,35,794
Domestic Hdlg (TEUs)	5,84,160	5,93,162	6,07,536
Total Hdlg (TEUs)	38,29,419	37,47,758	36,43,330
Optg Income (Rs. Crs.)	6881.91	6473.79	6384.96
Total Income (Rs. Crs.)	7216.14	6753.52	6670.44
Profit After Tax (Rs. Crs.)	1215.41	375.78	503.33
NSE Market Cap as on 31st March (Rs. Crs.)	32006 as on 31-03-2019	20207 as on 31-03-2020	36,435.80 as on 31-03-2021
Tonnage Mn MT(tfc. by Rail) CONCOR	43.5	40.43	42.02
Railways	60.34	61.22	63.23
Market share CONCOR %	72.09	66.04	66.46
Net Worth (Rs. Crs.)	10367.87	10064.74	10203.74
Capital employed (Rs. Crs.)	9126.52	8606.12	8654.29
Dividend (Rs. Crs.)	520.95	219.35	304.65 #182.79 interim dividend paid
Bonus Shares Issued	Apr '08- 1:1, Sep '13-1:2, Apr '17- 1:4, Feb'19 -1:4		

Table 4.2: Concor's key performance indicators

4.6 Observations about CONCOR

According to my observations, there are two process flows in Concor ICD: EXIM and DOMESTIC. What exactly is a domestic? It is the location where consumers' items are transported within the country by train or road.

In 1997, it became evident that there was a large potential for domestic traffic that could be used. As a result, a distinct Domestic Division was established in December 1997, in addition to EXIM. Concor handles domestic inside and outward processes with the use of DTMS software (Domestic terminal management system). This program aids in the recording of the cargo's whole process flow.

DTMS is used to facilitate the flow of cargo movement in the future. What exactly is DTMS? It is software that assists in improving the flow that was previously done manually; with the help of this programme, it has made it simple to handle the containers.

CRIS (Central for Railway Information System) created this software, while ORACLE handled the database. Domestic has rail at Concor that handles all domestic cargo. Various sorts of waggons go along this line.

a. BFKN: which can carry 20ft and 22ft waggons,

b. BLC, which can handle 20ft waggons and 45 waggons.

c. BLL, which handles 20ft and 22ft waggons,

So, at the moment, the CONCOR at ICD/WFD alone handles around 1323 inward containers and 511 outbound containers. Cement (J.K, BIRLA CEMENTS) is the largest inward flow, and solar panels (TATA SOLARS) are the major outward flow. Other inward and outward commodities include wheat, paints, grey cement, and tiles. Then, as a team, we were assigned to the EXIM counters to watch the procedure and flow, applications, and charge collection. They employ ETMS (export and import terminal management system) software in the counters, which is only used for EXIM (Export and Import). They issue the import and export applications required to destuff and restuff the goods to the allotted warehouse or given containers. After the import or export application, the further movement of the work flow they issue job order which gives the entire process of the goods like what should be done, should it be examined or allotted to factory destuffing or warehouse bonding, etc.

They mostly require a shipping bill, a let export order, an invoice, and a packing list in an export application. Then, a vehicle permit is issued so that the vehicle can enter the ICD for transhipment, and a task order is issued for unloading the contents from the vehicle into the container, which is then shipped via rail to respected ports for export. Concor collects several fees for the procedure, such as handling fees, document fees, and survey fees, for each container (20FT or 40FT).

They require BOE (Bill of Entry) and B/L (Bill of Lading) customs free of charge in import applications. Later, a task order is issued for the unloading of products that have arrived at the Concor ICD, and customs clearance is required to obtain authorisation from customs for the movement of cargo from the ICD to the designated locations or factories.

In export and import applications, the application number is specified in the year/month/date/serial number format, and everything is handled by the CHA (custom house agent) so that the importer or exporter does not have to worry; he or she only has to pay the total charges.

The major exports of goods are to USA

- Petroleum products
- Gems and stones
- Engineering goods

The major imports of goods are from China

- Gold
- Petroleum crud
- Chemicals

4.6.1 Export process flow FCL (Full container load)

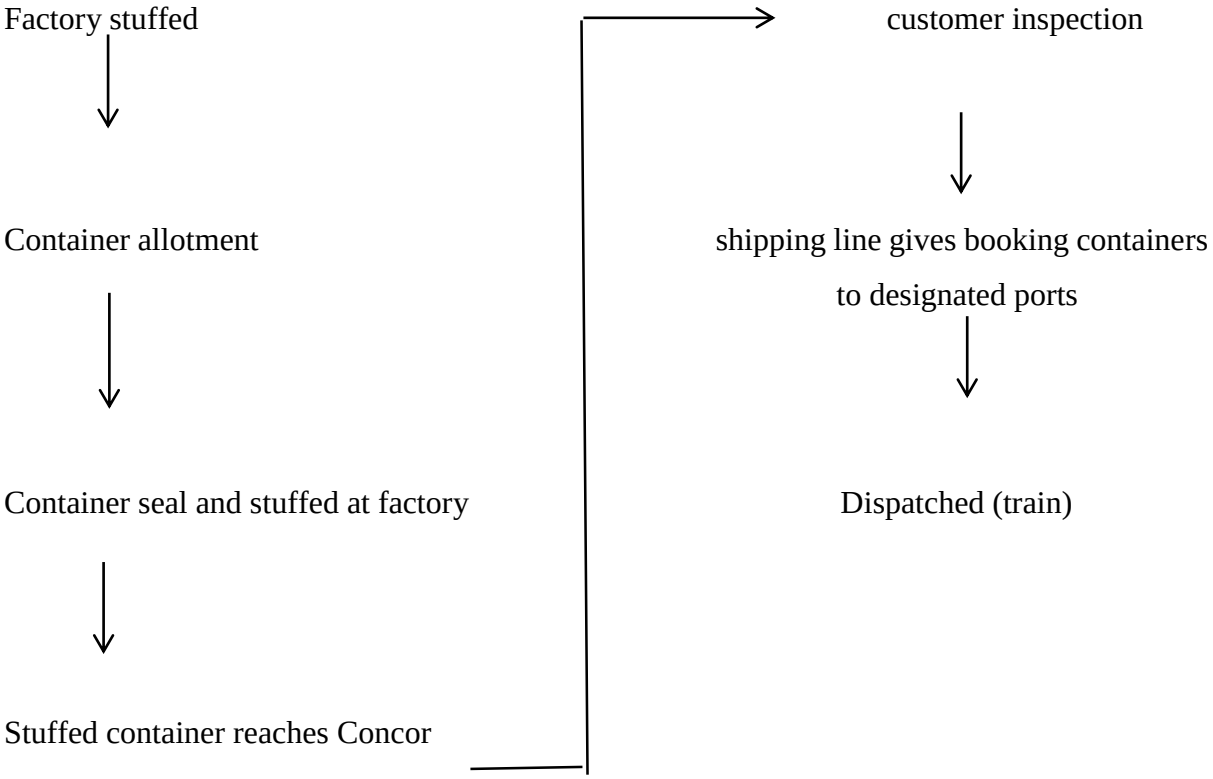

Fig 4.3: export flow of FCL

2.4.2 **Export process flow LCL (Less container load)**

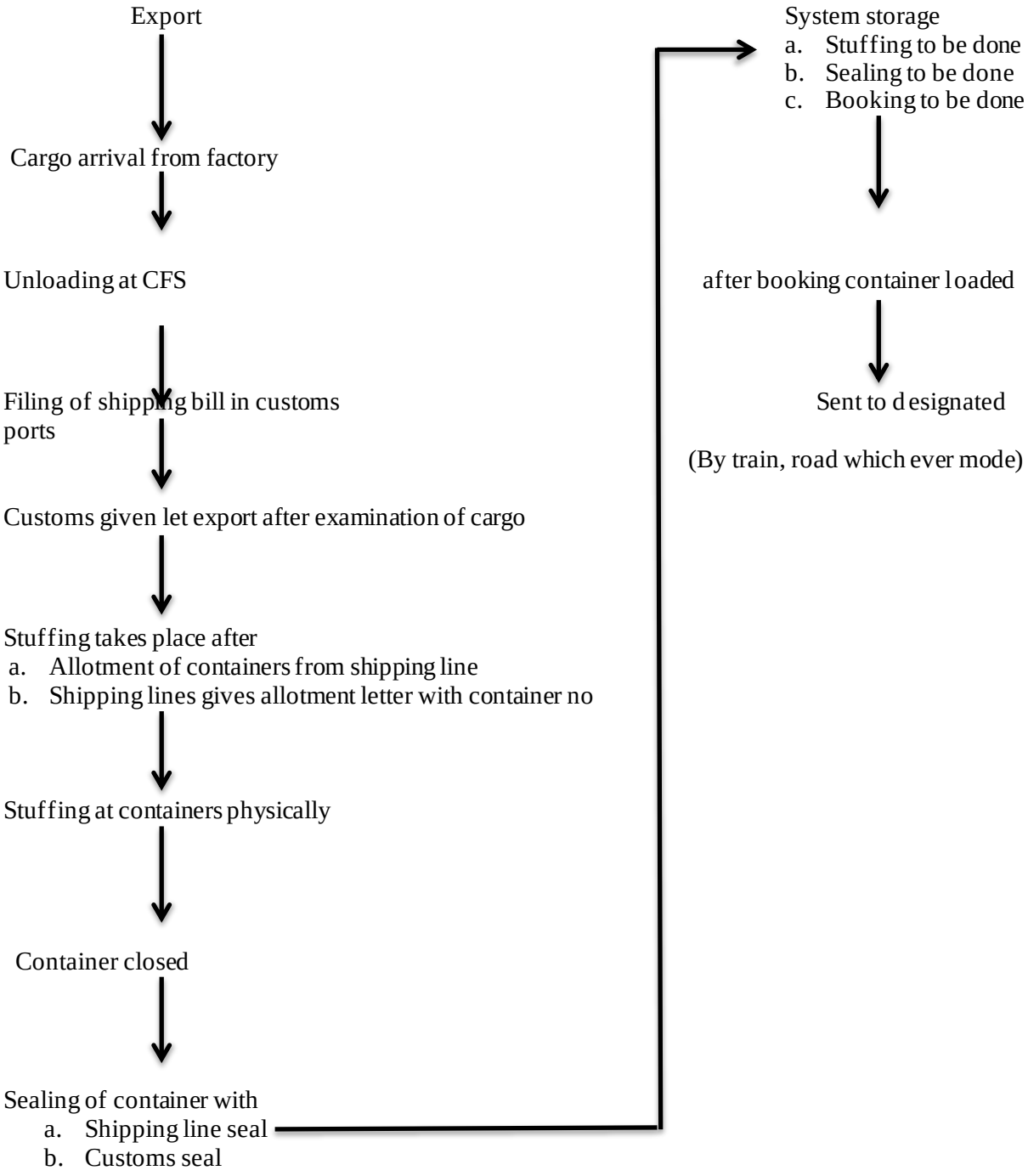

Fig4.4: Export process flow LCL

4.6.3 Import process flow

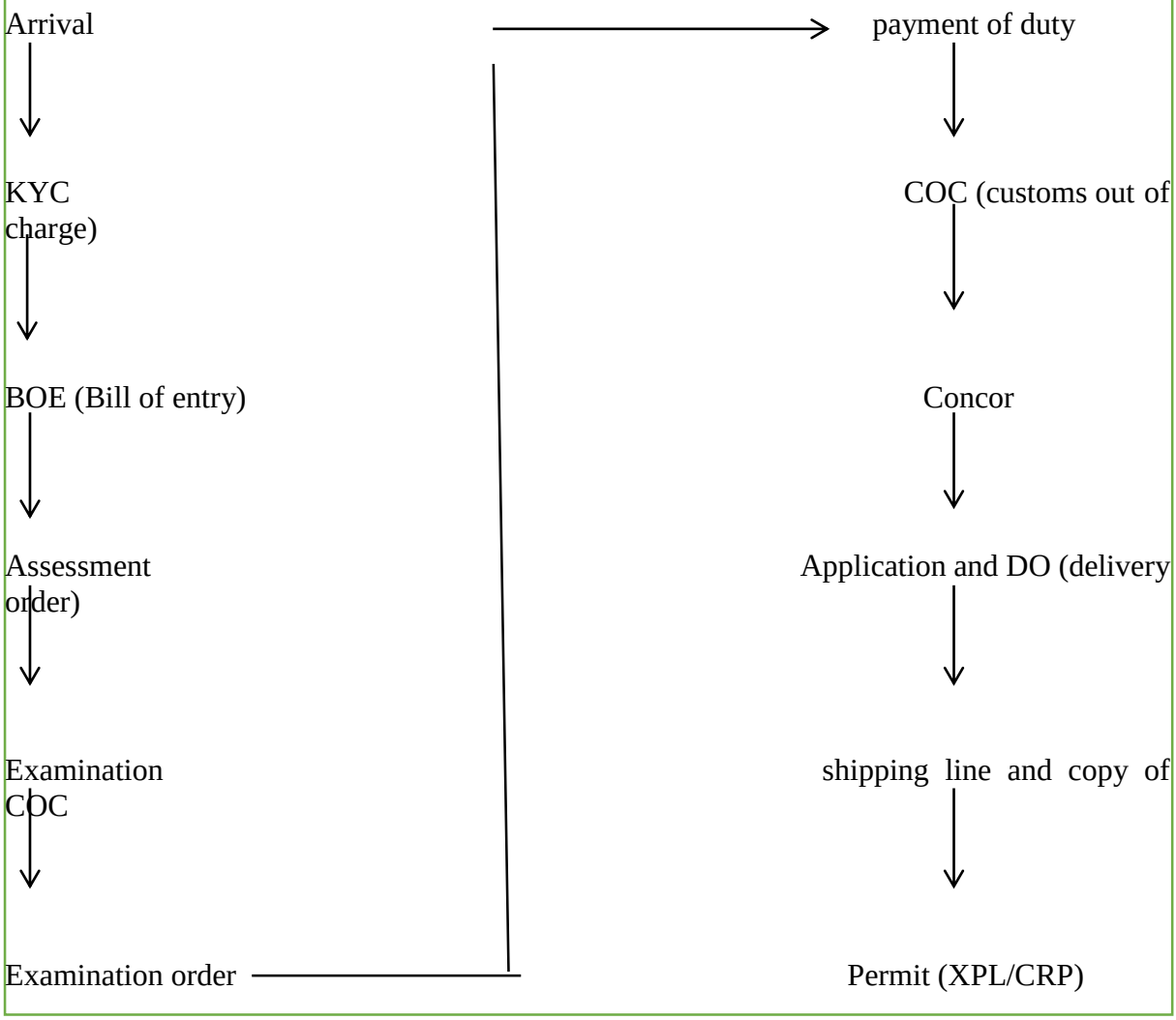

Fig 4.5: Import process flow

There are two types of de-stuffing factories and terminals in the home market. In terminal de-stuffing, the goods arrive by rail and are de-stuffed on the terminal before being collected by the factory trail or trucks and taken directly to the factory; there is no customs inspection here, only a survey check; and in factory de-stuffing, the goods arrive by container and are directly sent to the factory or allotted place for de-stuffing.

Concor has started a new service called FMLM (First Mile Last Mile) in the domestic section. This is where the customer hands over his/her goods and later everything is taken care of by the Concor, then the total amount is debited from the CPDA (Central Parties Deposit Account). This allows the customer to relax and let Concor handle everything.

Personal effects (baggage), furniture, textiles, medical supplies, and other items arrive to the CFS warehouse. Approximately 62% of FCL and 13% of LCL containers arrive during import. Approximately 4% of FCL containers and 1% of LCL containers are exported throughout the export process. Every day, around 4160 containers are imported and 3970 containers are exported.

The commodities stored in the CFS warehouse do not take more than 3 or 4 days to be exported, and inbound cargo does not take more than 8 days to lay in the warehouse. Then they demonstrated how the system works and what the ground rent fees are, among other things. Later, they demonstrated how Concor issues job order examinations such as 5% or 100% examinations; without this job order, customs cannot do the inspection.

Then we were escorted to the customs department to see how they execute their 5 percent and 100 percent inspections, which was more helpful than just explanation.

The required documents in import for a 5% examination are as follows: a. Import application b. BOE (Bill Of Entry) only document required c. B/L (Bill Of Lading)

Then, a job order for 5% is issued using RMS (Risk Management System), which is utilised to choose the items number and lots to be investigated.

The required documents in import for a 100 percent examination are as follows: a. Import application b. BOE customs permission required c. B/L

With a 100% inspection, the complete cargo is de-stuffed from the container and examined, but in a 5% inspection, only the party of cargo is examined.

The systems use MPLS (Multi-protocol link storage), which is similar to an optical fibre network, to ensure that there is no delay in the counters, allowing customs to process job orders and documents more quickly. The network service providers are Airtel and JIO; previously, they had BSNL and XCL, which were satellite version service providers that were slower and time consuming. The MIS main data base is located in Delhi and is coordinated by all customs so that they can view all of the data but cannot access it for verification purposes. Their software is called ICEGATE (Indian Customs Electronic Gateway), and all data from Concor is updated at ICEGATE so that the customs can access it.

Then there's CIFM, which keeps track of all freight costs so that when the customer enters the tonnage, the system automatically enters the freight, warehouse rent, and other fees.

If there are any problems in the MIS department, they have a higher area department in Delhi where the power flow is maintained.

4.5.4 MIS Flow

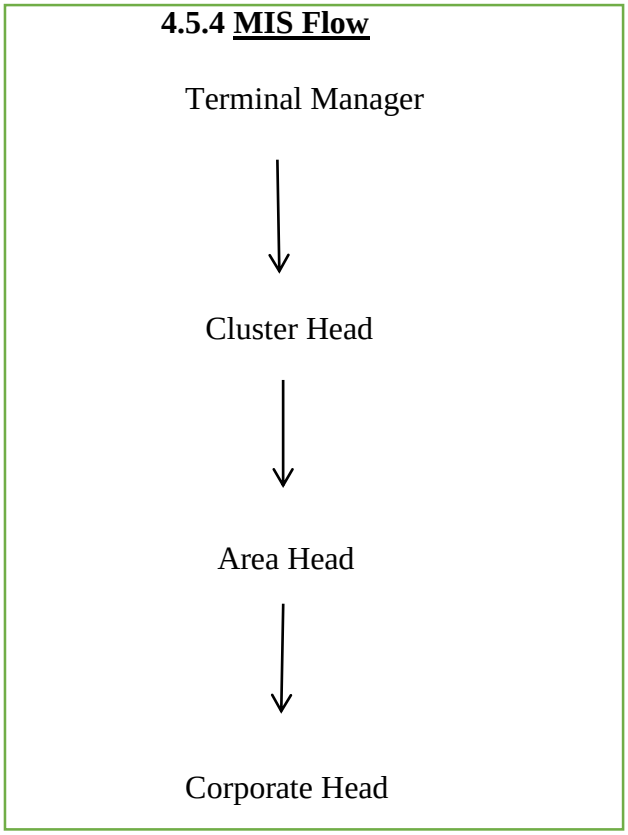

Fig 4.6: MIS flow

In examination and placement, there is a 5% and a 100% examination, so during this inspection, the BOE (Bill of Entry) is important to issue a job order for inspection, which is given by the custodian (Concor) to the CHA/LINER/FORWADER, but the 100% examination requires special permission from customs.

Every detail is included in the job order, such as a. seal number, b. hazardous items (20% freight costs additional), and c. liner/shipping line.

The placement allocation is then issued in the CFS warehouse, so that products are placed in the warehouse with a particular identifying number.

Then, following the placing of goods, there are customs formalities, which include a customs inspection.

CHAPTER 5

CONCLUSION AND SUGGESTIONS

5.1 Conclusion

In conclusion, using an ICD provides a unique service that can assist international consumers bringing in containers. By utilising all control points, the ICD at CONCOR provides solutions such as packing and repacking, LCL consolidation, container storage, repair, cleaning, fumigation, on-site customs clearance, and other customs services.

According to the findings of the investigation, the ICD project at CONCOR has a lot of promise in terms of financial indicators. It is also suggested that the following benefits be derived from the ICD:

- Concentration points for long distance cargoes and its unitization.
- Service as a transit facility.
- Customs clearance facility available near the centre of production and consumption
- Reduced level of demurrage and pilferage.
- No Customs required at gateway ports.
- Issuance of through bill of lading by shipping lines, hereby resuming full liability of shipments.
- Reduced overall level of empty container movement.
- Competitive transport cost.
- Reduced inventory cost.
- Increased trade flows.

ICDs that have been built up but are not operational due to a lack of required infrastructure represent a waste of capacity. EDI connectivity, which is critical for expediting the clearance of export and import cargo, must be constantly monitored. However, Audit was unable to locate any data on EDI downtime maintained by any of the test tested ICDs and CFSs, raising concerns about the effectiveness of EDI monitoring. Shortfalls in bonds, bank guarantees, and insurance were discovered to be lacking in the internal control mechanism. Manual filing of bills of entry and shipping invoices was common, notwithstanding the EDI system. Study

concluded that the overall compliance environment at ICDs was weak due to gaps in post-compliance audit functions and internal audit.

5.2 Suggestions

In view of the analysis findings and conclusion, Audit recommends:

1. Government may draw up a policy level document for providing a robust framework that comprehensively defines the approval process as well as the monitoring and regulatory mechanisms. Such a mechanism cannot rely on the Customs Law alone, as it is a legislation primarily for safeguarding government revenue and regulating the cross-border movement of goods and does not address the requirements of monitoring and regulation of dry ports sector.

2. A website on ICDs and CFSs may be developed by DoC where updated database and real time information on operations of ICDs and CFSs could be accessed by all stakeholders.

3. Central Board of Excise and Custom may consider introducing penal clause under HCCAR 2009 for Certified Cargo Screening Program found flouting these requirements.

4. Central Board of Excise and Custom may consider making it mandatory for all EDI locations to maintain a system downtime database and share this information publicly as part of performance measure of CCSPs (Certified Cargo Screening Program).

5. CBEC (Central Board of Excise and Custom) may consider bringing suitable modifications in ICES (Indian Custom System) to automate the re-credit of bond by populating the landing certificate message into ICES. Board may also consider developing a reporting mechanism to independently monitor the un cleared cargo/ containers rather than relying upon the custodian's report.

6. To check the large-scale dumping of municipal and hazardous waste into India through cross border trade, provision in the Customs Act / Customs Regulations may be provided to invoke the Hazardous Materials (Management, Handling and Transboundary Movement) Rules, 2008 or any other relevant laws of the land to initiate stringent penal action including criminal action, if warranted, against defaulting importers and shipping lines. CBEC may issue relevant guidelines to its field formations in this regard.

7. CBEC may lay down procedures for re-export of hazardous waste in consultation with other concerned ministries like the Environment and Shipping to avoid any ambiguity in procedures.

BIBLIOGRAPHY

- Journal of Maritime & Transportation Science 55(1):71-90
- Annual report of CONCOR 2020-21
- https://www.sciencedirect.com/
- https://concorindia.co.in/
- https://www.proquest.com/
- https://www.academia.edu/