A STUDY ON IMPACT OF COVID-19 ON MARINE FOOD PRODUCTS EXPORT IN INDIA WITH REFERENCE TO MPEDA

Submitted for partial fulfillment of the requirements for the award of degree of

MASTERS OF BUSINESS ADMINISTRATION

(International Transportation And Logistics Management)

Submitted by

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DECLARATION

I, RAHUL U V (1905305029) student of School of Maritime Management, Indian Maritime University- Kochi Campus hereby declares that this project report titled "A STUDY ON IMPACT OF COVID-19 ON MARINE FOOD PRODUCTS EXPORT IN INDIA WITH REFERENCE TO MPEDA" submitted in partial fulfillment 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 or associate ship of any University/Institution. The information submitted is true and original to the best of my knowledge.

PLACE: Kasaragod **RAHUL U V**

DATE : 29-06-2021

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Above all, I thank God Almighty for giving me the courage and wisdom to complete this project report.

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EXECUTIVE SUMMARY

Title of Dissertation: a study on impact of covid-19 on marine food products export in india with reference to mpeda

Degree: MBA International Transportation And Logistics Management

Fish and its wide range of products are major trade products in the global food industry. Fisheries play a vital role in boosting the economy of India. As a source of food , the fisheries has equal importance as of agriculture and animal husbandary. It is estimated that marine food products export will be one of the top five foreign exchange earners for the country. India is one among the seven largest fish producing countries in the world. Indian marine fishing sector plays a significant role in the economy of the country through employment generation, foreign exchange earnings and above all by providing cheap protein-rich food for the people.

The Marine Products Export Development Authority (MPEDA) was set up by an act of Parliament during 1972. The Marine Products Export Promotion Council established by the Government of India in September 1961 was converged in to MPEDA on 24th August 1972. MPEDA is given the mandate to promote the marine products industry with special reference to exports from the country. The

major objective of this organisation is to develop and augment the resources required for promoting the exports of all varieties of fishery products.

It all started with the emergence of COVID 19 and the World Health Organization declared COVID-19 as a global pandemic and a public health emergency of international concern . India reported the first COVID-19 case in Kerala and the transmissions gradually increased. To curb the further spread, India's government declared nationwide lockdown . The pandemic has hit hard on the world trade. India's total exports had a negative growth when compared to the previous years. COVID-19 has disrupted the food systems drastically affecting many lives and livelihoods, significant impacts are visible in the fisheries sector too. The sector has to deal with the decrease in demand and supply of marine food along with the logistics issues.

The purpose of the study conducted is to understand the process involved in the marine food trade and the impact of COVID-19 on the marine food industry in India. The study analyse the impact of COVID-19 on marine food export by comparing the exports before and during COVID-19. The study also shows the impact of COVID-19 on various processes ie, production, distribustion and consumption of marine food products.

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CHAPTER 1

INTRODUCTION

1.1 MARINE FOOD INDUSTRY

The fishing industry is one of the oldest industries in India and it has a great scope for rapid improvement in the future. Fisheries play a vital role in boosting the economy of India. As a source of food, fisheries stand almost at par with agriculture and animal husbandary. Fisheries have a large potential to fulfill the basic objectives of production-cum full employment as envisaged in the development plans of India. Fisheries provide employment to millions of people directly and indirectly. In a direct way it provides employment through the allied activities like net making, boot carving, fish processing, fish transportation, ice and salt making and the like.

Marine environment in India has a great potential with a vast coastline of 7516.6 km , which is the 6th largest in the world. The fishing ground available is two million square kilometers, yielding an annual fish catch of over four million tons. It is estimated that marine products export will be one of the top five foreign exchange earners for the country. India is one among the seven largest fish producing countries in the world. Indian marine fishing sector plays a significant role in the economy of the country through employment generation, foreign exchange earnings and above all by providing cheap protein-rich food for the people.

It is a fact that the blue economy contributes 3.57% to the global GDP. India exports 50 different types of fish and fish products, INR 451.06 billion and 1.377

million tonnes in terms of value and quantity, respectively . In recent times, India's seafood sector is recognized as one of the major sources of nutritional benefits and employment, along with being a crucial economic booster. As per the data of fish export worldwide in 2019 , India is among the 7 largest producer of fish products . Seafood worth INR 44368.44 crores (USD 6.72 billion) with 13.92 lakh tonnes of the volume was exported during 2019 . South-east Asian countries, China, USA, Japan, European Union, Middle-east countries are the major export markets for Indian seafood, including fish, crustacean, mollusc, etc.

1.2 EMERGENCE OF COVID-19 AND IMPACT

It all started with the emergence of COVID 19 and the World Health Organization declared COVID-19 as a global pandemic and a public health emergency of international concern . India reported the first COVID-19 case in Kerala and the transmissions gradually increased. To curb the further spread, India's government declared nationwide lockdown . The pandemic has hit hard on the world trade. India's total exports had a negative growth when compared to the previous years. COVID-19 has disrupted the food systems drastically affecting many lives and livelihoods, significant impacts are visible in the fisheries sector too. The sector has to deal with the decrease in demand and supply of marine food along with the logistics issues.

India's total exports in March, April and May 2020 are estimated as USD 528.45 billion, USD 27.96 billion, and USD 61.57 billion showing negative growth of

1.36, 36.65, and 33.66 percent respectively compared to the same period in the previous year which indicates the significant impact of the pandemic during this period. This is one of the major crises in the fisheries sector has ever witnessed.

The outbreak has created chaos and has a significant impact on the Indian seafood trade as most of the COVID-19 affected countries like the USA, China, EU and the Middle East were having strong trade links with India which has disrupted due to the pandemic. The aftermath of this includes the reduction in the seafood trade, falls in demand for fish, delay in export which affects the freshness of the seafood products as fish is a highly perishable commodity, etc. The major reason for the decrease in seafood export is due to the prolonged lockdown and associated disruption of demand and supply chains.

Fishes are one of the major nutritious part of the global food chain and key source of employability generation among rural coastal people. Fish and fish products are one of the most traded food products throughout the world involving 38 percent international trade . Decreased consumer demand, lower supplies, and interference in supply chains will directly affect the people engaged with the industry such as fisherman, fish processor, fish vendors, suppliers and transport workers. Postponement of various research and development programme, science and management meetings will detain the growth of this sector. Lockdown in the landing centres and harbours has severely affected the fisher folks in all nine coastal states and four coastal union territories of the country. In the initial stage

the lockdown led to a fishing ban afor a long time which effected the fisherman and the fisheries sectors.

Rural agricultural labour wages growth was depressed both in nominal and real terms from the pre COVID-19 period . In this circumstance, the corona outbreak will disrupt the fishery activity and supply through several dimensions, like crop harvesting, processing, procurement and marketing. Transportation hurdles, labour movement restriction, will directly affect the farming and processing industry. March to June is the peak season for fish farming as well as shrimp farming which will get hampered for non-availability of migrant workers. Shortage of fish seed, fertilizer and other inputs may also hamper the desire production level. Suppliers and producer will be greatly affected by reduced demand, transport constraint and closure of different restaurants and retail outlets. Lack of proper functioning of supply chains, lots of farmers are not able to sell their crop properly, leading to massive losses. Despite being essential service, fish and food supply chains are facing a lot of difficulties in marketing. Some people are not buying the fishes in afraid to get affected. India's seafood export may get retarded as it was likely to achieve $7-billion target . Most of the export markets like Japan, US are buying selectively, and European market is totally closed off. Thus, this sluggish farming sector and stagnant exports are going to put the fishery industry of the country in a severe crisis.

1.3 SIGNIFICANCE OF THE STUDY

The study conducted aims to gain insight on the marine food exports of India and the imact it had during the global pandemic.

The COVID-19 pandemic has hit hard on most of the developed countries and various sectors. One of the most affected sector is the fisheries and the marine food exports sector. The study focuses on the exports of marine food products from India durimg the pandemic with the reference to MPEDA, as the study contains the comparision of pre COVID-19 and during COVID-19 exports of India published by MPEDA.

1.4 STATEMENT OF THE PROBLEM

The global pandemic has hit hard on most of the countries in the world that are developed and had impact on the global economy in several ways. In the initial phase it is assessed that the world trade disrupted due to the COVID-19 outbreak.

India's total exports in March, April and May 2020 are estimated as USD 528.45 billion, USD 27.96 billion, and USD 61.57 billion showing negative growth of 1.36, 36.65, and 33.66 percent respectively compared to the same period in the previous year which indicates the significant impact of the pandemic during this period. COVID-19 has disrupted the food systems drastically affecting many lives and livelihoods, significant impacts are visible in the fisheries sector too.

The major reason for the decrease in seafood export is due to the prolonged lockdown and associated disruption of demand and supply chains. This is one of the major crises in the fisheries sector has ever witnessed. The study is conducted to understand the impact of COVID-19 on the seafood export of India.

1.5 OBJECTIVES BEHIND THE STUDY

Primary Objectives

- To study about the impact of COVID 19 on the seafood trade of India
- To study the steps taken to overcome the implications of the pandemic
- To study the impact of pandemic on the transportation and logistics of seafoood trade

Secondary Objectives

- To study the process involved in the seafood trade
- To study the export of seafood from kerala
- To suggest the findings for the above study

1.6 SCOPE OF THE STUDY

The purpose of the study conducted mainly focuses on the process involved in the marine food trade and the impact of COVID-19 on the marine food industry in India.

1.7 CHAPTERISATION

CHAPTER 1: INTRODUCTION

CHAPTER 2: RESEARCH DESIGN

CHAPTER 3: INDUSTRIAL PROIFILE

CHAPTER 4: SUPPLYCHAIN INVOLVED IN MARINE FOOD EXPORTS

CHAPTER 5: IMPACT OF COVI-19 ON MARINE FOOD EXPORT

CHAPTER 6: FINDINGS, SUGGESTION AND CONCLUSION

CHAPTER 2

RESEARCH DESIGN

2.1 RESEARCH METHODOLOGY

Researcher has used the deductive research approach and analysed the data and previous literature using the Quasi-Experimental method. The study work is descriptive, comparative and analytical in nature. Secondary data like Books, newspaper reportss, online articles, Websites MPEDA and NETFISH, journalS are used for the study. Secondary Data Analysis are used extensively.

2.2 HYPOTHESIS

Assumptions are suppositions about things may or may not happen in the future.

- India is the fourth biggest seafood exporter in the world, possessing a 4.41% overall share of the global seafood market and further gearing up for 6.7% in 2030.
- The consumption of fish products are expected to rise in 2030.
- The most effected are the elements of supplychain of seafood production which comprises of fisherman, commision agent, supplier and the exporter. This is expected to overcome in the coming years.
- The issue of less demand, logistic issues and the employment crises are expected to be overcome in coming years through suitable policies and procedures.

2.3 SOURCE OF DATA

Study is basically based on secondary data collected mostly from reliable official sources Websites Marine Product Export Development Authority, Seafood Export Association of India, online journals and articles. Secondary data have been used extensively.

2.4 LITERATURE REVIEW

The review on the related study of marine food trade in India and the implications of COVID-19 on marine food trade is done in this chapter.

Indian marine food industry

A journel by the *Seafood Export Assosiation of India(SEAI)* states that The Indian Seafood Industry today is on a totally different footing as to what existed in the late sixties. India has taken a major stand in the Global Seafood Market and our seafood is one of the biggest foreign exchange earners.Today we have world class seafood factories following quality control procedures meeting the most stringent of international standards.Though shrimp continues to dominate our export basket, the Indian Seafood Industry has diversified its product range and its markets.For many years, Japan was India's largest export market but in the last two years United States has emerged as India's leading export market.We export mainly basic raw material for reprocessing to Japan whereas our exports to the

United States consists of value added products for direct use in the American Food Service Industry and for retail sale in the supermarkets. Our seafood exports now include crabs, lobsters and other kinds of fish.

In a study conducted by Parashar kulkarni in 2003 *(The Marine Seafood Export Supply Chain in India)* it is stated that with the fish production of approximately six million ton in 2003 , India was the fourth largest producer of fish products. And the production was doubled in the last decade . The growth of indian fish production was labelled as the blue revolution by the Indian Council of Agricultural Research since fish production increased from 0.75 million metric tons in 1951 to 6.1 million metric tons in 2003.

Seafood supplychain

The study conducted by Parashar kulkarni in 2003 *(The Marine Seafood Export Supply Chain in India)* also elabrates the seafood supply chain in India. The study states that in general the supplychain of seafood production comprises of fisherman, commision agent, supplier and the exporter.

COVID-19 Pandemic in India

There are a lot of newly published books and articles related to the COVID-19 pandemic in India, a few related to my study has been reviewed below.

The article on *(Indian Seafood Trade and Covid-19: Anticipated Impacts and Economics)* by Mohammed Meharoof, Shahid Gul and Neha W. Qureshi in 2020

states the origin of the pandemic and the initial reaction of India on the speard of COVID-19 was identified in India. This article also states the impact of COVID-19 on the seafood trade of India.

The book *(COVID-19 Pandemic Trajectory in the Developing World)* by Mukunda Mishra , R. B. Singh in 2020 provides an overview of fight against the pandemic by different countires including India and the future impacts. This book provides multidisciplinary contributions for expressing the solidarity of academic knowledge to fight against this global challenge. And also states that It is crucial that there should be an on-going discussion and exchange of ideas, not only from the perspective of the current times but keeping in view the preparedness for unforeseen post-COVID crises as well.

The book *(The COVID-19 Pandemic, India and the World Economic and Social Policy Perspectives)* Edited By Rajib Bhattacharyya, Ananya Ghosh Dastidar, Soumyen Sikdar in 2021 is a timely look into the economic and social impact of the pandemic in the Indian context which also includes some forward looking analysis.

The study *(COVID-19 Pandemic in India: Present Scenario and a Steep Climb Ahead)* by Rimesh Pal and Urmila Yadav in 2020 is a brief of impact of COVID-19 on India and summarises the initial stage of the pandemic in India.

Impact of COVID-19 on marine food export of India

There are a lot of articles and a few studies conducted related to the impact of COVID-19 on marine food export of India. The studies relavent to my project report has been reviewed below.

The study *(Impacts of Novel Coronavirus (COVID-19) Pandemic on Fisheries Sector in India: A Minireview)* conducted by Soumyadip Purkait, Sutanu Karmakar, Supratim Chowdhury, Prasenjit Mali and Surya Kanta Sau published on 2020 states that In Indian context, COVID-19 pandemic is an unrivalled shock for the economy and health system as a whole. Disruption of demand and supply chain of agricultural commodity like fish and fishery products for the prolonged nation-wide lockdown will directly affect 14.5 million people associated with the sector. The magnitude of the versatile impact includes production distribution and marketing of inland fisheries, marine capture fisheries, seed supply and seafood export. This study aims to describe the multidirectional economic impacts of the fisheries sector from this pandemic and a set of policy recommendation to ameliorate this shock.

The article on *(Indian Seafood Trade and Covid-19: Anticipated Impacts and Economics)* by Mohammed Meharoof, Shahid Gul and Neha W. Qureshi published in 2020 states that Fisheries play a vital role in boosting the economy of our country. The COVID-19 situation has disrupted the seafood trade which has serious implications on the economy and employment. This article deals with

the preliminary findings on the impact of corona virus pandemic on seafood trade and copes up plans to foster the sector. The findings realized a significant reduction in seafood export from India which will affect the economy of the country.

The article on *(Impact of COVID-19 on Indian Seafood Industry and Potential Measures for Recovery: A Mini-review)* by Susmita Mukherjee, Asik Ikbal, Soibam Ngasotter, Deeksha Bharti, Susmita Jana, Anakhy Mondal and Triparna Pahari published in 2020 states the decline of export and import during the pandemic and the main reason for the same was the restrictions by different countries as a safety requirement . Due to uncertainty of the lockdown periods, the Indian seafood sector has crashed, affecting livelihoods of all fishing and related communities, export and supply chain (both domestic and international), demand and consumption etc. The study conducted assesing the news paper reports and articles.

2.5 RESEARCH GAP

The time period for research was a major limitation which effected collection of data. Due to the restriction caused by COVID-19 the collection of data through primary source (interview, survey and personal observation) was not possible and the study is limited to secoundary source of data.

CHAPTER 3

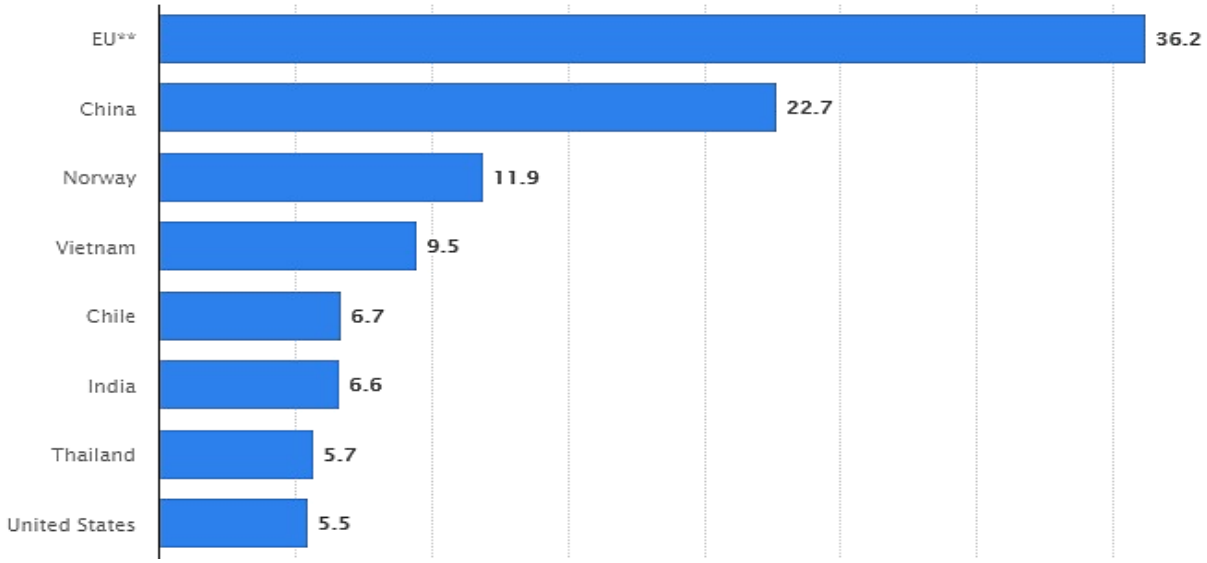
INDUSTRIAL PROFILE

3.1 OVERVIEW OF MARINE FOOD SECTOR

Fisheries provides nutrition and food security to a large population of the country besides providing income and employment to millions. India is estimated to have a fisheries potential of about 5 million tonnes residing in 2 million Sq Kms of Exclusive Economic Zone (EEZ) spread off the 8118 Km. long coastline. The West coast of India has 5 maritime states viz. Gujarat, Maharashtra, Goa, Karnataka, and Kerala and two Union Territories - Daman & Diu and Lakshadweep. Our country's East coast has 4 maritime states namely Tamil Nadu, Andhra Pradesh, Odisha and West Bengal and two UTs-Puducherry and the Andaman and Nicobar Islands. About 2.4 lakhs fishing crafts are being operated in our seas and more than 1500 landing sites are functioning across the country. The latest figures show that marine capture fisheries contribute yearly about 3.5 million metric tonnes to our fish production. More than 50 different types of fish and shellfish products are being exported to 75 countries around the world. During the year 2018-19, India has exported more than 14 lakhs MT of seafood worth more than 47000 crores rupees. Marine capture fisheries is facing decline due to climate change, added with illegal and unscientific fishing practices. The catch of almost all commercially important marine finfishes and shellfishes is on the decline trend resulting in severe resource depletion and unemployment in the sector. Responsible fishing besides strong policy decisions is needed for the sustainability of our marine capture fisheries.

It is a fact that the blue economy contributes 3.57% to the global GDP. In recent times, India's seafood sector is recognized as one of the major sources of nutritional benefits and employment, along with being a crucial economic booster. As per the data of fish export worldwide in 2019 , India is among the 7 largest producer of fish products.

Fig:3.1 Leading exporting countries of fish and fishery products worldwide in 2019

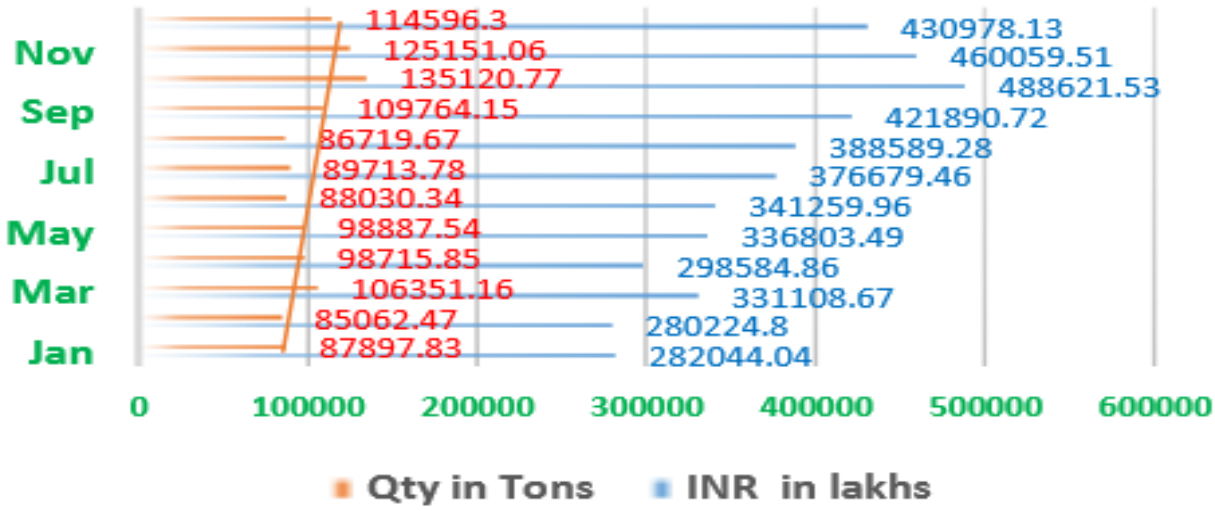


source: statista

Possessing a 4.41% overall share of the global seafood market and further gearing up for 6.7% in 2030. The export pattern has shown an increasing trend with a growth rate of 1.1 per cent quantity-wise and 3.28 per cent valuewise. Frozen shrimp is the major exported item in the seafood trade basket both quantity and value-wise followed by the frozen fish, frozen cuttlefish, frozen squid, dried items, chilled items, live items and others. The major export market for fish trade

in quantity-wise is South East Asian countries (32%), USA (20%), China (16%), European Union (12%), Japan (6%), Middle East (4%) and value-wise is USA (35%), South East Asian countries (23%), European Union (13%) out of which Spain, Italy, UK, Belgium, France, Netherlands contributes 11.4%, China (12%), Japan (6%), and the Middle East (4%).

Fig 3.2 India's seafood trade performance in 2019



Source: Food and Scientific Reports

The above figures shows that exports showed a growing pattern over the months and a major share of exports occurred during the period from September to October. At 135120.77 tons worth INR 4886.22 crores, the export touched the highest in both quantity and volume in October.

3.2 MARINE PRODUCTS EXPORT DEVELOPMENT AUTHORITY (MPEDA)

The Marine Products Export Development Authority (MPEDA) was set up by an act of Parliament during 1972. The erstwhile Marine Products Export Promotion Council established by the Government of India in September 1961 was converged in to MPEDA on 24th August 1972. MPEDA is given the mandate to promote the marine products industry with special reference to exports from the country. It is envisaged that this organisation would take all actions to develop and augment the resources required for promoting the exports of "all varieties of fishery products known commercially as shrimp, prawn, lobster, crab, fish, shellfish, other aquatic animals or plants or part thereof and any other products which the authority may, by notification in the Gazette of India, declare to be marine products for the purposes of (the) Act". The Act empowers MPEDA to regulate exports of marine products and take all measures required for ensuring sustained, quality seafood exports from the country. MPEDA is given the authority to prescribe for itself any matters which the future might require for protecting and augmenting the seafood exports from the country. It is also empowered to carry out inspection of marine products, its raw material, fixing standards, specifications, and training as well as take all necessary steps for marketing the seafood overseas.

MPEDA is the nodal agency for the holistic development of seafood industry in India to realise its full export potential as a nodal agency. Based on the recommendations of MPEDA, Government of India notified new standards for fishing vessels, storage premises, processing plants and conveyances. MPEDA's focus is mainly on Market Promotion, Capture Fisheries, Culture Fisheries, Processing Infrastructure & Value addition, Quality Control, Research and Development.

3.2.1 FUCTIONS OF MPEDA

- Registration of infrastructural facilities for seafood export trade.
- Collection and dissemination of trade information.
- Promotion of Indian marine products in overseas markets.
- Implementation of schemes vital to the industry by extending assistance for infrastructure development for better preservation and modernised processing following quality regime.
- Promotion of aquaculture for augmenting export production through hatchery development, new farm development, diversification of species and up gradation of technology
- Promotion of deep-sea fishing projects through test fishing, joint ventures and up gradation & installation of equipments to increase the efficiency of fishing.
- Market promotional activities and publicity.

- To carry out inspection of marine products, its raw material, fixing standards and specifications, training, regulating as well as to take all necessary steps for maintaining the quality of seafood that are marketed overseas.
- Impart trainings to fishermen, fish processing workers, aquaculture farmers and other stake holders in the respective fields related to fisheries.
- Conduct research and development for the aquaculture of aquatic species having export potential through Rajiv Gandhi Centre for Aquaculture (RGCA).

3.2.2 SIGNIFICANCE OF MPEDA

The prosperity of a country on many activities which it gets involved. Export is a developing activity which plays a major role in development of a nation. The role played by marine products in export process of the country is something which is inevitable.

MPEDA(Marine Products Export Development Authority) is a force to help the country in promoting the export of marine products to various international destinations. It functions as a supporting body to the farmers in increasing their production, by way of proving all type of assistance. The authority got various kinds of schemes which would help in promoting the trade of marine products and in protecting the exporters from all kinds of threats.

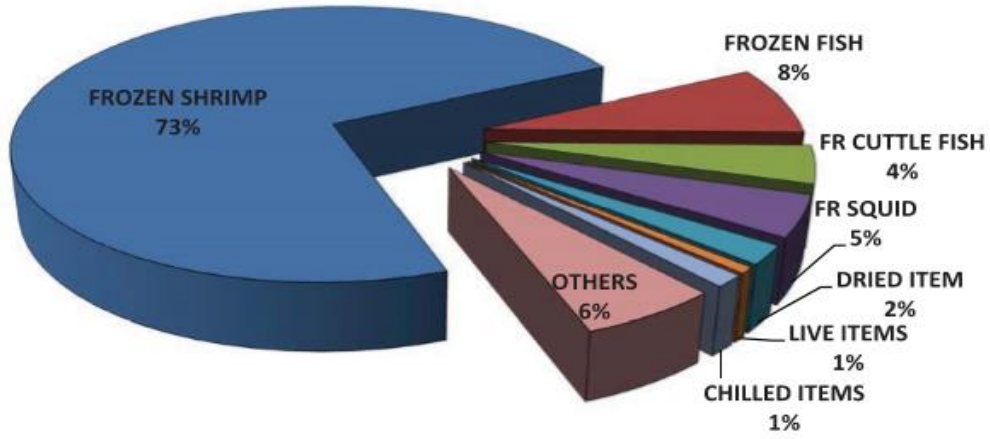
3.2.3 ROLE OF MPEDA

- Providing infrastructural facilities for seafood export trade and registration.
- Collection of trade information and their dissemination.
- Promotional activities of Indian maritime products are being done by MPEDA in overseas markets.
- Implementation of the schemes which is important for the industry by extending the assistance for infrastructure development which leads to better preservation and modernized processing.
- Promotion of aquaculture through hatchery development, new farm development, up gradation of technology and diversification of species.
- Promotion of deep sea fishing projects to increase the efficiency of fishing through test fishing, upgradation and joint ventures and installation of equipment's.
- Taking all necessary steps for maintaining the quality of seafood that are marketed overseas and to carry out inspection of marine products, its raw material, specification and fixing standards, training, regulating.
- Provide trainings for fishermen, fish processing workers, aquaculture farmers and other stake holders in the respective fields related to fisheries.
- Conduct research and development for the aquaculture
- To prescribe for itself any matters required for protecting and augmenting the seafood export from the country in the future.

3.3 MAJOR MARINE FOOD PRODUCTS EXPORTED FROM INDIA IN THE YEAR 2019-20

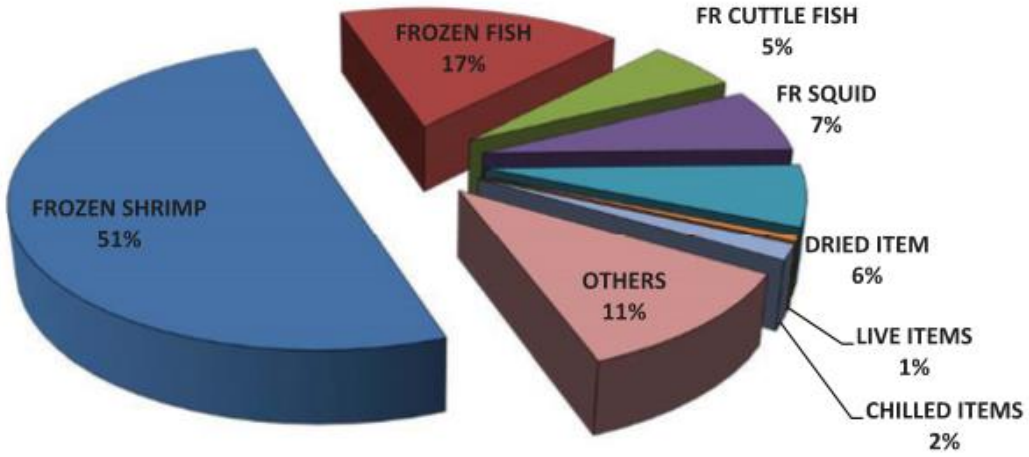
The following data is based on the statistics published by MPEDA for the year 2019-20

Fig 3.3 Item wise export in 2019-20(value US $)



source: MPEDA annual report 2019-20

Fig 3.4 item wise export in 2019-20(quantity)



source:MPEDA annual report 2019-20

3.3.1 FROZEN SHRIMP

Frozen shrimp continued to be the major item of export in terms of quantity and value, accounting for a share of 50.58 % in quantity and 73.21% of the total USD earnings. Shrimp exports during the period increased by 6.04% in USD value and 6.20% in quantity.

The overall export of shrimp during 2019-20 was to the tune of 6,52,253 MT worth USD 4,889.12 Million. USA is the largest market imported (2,85,904 MT) of frozen shrimp followed by China (1,45,710 MT), European Union (74,035 MT), Japan (38,961 MT), South East Asia (34,439 MT), Middle East (32,645MT) and Other Countries (40,560 MT).

The export of Vannamei shrimp has increased from 4,18,128 MT to 5,12,189 MT in 2019-20. Out of the total Vannamei shrimp exports in value terms, about 51.07 % was exported to USA followed by 21.81% to China, 8.19% to European Union,

4.73% to South East Asia, 4.51% to Japan, 3.66% to Middle East and 6.03% to Other Countries. USA is the major market for Black Tiger shrimp too with a share of 36.88% in terms of value followed by Japan (31.55%) and European Union (10.40%) in USD.

3.3.2 FROZEN FISH

Frozen Fish is the second largest export item, accounting for a share of 17.32% in quantity and 7.69% in USD earnings. In the year 2019-20 the export of Frozen fish has declined by 34.11% in Quantity and 26.53% in terms of USD value.

3.3.3 FROZEN SQUID

Frozen Squid has shown a decline of 13.32%, 12.38%, and 12.64% in terms of quantity, rupee value and USD earnings respectively.

3.3.4 FROZEN CATTLEFISH

Export of Frozen Cuttlefish has shown a positive growth of 17.76 % in quantity, 1.71% in rupee value and 1.45% in USD terms

CHAPTER 4

SUPPLYCHAIN INVOLVED IN MARINEFOOD EXPORT

The supply chain, in general, comprises of:

Fisherman ➔ Commission Agent ➔ Supplier (Pre-processor) ➔ Exporter

Table :4.1 Role of supplychain actors

	Fisherman	Commission agent	Supplier	Exporter
1	Input procurement:diesel,ice, food,nets,boat,6–12 helpers	Recieve fish from the boat	Recieve fish from the agent	Recieve fish as the raw materials
2	Undertaking 4-8 fishing trip	Weigh fish	Stock fish in crates filled with ice	Wash with potable water
3	Classify caught fish as per Fish category	Grade fish as per detective and non detective	Sort fish in four grades as per the quality standards of the exporter	Process using hazard analysis and crticial control point(HACCP) procedure
4	Store fish in ice	Negotiate price with the fisherman and the supplier	Transfer fish to pre processing unit	Pack processed fish
5	Unload fish on dock after priliminary wash		Clean fish	Perform export procedure and dispatch
6	Negotiate with agent and recieve money		Negotiate price with exporter and agent	Negotiate price with importer and supplier

Source: trade knowledge network

The agent should bear transaction charges between the fisherman and the commission agent, for example labor cost for lifting, cleaning, etc. Those between the agent and the supplier shall be carried by the supplier, whereas those between the supplier and exporter shall be borne by the supplier. The level of sophistication increases the value chain and means that a better and more advanced grading system is employed at each stage, as indicated in point three of table no.4.1

Table :4.2 distribution of income in supplychain(in per cent)

	Fisherman	Commission agent	supplier	exporter
Selling price to next person (rupees)	10	10.5	14-15	25-30
Average share of final export price	25-35	1.5-4	20	40-50

source:trade knowledge network

4.1 FISHERMAN

An average fishing trip is approximately four to five days and involves spending approximately Rs. 60,000–70,000. The risk of inadequate catch is completely borne by the fisherman. The inputs required on the boat include diesel (approximately 2,000–2,500 litres), ice (8–10 tons), helpers (10–12 on average), assistant fishermen aboard the boat and food.

The fisherman sells his catch as per different types of fish to the commission agent. Because the fisherman lacks appropriate expertise of fish handling, the fish are not evaluated at this point. In the domestic market, the seafood supply chain is relatively short and transparent, resulting in higher margins for all actors, including the fishermen.

4.2 COMMISSION AGENT

The commission agent act as a link between the fishermen and the supplier. The commission agent service is valuable as the commission agent deals with both fisherman and professional suppliers . Based on the condition of the fish, the

commission agent purchases products from the fisherman and rates each type of fish as clean or faulty (i.e., wear and tear, size, broken parts, etc.).

4.3 SUPPLIER

The supplier is the link between the commission agent and the exporter. The supplier uses trucks to carry the items to his facilities, where they are cleaned and sorted into three to four categories based on size, quality, and faults. Unlike commission agents, who deal with the whole catch of the fishermen, suppliers generally deal with particular species of fish. Small depots are located near docks or harbours where suppliers sort and clean their products.

4.4 EXPORTER

The exporter is the supply chain's most sophisticated end. Hazard Analysis and Critical Control Point (HACCP) issues arise initially at the exporter's end. The rest of the supply chain has no idea about export-import laws or safety concerns. The exporter sets the price, and prices flow daily from the exporter to the supplier, through the agent, and finally to the fisherman. The level of transparency is very low between each of these groups.

4.5 PROCESS INVOLVED IN THE MARINE FOOD PRODUCT EXPORT

There are four major stages involved in the process of export of marine food products.

- **Stage one(capture and onboard storage)**

  The first stage is the capture of fish. This is done by either pelagic or deep water trawl. The fish is then washed, iced and stored onboard.

- **Stage two(landing and auction of the catch)**

  Once the boat comes ashore, the catch is auctioned at the auction site and sold to the highest bidder. The buyers inspect the catch. Freshness is assessed by noting the colour and firmness. The size and weight are major determinant of price. The buyers make their own assessment of the count and quality and quote their price. Once purchased, the raw material is then transferred into plastic crates, iced and transported into pre-processing plants in refrigerated vans.

- **Stage three (pre-processing and processing)**

  In this stage the fish are processed, cleaned and trimmed to the standard that can be exported .

- **Stage four (packing, storing and transportation)**

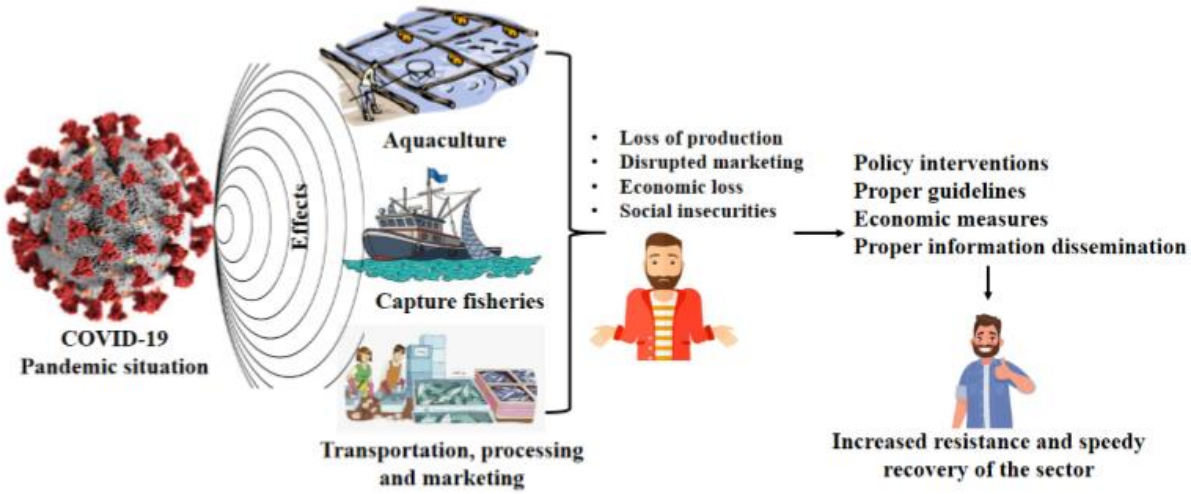
  The material is then packed in individual plastic wrappers, packed into master cartons and transferred to freezers where it is stored at minus eighteen degree Celsius until it is to be transported. The processed material is transferred to the port of dispatch in refrigerated containers for export.

CHAPTER 5

IMPACT OF COVID -19 ON MARINEFOOD PRODUCTS EXPORT

5.1 IMPACT OF COVID-19 ON SEAFOOD EXPORT IN INDIA

The environment created during the pandemic is fearsome and full of uncertainty and anticipations. The national economy has been crashed, with GDP contracting by 7.4% in 2020. The overall agriculture system has been hampered, along with the fisheries sector contributing 1.07% of overall GDP. This socio-economic situation has negatively impacted all facets of the seafood industry as well and could not be recovered and restored overnight. The problems have to gradually address by newer policies and changed attitudes and practices of both government and society.



The outbreak has created chaos and has a significant impact on the Indian seafood trade as most of the COVID-19 affected countries like the USA, China, EU and the Middle East were having strong trade links with India which has disrupted due to the pandemic. The aftermath of this includes the reduction in the seafood trade, falls in demand for fish, delay in export which affects the freshness of the

seafood products as fish is a highly perishable commodity, etc. The major reason for the decrease in seafood export is due to the prolonged lockdown and associated disruption of demand and supply chains.

Fishes are one of the major nutritious part of the global food chain and key source of employability generation among rural coastal people. Fish and fish products are one of the most traded food products throughout the world involving 38 percent international trade . Decreased consumer demand, lower supplies, and interference in supply chains will directly affect the people engaged with the industry such as fisherman, fish processor, fish vendors, suppliers and transport workers. Postponement of various research and development programme, science and management meetings will detain the growth of this sector. Lockdown in the landing centres and harbours has severely affected the fisher folks in all nine coastal states and four coastal union territories of the country. Starting March 24, 2020 fishers have not ventured into the sea; in the meanwhile, fishing ban season started from July 15 and will continue till June 15, in east coast. For the west coast it is from June 1 to July 31.

As a result marine fisherman will not be able to fish for about 75 days in east coast and 130 days in west coast. So, there is no doubt how this pandemic is going to devastate the fishing industry even after the lockdown. Rural agricultural labour wages growth was depressed both in nominal and real terms from the pre COVID-19 period . In this circumstance, the corona outbreak will disrupt the

fishery activity and supply through several dimensions, like crop harvesting, processing, procurement and marketing. Transportation hurdles, labour movement restriction, will directly affect the farming and processing industry. March to June is the peak season for fish farming as well as shrimp farming which will get hampered for non-availability of migrant workers. Shortage of fish seed, fertilizer and other inputs may also hamper the desire production level. Suppliers and producer will be greatly affected by reduced demand, transport constraint and closure of different restaurants and retail outlets. Lack of proper functioning of supply chains, lots of farmers are not able to sell their crop properly, leading to massive losses. Despite being essential service, fish and food supply chains are facing a lot of difficulties in marketing. Some people are not buying the fishes in afraid to get affected. India‟s seafood export may get retarded as it was likely to achieve $7-billion target . Most of the export markets like Japan, US are buying selectively, and European market is totally closed off. Thus, this sluggish farming sector and stagnant exports are going to put the fishery industry of the country in a severe crisis.

There are some major impacts of the pandemic on marinefood sector they are

5.1.1 FALL IN DEMAND FOR FISH AND FISH PRODUCTS

Due to lock down and the stringent measures adopted to control COVID-19 spread, people have poor access to the markets also the seafood restaurants were the main hub for fish products which are also closed resulted in a decrease in fish

consumption patterns. Also due to the false notion that the virus has spread from the Wuhan seafood market which was not a seafood market exclusively but a wet market where wild animals were being traded. Many people think consuming the fish may cause the spread of COVID-19 but it is corrected now. The bleak demand in International markets has made the products stuck in the factories so the factories reduced the production volumes .

5.1.2 PRODUCTION DISRUPTION

Fishing has banned in the country during the initial stages of the lockdown resulted in the nonavailability of raw materials for processing. Fishing and fisheries activities have exempted from the restrictions and remain operational during the later stages of lockdown, but the adverse situations aroused like unavailability of fishing accessories had made the sector difficult to thrive. The processing capacity and output have decreased due to the reduction in the workforce with the exodus of migrant laborers. The primary impact of COVID-19 on seafood trade is felt due to the disruption of the fish supply chain leads to a reduction in the unavailability of seafood products which significantly reduced the seafood export. 2019 witnessed an uplift of 2.1% in marine landing data, i.e., 3.56 million tonnes . Under the influence of pandemic and subsequent lockdowns, this data may face downfall . To ensure social distancing and proper safety measures, capture fisheries is significantly halted, which might positively affect fish stock and negatively affect the industry. Culture fisheries are also unable to

support the industry as there is a shortage of seeds, feed, and fertilizers due to the lack of transportation during lockdowns. Moreover, due to uncertainty regarding marketing facilities and consumers' demand, farmers have halted their culture. The lockdown period, i.e., from March to July, usually yields 60% of the shrimp production, but due to the stay-at-home regulations and disruption in inter-and intra-state movement, many farmers have "panic-harvested" small-sized shrimps to avoid further huge losses. Production capacity and cost have decreased and increased, respectively, as prices have been curbed due to the mandatory public health measures and this situation is responsible for unregulated price hikes in the supply chain of the final products.

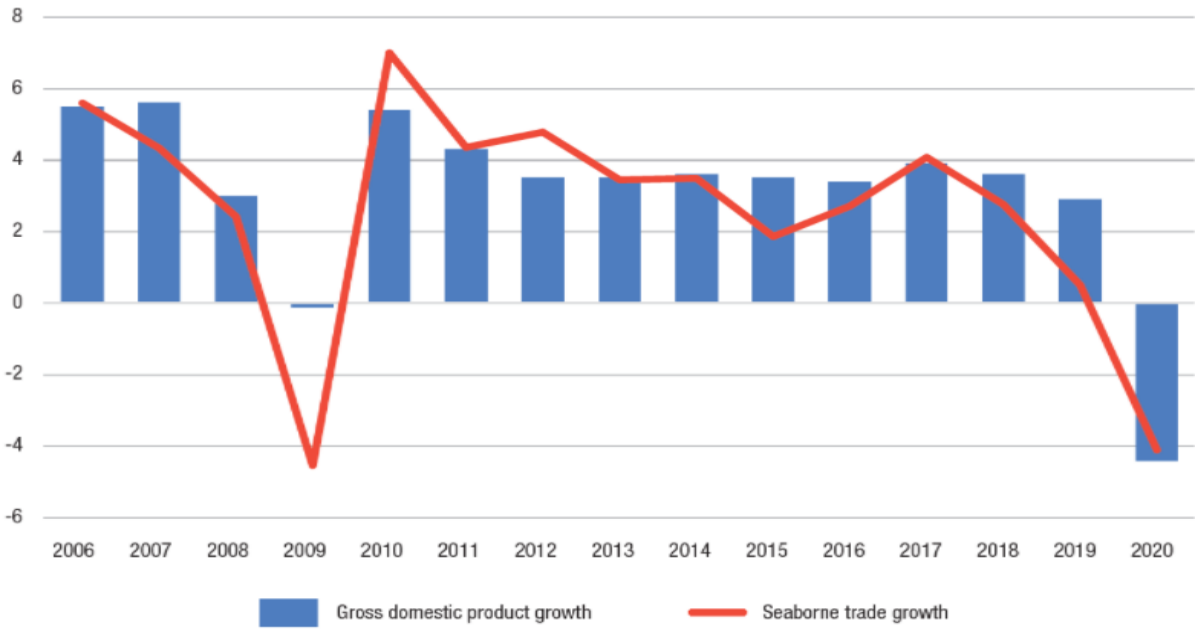
5.1.3 EMPLOYMENT CRISIS

The Indian fisheries sector employs nearly 15 million people; in processing industries, 65% of total workers are women . During the pandemic period, the workers faced a new form of immobility due to suddenly ceased fishing activities or shutdown of processing plants. In both cases, they are losing jobs or reduced salary as maximum processing and fishing firms are self-financed, and the owners are unable to continue the daily wages of workers; the scenery is quite same globally .Prolonged lockdown, disruption in internal and foreign trade, and reduced demand from importer countries have led to the closure of hatcheries, feed mills, and other accessory businesses in the fisheries sector . Unemployment crisis have given rise to dire assumptions regarding extremely negative impact of

COVID-19 . Currently, jobless and homeless migrant laborers finding interstate borders closed has become a critical issue for the government.

5.1.4 DISTRIBUTION AND TRADE

Fig 5.1 Development of international maritime trade and global output, 2006–2020



Source: UNCTAD calculations based on data from UNCTADstat

The seafood industry is connected by the continuous flow of products through the global value chain. Where some flows have been uplifted by the pandemic, others have been provided with chokepoints. 50% reduction in export has been predicted due to stringent lockdowns during this pandemic, losses incurred is estimated to be INR 4883.24 crores . United States of America is the World's top importer of seafood, but currently the market is undergoing major shock; as a result India's trade basket is also destabilized. Having international and inter-state trades been

halted, food giants closed, local retail markets and grocery stores have emerged as an alternative option for canned and frozen products. Many retailers have found strategies to deliver the products at consumers' doorsteps. Many processing factories have been shut down with excessive products that are nowhere to be transported and need extra frozen storage. Aftermath the lockdown period, slowly the trade is being mobilized but is currently facing issues like reduced demand for some species or products and prices downfall. Disruption in the supply chain might lead to the global food crisis. The figure 5.1 show the development of shipping trade and it shows a negatuve growth in the end of 2020 which effected the mobility of marine food products.

5.1.5 EXPORT

Table 5.1 Item wise export of marine food products from India in pre COVID-19 and during COVID-19 situation

Items	2019-20		2020-21		Growth (increase/decrease)	
	quantity(MT)	value(Cr)	quantity(MT)	value(Cr)		
Frozen shrimp	652253	34152.03	590275	32520.29	-61978	-1631.74
Frozen fish	223318	3610.01	188130	2941.65	-35188	-668.36
Frozen cattlefish	70906	2009.79	59292	1626.34	-11614	-383.45
Frozen squid	87631	2196.59	61176	1998.9	-26455	-197.69
Dried items	84414	981.5	85661	1148.38	1247	166.88
Live items	7287	324.26	4378	239.69	-2909	-84.57
Chilled items	21202	631.84	17622	477.99	-3580	-153.85
others	142638	2756.84	142806	2764.02	168	7.18

Source:MPEDA

Fig 5.2 Item-wise percentage of Export share of Fisheries Products (Quantity)2019-20

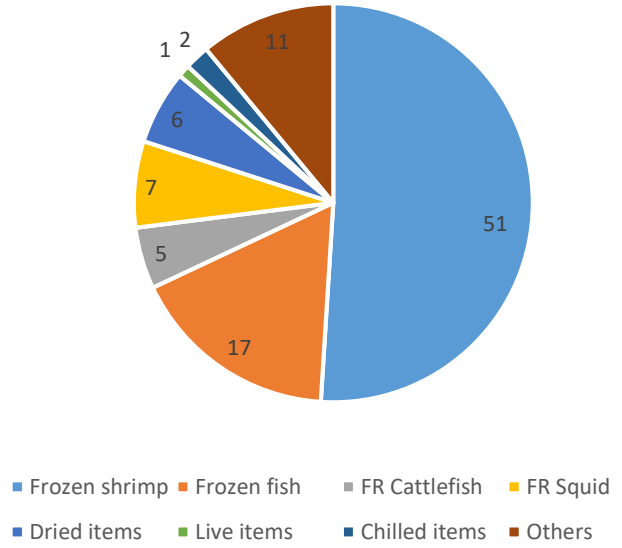
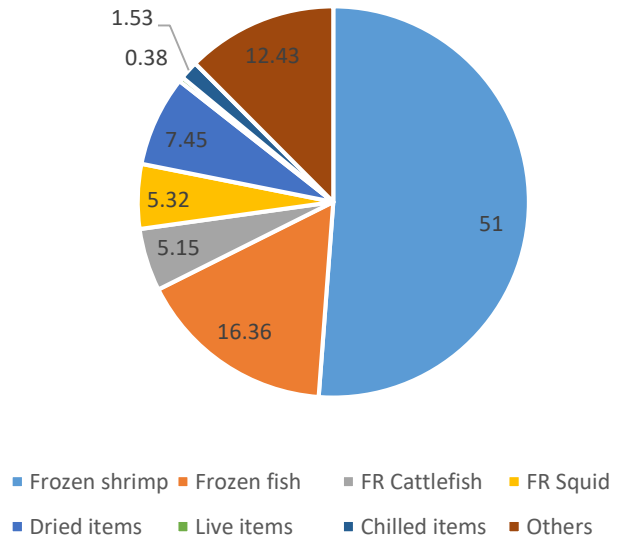


Fig 5.3 Item-wise percentage of Export share of Fisheries Products (Quantity)2020-21



When comparing th exports of marine food products in the pre COVID-19 and during COVID-19 situation the exports items wise shows a negative growth. The

exports in 2019-20 has a deckine from previous years and the exports are even lower when it came to 2020-21. This negative growth is mostly the impact of COVID-19 pandemic which led to various reasons like sluggish demand from major exporters, cancellation of several orders, delayed and reduced payments, decreased cargo mobility, less capture from the west coast due to lockdown, etc. Some of the items have a positive growth but less than the increasing rate in previous years. The larget species exported remains the same ie; Foren shrimp but frozen fish has decresed its quantity exported same as frozen squid , live items and chilled items.

Table 5.2 Market wise export of marine food products

Items	2019-20		2020-21		Growth(increase/ decrease)	
	quantity(MT)	value(Cr)	quantity(MT)	value(Cr)		
Japan	78507	2920.28	86764.08	3032.75	8257.08	112.47
USA	305177.73	17904.37	291948.08	17990.4	-13229.65	86.03
European Union	165773.38	6136.71	152769.73	6022.83	-13003.65	-113.88
China	329479.43	9617.44	218343.06	6908.63	-111136.37	-2708.81
South East Asia	223397.84	4929.9	217686.42	4875.54	-5711.42	-54.36
Middle East	57386.92	2079.12	48606.32	1843.39	-8780.6	-235.73
Others	129928.99	3075.03	133223.04	3043.72	3294.05	-31.31

Source: MPEDA

Fig 5.4

Market-wise Percentage share of Export in Quantity

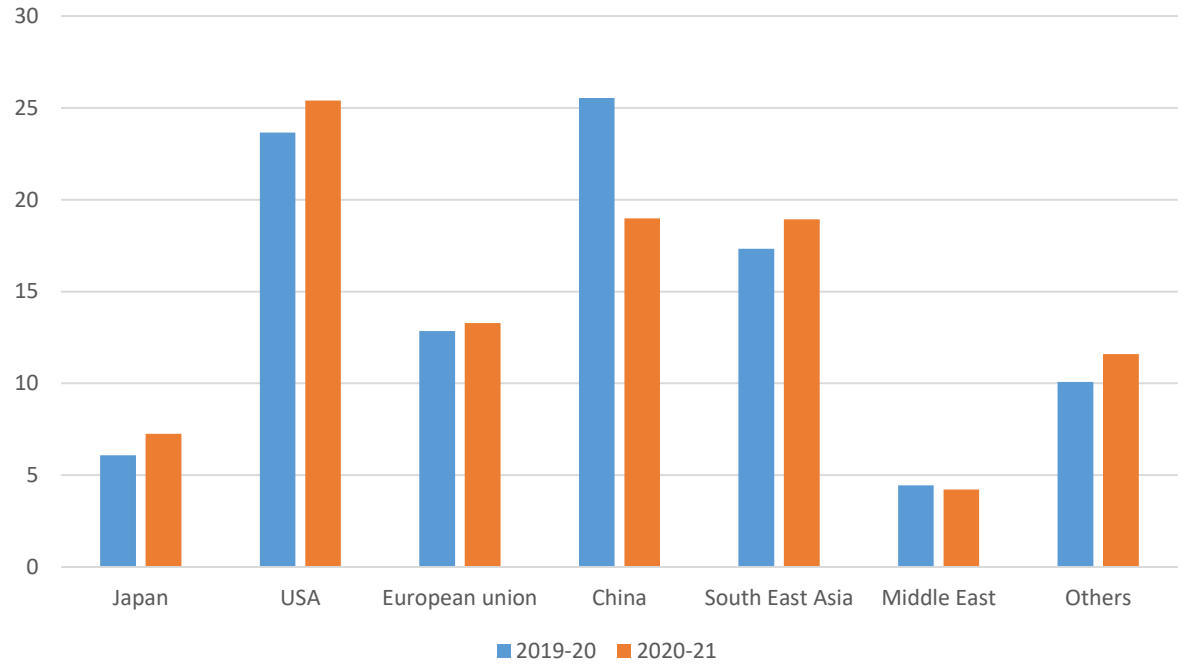
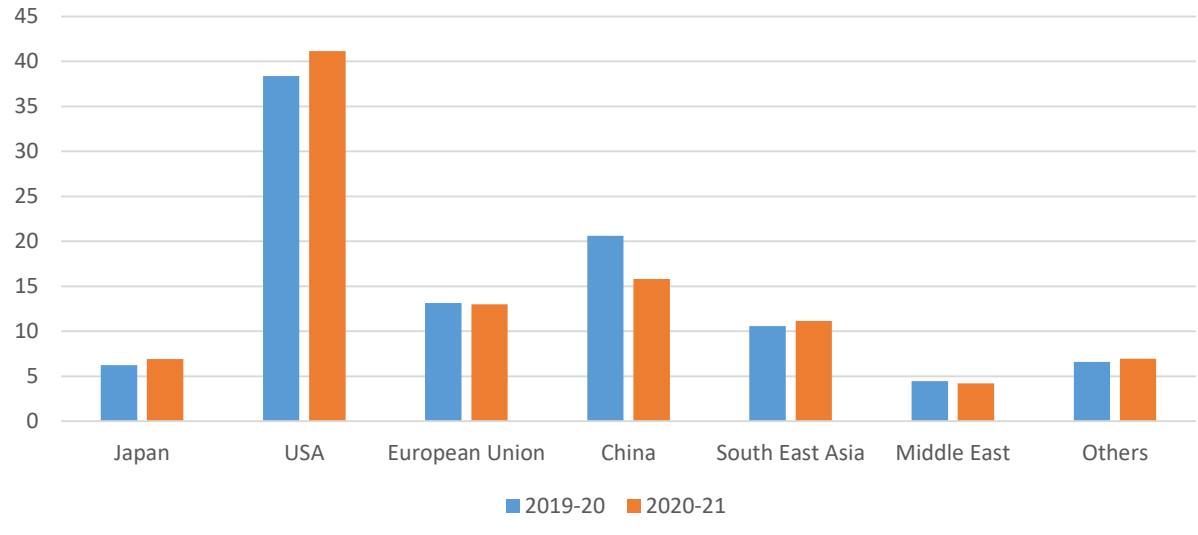


Fig 5.5

Market-wise Percentage share of Export in Value (INR)



India could not achieve the target and shipped 12,89,651 MT of seafood worth Rs 46,662.85 crores (US$ 6.68 billion) as the exports show a negative growth.

The largest importers for the Indian seafood industry have been the USA (value wise), China (quantity-wise), followed by European Union, South-east Asia, and Japan. In the year 2019-20 China was the largest importer of marine food from India and in the year 2020-21 the export to China has decreased and USA is the largest importer from India. Initially, in January 2020, China closed the ports for live lobsters and other products, which forced many cargoes to reroute, and orders were cancelled. Later on, after restrictions eased up globally, India has been able to export to the major countries, with frozen shrimp and frozen fish being the major items.

The anticipated impacts of a decrease in fish export are;

- Processing companies will incur high losses
- Effect the livelihood of fishers and dependents especially the small scale fishery
- Leads to a decrease in employment opportunities in the sector
- Fish farmers, especially the shrimp farmers face economic loss because of the decrease in demand and price
- Young start-ups in the field of fisheries will be in trouble due to the reduction in funds
- Increased transportation and logistics cost will pile up the cost of fish and fish products, which reduce the consumers purchasing power

5.1.6 CONSUMPTION

Seafood is a nutritious alternative that is becoming increasingly popular across the world. Consumers are worried about eating fresh seafood because of a false perception that the coronavirus originated at a seafood market in Wuhan, China. Although it has been shown that fish and shellfish are not carriers of the virus, the risk of infection by infected food workers and merchants must be overlooked. The trade of fresh and frozen seafood is harmed to some extent in this circumstance. Rather, there has been a surge in the use of processed, packaged, and canned meals, with consumers viewing these items as less dangerous. It's good to observe the growing attention towards processing industries, but at the same time, the bleak demand for fresh and live seafood must be restored as well.

CHAPTER 6

FINDINGS ,SUGGESTION AND CONCLUSION

6.1 FINDINGS

The study was conducted to understand the impact of COVID-19 on marine food product exports in India and to extend the knowlegde of the marine food product exports. The Study is based on secondary data and used extensively. The following are the findings of the study conducted .

- Fishes are one of the major nutritious part of the global food chain and key source of employability generation among rural coastal people. Fish and fish products are one of the most traded food products throughout the world involving 38 percent international trade
- India is one of the 7 largest producer of marine food products and South-east Asian countries, China, USA, Japan, European Union, Middle-east countries are the major export markets for Indian seafood, including fish, crustacean, mollusc, etc.
- Frozen shrimps are the major marine food product dominating the exports from India (in quatity) followed by frozen fish, squid and cattlefish.
- In 2019 Indian marine food product exports showed an increasing rate in the total performance when compared to the previous years.
- The supplychain involved in marine food product exports generally comprises of fisherman, comission agent, supplier and the exporter.

- The impact on COVID -19 was felt in different sectors in the world and the marine food export was one of the mostly effected sectors globally as it is one of the largest exported product.
- The major reason for the decrease in seafood export is due to the prolonged lockdown and associated disruption of demand and supply chains. Transportation hurdles, labour movement restriction, which directly affected the farming and processing industry.
- Due to the restriction by the the government as lockdown and trade barriers the demand for fish products fell down and the production and capture department lacked the availability of human resources as a result many fishermen were jobless and many had employment crisis.
- The supplychain was affected drastically as many stocks were left behind due to travel restriction and this led to fall in the export of marine food products from India to the major markets globally.
- When compared to the exports of pre COVID-19 situation the exports of marinefood products from India has decreased in value as well as the quatity during the pandemic.

6.2 SUGGESTION

As an immediate response to the towering pandemic, the government imposed lockdowns and border restrictions to ensure safety throughout the country, which made the entire fisheries sector to a halt. After few days into the lockdown, the government has exempted fishing activities, including culture, capture, processing and marketing, from the restrictions identifying the sector as an essential one. Despite this fact, the industry had to incur losses as a result of additional costs due to enhanced medical regulations during production and processing.

- Proper awareness during farming like social distancing in harvesting, procurement, marketing, packaging, proper sanitisation, personal hygiene, wearing face mask will help to prevent the spread of the pandemic.
- The proper guidelines and assistance like insurance schemes and medical aids (regular health check, personal protection kits, proper sanitization) for fishing community, subsidized production-capture-export,financial assistance, creating and stabilizing alternative seafood network etc.. are to be provided.
- Regular surveys for real-time data both in culture and capture sectors, will surely help the industry to intensify its potential and be efficiently prepared for any future crisis.

- A safe environment can be created in the production department for more effective usage and availability of human resourse.
- Providing timely and accurate data and info on fish and fisheries-related trade measures, supply and stocks, as well as prices in coordination with international organizations and research centers which reduces the uncertainty and allows traders, producers, and consumers to make informed decisions.
- Maintaining effective transport and logistical services will be crucial to the proper functioning of the fishery supply chain and to ensure that supply chains remain open and connected so that international markets can continue to function in supporting the movement of fish.
- As a long-term measure, a number of cold storages throughout the country need to be increased to prevent losses of raw material during failed transportation and logistics in future emergencies.
- The Government will have to pay more attention to the brewing economic crisis in the fish processing sector by providing grants and subsidies for storage infrastructures.
- The pandemic has also created a cause of uage of newer technology practice, policies and perceptions. The blockchain technology should be implemented in the marine food export sector , which will lead to the usage

of smart contracts and will increase the effeciency of supplychain which could minimise the current pain of global sea food industry.

There will not be a return to the old days , there will only be the new normal and to overcome the impact and crisis the sector need to work accordingly.

6.3 CONCLUSION

Fish and its wide range of products are major trade products in the global food industy and it contribute a huge part to the Indian economy. And It is a fact that the blue economy contributes 3.57% to the global GDP. In recent times, India's seafood sector is recognized as one of the major sources of nutritional benefits and employment, along with being a crucial economic booster. As per the data of fish export worldwide in 2019 , India is among the 7 largest producer of fish products.

The outbreak of COVID-19 has been deemed a global health emergency, and its impact on developing countries like India is one of heightening concern. The countrywide shutdown has brought an abrupt halt to almost all the economic activities including fisheries. Trade, distribution and supply chains in all sectors are affected and are continuously contributing to the contracting national GDP. Human resources, transport, and logistics chain are the fundamental components of the seafood system and the pandemic has made all the vulnerabilities of this

system quite clear. With the aim to contain the spread of novel coronavirus in the country, the government imposed stringent lockdown, which resulted in an economic crisis.

Altough there are restriction, it is estimated to be at ease in the coming years and the impact can be decreased or the exports can be improved. In the coming years the exports of marine food products from India will regain the possesion as one of the largest exporters in the world when the policies are implemented by the government and the global market and trade regain its operation.

Thinking with an optimistic perspective, the supply chains are likely to normalize in some time to come and the demand is to get restored in a few months. Due to the pandemic, people are now well aware of the importance of personal hygiene and sanitation which is one of the most critical factors in fish processing. the HACCP and SPS measures will be strict and more quality checks will be there so that products with zero contamination will flow to other countries. This will further increase the quality of the fish being processed and will be able to fetch a better price for the product. As the popular proverb 'Necessity is the mother of invention', there is tremendous scope for innovations in this situation that can transform the fisheries sector.

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