"AN ANALYSIS OF PERFORMANCE OF FISH PROCESSING INDUSTRY IN MAHARASHTRA"

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Chapter VII

Conclusions And Recommendations

7.1   Introduction

This chapter deals with the major findings related to hypothesis testing, profile, share capital, liabilities, assets, total revenue, total expenditure, total debt, profit and problems of fish processing units, recommendations for the improvement of the performance of fish processing units and scope for the further study.

7.2   Testing of Hypotheses:

The hypotheses for this study are as follows:

7.2.1   The fish processing industry does not significantly generate direct as well as indirect employment opportunities.

1.   Fishing is one of the oldest occupations. In the ancient period, before the cultivation of land, Hunting and fishing were the only sources of livelihood. Fishing is the traditional occupation of a community of fishermen. It provides direct as well as indirect employment through its ancillary activities like net making, boat making, salt making, ice making, fish processing, marketing, fish transportation, etc. The development of the fishery industry can tackle the unemployment problem that is existed in all developing countries like India due to overpopulation.

2.   As per the Marine fishery census 2010, In India, there were 864,550 marine fishermen households and the total marine fisherfolk population was 39, 99,214. In the Maharashtra state, there were 76,345 persons as active fishermen. While, 1, 01,364 fishermen were engaged in fishing activity in the year 2017-18.

3.   The share of women workers is significant in marketing and processing activities in the marine fishery. 73.6 and 75.7 percent were women in the

total workers engaged in marketing and processing activities in marine fishery, respectively.

4.   As it is a labor-intensive industry, it creates more job opportunities. The fish processing industry, thus, gives preference to appoint women workers because they are considered to be more efficient in the work of fish processing. It was found that a minimum of 210, a maximum of 2350, and an average of 505 workers got direct employment in the selected sample of this industry in Maharashtra.

The above hypothesis is found to be incorrect and, thus, the conclusion arises within that the fish processing industry, significantly, generate direct as well as indirect employment opportunities.

7.2.2 The fish processing industry does not play a significant role in India's foreign trade.

1.   In the year 1991, the free trade policy and liberal policies have been adopted. As a result of the export of fish and fish products from India increased. The efforts are, also, being made to produce different kinds of value-added products at the international quality standard as per demand in international markets for export promotion of fish products.

2.   There has been an increasing trend in the demand and consumption of fish products in international markets. Thus, fish products have high export potential. By exporting fish and fish products, developing countries like India can earn foreign exchange required to import necessary goods for the economic development of the country. The export of fish products has increased from 9,83,756 tonnes worth Rs.30213.26 crores in the year 2013-14 to 13,77,244 tonnes worth Rs.45,107 crores in the year 2017-18. (MPEDA)

3.   Before the year 1960, only dried fish items were exported but with the improvement in processing technologies, a variety of frozen and value-

added fish products are being exported from India. The share of frozen shrimps and fresh and frozen fish is significant in the total of fishery exports. The share of frozen shrimps in quantity was 25.40 percent in 2000-01 and it has increased up to 30.64 percent in 2013-14 whereas the share of frozen shrimps in terms of value was 69.55 percent in total export of fishery in the year 2000-01 and it has decreased up to 64.10 percent in the year 2013-14. The share of frozen shrimps in value is higher than in terms of quantity. It shows that the frozen shrimps could get a higher price.

4. The share of fresh and frozen fish in quantity was 48.34 percent in the year 2000-01 and 32.97 percent in the year 2013-14 whereas the share of fresh and frozen fish in value was 13.57 percent in the year 2000-01 and 14.22 percent in the year 2013-14 in total export of fishery. The share of fresh and frozen fish in value is lower than in terms of quantity. It shows that fresh and frozen fish could not receive a high price. (DAHDF 2014)

5. Before the year 1960, fish was exported from India limiting only to neighboring countries like Sri Lanka, Singapore, and Malaysia. With the development of quick transport facilities, fish is exported to various countries like America, France, Australia, Canada and Japan, European Union, United Kingdom, Italy, Spain, Netherlands, and Belgium, etc. (DAHDF 2014)

6. Maharashtra's share in India's exports is estimated at 13 percent in the year 2017-2018. Maharashtra exported 1, 80,820 tonnes marine fish products during the year 2017-18 as compared to 1, 51,753 tonnes during the year 2016-17, inclined by 19.15 percent over the previous year as well as the value of export was of Rs.4,906 crores during the year 2017-18 as compared to Rs.4312 crores during the year 2016-17 inclined by 13.80 percent compared to the previous year. (GoM 2017-18)

7. By selling products in domestic as well as in foreign markets, firms can divide business risk between two markets. Most of the fish units prefer to sell their products in foreign markets due to the huge demand for the products and higher prices.

8. It was found that those firms who had sold their products in foreign markets had higher total revenue. This is because prices in foreign markets are higher than domestic markets and, also, those firms that sell their products in more markets had higher total revenue than those firms who sell their products in few markets.

The above hypothesis is found to be incorrect and, thus, the conclusion arises within that Fish processing industry has been playing a significant role in India's foreign trade.

7.2.3 Fish processing units do not run at optimum levels.

1. Despite having vast marine and inland resources, India's situation in fish production is not satisfactory. In the year 2011, India was the second-largest producer of fish in the world and its share in global fish production (Marine + Inland) was 5.68 percent. However, the difference between the first largest country China and India regarding fish production was very high. China's share was 34.82 percent in global fish production whereas India's share was just 5.68 percent. Simple regression equation $Y = \alpha + \beta X$ is used to analyze the trend of fish production based on data available during the year 1950-51 to the years 2011-12. With the help of the estimated regression equation, $Y = -244852538.9 + 125413.6622 (X)$ prediction about fish production was made. In the year 2030, total fish production in India would be 9737195.44 tonnes.

2. The share of marine fish in the total fish production of India fell from 71 percent in 1950-51 to 39 percent in 2011-12, whereas, the share of

inland fish in the total production increased from 29 to 61 percent during the same period.

3. Maharashtra is one of the major marine fish producing states in India. It has 720 Km. long coastal line spread all over the 5 maritime districts: Thane, Mumbai, Raigad, Ratnagiri, and Sindhudurg. It has 112000 Sq. Km area of Continental Shelf. During the year 2017-18, the potential of marine fish production of state was estimated at 600,000 tonnes but actual Marine fish production was 474000 tonnes. It was 78.83 percent of the potential of the state. (GoM 2017-18)

4. In the year 2017-18, total fish production in the Maharashtra state was 606013 tonnes out of which 131020 tonnes came from inland sources and marine fish production was 474992 tonnes. Marine fish production shows a hike of 2.64 percent over the earlier year. The share of marine fish production in quantity was 78 percent in total fish production of the Maharashtra state. (GoM 2017-18)

5. The growth rate of total fish production of Maharashtra in the year 2017-18 was -8.58 percent due to negative growth rate i.e. -34.54 percent of inland fish production and lower growth rate i.e. 2.64 percent of Marine fish production. (GoM 2017-18)

6. The growth rate of marine fish production in the state Maharashtra was very low 2.64 percent in the year 2017-18 because of many reasons; some of them are overfishing by purse seine net, big trawlers, due to overfishing many species of fishes are depleting. Fishing in the rainy season seemed to be affected, badly, to fish breeding as the fish breeding season of fishes is rainy season.

7. There was a negative growth rate of inland fish production in Maharashtra i.e. -34.54 percent in 2017-18. Due to deforestation, the rainfall has decreased, significantly. This results in drought-prone situations every year in some or other parts of Maharashtra. Marathwada

and Vidharba have most water scarcity regions. The water level of all inland water sources has, continuously, been decreasing. Some of the Rivers become completely dry in the summer. This has badly affected the inland fish production.

8. Maharashtra's share in India's marine and total fish production has been significant. In the case of marine fish production, Maharashtra has 3rd place after Gujarat and Kerala among all Indian states in the year 2012-13. However, over the two decades from the years 1981-82 to 1998-99, there has been declining trends in Maharashtra's share in total fish production of India. It has decreased from 15.2 percent in 1981-82 to 6 percent in 1998-99. (DFDO 2005)

9. The fish processing industry is seasonal because it's raw material i.e. fish does not available the whole year as fishing is banned during the rainy season. Hence, fish processing units have to close during the rainy season and cannot utilize installed capacity at the optimum level to keep average production costs at the lowest level. The capacity utilization of fish processing units is very low. In the selected sample, all 48 units have utilized from 70 to 90 percent of installed production capacity. Not a single unit has utilized 100 percent production capacity. This is because of inadequate fish supply, low efficiency of workers and management. There is a negative relationship between the utilization of production capacity and the average cost of production as when production capacity is utilized at a maximum level, the average production cost will be minimum.

The data confirmed the above hypothesis to be correct and we conclude that fish processing units do not run at optimum levels.

7.2.4 Government policies are not benefiting the fish processing industries.

To assess the impact of government policies on the performance of fish processing units, total revenue, export turnover and profit in the year 2017-18 and 2018-19 have been compared and paired T-test was used to verify, whether fish processing units could improve their total revenue, export turnover, and profit after receiving incentives through various Government schemes and policies.

1. In the year 2017-18, mean total revenue was Rs.160,35,79,021, whereas in the year 2018-19 a mean total revenue was Rs.154,60,82,479. The result of the paired T-test reveals that there has been no significant increase or decrease in total revenue in the year of 2018-19 with compared to the year 2017-18.

2. The result of the paired T-test shows that in the year 2017-18 mean export turnover was Rs.1734893021 whereas in the year 2018-19 a mean export turnover was Rs. 1736303029.Since the calculated value of t-test (-0.021) is greater than table value (-2.032) and also p-value (0.982) is greater than a significant level (0.05), the researcher accepts the null hypothesis that there is no significant difference in the means of export turnover. There has been no significant increase or decrease in export turnover in the year of 2018-19 with compared to the year 2017-18.

3. The 38 fish processing units were earning profit and 10 units were in the loss, their average profit after tax was Rs.5,32,25,238.16 in the year 2017-18 whereas, 36 units could earn profit and 12 units were in the loss, their average profit after tax was Rs.5,23,41,356 in the year 2018-19.Since the calculated value of t-test (0.271) is less than table value (2.026) and also p-value (0.787) is greater than a significant level (0.05),

the researcher accepts the null hypothesis that there is no significant difference in the means of profit. The result of the paired T-test reveals that there has been no significant increase or decrease in profit in the year of 2018-19 compared to 2017-18.

4. The researcher, thus, can observe that government policies could not make any impact on the performance of fish processing units. Hence, the above hypothesis was found to be correct and, thus, the researcher concluded that the government policies are not benefiting the Fish processing industries.

7.3 Disposition of Fish Catch

1. The technological level determines the pattern of disposition of fish catch. Earlier traditional techniques were being used for fish processing i.e. Sun drying, curing, canning, etc. With the development of modern techniques of fish processing like freezing and making value-added products, the pattern of fish disposition has been changing. The share of fish catch used for marketing fresh fish, curing, and canning purpose has been coming down whereas the share of fish catch used for the frozen purpose has been rising. However, during the period commenced from the year 2013-14 to the year 2017-18, the pattern of utilization of marine fish production in Maharashtra has remained almost the same. The major share of 80.39 percent of the fish catch was used to sell in fresh form because of inadequate processing facilities, fishermen prefer to sell fresh fish immediately in the market after catching. Instead of selling fish in fresh form, fish should be sold after processing because there are so many advantages of processing of the fish.

2. The 19.59 percent of the fish catch was used for cured products such as salted and sun-dried fish products. The utilization of fish catch for cured products depends on the progress of fish curing yards. Total numbers of

Fish curing yards in Maharashtra have been decreased from 20 in the year 1981-82 to 11 in the year 1998-99. While only 99,627 tonnes of marine fish was used for the frozen purpose in the year 2012, a lot of progress can be made in the area of fish processing. The canning method of processing of fish is not being applied and canned products are not produced in Maharashtra.

7.4 Food Security:

1. Food shortage and malnutrition are the most critical problems in developing countries like India because the supply of food from agriculture sector is not sufficient, as agricultural productivity is very low in India due to various reasons, such as inadequate irrigation facilities, the small size of landholding, lack of capital, traditional methods of cultivation, unorganized nature of farmers, etc. In this situation, the development of fisheries and the exploitation of marine resources at an optimum level is a necessity to increase the supply of food to meet the demand of the growing population.

2. Not only India but also the world is facing the problem of increasing demand for food, 141 million tonnes of fish consumed in the year 2013, an additional 50 million tonnes of fish will be required to meet the demand of the worlds growing population by 2030. (FAO 2011).

3. The fishery industry is a major source of cheap and nutritious food supply and it provides animal protein to 17 percent of the global population. (FAO, nutrition & people) Whereas in India 35 percent population was estimated to be a fish eater and their annual per capita fish consumption was 9.8 kg in the year 1999-2000 (FAO 2015). Monthly per capita consumption of fish and prawn in Maharashtra was 0.092 Kg worth Rs.7.72 in the rural area whereas it was 0.108 Kg worth Rs.14.11 in the urban area.

7.5 Contribution of Fishery Sector to GDP of India:

1. The contribution of the fisheries sector to the total GDP of India has been significant. It has increased from Rs. 4547 Crores in the year 1990-91 to Rs.78053 Crores in the year 2012-13 and its share in GDP from agriculture, forestry, and fishing have gone up from 2.95 to 4.75 percent during the same period. (DAHDF 2014)

2. Total GSDP of Maharashtra during the year 2016-17 is estimated at Rs. 22, 57,032 crores, out of which, Rs. 6,274 crore came from Fishery. Share of the Fishery sector to total GSDP was 0.24 percent in 2012-13 and it remained constant in the years 2013-14 and 2015-16.

7.6 Economy of Maharashtra.

1. The agriculture sector plays a significant role in the economy, as the Indian economy is the agro-based economy. The process of structured transformation starts with economic development. After independence, since the year 1951 India has adopted planning to accelerate economic growth. As a result of planning, India has achieved industrial and economic development at a rapid pace. In the process, the economic development, scope, and role of agriculture sector decrease and scope of industrial and service sector increases but still agriculture sector has remained prime sector in Indian economy in terms of contribution in GDP, generation of employment opportunities, a supply of foods, a supply of raw materials to agro-based industries and contribution in India's export.

2. During the year 2013-14, the per capita national income at current prices was Rs 39,904 whereas the per capita income of Maharashtra state was Rs 69,584. The per capita income of the state is higher than that of the country. During the year 2013-14, the growth rate of the per capita

national income was 2.70 percent whereas the growth rate of the per capita state income was 8.36 percent (CSO).

3. There has been a significant change in the sectoral composition of the state income during the year 1960-61 to the year 2003-04. During this period, the share of the primary sector in Maharashtra's income has declined from 34.4 to 13.4 percent while that of the secondary sector has remained constant at about 26 percent. However, the share of the tertiary sector has increased from 39.9 to 60.8 percent. (Planning commission)

4. During the period of 2005-06 to 2013-14, the average growth rates of the primary, secondary and tertiary sectors in Maharashtra were estimated as 5.16, 8.65, and 9.83 percent, respectively, which were higher than that of India.

5. Maharashtra's share in the country's industrial output was significant (18 percent) but the share of working population employed in the Industrial sector has decreased from 14.7 percent in the year 1990-91 to 11.2 percent in the year 1999-2000. This is because industries are using capital intensive techniques to reduce production costs and to reduce expenses on salaries of workers. The industrial activity in Maharashtra is concentrated in four districts such as Mumbai City, Mumbai Suburban District, Thane, and Pune. There is a regional imbalance in industrial development and, thereby, in the availability of employment opportunities in Maharashtra. The industrialists do prefer to establish industry in the area where all infrastructural facilities are available. There are inadequate infrastructural facilities in a rural part of Maharashtra. Infra-structural facilities give external benefits to industries and increase returns on capital invested in the industry. Therefore, an imbalance in industrial development between rural and urban areas exists in Maharashtra.

6.   The occupation structure of the population changes with the process of economic development. 72.07, 12.52, and 15.41 percent of the workforce in Maharashtra depended on the primary, secondary, and tertiary sectors for employment during the year 1961. In the year 1991, the share of the workforce employed in primary, secondary, and tertiary sector were 61.51, 15.80, and 22.69 percent respectively. During the period from the years between 1961 and 1991, the contribution of the primary sector in employment generation has been decreased whereas the contribution of the Secondary and Tertiary sector in employment generation has been increased. (Census abstracts)

7.7 Government and Fish Processing Industry:

1.   Both the union and state governments have implemented several policies to boost the growth of the fishery industry in India. The central and state governments are implementing various schemes to give incentives to the fish processing industry like tax concession, duty drawback, subsidy, etc. to increase efficiency and performance.

2.   Various ministries of central and state governments regulate different aspects of the fishery industry. The processing aspect comes under the Ministry of Food Processing Industries and, therefore, this ministry is responsible for the overall growth of the fishery industry. It gives financial assistance for setting up and modernization of fish processing units. The control of marine biodiversity and marine pollution comes under the jurisdiction of the Ministry of Environment and Forests whereas, under the Ministry of Commerce and Industry, MPEDA implements export promotion schemes for the fishery industry.

3.   Various schemes are being implemented by the Government of Maharashtra through the state's Department of Fisheries (GOM Schemes).

4. Actual expenditure incurred by the government to create infrastructure facilities such as Fishing Harbours, fish landing centers, cold chains, etc. for the development of the fishery sector in the first five-year plan was just Rs.2.78 crores. The government has continuously increased expenditure in every plan. During the eleventh plan, the government has raised expenditure on the fishery sector up to Rs.3631.92 crores and during the twelfth plan, it was Rs.616.46 crores (Planning Commission, GoI 2011).

5. The Government of India has been implementing various export promotion schemes and undertaking various promotional measures through MPEDA to increase export from the fishery sector and to earn valuable foreign currency. (MPEDA Schemes).

7.7.1 Institutional Framework for the Fishery Industry:

1. After Independence, the Government of India has set up many institutions to facilitate the fishery industry. Some institutions have been set up to provide training to fishermen and workers, some institutions were established to provide technical assistance and some to conduct scientific research to develop the fishery industry.

2. To promote export of fish and fish products, the Government of India established the marine products export development authority in the year 1972 under the Ministry of Commerce and industry and National Cooperative Development Corporation (NCDC) has been established in the year 1974 to promote the development of fishery cooperatives. The National Fishery Development Board, Hyderabad (NFDB) was set up in the month July 2006 to realize the untapped potential of inland and marine fishery sector and to promote research for optimization of fish production, whereas, Fishery Survey of India conducts a survey of

marine fishery resources and provide this information to the fishing community and fishery industries.

3.   Indian Council of Agriculture Research (ICAR), State agricultural universities, etc. carry out scientific research for the development of the fishery sector. ICAR is the main institute in fishery research and it has four sub institutes such as Central Marine Fishery Research Institute, Kochi, Kerala (CMFRI), Central Inland Fishery Research Institute, Barrackpore, West Bengal (CIFRI), Central Institute of Fishery Education, Mumbai, Maharashtra (CIFE) and Central Institute of Fishery Technology, Kochi, Kerala (CIFT). The CIFT conducts R & D programs on fishing technology, fish processing, preservation and also helps to fish processing units in quality control certification for the export of fish products.

7.7.2   Legislative Framework for the Fishery Sector:

1.   In India, both the union and state governments have enacted different kinds of acts for the regulations of fishery resources and sustainable development of the fishery industry.

7.7.3   Measures for the Credit and Capital Supply:

1.   As per the RBI guidelines (RBI Notification, 2016), the fishery industry has been included in the priority sector. Hence, fish processing industries are given loans at a concessional interest rate to reduce their production cost and thereby increase their competitiveness in the foreign market. NABARD, too, provides various financial and non - financial assistance to the fishery industry.

2.   It was observed to be that there is no significant increase or decrease in total revenue in the year of 2018-19 with compared to the year 2017-18. Hence, the researcher can conclude that government policies could not make any impact on the performance of fish processing units.

7.8   Profile of Fish Processing Units in the Study Area:

1.   Out of 48 fish processing units selected in a sample for the study, 34 were freezing and cold storage plants, 5 were surimi plants and 9 were ready to cook and eat product plants. 46 units were set up as private limited companies whereas 2 units were established as public limited firms.

2.   All 48 units were established after the year 1961. The modern fish processing industry has been developed in India only after independence. This is because of favorable policies adopted by the Government for the development of the industrial sector.

3.   Marine fish processing units are located only in the coastal districts of Maharashtra. In the selected sample for the study, 25 percent and 41.66 percent of the units were located in Mumbai and Raigadh districts, respectively, because of the availability of all means of transport facility.

4.   23 small fish processing units purchased fish from fishermen by taking part in auction at nearby landing centers as their requirement was less and 20 units purchased raw material from traders as their requirement was large. Traders can supply the raw material in large quantities compared to fishermen since each fishermen's fish catch is small. Whereas only 5 units have their farm land.

5.   The data confirmed the earlier studies that in India, industries procure loans from the unorganized sector at large scale. The 22.92 percent of units had to depend on the unorganized sector of the financial market for capital requirement, whereas 77.08 percent of units could receive credit from the organized sector.

6.   About 49 varieties of fish are found in the sea-water of the State. Fish processing units are producing various kinds of ordinary and value-added products. The 41.66 percent of the fish processing units have

produced Frozen shrimp whereas 45.83, 25, 6.25, 79.16, 16.66, 10.41, and 18.75 percent of fish processing units have produced Cuttlefish, Frozen squids, octopus, Frozen fish, dried fish, surimi and Ready to eat products, respectively.

7.9 Analysis of Balance Sheet:

Various ratios such as debt-equity ratio, working capital ratio, earning per equity share, and turnover-asset ratio have been calculated from financial statements: Balance sheet, income expenditure statement, profit loss statement to understand liquidity, operational efficiency, profitability and solvency of fish processing units in the study area.

1. Out of 48 units, 17 units had a working capital ratio below 1:1 which means their current assets were less than current liabilities indicating that they were not able to pay short term debt by converting their current assets into cash and thereby their current assets had less liquidity.

2. Only 9 units had turnover – asset ratio more than 3:1 indicating operational efficiency, while 14 units had below 1:1 which means their total revenue was less than their total assets and they could not generate more revenue than their assets. Thus, they were operationally inefficient as they could not use their assets efficiently.

3. Only 7 units had a ratio of more than Rs.200. While 11 units had negative basic earnings per equity share indicating their loss and inability to generate profit. A higher ratio indicates higher profitability of the company.

4. A lower debt-equity ratio is considered to be good. However, 18 fish processing units had a debt-equity ratio of more than 10:1 which means their total debt was 10 fold more than their equity shares capital, whereas 30 units had a ratio below 10:1.

7.9.1 Share Capital of Fish Processing Units:

1. In the study area, 20 units have the value Rs.10 of their one share, whereas 28 units have the value of Rs.100 of their one share. Shares are classified in equity shares and preferential shares. In the study area only 5 units have issued both equity and preferential shares whereas 43 units have issued only equity shares.

2. The Mean of authorized share capital in terms of number was 30,96,229.16 with a standard deviation of 6352813.018 and mean in terms of value was Rs.5,52,51,041.7 with a standard deviation of Rs.75299018.7. Mean of issued, subscribed and paid-up capital in terms of number or a total number of shares held by shareholders was 21,90,356.27 with a standard deviation of 4151960.463 and mean in terms of value was Rs.4,44,38,518 with a standard deviation of Rs.59905930. The minimum issued, subscribed, and paid-up capital of the respondents was Rs.100,000 and the maximum was Rs.24,40,00,000.

7.9.2 Reserve Funds of Fish Processing Units:

1. The 11 units had negative reserves and surplus having an average of Rs.-15,84,10,385, while 37 units had positive reserves and surplus having an average of Rs.32,31,30,415.75, out of them only 7 units had it more than Rs.50,00,00,000 during the financial year 2018-19.

7.9.3 Total Liabilities and Assets of Fish Processing Units:

1. The analysis of total liabilities of fish processing units clearly shows that short term borrowings constitute 34.08 percent of the total liabilities. This is compared as highest to the other types of liabilities. The short term borrowings are dominant and constitute the maximum share of the total liabilities. The other components are found to constitute only a minor component of the total liabilities. Trade payables constitute 14.13

percent of the total liabilities. The other current liabilities and short term provisions constitute 2.54 and 4.38 percent of the total liabilities. In sense of altogether, short term or current liabilities constitute 85.21 percent of the total liabilities, whereas long term or current liabilities constitute 14.79 percent of the total liabilities

2. The analysis of total assets of fish processing units, clearly, shows that inventories constitute 20.93 percent of the total assets. Trade receivables constitute 22.53 percent of the total assets. Cash and bank balance and other current assets constitute 3.80 and 2.79 percent of the total assets. Altogether, the short term or current assets constitute 55.20 percent of the total assets, whereas long term or non-current assets constitute 44.80 percent of the total assets.

3. Gross fixed assets (Tangible and Intangible) constitute 37.71 percent of the total assets. This is the highest compared to the other types of assets. Gross fixed assets (Tangible and Intangible), inventories, and trade receivables are dominant and constitute the maximum share of the total assets. The other components are found to constitute only a minor component of the total assets.

4. The ANOVA was used to describe the relationship between the type of units and their total liability as well as to describe the relationship between the type of units and their total assets. Here, the difference in the total liabilities and total assets of freezing and cold storage plants, surimi plants, and ready to cook and eat product plants was studied.

5. The average of total liability of surimi plants was Rs.1,30,38,83,126, whereas it was having a worth of Rs.1,24,16,02,463 of ready to cook and eat product plants. It was observed to be no significant difference in the total liabilities of Freezing & cold storage plants, surimi plants, and ready to cook & eat plants. The type of unit does not influence its total liabilities.

6. Total assets of all units range from Rs.25, 20,000 to Rs.8,76,78,26,339. The average of total assets of freezing and cold storage plants, surimi plants, ready to cook and eat product plants was Rs.38,77,44,942, Rs.2,54,18,04,198, and Rs.1,94,90,58,723, respectively. It was found to be a significant difference in the total assets of freezing & cold storage plants, surimi plants, and ready to cook & eat plants. The surimi plants and ready to cook & eat plants had more assets than Freezing & cold storage plants.

7.10 Total Revenue of Fish Processing Units:

1. Fish processing units receive income by selling goods and services in domestic as well as foreign markets. Apart from, these units, also, receive interest income from short term and long term investment like fixed deposits, etc. Mean of export turnover of all units was higher Rs.1,23,62,49,590.10 than domestic market turnover Rs.33,25,90,34

2. During the financial year 2018-19, the total revenue of all units ranges from Rs. 12, 67,543 to Rs. 10,80,10,84,151. The mean total revenue of freezing and cold storage plants, surimi plants, ready to cook, and eat product plants was Rs.63, 86, 02,718, Rs.4,88,41,77,193 and Rs.3,11,98,42,292 respectively. The mean total revenue of freezing and cold storage plants was lower than that of surimi plants, ready to cook and eat products plants.

3. Two independent samples T-test was used to make comparisons and to verify the difference existed between total revenue of plants having ordinary products and plants having value-added products. The plants having ordinary fish products had mean total revenue of Rs.63,86,02,718, whereas plants having value-added products had a mean total revenue of Rs.374,99,61,900. It was found a significant difference in the means of total revenue and total revenue of plants having value-added products was higher than plants having ordinary products because value-added products receive higher prices.

4. Multiple regression model $(Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + E)$ was estimated by the least square method to analyse the relationship between total revenue and the determinants. In the linear function, total revenue was taken as the dependant variable and income from the domestic market, income from export, number of products, advertisement cost, and value of fixed assets were taken as independent variables.

5. The total revenue function could explain 99 percent of the variation in the total revenue of the sample units. All the independent variables such as income from the domestic market, income from export, number of products, advertisement cost, and value of fixed assets are positively related to total revenue. Hence, the total revenue of fish processing units could be improved by increasing the income from the domestic market, income from export, number of products, advertisement cost, and value of fixed assets.

6. Total revenue of 29 fish processing units was below 100 crores whereas the total revenue of 19 fish processing was above 100 crores. 15 fish processing units were producing 1 to 5 fish products, out of the 13 units had total revenue less than 100 crores and only 2 units had total revenue more than 100 crores. 9 fish processing units who were producing 6 to 10 fish products had total revenue below 100 crores, whereas 6 units had total revenue above 100 crores. 18 fish processing units were producing more than 10 fish products. Total revenue of 7 fish processing units, producing more than 10 fish products, was below 100 crores and total revenue of 11 units was above 100 crores. Fish processing units producing 1 to 5 fish products had an average of total revenue Rs. 1,42,47,05,053. Whereas units producing more than 10 products had the highest average of total revenue Rs. 2,52,51,93,221.

7. The Chi-square test revealed a significant relationship between the number of products and the total revenue of fish processing units. It was

observed an increasing trend in total revenue with an increase in the number of fish products. The conclusion can be made that firms producing more products had higher total revenue than firms producing few products.

8. Total revenue of 29 fish processing units was below 100 crores whereas the total revenue of 19 fish processing was above 100 crores. 13 fish processing units were selling their products in the domestic market only, out of the 12 units had total revenue less than 100 crores and only 1 unit had total revenue more than 100 crores. The other 13 units were selling their products in foreign markets only. 7 fish processing units who were selling their fish products in foreign markets only had total revenue below 100 crores whereas 6 units had total revenue above 100 crores. 22 fish processing units were selling their fish products in both domestic and foreign markets, out of them, 10 fish processing units had total revenue below 100 crores and 12 units had total revenue above 100 crores.

9. Firms selling their products in the domestic market only had average total revenue Rs.28,47,91,279 whereas the average total revenue of firms who sold their products in foreign markets only was Rs.1,46,13,12,249, it was higher than the average total revenue of firms selling products in the domestic market.

10. The Chi-square test was applied to study the relationship between the type of markets and total revenue and found a significant relationship. The researcher concluded that those firms who had sold their products in foreign markets had higher total revenue. This was because of prices in foreign markets are higher than in domestic markets.

11. Total revenue of 29 fish processing units was below 100 crores whereas the total revenue of 19 fish processing was above 100 crores. 28 fish processing units were selling their products in less than 5 markets, out of them, 22 units had total revenue less than 100 crores and 6 units had

total revenue more than 100 crores whereas 20 fish processing units were selling their products in more than 5 markets, out of them, 7 units had total revenue less than 100 crores and 13 units had total revenue more than 100 crores.

12. Firms selling their products in less than 5 markets had average total revenue Rs.39,86,17,479 whereas the average total revenue of firms who sold their products in more than 5 markets was Rs.3,15,25,33,480. It was higher than the average total revenue of firms selling products in less than 5 markets.

13. The Chi-square test was used to study the relationship between the number of markets and the total revenue of fish processing units and found a significant relationship. The researcher concluded that those firms that sell their products in a large number of markets had higher total revenue than those firms that sell their products in a small number of markets.

7.11 Total Expenditure of Fish Processing Units:

1. During the financial year 2018-19, total expenditure of all units ranges from Rs.1,55,260 to Rs.10,21,35,90,546. The average total expenditure of freezing and cold storage plants, surimi plants, ready to cook, and eat product plants was Rs.61,75,35,962, Rs.4,67,75,01,150 and Rs.3,01,65,30,573 respectively. The average total expenditure of surimi plants, ready to cook and eat products plants was higher than that of freezing and cold storage plants. The reasons for this are huge investments required to install modern machinery and skilled workers are needed to make surimi, ready to cook and eat products.

2. Plants having ordinary fish products had a mean total expenditure of Rs.61,75,35,961.6, whereas plants having value-added products had a mean total expenditure of Rs.360,97,34,350. Two independent samples T-test was used to verify the difference in the means of total expenditure and it was found a significant difference. The total expenditure of plants

having value-added products was higher than the plants having ordinary products as value-added products require modern machinery and skilled labor. Therefore, fish processing units have to make more investment in the installation of modern machinery and expenditure on salaries of skilled labor to produce value-added products.

3. The sum value of expenditure made on the purchasing of raw material by all units was Rs.5631,45,19,683, which has the largest share of 78.73 percent in the sum of total expenditure.

4. The total other expenses constitute 12.54 percent of total expenditure. The mean value of total other expenses was Rs.18,69,22,724 with a standard deviation of Rs.405132640.

5. The expenditure made on power and fuel among all other expenses has the highest share of 2.84 percent to the sum of the total expenditure of all units. The mean value of expenditure on power and fuel was Rs.4,22,74,050 with a standard deviation of Rs.110558464.

6. The expenditure on rent constitutes 0.15 percent of the total expenditure. The mean value of expenditure on the rent was Rs.22,85,692.33 with a standard deviation of Rs.10340764.

7. The expenditure on payment to auditors constitutes 0.01 percent of the total expenditure. The mean value of expenditure on payment to auditors was Rs.2,17,183.313 with standard deviation Rs.303111.284.

8. Expenditure on electricity bills constitutes 0.37 percent of the total expenditure. The mean value of expenditure on electricity bills was Rs.54,72,259.4 with a standard deviation of Rs.9126609.01.

9. The mean value of expenditure on telephone and internet bills was Rs.6,77,557.125 with a standard deviation of Rs.1954927.44. Expenditure on telephone, internet bills constitutes 0.05 percent of the total expenditure

10. The expense for water constitutes 0.38 percent of the total expenditure. The mean value of expenditure on the water was Rs.56,29,358.85 with a standard deviation of Rs.15024721.7.

11. The share of expenditure made on transportation among all other expenses was the second largest 2.84 percent in the sum of total expenditure. The mean value of expenditure on transportation was Rs.3,00,57,986.4 with standard deviation Rs.71411074.9

12. The mean value of expenditure on insurance premium was Rs.17,78,385.52 with a standard deviation of Rs.4306751.31. The expenditure on insurance premium constitutes 0.12 percent of the total expenditure.

13. The mean value of the advertisement cost was Rs.51,75,145.5 with a standard deviation Rs.29300683.8. The advertisement cost constitutes 0.35 percent of the total expenditure.

14. The mean value of expenditure made by all units on the sales commission was Rs.1,75,31,851.1 with a standard deviation of Rs.72251322. The expenditure on sales commission constitutes 1.18 percent of the total expenditure.

15. Only 3 units had made CSR expenditure and the sum value of their CSR expenditure was Rs.1,72,11,197 which constitutes only 0.02 percent of the sum of total expenditure.

16. The sum value of changes in inventories was Rs

17. units could be improved by increasing the total revenue. The measures to reduce the production cost, marketing cost, and tax expenses would enhance the profit of units significantly in the study area. .115,04,00,060 and its share has been 1.61 percent in the sum of total expenditure.

18. The sum value of total depreciation and amortization expenses was Rs.127,30,03,347 and its share in the sum of total expenditure was 1.78 percent.

19. During the financial year 2018-19, the average expenditure on workers' salaries was found to be Rs.3,66,20,921.27 with a standard deviation of Rs.88633867.23. The sum of expenditure on workers' salaries was Rs.175,78,04,221 and its share in the sum of the total expenditure of all units was 2.46 percent which was highest among all other employee-related expenses.

20. Fish processing units have made expenditure on provident funds, gratuity, and staff welfare for giving incentives and motivations to workers to improve productivity and work efficiently. However, their share was below 0.50 percent to the sum of total expenditure.

21. Total employee benefit expenses include expenditure on salary, contribution to provident fund, expenditure on gratuity, staff welfare expense, other employee-related expenses, and remuneration to managers. The mean of total employee benefit expenses was Rs.5,93,64,531.6 with standard deviation Rs.121523872.

22. The freezing and cold storage plants have the lowest sum of total employee benefit expenses of Rs.82,37,77,293 whereas ready to cook and eat product plants have the highest expenses of Rs.104,70,22,745. The sum of total employee benefit expenses of all units was Rs.284,94,97,517 and its share in the sum of total expenditure was 3.98 percent.

7.12 Total Debt of Fish Processing Units:

1. The average of total finance cost of freezing and cold storage plants, surimi plants, ready to cook and eat product plants was Rs.95,82,342, Rs.5,32,07,325, and Rs.4,23,28,444, respectively. The average of total finance cost of freezing and cold storage plants was lower than surimi plants, ready to cook and eat product plants. The share of total finance cost in the sum of the total expenditure of all units was 1.36 percent.

2. The Simple Regression Model ($Y = \alpha + \beta X + E$) was estimated by the least square method to analyze the relationship between finance cost and total debt. In the linear function, the finance cost was taken as the dependant variable and total debt as independent variables. The average total debt of all units was Rs.38,18,83,182.4 and the average total finance cost of all units was Rs.2,02,66,505. A positive relationship between total debt and total finance cost was found. The total finance cost function can explain that 73 percent of the variation in the total finance cost of the sample units was due to variation in total debt. The total finance cost of fish processing units can be minimized by reducing the total debt.

3. Karl Pearson's coefficient of correlation was calculated to find out the nature of the relationship between the total expenditure of fish processing units and their total debt. It was 0.90 showing high positive relationships between the total expenditure of fish processing units and their total debt. If expenditure increases, total debt, also, increases, and vice versa. Mean of total debt of all units was Rs.38,18,83,182.4 with standard deviation Rs.63,32,98,974.5. The mean total expenditure of all units was Rs.149,02,60,492 with a standard deviation of Rs.2308715734.

7.13 The Profit of Fish Processing Units:

1. The Freezing and Cold Storage Plants, surimi plants, ready to cook and eat products plants had average profit after tax Rs.2,25,21,465, Rs.13,39,84,100 and Rs.9,62,64,738 respectively. The surimi plants, ready to cook and eat product plants had a higher average profit after tax than that of freezing and cold storage plants.

2. The profit of fish processing units depends on many factors such as investment, total revenue, total expenditure, quality of products, utilization of installed production capacity, availability of raw-material, managerial skill, the efficiency of labor, degree of competition and price received.

3. The Multiple Regression Model ($Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + E$)) was estimated by the least square method to analyze the factors which determine the profit of fish processing units. In a linear profit function, profit was taken as the dependant variable and total Revenue, total production, and marketing cost and total tax expenses were taken as independent variables.

4. The profit function could explain that 99 percent of the variation in the profit of the sample units. Total revenue is, positively, related to profit while production cost, marketing cost, and tax expenses are, negatively, related to profit. Hence, the profit of fish processing

5. The 34 fish processing units were producing ordinary products, out of them 24 units could earn profit and 10 units were in the loss whereas 14 units were producing value-added products, out of them, 12 units could earn profit and 2 units were in the loss.

6. Plants having ordinary fish products had a mean profit of Rs.1,38,30,686.26 whereas plants having value-added products had a mean total revenue of Rs.8,94,53,275.21. Independent samples T-test was used to verify the difference between the means and it was found a significant difference in the means of profit. Profit of plants having value-added products was higher than that of plants having ordinary products as value-added products receive higher prices.

7.14 The Problems of Fish Processing Units:

1. After independence, the Indian Fish Processing Industry has transformed from the traditional structure to a modernized structure. The demand for fish products has increased at the global level. There has, also, been an increase in the number of units, sales revenue, production, number of fish products, and number of employees in the fish processing industry of Maharashtra. However, the fish processing industry faces different kinds of problems related to production, marketing, etc.

2. Among all problems of fish processing units, inadequate raw material supply has the highest Garrett mean score 56.23 which means 56.23 percent fish processing units were facing this problem in the study area. As the supply of raw material is less than the demand for it, prices of raw material are showing an increasing trend. Next 55.90 percent of units were facing the problem of lower utilization of Production capacity. 52.85 percent of units had the problem of low efficiency of labor. 47.42 percent of units could not procure loans, adequately. 45.69, as well as 44.33 percent of units, were facing the problem of high competition in the foreign market and low quality of products respectively. Small firms cannot purchase and use modern machinery in production activities. Therefore, they cannot produce high-quality products. The low-quality products have low demand in the markets. Only 33.17 percent of units said that they are affected by tariff and non-tariff barriers imposed by the buyer country.

7.15 Recommendations for Improving and Strengthening of Marine Fishery:

1. There is a necessity of optimum capacity utilization of processing industries, product diversification, value addition, and quality control to increase export from the fisheries sector of Maharashtra.

2. The Government has to invest much more in the creation of infrastructure facilities such as ports, airports, warehousing, and roads to increase the export from the State.

3. There should be coordination between, The Department of Agriculture of the Union Government, Fishery department of state government, and other public organizations.

4. A gap between actual production and potential of fish production should be minimized therefore fishery resources should be exploited at maximum level.

5. To diversify and strengthen the raw materials base of the seafood industry, transfer of new technology in the field of coastal aquaculture, inshore Mari-culture and offshore Mari-culture is necessary.

6. The raw material base could be widened through exploitation of oceanic and deep-sea resources, onshore and offshore Mari-culture, utilization of brackish water aquaculture resources, aquaculture in freshwater, and import of raw material for processing.

7. There is a need for reliable data for effective fishery management and policymaking. Therefore, strengthen the state departments that are collecting marine fishery statistics.

8. The Marine Fishermen Cooperatives should be strengthened by providing adequate technical and financial support for their efficiency improvement. The share of co-operative societies in marine fish marketing is small. Most of them were, also, in deep loss. The inefficient management, lack of marketing strategy, and inadequate capital were the main reasons for their loss.

9. To divide the risk between the domestic and foreign markets, it is necessary to allow fish processing units to sell their products in the

domestic market, also. This would give strength to the units to meet the challenges of the export market.

10. The market expansion of ready to eat fish products by utilizing fishes disposed of in fresh form for the domestic as well as the export market.

11. To develop new ready to eat fish products by utilizing non-conventional resources such as deep-sea catches should be encouraged to address better utilization of available raw materials.

12. There should be a restriction-free import of raw material and machinery for the fish processing industry.

13. To provide the linkage between marine landings and post-harvest processing, some of the food parks should be located near the major seafood export zones by the Ministry of Food Processing.

14. The packaging protects fish products during transportation and storage. Besides, attractive packaging helps to attract consumers towards the product and, thereby, to increase sales, total revenue, and profit. Therefore, it should be managed, properly, and it should be included in the planning of product development.

7.16 Scope for Further Studies:

Further study can be conducted in various areas and aspects of the fishery industry. Such as:

- The study can be extended to inland fish processing units.
- A national-level study can be undertaken.
- The comparative study can be conducted on marine fish and inland fish processing units.
- 'Socio-economic impact of fish processing units on fishermen community' can be studied.