CHAPTER 8

SUMMARY AND CONCLUSION

Kerala, an important maritime state in India, contributes nearly 20 per cent of the country’s marine fish landings and 24 per cent of the state’s export (Aswathy et.al., 2011). Majority of this are contributed by the mechanized sector, dominated by the trawl fishery. In the sixties and seventies hundreds of trawlers were introduced into the archaic of Kerala fishery. During the late seventies and early eighties, a conspicuous change in the trawlers took place. The major developments brought about were change in materials for construction, hull form, marine engines, propulsion system and optimization of energy. By the mid sixties, most of the bigger boats switched over to stay over fishing resulting in substantial increase in returns mainly by saving fuel cost (Femina et.al. 2009). In recent years multiday trawl fishery has expanded considerably and now it extends as a separate fishery. Considering the heavy investment and the increasing number of trawlers, it is important to analyse the profitability of the trawler fishery and the economic sustainability.

The trawler sector of Kerala has become highly complex and ramified. The wooden boats of the 1950s and 1960s have given way to steel boats and 20 and 30 footers have been replaced by 50, 60 and 70 plus footers. The introduction of mechanical gadgets and the technological complexity made it ultra modern and high tech. Commensurate with this high-tech situation, the investment cost got accelerated. If a trawler investment was around two lakh rupees in the eighties, now it is around 55 to 58 lakh rupees. In such a situation, the significance of a loss making trawler would be quite appalling. Unfortunately, these crucial issues that form the lynchpin of the thousands who rely on this sector and the viability of the trawler fishery are not well analysed. A scientific study of these issues is inevitable for any proper policy formulation for an economically sustainable trawler fishery. It is in this back ground the economic sustainability of the trawl fishery of Kerala is studied.
8.1 Structure and Focus of the study

Various studies reviewed from 1982 onwards had found out that the net profit in the trawler fishery of Kerala was negative. Serious erosion of net profit in the trawler sector was further observed in 1990s. By the year 2000, the length of the vessels in the trawler sector was found varying from 48 feet to 60 feet in overall length. As a result the cost of investment also got accelerated. Further the possibility of catching prawns by deep sea operations attracted the new investors and the number of trawlers proliferated. Thereby overcrowding and over fishing took place in the trawler fishery of Kerala and how they affected the profitability and economic sustainability is an investigative question to be researched. More interestingly trawlers are still entering the fishery.

In the light of the problem stated, the present study becomes relevant. The broad objective of the study is to examine the economic sustainability of trawl fishery through the analysis of investment, cost, and profit etc.

The secondary data on the proliferation of the number of trawlers from 1980 to 2009 was collected from MPEDA, the concerned fisheries offices, the Fisheries Directorate Thiruvananthapuram and from the publications of CMFRI. The primary data required for the study is cost and earnings data of the selected trawler units for which a multi stage sampling is resorted to. The districts selected for the study are Kollam and Ernakulam. From Kollam, Neendakara - Shaktikulangara and from Ernakulam, Munambam were further identified as the study locations. The list of trawlers in the two selected areas of the study constituted the sampling frame. The sample design is done on the basis of stratified random sampling. Systematic and proportionate sampling is used for the selection of samples. The sample of the study is 199 trawlers, constituting 122 from the N.S.belt and 77 from Munambam. The trawlers, based on the size are divided into small, medium and large.

In the theoretical frame work of the study costs are distinguished as fixed cost (FC) and variable cost (VC). Fixed Cost consists of the cost of buying the trawler and modification charges, interest payments on borrowed capital used for the purchases of trawlers and the opportunity cost (interest forgone) of the owned capital invested in the trawlers. Variable costs are defined as the sum of the cost of inputs that are
increased only when the fishing unit operates. Total cost (TC) = Fixed Cost + Variable Cost. The concept of profit has certain nuances; the gross profit and net profit. Gross profit should be non negative (π gross = TR – VC ≥ 0) for the short run viability of the fishing operation. In the long run, the fishing operation to sustain the net profit should be non negative (π net = TR – TC ≥ 0). Break even point is estimated by using the formula;

\[ \text{BEP} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} \times \text{Sales} \]

To estimate the long run economic sustainability, Gordon Fox model is used. In simple economic model developed by Gordon (1954), fishery input and output values are expressed in terms of total cost and total revenue and are functions of fishing effort.

8.2 Major Findings

The major findings of the study can be summarised as follows.

8.2.1 Proliferation of the Number of Trawlers.

- The study has found that there is proliferation in the number of trawlers operating in Kerala in all maritime districts except Thiruvananthapuram and Alappuzha. The growth rate is the highest (4.24 %) in Kollam followed by Ernakulam (2.42%) and Kozhikode (1.64%). The all Kerala compound annual growth rate is 8.91 per cent (1980 – 2009).
- The reasons for the proliferation of trawlers as found out by the study are:
  - Lucrative returns to capital especially in the initial stages owing to steep rise in the price of fish (1980-1990).
  - Availability of institutional credit on liberal terms along with large amounts of subsidies and more financial institutions coming forward to finance the trawler owners Eg: Loans issued by co-operative societies to the boat owners.
  - Development of harbours and landing centres in all maritime districts and more shore based facilities.
  - To overcome the negative profit in the existing vessel an attempt is made to acquire modern vessels with all technical advancement.
  - No checking on the increase in the number of boats by the department of fisheries in Kerala.
  - Availability of fishery equipments and requisites on subsidized rate.
8.2.2 Profile of the Boat Owners

- The study found out that majority of the boat owners (78.39%) are Christians followed by Hindus (11.06%) and Muslims (10.55%)
- The illiteracy level of the owners of trawlers is higher than the state average of four per cent and it is particularly observed among Muslim boat owners.
- The trawler owners have an average age of 45 years.
- Qualified professionals are attracted to enter into the trawl fishing business.
- The average annual income as found out by the study is ₹13.39 lakh, annual saving is ₹1.37 lakh and household liabilities including the liabilities of the boat are ₹7.7 lakh.
- Boat owners of Munambam have better average income than the owners in the N.S.belt.
- Dominant mode of ownership is proprietorship.

8.2.3 Cost and Profit of the Trawler fishery

At the outset of the analysis of cost, it was identified that trawlers with overall length (OAL) of 32 -40 have almost waned and trawlers with OAL of 48 foot and above have waxed both in the N.S belt and Munambam. The annual fixed coast is calculated as ₹529480.6, ₹7,10,184 and ₹742251.25 respectively for the small, medium and large vessels. Total variable cost (TVC) is more in the location Munambam than the N.S.belt. The TVC is 92.3 per cent of the total cost in Munambam and 87.4 per cent of the total cost in the N.S belt. The total cost during the year 2010-2011 came up to ₹36,57,875.6. In estimating the profit, 30.15 per cent of the owners were not able to get positive net profit and 11.1 per cent of the owners attained only very low profit (0-3 lakhs). Majority (61.3%) of the owners fall in the below ₹21 lakhs’ category. In estimating the gross profit 17.08 per cent were not even able to gain positive gross profit. As per linear regression, the independent variable fishing hours was found having the highest value followed by fixed cost, fuel and size of the boat. If actual amount of insurance had to be included in the fixed cost, 30.65 per cent of the owners i.e., 0.5 per cent more would have been in the loss making category. The rate of return calculated for the study is 12 per cent, which is lower than the rate of interest paid by the trawler owners.
8.2.4 Economic Sustainability

Fox model is used to estimate the economic sustainability. The result of the Fox model revealed that the estimated catch at maximum economic yield (MEY) is 1.95 lakh tones and the effort needed to catch the MEY is only 31.56 lakh hours. With the average 199 days of fishing trips, the actual fishing effort is 63.7 lakh hours. The actual fishing effort is found to be more than double the effort needed to attain the MEY. This finding of the Fox model concludes that with the present fleet size of trawlers, the trawler fishery is operating not at economically optimum or economically sustainable level. Break even point was also calculated and found out that ₹ 6,92,281.77 is the point of return where the trawlers are at no loss or gain situation. Based on this estimation, 49.3 per cent of the owners are below break even point and 50.7 per cent of the owners are above this level. The ARR is also calculated and it is 6.83 per cent. From these calculations, it can be concluded that the economic sustainability of the operation of trawlers in Kerala fishery is doubtful.

8.3. Evaluation of the study

The heart of the study lies in the analysis of the aspects of the economic performance of trawlers in Kerala fishery like, cost, investment, earnings and profit. The broad objective set up of the study is the estimation of the economic sustainability or the long run economic existence of trawlers in Kerala fishery. Before analysing this, the proliferation of the number of trawlers in Kerala fishery, is taken up. The marine statistics (2009) published by the department of fisheries of Kerala is relied upon for this. According to the book of registrations of the respective fisheries offices, there were 4225 trawlers in Kerala fishery in the year 2009. While counter checking the number of trawlers with the Deep Sea Boat Operators Associations, it was identified that 243 trawlers were not in active operation. Modernisation in Kerala fishery, especially in the trawler fishery took place from 1980 onwards. So, a district wise analysis of the growth rate of trawlers during the period 1980-2009 is undertaken. In the compound annual growth rate of the districts, the district of Kollam has the highest growth rate, followed by Ernakulam and Kozhikode which is quite evident in other studies and secondary data. In the decadal growth rate of trawlers the decade 2001-2009 has the highest growth rate relative to other decades of the study.
Factors behind the proliferation of the number of trawlers identified in the study have to be evaluated by authorities for proper action.

A brief profile of the boat owners is also touched upon. The boat owners belong to the three major religions of Kerala, with Christians constituting the majority, followed by Hindus and Muslims. This finding corroborates with the trend in the findings of the CMFRI census. The difference between the two lies in the fact that CMFRI census is on the entire fisher folk and the present study is on the owners of trawlers. From the Christian community the dominance of the Latin Catholics is visible in the study as is revealed in other studies and secondary data. The boat owners belong to a mature age group of the working population. In the educational background of the boat owners, as a comparison is made of the two locations of the study namely the N.S belt and Munambam, the illiteracy level is found to be slightly high in Munambam and it is particularly observed among the Muslim boat owners. The boat owners both in the N.S.belt and Munambam are quite aware of the ample educational facilities available for the educational attainments. The dominant mode of ownership in both locations is proprietorship. In acquiring the inputs like diesel, boat owners mainly depend on the local diesel bunks.

In the analysis of cost, the location Munambam has more amount spent on variable cost than N.S.belt since the percentage share of the crew is higher in Munambam than the N.S.belt. Thus the total cost also is more in Munambam in comparison with the N.S.belt. The study highlights that the operational or variable cost is an important cost in trawl operation. The cost per fishing day is also high in Munambam. In the analysis of profit, the short run viability and long run economic existence are dealt with. In analyzing the net profit it is estimated that even among the trawlers with positive net profit, majority fall in the low profit category. This has to be viewed seriously by the concerned authorities.

In the estimation of the economic sustainability, Fox model is used and the model identified that the present fleet size or the present fishing effort is more than double the effort needed to catch the MEY. The catch has not exceeded the MEY except in the years 2004 and 2011. This again should draw the attention of the policy makers in the trawler fishery of Kerala.
8.4 Contribution of the Researcher and Policy Implications

The contribution of the study mainly centres on the economic performance and economic sustainability of the trawler fishery. The study has also contributed that the present fishing effort made by the trawlers is more than double the effort at Maximum Economic Yield (MEY). These contributions can be an eye opener to the government of Kerala and the department of fisheries to formulate proper policies for the economic sustainability of the trawl fishery in Kerala.

The following policy implications are the contributions of the researcher

The finding of the study indicates that 17.08 percent of the trawlers had negative gross profit and 30.15 percent had negative net profit. Thus the government of Kerala should bring out policies to face out the loss making trawlers and rehabilitate them in gainful areas.

The study also found out that there is proliferation in the number of trawling vessels operating along Kerala coast. The governments of Kerala through the institutes like CIFT make mandatory measures to determine scientific life span of the different types of trawlers and bring policies to remove all vessels which have covered the period determined by the governmental agencies.

The study estimated that the present fishing effort is more than double the effort at MEY. The government of Kerala should bring policies to reduce the fishing effort by not permitting new licenses to trawlers at least for a period of five years.

8.5 Future Research Issues

I. Using the same methodology studies can be undertaken to estimate the economic sustainability of the three important districts of trawl operation in Kerala i.e, Kollam, Ernakulam and Kozhikode.

II. The study can also be extended to other maritime states in India to find out the economic sustainability and economic performance of the trawl fishery.

III. Studies can be undertaken to estimate how the economic sustainability of trawlers are affected by the operation of the foreign deep sea vessels in each maritime state in India.
IV. Scientific studies could also be undertaken by the researchers to estimate the MEY of the different maritime states in India of the trawler operation and a comparative analysis could be brought out. The bio-economic equilibrium of the different maritime states can be estimated and management policies can be formulated.

8.6 Suggestions

To make the operation of the trawlers in Kerala fishery viable, the study gives the following suggestions.

The study has brought out the finding that the trawlers operating in Kerala fishery is more than double. Therefore, it is suggested that a prohibition of giving new licenses to trawlers should be adopted by the government of Kerala at least for five years.

The operating cost is enormously high in trawler operation in Kerala and the cost on fuel is the major cost bearing item. Thus study suggests the use of solar energy equipped vessels for the operation of trawlers in Kerala. The use of solar energy equipped vessels should be made wide spread all through the state.

In the study it is identified that the small vessels are oldest of the three types of vessels considered for the study and majority of these vessels belong to the category of loss making vessels. The urgent attention of the department of fisheries in Kerala, should be to phase out these vessels instead of permitting the owners to sell them out to other investors.

The study has brought to light the fact that the interest levied by the money lenders is at a usurious rate and therefore a complete and strict ban on indigenous money lenders, popularly known as ‘the blade’ in Kerala is recommended by the study.

In the process of the survey it was noticed that the old vessels were sold out keeping the same registration without the prior permission by the competent authority. It is highly recommended that the life span of all types of vessels should be specified by the authority and after the completion of the life span it should be de registered and phased out of the fishing fleet.
8.7 Conclusion

Trawl fishing units with positive net profit are either undergoing temporary problem or simply living off their capital. In the latter case, it is appropriate to switch them to richer fishing grounds or more profitable ventures. If under fished grounds do not exist the government of Kerala should take initiative to develop non fishing employment opportunities for the trawler owners and fishermen to move into.

Considering the co-existence of high fishing effort in trawl fishery which is more than double and the average catch which has not exceeded the MEY, the economic sustainability of the trawler sector has to be addressed by focusing on the former issue. By phasing out the old trawlers and restricting the entry of new ones or refusing license to the trawlers entering into the trawl fishing sector at least for five years, the present effort of the trawlers can be reduced. Active intervention of the government of Kerala is needed to make the trawler sector an economically sustainable venture. The motto of the government towards this sector should be to make the sector an economically sustainable and viable one. Efforts should be made to enable the sector to become economically viable at least by the end of the year 2020.