CHAPTER IV

OBJECTIVES, METHODOLOGY AND CONCEPTS

4.0 INTRODUCTION

Formulation of relevant objectives is an important task through which fruitful analysis can be made. To fulfil the objectives, relevant methodological strategy is required. Therefore, objectives and methodology are highly related to each other. In addition, certain concepts which are very familiar to fishery are explained.

4.1 OBJECTIVES

The overall objective of the study is to compare the welfare conditions of the fishermen of the catamaran sector and mechanised sector in Kanyakumari district; The specific objectives are:

(i) to assess the socio-economic conditions of the fishermen in catamaran sector and mechanised boat sector,
(ii) to estimate the trend and compound growth rate in fish catch over fifteen years,
(iii) to examine the factors limiting fishing occupation,
(iv) to focus attention on the welfare schemes (protective and promotional) with their impact on the standard of living of the fishermen,
(v) to assess the concentration of various welfare schemes and
(vi) to throw light on the default in the loan repayment made by the fishermen.

4.2 METHODOLOGY

The methodology for any research study must be strong in a careful examination of the available literature. This depends largely on the imagination and long-term vision and undertaking of the researcher. The methodological strategies adopted are presented in this chapter. It outlines the whole research plan and describes just what must be done, how it will be done, what data will be needed, what data collection methods will be employed and how the data will be analysed and conclusion reached.

4.2.1 Selection of the research problem

Selection of proper research study is a very crucial problem. As marine fishing is highly risky and the income accrued from fishing is inadequate and unstable, the fishermen struggle daily for their survival. Their dwelling condition is pathetic. In order to protect from risk and to provide them better standard of living, the government of Tamil Nadu launched various welfare schemes exclusively meant for the fisherfolk. Therefore, the researcher undertook the study about the welfare schemes with the objective of investigating the welfare conditions of fishermen in the three categories (catamaran without
outboard engine, catamaran with outboard engine and mechanised boat) and the implementation of the various welfare schemes for the well-being of the fishermen community in Kanyakumari District of Tamil Nadu.

An appropriate design of the study or research methodology is very important for a systematic analysis of the research problem and to arrive at meaningful conclusion. The various aspects included in this chapter are presented as detailed below.

4.2.2 Statement of the problem

Marine fishing is one of the major industries of Kanyakumari district. Fishing is carried out in 42 fishing villages upto 68 km along the coastal belt. Out of the total fishermen population of 1,33,264 in the district, nearly 91,960 fishermen are engaged in Catamaran sector and 41,304 fishermen are engaged in mechanised sector. The skills of these fishermen are regarded highly all over India. Boats from the district are found along the entire coastline. It is only during the southwest monsoon (when a ban on trawlers is in force in most states) that the migrated fishermen return to Kanyakumari district.

Over the years, the intensity of fishing has increased dramatically - partly on account of the increase in the active fishing population, partly due to the lack of alternative income-generating
opportunities; and partly due to motorisation and mechanisation of fishing crafts. The resources have not kept up with the increase of effort. As a result; a sharp reduction in catch per unit effort (CPUE) has happened. Some traders estimate a 60-75% reduction over the last decade. The parallel increase in prices protected the earnings of fishers for a while from the effect of lower catches but even their buffer is wearing off, and earnings are declining.

With competition running high during the past decade, conflicts among fishers, leading to violence, are endemic. Fishermen found in the coast of Kanyakumari district has, over the last two decades, seen every kind of conflict such as inter-caste, inter-religious rich-poor, also artisanal fishers-mechanised fishers.

Local government authorities usually treated the conflicts as law and order issues. Although violence was suppressed and law and order enforced, the conflict was rarely resolved. It came back in different mutations to haunt the local public. The basis of these conflicts was the modernisation drive of fishing vessels and gear for which state subsidy schemes have been in place since the 1960s. These schemes initially encouraged the introduction of mechanised trawlers; later the motorisation of vallams and catamarans.

Since the ushering of mechanization in 1958, artisanal fishers have, with dismay, compared the landings of the mechanised crafts
with their own meager catches. Besides, the artisanal fishers have
often seen their nets destroyed by mechanised boats. Now, many
catamarans and vallams are motorised and more conflicts loom large
since artisanal fishers are able to access the same fishing grounds as
the bigger mechanized boats.

Despite the increasing fishing intensity in the district and the
falling catch per unit effort, no one has casually linked the problems
to resource limitations. Until recently, Kanyakumari fishers and the
government of Tamil Nadu were not ready to accept the fact that the
resource limits had been touched. In fact, subsidy schemes for the
purchase of craft, engine and gear are still in place. Modernisation of
vessels and gears is still regarded as a solution, although all signs
suggest the contrary.

Till date, no systematic research study on the welfare
conditions of the Cattamaram fishermen and mechanised fishermen
from Kanyakumari had been undertaken. Therefore, an attempt was
made in this research study to examine the reasons for the poor living
conditions of the fishermen in Kanyakumari district and to find out
suitable methods and suggestions to improve the welfare conditions
of all the fishermen population in this district.

The core of the problem of the study is that unless certain
welfare schemes are provided for the betterment in the life of the
fisher folk, they would suffer a lot not only in their fishing occupation but also in their standard of living. As a result, it would lead to migration of the fishermen and would even lead to ruin the fishing occupation.

4.2.3 Significance of the study

The significance of the study is confined to the comparative analysis of the fishermen belonging to the catamaran sector without OBE\(^1\), the catamaran sector with OBE and mechanised boat sector in Kanyakumari District. Fishing occupation provides livelihood for many people not only residing at the coastal villages but also the people involving in fish trade. During the peak season fish catch would be higher than during the lean season. The fishermen save certain amount of their income earned from the peak season in order to survive in the lean season. As a consequence, their standard of living remains the same. In order to provide for a better standard of living, certain assistance either from the government or from voluntary agencies / organisations or from both is essential. For this, certain welfare schemes of the government exclusively meant for the fishermen have been implemented. Therefore, it is quite interesting to assess the impact of these schemes on the living condition of the fishermen in the study area.

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\(^1\) Out-board engine
The area of the study – Kanyakumari District – is popularly confined to fishing occupation. A number of social and economic factors had influenced the fishing occupation in the district. In addition, certain uncontrollable natural factors had also played their role in fish catching. The identified important factors were lack of adequate fish-catching materials, liquor addiction of the fishermen, distance of fish catching area from the residential area and heavy wind. In spite of all these hindering factors, the fishermen used to involve in the occupation of fish catch and are thrown into the arena of struggle for their livelihood. Different fish-catching vessels were used to catch fish. Among these vessels, catamaran and mechanised boat were of prime importance. Most of the fisherman were under the clutch of indebtedness due to their incapability of repaying the loan borrowed from various financial institutions / agencies. Due to higher cost of maintenance of the fishing vessels and higher unnecessary domestic expenditure on liquor, the fishermen were unable to repay the loan properly. To relieve the fishermen from the higher expenditure incurred in maintaining fishing vessels and to provide them financial assistance, Fishermen Welfare Schemes have been implemented.

This study, therefore, proposes to examine the impact of Fishermen Welfare Schemes on the fishermen community of
Catamaran without out-board engine, of Catamaran with out-board engine and of Mechanised boat in the study area.

As few statistical models were used in this study, this would be an improvement over the earlier works on the quantitative techniques. Hence, the methodology used would be an eye-opener for further researches.

Conclusions drawn on the basis of micro analysis will be of useful in framing macro policies. The micro analysis of the welfare schemes exclusively meant for the well-being of the fishermen and conclusions drawn may be considered to formulate state level and/or national level financial policies relating to welfare schemes for various sectors.

The findings with respect to the problem of repayment of loan would be of immense use in motivating the fishermen to make savings from their income and to find possible ways and means to repay the loan properly so that the loan can be recovered in time, the number of defaults can be reduced and the funds for recycling of loan can be increased.

4.2.4 Choice of the study area

Kanyakumari District is divided into two Revenue Divisions, viz, Padmanathapuram at Thuckalay. Nagercoil is the district Head-Quarters. Further, this district is divided into four Taluks namely,
Agasteeswaram, Thovalai, Kalkulam and Vilavancode and nine Community Development Blocks. Besides these, it has 82 revenue village panchayats, 67 town panchayats and one township.

In terms of banking coverage, Kanyakumari District could be considered as one of the well-banked districts of Tamil Nadu. There are 114 branches of different commercial banks, spread over 103 centres in the district. Indian Overseas Bank has been considered to be the "Lead Bank" of the district for distributing necessary loans and advances to the farmers, industrialists and cattle rearing people of the district. Apart from the commercial banks, many other financial institutions like co-operative credit bank and the National Rural Development Bank are also ready to offer loans, advances and subsidies. In addition, different types of welfare schemes have been implemented for the upliftment of fishermen community especially with respect to the standard of living of them. Due to these welfare schemes, large number of fishermen has got benefited. Therefore, the researcher has chosen Kanyakumari district as the study area.

4.2.5 Data and collection of data

4.2.5.1 Data

Both primary and secondary data were used for empirical analysis to fulfill the objectives of this study. Primary data were used to study about he beneficiaries from the welfare schemes for 15 years
from 1990-1991 to 2004-'05. Regarding the primary data, the detail information of all the 307 sample respondents was obtained by following structured interview schedule.

Secondary data regarding the welfare schemes exclusively implemented for the well-being of the fishermen belonging to the Catamaran sector and Mechanised boat sector were found essential. Secondary data were lucidly obtained directly from government records for the same period as in the case of primary data.

### 4.2.5.2 Collection of data

**Primary data**

Primary data with relevant information were collected with the aid of structured interview schedule. This interview schedule was pre-tested with 25 arbitrarily chosen beneficiaries. After the pre-test, modifications were made and required data were collected directly by the investigator. The investigator had taken only the fishermen who have got benefit from the welfare schemes for 15 years from 1990-91 to 2004-05 for analysis purpose. As the sample respondents, 172 fishermen in the Catamaran sector without out-board engine, 87 in the Catamaran sector with out-board engine and 48 in the Mechanised boat sector were selected.
Secondary data

Secondary data regarding different welfare schemes that have been implemented for the betterment in the standard of living of the fishermen, number of fishermen benefited and amount of money disbursed were obtained from the Tamil Nadu government publications for the reference period.

4.3. MATHEMATICAL AND STATISTICAL TOOLS USED

4.3.1 Simple average, percentage and ratio

Mathematical tools such as simple average, percentage and ratio were used in the tabular analyses

4.3.2 Trend and Compound growth rate of fish catch:

The present study is mainly empirical in character. To determine the trend in fish catch, simple linear regression model was used. The model runs as follows:

\[ Y = a + b X \]

where,

- \( Y \) = quantity of fish catch
- \( a \) = the constant term
- \( b \) = trend or slope of fish catch
- \( X \) = number of years
To find out the compound growth rate in fish catch in the catamaran sector and mechanised sector over the study period, **semi-log growth model** has been applied. The formula used is:

\[ \log Y = a + b \times X \]

where,

- \( Y \) = quantity of fish catch
- \( a \) = the constant term
- \( b \) = growth rate
- \( X \) = number of years

The compound growth rate was obtained by considering \( b \). Therefore, \((b - 1) \times 100\) gives the growth rate.

The value of \( b \) was tested by 't' statistic: 
\[ t = \frac{b}{S.E\ of\ b} \]

\( S.E \) is the standard error. This 't' follows the student 't' distribution with \( n-2 \) degrees of freedom.

**4.3.3 Multiple regression analysis for repayment of loan**

Linear multiple regression analysis was made to assess the repayment of loan by the borrower respondents. The multiple regression model is shown below:

\[ \log Y = b_o + b_1 \log X_1 + b_2 \log X_2 + b_3 \log X_3 + b_4 \log X_4 \]

where

- \( b_1 = b_o, b_1, b_2, b_3, b_4 \) (Regression coefficients of the respective variables)
\[ Y = \text{Repayment of loans} \]
\[ X_1 = \text{Rate of interest} \]
\[ X_2 = \text{Consumption expenditure} \]
\[ X_3 = \text{Maintenance cost} \]
\[ X_4 = \text{Level of income} \]

The regression coefficients of the respective variables for the three categories were estimated by employing the method of Ordinary Least Squares (OLS). The statistical significance of the estimated values was tested using t-test.

### 4.3.4 Garret ranking technique

The important natural, social and economic factors that limit the occupation of fish-catching in their day-to-day life were identified by employing Garret ranking technique. The technique runs as follows:

\[
\text{Percent position} = \frac{100(R_{ij} - 0.5)}{N_j}
\]

where,

\[ R_{ij} = \text{Rank given for } i^{\text{th}} \text{ factor by } j^{\text{th}} \text{ individual} \]
\[ N_j = \text{Number of factors ranked by } j^{\text{th}} \text{ individual} \]

The percent position of each rank thus obtained was converted into scores by referring to the Table given by Garret. Then, for each factor, the scores of individual fisherman were added together and divided by the total number of sample fishermen for whom scores
were added. These mean scores for all the factors were arranged in descending order and ranks were given to identify the important factors limiting the occupation of fish catch.

4.3.5 Descriptive Statistics

Descriptive statistics consisting of minimum, maximum, mean, standard deviation, skewness and kurtosis was employed to establish the concentration of welfare schemes with respect to the fishermen belonging to both the fishing sectors.

4.4 PERIOD OF STUDY

The study is inclined to a period of fifteen years from 1990-91 to 2004-05 related to the primary as well as secondary data.

4.5 LIMITATIONS

Following are the limitations of the study:

1. This study examines the implementation of various welfare schemes exclusively meant for the fishermen community relating to Catamaran sector and Mechanised boat sector in Kanyakumari district only.

2. The generalisations arrived in this study would be relevant only to the area under study.
3. Even though different varieties of fish are caught in one catch, the value of the fish in that catch is determined totally. Therefore, variety-wise determination of value is totally ignored.

4. Seasonal changes in the implementation of various welfare schemes are not considered.

5. As this study was pertaining to area specific and scheme specific, the inferences and conclusions drawn cannot be generalised to the welfare schemes of other sectors.

6. This study has certain limitations on statistical ground such as i) limited number of observation, (ii) multi-collinearity and iii) auto regression errors of regression models, based on time-series and cross section data.

7. The limitations of the Ordinary Least Squares (OLS) method of estimation are also present.

### 4.6 CONCEPTS AND TERMS USED

In applied economics, conceptualisation is a task of paramount significance. Explanation of concepts and terms makes it possible to have a swift understanding of the present study. Following are the concepts and terms used in the study.
4.6.1 Fishing

Fishing is generally understood as the catch of fish from the sea. It is used to be a hereditary profession carried on from generation to generation with all the members of the family taking part in it to a varying degree. At present, it is fairly a mechanised and modernised industry involving a good deal of advanced technology.

4.6.2 Fisherman

A fisherman is a person whose primary occupation is marine fishing and who receives more than 50 percent of his annual total income from fishing. In the present study, the term “fishermen” includes those men who earn a living by fishing.

4.6.3 Fishermen household

A household in which at least one person is engaged in active fishing or in allied activities such as drying, curing, fish marketing and net making is called fishermen household.

4.6.4 Catamaran

Catamaran is a most popular traditional fishing craft. It is generally made of alpica wood. The word catamaran is derived from the Tamil word kattumaram. Kattu means tie and maram means tree or wood. In the study area, four logs of wood is tied together to make a catamaran.
4.6.5 Fishing gear

Fishing gear is any device used to catch fish. This may be grouped under some important categories which are distinguishable on the basis of basic characteristics of form, function and mode of operation. The important types of gears popularly used in Kanyakumari district are nets, hook and lines, traps, spears and harpoons.

4.6.6 Fishing season

Fishing season is classified into two: peak and lean. When fishes are caught in plenty, it is a peak season and when fishes are caught in low quantity, it is known as lean season. In Kanyakumari district, the lean season persists in the first six months of a year (January – June). The peak season remains in the second six months commencing on July and ending with December.

4.6.7 Bonded labour

There is a common practice among the fishing labourers that during the lean season the fishing labourers borrow money from craft owners. One of the conditions attached to such borrowing is that the fishing labourers are not allowed to work with any other craft owners by ignoring the lender craft owners. Thus, in effect, the borrower fishing labourers become bonded labourers.
4.6.8 Trawlers

A trawler means any vessel that pulls a bag net through the water. There are many types of trawlers varying in size from open boats, powered by outboard engines to huge factory ships, which can fish in the most distant water.

4.6.9 Seiners

Seiners are surround nets. Many kinds of these nets have been used to catch surface swimming fish. Ring nets or lampara nets and tuck seiners are the best known of the numerous kinds of surround nets. The chief distinguishing feature is that a pursue seine has purse rings fitted all the way round the foot.

4.6.10 Income

Income refers to the total receipts or cash earned by a person or household during a given period of time (usually a year). Income consists of wage and labour earnings, property income such as rent, interest and dividend; or transfer payments or receipts from the government, such as social security or unemployment insurance. In the present study, income consists of the income earned from fishing and other related fishing works.
4.6.11 Wealth

Wealth is capitalised income. Wealth consists of the net money value of assets owned at a point of time. Wealth is a stock while income is a flow of money per unit of time. Wealth includes tangible items like house, car, other durable goods, land and financial holdings such as cash, savings accounts, bonds and stocks.\(^2\) In the present study, fishing vessels and fishing gears are considered as wealth.

4.6.12 Employment

Employment refers to an occupation or the state of being employed or having a job for which a person is paid. Employment is of various types namely permanent, temporary, seasonal and casual. In other words, employment means that a person is employed in any productive activity for any remuneration.\(^3\) In the present study, employment refers to the work of fishing labour in catching fish.

4.6.13 Age

Age was conceptualised as the number of years completed by the respondent at the time of survey.

\(^3\) Agrawal A.N and Wishwa Prakashan, “Indian Economy, Problems of Development and Planning” 20\(^{th}\) Edn.(A Division of Wiley Eastern Ltd.) New Delhi, 1994, p 105
4.6.14 Marital status

Since marriage creates responsibility on individuals, this status plays an important role in materialising the job of individuals. It was found in the study area that married people were found to be more responsible than the unmarried in all the activities in fishing occupation.

4.6.15 Level of education

Level of education positively relates to efficiency in fishing occupation. Level of education varies from person to person. From the pilot survey, it was found that the respondents were at different education levels such as middle school level, high school level and higher secondary level.

4.6.16 Nature of family

Nature of family reflects whether the respondents live in joint family system or in nuclear family system.

4.6.17 Size of family

Size of family stood for the total number of persons who lived under one roof and made use of a single kitchen.
4.6.18 Ownership of house

Majority of the respondents owned houses of their own; some respondents were living in rented houses and some in leased houses. Since ownership of house influences the saving potentiality of the respondents, this variable was taken into account.

4.6.19 Expenditure

Expenditure of a family determines the status of it. In the present study, the household expenditure as well as operational expenditure was taken into account. This expenditure directly exposed the status of the family and indirectly influenced the repaying capacity of the borrowers.

4.6.20 Savings

Savings stands for the annual savings of all the respondents. Savings depends on income and it is income minus consumption in economics. But, in practice, savings is influenced by several factors. In the present study, savings is considered to be the difference between the total income and household consumption expenditure plus operational expenditure.

4.6.21 Default

Default refers to the act of purposive or accidental failure to repay the loan by the borrowers during the stipulated period. It acts
as a stumbling block in the recycling of loan. Identification of the defaulters would help finding the extent of default in the repayment.

### 4.6.22 Earner-dependent ratio

Earner-dependent ratio is the ratio between the earners and the dependents of the families. Earners are labourers engaged in catching fish and dependents comprise the life partner, the aged and the children. This variable would certainly influence the level of consumption expenditure and the size of savings in the families.

### 4.6.23 Welfare

Welfare is a word connected with the body and mental conditions of a person. Normally welfare means a state of being in a good condition. Labour welfare is one of the major aspects of normal programme towards bettering the lot of labour and creating a life and work environment of decent comfort for the working class of population. In the present study, welfare relates to the betterment in the living as well as occupational conditions of the fishermen community on the basis of various welfare schemes implemented by the Tamil Nadu government.

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4 Bhagoliwal, T.N, “Economics of Labour and Industrial Relations”, Published by Sahitya Bhawan, New Delhi, 1979, p 53