CHAPTER – II

REVIEW OF LITERATURE AND RESEARCH METHODOLOGY

2.1 Introduction

2.2 Review of Literature

2.2.1 Review of Books

2.2.2 Review of Ph.D. Thesis

2.2.3 Review of M.Phil. Dissertations

2.2.4 Review of Articles

2.2.5 Review of News Papers

2.3 Research Methodology

2.3.1 Present Position of Oil Mills in India and Maharashtra

2.3.2 Title and Scope of the Study

2.3.3 The Need and Importance of the Present Study

2.3.4 Edible Oil Industry in Solapur city

2.3.5 Objectives

2.3.6 Hypothesis

2.3.7 Research Design

2.3.8 Methodology and Data Collection

2.3.9 Data Processing and Techniques of Analysis

2.3.10 Reference Period

2.3.11 Outline of Study

2.3.12 Limitations of the Study
CHAPTER - II
REVIEW OF LITERATURE AND RESEARCH METHODOLOGY

2.1 INTRODUCTION:

In this chapter, we present the review of the studies made related to a critical study of the working of edible oil industry. These studies had made in various small scale and village edible oil industries and also in the field of agricultural sector particularly in the production of oilseeds. Various academicians, industrialists and organisations had made studies on the working of edible oil industry in Maharashtra and India.

2.2 REVIEW OF LITERATURE:

A brief review of these important studies in chronological way enabled us to understand the working of edible oil industry in India and Cities in Maharashtra.

REVIEW OF BOOKS, PH.D. THESIS, M.PHIL DISSERTATION, ARTICLES AND NEWS PAPERS:

2.2.1 REVIEW OF BOOKS:

1) Vijay Paul Sharma, Saradendu Patnaik, Hiren Tilak (2007):

growth behaviour of oilseeds in India such as groundnut, rapeseed, sesame, sunflower, safflower, soybean etc. In this study they observed one of the most important changes in the cropping pattern over the last 3 decades. In relative terms the share of cereals in the GCA has declined from about 61% in 1970-72 to about 51% in 2001 to 2003 indicating that increasing area under rice, and wheat fell short of decline in area under course cereals. The share of oilseeds in GCA increased from around 10% in 1970-72 to 13.6% in 1990-92 and then declined to 11.7% in 2001-03.

They analysed consumption expenditure of edible oils in India. Per capita expenditure on edible oil has increased at a faster rate than per capita consumption expenditure on food items and total consumption expenditure. As a result the share of edible oil in total consumption expenditure has shown a consistent increase in the 70’s and 80’s, this increase was more pronounced in rural than urban areas. In the 90s, this share witnessed a decline. Per capita consumption expenditure on edible oil in urban areas was about 1 and half times of rural areas, however, the ratio of per capita consumption in urban and rural areas showed a declining trend in the case of edible oils. In 1999-2000 the per capita total consumption expenditure of edible oil increased.

In this book they presented the effect of changing prices of oilseeds on the production of edible oils. Nominal prices of major edible oilseeds and oils experienced deceleration in the 90s compared to the 80s, whereas real prices of edible oilseeds and oils declined significantly in the 90s. The results of variability in edible oilseed prices reveal that inter-year fluctuations in nominal prices have marginally, increased in the 90s. In the case of oils, inter year fluctuations in prices have declined significantly over time which is
reflected in the low coefficients of variations ground the trend line in the 90s. The extent of fluctuating in monthly prices in the 90s for major oilseeds are oils in major markets varied crops and markets. Prices were generally higher in the festival months and harvesting months which shows that market intervention mechanism through procurement prices has not been able to stabilize edible oilseed prices. The National Agricultural Co-operative Marketing Federation of India (NAFED), the national level nodal agency for procuring oilseeds from farmers has not played its role.

This book raised the problems of an increasing consumption of edible oils with the low production. Demand for edible oils in India is expected to grow at 5-6% over the next 5-10 years because of income growth, population increase and changes in consumption pattern, while domestic output has been stagnant. The obvious questions that arise are –

- Will India achieve the goal of self-reliance in edible oils or will it continue to be the largest importer of edible oils?
- What various policy options are available to policy makers to protect the interests of both oilseed producers and consumers?

The study focused the need of technological change to make India self-reliant on edible oils. New location, specific – high yielding varieties, more coverage of oilseeds acreage under irrigation, appropriate pricing incentives and institutional reforms would be the components of this strategy. Investment in agricultural research and development is a key element and should be stepped up. The National Agricultural Research System should meet this challenge. Dissemination of technology is equally important and needs to be
strengthened through effective agricultural extension system. Extending oilseed cultivation to non-traditional edible oils, like rice bran oil, corn oil, cottonseed oil etc. needs to be exploited to boost India’s oil output.

2) Gadgil D. R. (1965):  
Gadgil D. R. in his study on “Solapur City Socio Economic Studies” published by Ghokhale Institute of Politics on Economics, Pune in 1965, emphasised on the factors which are essentially responsible for the location of edible oil industry in Solapur. The surrounding areas are suitable for the cultivation of groundnut, sunflower and safflower. Secondly, chief labour is available in plenty. Thirdly, Solapur is a railway junction and well connected with the rest of the country. Fourthly, as it is a big city banking and other commercial facilities are easily available and a ready market for consumption of oil exists automatically.

This study highlighted the genesis of edible oil industry in Solapur city, also showed the suitable socio economic conditions for the development of edible oil industry in Solapur city.

This study analysed the changing edible oil process and production.

i) Village ghani

ii) Hand Pressed or Hand Screw

iii) Rotary Mill

iv) Expellers

This study emphasised on the detailed process of edible oil extraction by village ghani in the beginning period in Solapur. This study also emphasised on the development of oil extraction in detail
in further period from village ghani to expellers. Village ghani is simple in design, locally made and entails small initial investment. It is easy to work and is thus able to hold its own in the villages in spite of the keen competition that it faces from the power mills. It is for excellence and important cottage industry providing employment to a large sector of the agricultural production.

The writings of the Gadgil D. R. also emphasises on the details about the oil extraction through rotary mills and expellers showing the minimisation of cost of production and to curtail unemployment in local areas.

This study also emphasised on increasing consumption of edible oil, opportunity of higher production of edible oil and suitable condition for cultivators to increase the production and productivity of oilseeds.


Nannapanavaru S. R. in his study book on “The Oil and Oilseeds Economy of India” published by Himalaya Publication House in 1994, highlighted on the various aspects related to Oil and Oilseeds Economy of India. This study analysed the various sectors related to the subjects such as production, consumption of edible oilseeds and the comparative analysis of domestic supply of oils with imported oils. The study also presented the current situation of oilseed production in India in different states and the behaviour of oilseed production particularly groundnut, mustard, sesame and linseed etc. This study showed the government efforts and the plan performance to boost oilseed production and the strategy implemented to boost oilseed production in India.

This study analysed the trends in per capita consumption of
edible oil and estimated the elacities of demand with respect to own price, prices of substitutes and income. This study analysed the details about linseed oil which is mainly used for industrial purposes. It is also used for cooking purposes in India and U.S.S.R., Poland, Hangeri and a few other countries. It is used extensively as a drying agent in a manufacture of paints and varnishes. It is also used in the manufacture of soft soaps, furniture polish, lubricants, plastics, printing and for other purposes where a drying agent is required. The study showed harvesting and peak marketing seasons of linseed oil in the states like Uttar Pradesh, Bihar and Maharashtra where the crop is cultivated as a mixed crop with wheat, grass, barlin and rubi jawar.

4) **Persaud Suresh and Landes Maurice R. (2005)**

Persaud Suresh and Landes Maurice R. in their study on “The Role of Policy and Industry Structure in India’s oilseed Markets” published in Economic Research Service/USDA in 2005, tried to analyse and compare oilseed production in India with production countries in the world. They also analysed consumption and import of edible oil in India. This study highlighted on increasing edible oil consumption in India by more than 6% annually. The present consumption of edible oil i.e. per capita consumption (9.6 kg.) of India remains below the world average of 11.1 kg. This study showed that edible oil used for the different purposes rather than the food preparation, therefore, India has to import edible oil every year.

This study analysed edible oil trade policy from 1970 to 1994. In this period most edible oil imports were conducted by the government’s state trading corporation with annual import, quantity determined by an inter-ministerial committee based on domestic supply, demand and balance of payment conditions. Imports were
particularly restricted during 1989-94 a period corresponding with the Technology Mission on Oilseeds a government initiative to boost self-sufficiency in edible oils. Since 1994 when India began conforming to WTO rules and replacing quantitative trade restrictions with tariffs, oil imports have been placed under Open General License allowing unlimited imports by private traders.

The study analysed the trends of oilseed production in area and yields. Area planted to oilseeds has generally responded to changes in domestic prices associated with changes in trade policy and in price policy for competing crops. Growth in oilseed area accelerated and grave faster than the world average during 1980’s, when stricter controls on imports of oilseeds and products strengthened oilseeds prices related to competing crops. However during 1990 to 2002 a period that includes the liberalisation of oil imports domestic prices of oilseeds and oil declined related to other crops and oilseed area growth slowed significantly. However government minimum support prices (MSPS) for wheat and rice, important competing crops for oilseeds in some regions also slowed the growth in oilseed area during the late 1990. Further the study showed the measures implemented by the government to boost the oilseed production in India.

5) **Pavaskar Madhoo (1979)**

Pavaskar Madhoo, in his study on “Demand for Oils and Oilseeds”, Bombay: Popular Prakashan Pvt. Ltd., 1979 attempted to estimate demand for oils and oilseeds for the years 1980 and 1985. His estimates of demand for major oils and oilseeds in India are essentially in the nature of projections based on time series data covering the period 1960-61 to 1974-75. The study aims at projecting the demand for domestic consumption, vanaspati
production and industrial purposes under various assumption relating to changes in population, income and prices.

6) **George P.S., Shrivastava U.K., and Desai B.M. (1978)**:

George P.S., Shrivastava U.K., and Desai B.M. in their study book on “The Oilseeds Economy of India”, Delhi: published by The Macmillan Company of India in 1978 have analysed the supply projections of major as well as minor oilseeds for 1980-1985 based on past performance covering the period 1954-55 to 1973-74. The supply of oilseeds in 1980 and 1985 were determined by the area under oilseeds and the yield levels achieved. In projecting the area under the crop and the yield levels, 3 broad approaches were used:

i) trend method;

ii) analytical models; and

iii) judgments based on the current developments.

To estimate the trends, linear, semi log, log inverse and double log functional forms were used.

In analytical models, it was assumed that the area under oilseeds was determined on the basis of the relative profitability of oilseeds and the total cultivable area at the farmer’s disposal. In the absence of expected relative profitability, past experience through lagged variables was used. The general models used for estimating acreage responses were explained by gross return of the oilseed gross return of the major competing crops, net cultivable land, irrigated area under the crop, rainfall and trend variable yield responses were project by taking into account the availability of improved technology and the use of intensive cropping practices.
In the case of newly introduced crops such as sunflower, soybean and minor oilseeds of free origin, the projections were made on the basis of an assessment of factors like current development activities the chance of success in these activities etc.

Since there have been violent fluctuations in prices as well as yield levels of oilseeds, price risk and yield risk could have been included in explaining the acreage response relations. Market clearance and price variation aspects are also not covered in the study.

7) George P.S., Shrivastava U.K., and Desai B.M. (1978)\(^7\):

George P.S., Shrivastava U.K., and Desai B.M. in their study book on “The Oilseeds Economy of India”, New Delhi: published by The Macmillan Company in 1978, p-54 have pointed out that the slow change in the use of improved seeds in the cultivation of groundnut is largely due to –

i) Marginal difference between yields obtained from local/traditional seeds and improved seeds;

ii) high cash cost of groundnut seeds on account of high seed rate;

iii) low multiplication ratio in groundnut seed production; and

iv) inadequate resources for seed multiplication.


Aneja R. P. in his study “Oilseed and Vegetable Oil Economy of India” tried to examine the impact of government policies and programmes on the production of oilseeds in India. The study highlights area, production and yield of edible oilseeds in India from 1970 to 1991. The study also highlighted the production of oilseeds
in India in kharif and rubi season particularly groundnut, sunflower, safflower, mustard, linseed, sesame, soybean etc. Further the study analysed an increasing trend of cultivation of oilseeds in the different states in India particularly Andhra Pradesh, Karnataka, Maharashtra and Gujrat.

This study analysed the fluctuations of oilseeds prices in Indian Market and further showed the impact on edible oil production in India.

This study also observed that differential tax structure across states/Union Territories has laid to massive evasion of taxes on edible oil trade through interstate transpassing. Oils are sent to consignments to the states where taxes on the sale of edible oils are lower than the organising areas. The practice of transporting more quantity on permit for single load would have to be gains. This study enlightened hedging and futures trading by producers and processors facilitating better source allocation and planning of production sales, processing and storage patterns. However, for the effective functioning of futures market prevalence of 2 conditions is necessary. First, the differences in the prices across commodity spot market should reflect only the differences in the costs accruing on account of space time and form utilities viz. equal minimum transporting storage and processing costs respectively. Second, all information on prices, demand and supply should be transparent, accessible and uniform in terms of quantity, quality, taxation, processing etc. Instead of addressing these requirements the government has banned futures trading in edible oilseeds which have resulted in formation of illegal forward market in many important trade centres like Rajkot, Jamnagar, Adoni etc. In the absence of near perfect spot markets and near perfect information
futures trade would only lead to inefficient gamble on the prices of the commodity. Further, the failure to have an authorised moderator would potentially lead to the losses of weaker players. Similarly, the failure to form an integrated forward market for the commodity would lead to region based concentration of power in the commodity.

2.2.2 REVIEW OF PH.D. THESIS:

1) Nannapanavaru S. R. (1994)\textsuperscript{9}:

Nannapanavaru S. R. in his unpublished Ph.D. thesis entitled “The Status and Prospects of Oilseeds in India”, (pp. 5-6, 54,110) in 1994, exposed that India’s agricultural performance has been quite impressive in the case of food grains as a result of which India has attained self-sufficiency. But the story in case of oilseeds is different. The domestic production during 1971-72 to 1982-83 increased at an annual growth rate of 1.5 percent only which is much lower as compared to 2.5 per cent growth rate of food grains as well as 2.2 per cent growth rate of population. Oil consumption also increased over time owing to higher growth rate of demand mainly due to development of socio-economic status of weaker sections of society as a result of various poverty alleviation programmes. In this context, an overview of the performance of oilseed economy acquires significance in India’s aim to achieve self-reliance in production of oilseeds by 2000 A.D.

It is observed from various studies that, it is necessary to enhance production of non-cultivated oilseeds also along with cultivated oilseeds in order to make the proposition more feasible. Besides, an in-depth study is needed to understand the potential of other sources from where edible oil can be tapped and what role the private and public industrial units can take in the process of tapping oil from non-conventional sources in the background of the present
industrial liberalization policies. Considering the progressive increase in demand of non-edible oil, owing to industrial development in the country, demand of vegetable oil is also increasing exorbitantly and as such, if proper planning for non-edible vegetable oil is not done simultaneously, a sizable amount of edible oil may be diverted to meet the industrial requirements thereby causing further shortage in edible oil supply. Therefore, it is also felt that while improving the production of edible oil there should not be any slackness towards production of non-edible oil so that it is adequate to meet the requirements of non-edible oil for industrial purposes.

2) Jhala M. L (1978)

Jhala M. L. in his unpublished Ph.D. thesis on “Supply and Demand Aspects of Edible Oilseeds and Oils in India 1951-71”, Ahmedabad submitted to Gujrat University in 1978, has attempted to explore quantitatively the supply and demand relations pertaining to edible oilseeds and oils economy of India in a classical supply demand framework. The analysis was done for groundnut, rape/mustard, sesame, coconut oils and vanaspati on the basis of time series data covering the period 1951 to 1971. The study examined both single equation approach and simultaneous recursive type model at a specific edible oil level. It was assumed that acreage response was the same as the output response and Nerlovian partial adjustment model was used to explain the supply response of acreages for oilseeds. This was explained by farm harvest price, lagged yield, rainfall during sowing period and lagged acreage under the crop. In the case of groundnut for many states the negative price response was found despite groundnut being a
commercial crop. The agro-climatic factors especially yield and rainfall, were found influencing the groundnut acreage in the country.

The static demand relation linear in logarithm has been used to explain the per capita consumption of individual oil. This was explained by the real wholesale price index per capita real income and trend variable. The time series data on per capita consumption were derived on the basis of the production approach.

Thus, it is not the equality of supply and demand that explains fully the pricing mechanism of oils and oilseeds in the market. This requires a separate price equation which is behavioral relation incorporating oil millers/traders role thinking that they have 2-fold economic function, viz. to bring the supply and demand into contact and to use their market influence to regulate price of oils and oilseeds.

3) Modi C. P. (1987)\textsuperscript{11}:

Modi C. P. unpublished Ph.D. thesis on “Problems and prospects of Edible Oil Industries in Gujrat” submitted to Sardar Vallabhabhai Patel University, Gujrat in 1987. Modi C. P. in his research work analysed that though the Gujrat state is top in India in the production of oilseeds particularly groundnut but then also the edible oil industries in the state are facing number of problems they are –

i) Problem of export of edible oils, oils cakes and by-product;

ii) Problem of competition with oil extraction solvent plants;

iii) Industries in Gujrat are facing the problem of restrictions laid by the state govt.

iv) Problem of changing cropping pattern in the state.
v) The empirical study of market structure of edible oil industry with reference to groundnut oil market in Gujrat confirms that characteristics of mixture of different market systems are found in this market. In the opinion of different sample groups, producers and middle businessmen, wholesale and retail dealers and different groups of consumers, market system in edible oil market is a mixture of different markets. All the 4 market systems; perfect competition, imperfect competition, monopolistic competition and oligopoly have their own place in the entire edible oil market.

vi) Groundnut telia oil market is very close to perfect competition. There is only vegetable price difference in wholesale level and a little more price differential at retail level. There differential indicate there is also an element of imperfect market in edible oil industry. The market of branded double filtered groundnut oil which is sold at higher prices (with certain premia over telia) can be regard as situation of monopolistic competition. Advertising and selling costs also are used to influence the markets of branded varieties of oil.

2.2.3 REVIEW OF M.PHIL. DISSERTATIONS:


Patel R. P. submitted his unpublished M. Phil thesis on “Problems of Edible Oil Industry in Saurashtra” to Sardar Vallabhbhai Patel University, Gujrat in 1992. Patel R. P. selected 45 oil millers as a sample oil mills for the study. This study consist the information and statistical data collected by traders, co-operatives, commission agents and brokers related to the oil mill business. This study focused the basic and general problems of edible oil industry in Saurashtra such as –
i) Idle capacity and scarcity of raw materials.

ii) Price fluctuations

iii) Losses and closing of firms

iv) Adulteration in oil

v) Government controls

vi) Uncertain and unstable government policy

vii) Heavy tax burden

viii) Modernization of Mills

2) **Bhave Priyadarshini Uday (1998)**:

Bhave Priyadarshini Uday submitted her M.Phil. thesis on “A Study of Groundnut Oil Industry in Sangli to Shivaji University, Kolhapur in 1998. This study analysed the present situation of edible oil industry in Sangli. The aspect of the study was to present processing, production, sale, market situation and problems of this industry. This study analysed an increasing cost of production and competition with big size oil extraction plants. For this study the traders, businessmen, wholesale and retailers were interviewed and pointed out the difficulties before the oil mill owners.

3) **Hallur S. C. (1992)**:

Hallur S. C. unpublished M.Phil. thesis on “The Problems and Prospects of Edible Oil Industry in Bijapur” submitted to Karnataka University, Bijapur in 1992. This research work highlighted the socio-economic reasons are fast developed the edible oil industry in Bijapur. The study emphasised the present situation of the edible oil industry through the 32 sample oil mills. In the present situation this industry is facing number of problems were mentioned and the suggestions were made for the further sound development of this industry.
The findings of this study were related to the finance, purchase of oilseeds, sale of oilseeds, process and production, employment of skilled labour, location and the government policies. To overcome the difficulties some general suggestions were made to develop production and marketing system of edible oil business for strengthening this business in Bijapur.

2.2.4 REVIEW OF ARTICLES:

1) Singh R. B. (2002): Singh R. B. in his study on “Situation and Outlook for World Supply and Demand of Oils, Fats and Oil Meals” in the Article – IARDC, Research and Technology Development Division, FAO Hqrs, 00100, Rome, Italy, enlightened on assessment of the situation and outlook for 1992 for all edible oil, soap fats/oils and oil meals, to provide the general framework for supply/demand prospects for different oil/meal sources and necessary production and distribution adjustments in India.

This study showed in contrast to fats and oils, oil meal prices, already low in 1990 after having declined for 2 years, edged even lower in 1991. With the weakness of U.S.S.R. demand a major influence resultant downward pressure of prices of oil meals of vegetables origin was largely offset by the demand. Shift from fishmeal which was in short in supply and the price of which averaged 15%, 15% higher in January-September, 1991 than in 1990. Overall international market prices in 1991 compared with 1990 as measured by the FAO Dollar price, indices averaged 5% higher for fats and oils but 1% lower for oil meal. Because of this stronger U.S. Dollar, the FAO indices in terms of imports, currencies were 9% higher for fats and oils and 2% higher for oil meals.
Singh R. B. tried to analyse the import prices of selected oilseeds, oils and meals in his study. And also analysed world supply/demand balances of edible/soap fats and oils. Overall this study analysed the situation and outlook for world supply and demand of oil fats and oil meals which help to study comparison with Indian oilseed and oil production position.


Narwade S.S. and Bhise B.B. wrote an article on “Growth and Instability of Oilseeds in Maharashtra” published in Arthsamvad in October-December, 2008, pp-225-229. They presented the adverse effect on Indian economy by an increasing trend of importing edible oils. In 1992-93 the share of India in the production of oilseeds was 10% of world’s oilseed production. But then also to overcome the difficulty of consumption of edible oil India is importing edible oils from 1997. Further, they explained the policies implemented by the Government of India to boost the production and productivity of oilseeds. In 1968 a special Oilseeds Technology Commission was established. This Commission recommended the plan to expand the acreage under the oilseeds crops, irrigation schemes, crop protection projects in 180 districts. This article analysed the state of the production of oilseeds in the different districts in Maharashtra during 1981 to 2000-2001. This showed the production of oilseeds in Maharashtra decreased except coconut and castorseeds.

This article concludes the provisions should be made by the Government of Maharashtra to expand the area under oilseed crops. For this purpose the government has to implement some schemes to motivate to the farmers to increase the production and productivity of oilseeds.
3) **Nawab Ali**

Nawab Ali in his article namely “Oilseeds in Asia Pacific About Diversification of oilseeds and their By-products towards Food uses in India” published by Central Institute of Agricultural Engineering, Nabibag, Berasai Road, Bhopal (pp-140-147), showed food potential, pulses and oilseed growth in India, average protein contents in various oilseed meals, production and productivity of major oilseeds in India and percentage of oil recovery from various oilseeds. The study analysed percentage of direct human consumption of oilseeds and percentage of oil extraction of oilseeds in 1992. This showed the availability of oilseeds for oil extraction. This article entitled the present status of utilisation of oilseeds in India.

On an average 7%, 8% and 8.5% of the total production of 7 edible oilseeds in India are used for seed direct human consumption and oil extraction. Oilseed cake/meal is also used for human consumption in the form of flour protein concentrates texturised vegetable protein.

Oilseeds are processed to separate oil from the protein rich residual cake/meal. The technology employed particularly in relation to hygienic control determines whether the extracted oil meal is to be used as food, animal feed or fertilizer, whether the oil is to be extracted by pressing solvent extraction or by a combination of the both, the seed is usually first cleaned, cracked, flecked and cooked to rupture the cell walls, reduce oil viscosity and increase the rate of diffusion. In screw press extraction, pressure is kept as low as possible to avoid high frictional temperature with resultant damage to both oil and residual cake. A good press cake will be dry, with moisture content below 6% and relatively free from heat damage.
Normal hexane is the solvent universally used for vegetable oil extraction. The solvent percolates through the bed of flaked oilseed and the dissolved oil is eventually recovered by evaporating the hexane in several stages by direct and indirect steam heating, the second stage after under vacuum. The critical features of oilseed extraction are –

- Efficiency of oil recovery both quantitatively and qualitatively expensive, tonic and flammable substance and

- The quality particularly the hygienic and nutritional quality of residual cake meal.

4) **Vandenbore R. J. (1966)**

Vandenbore R. J. in his study on "Demand Analysis of the Markets for Soybean Oil and Soybean Meal"; "Journal of Farm Economics", Vol. 48(4), Part-I, 1966, pp. 920-34 developed a simultaneous equation model of the soybean economy for the United States for the period 1948-1964. This study was mainly concerned with an analysis of the soybean sector through an econometric study of prices, quantities demanded and exported. The estimates of the structural parameters of the model were obtained by the 2-stage least squares method. Supplies of meal and oil for all uses were assumed to be fixed at harvest time. Stock relationships for meal and oil were introduced to remove this assumption with respect to the availabilities for domestic consumption and exports. The estimated domestic demand for oil and meal was observed to be inelastic, the estimates of elasticities being -0.45 and -0.28 respectively. However, the price elasticities of demand for meal were less reliable than those of demand for oil. The author concluded that annual increase of more than 30 million bushels is
necessary to cover the needs of the United States, Western Europe, Japan and Canada if prices are to remain relatively constant. The supply behaviour and supply responses of producers to various factors which could have given a more realistic picture of the soybean economy were not analysed in the study.

5) Sharma V. V. (1969):

Sharma V. V., in his writings on “An Analysis of the Markets for Vegetable Oils in India, 1947-1961”, “The Indian Journal of Economics”, Vol. 50 (1997), 1969, pp.145-60, has formulated a simultaneous equation model containing 11 relations for Indian vegetable oils economy on the basis of time series data covering the period 1947-64. Three relations were constructed for each component of demand of peanut oil, namely, demand for direct liquid consumption, demand for vanaspati and export demand. The demand for peanut oil for food was hypothesized as negatively related to the prices of peanut oil and positively related to the prices of mustard oil, sesame oil price and disposable income. The demand for peanut oil in vanaspati production was postulated to be inversely related to the prices of peanut oil and positively related to the prices of competing oils like sesame and cotton seed oils and to the price of vanaspati. The export demand function of peanut oil was hypothesized as negatively related to Indian peanut oil price and positively related to oil prices in foreign countries.

In the supply relationship, the quantity of peanut oil was postulated as a function of the prices of joint products – oil and oil meal and the level of technology characterised by the industry. Similar equations were described for sesame, mustard and cottonseed oils.
The relations were estimated by OLS, 2 SLS, unrestricted least squares reduced form and 2 SLS reduced form methods in log linear forms. The price elasticity of demand for peanut, sesame and mustard oil was -0.45, -0.53 and -0.39 respectively and income elasticity was 1.42, -0.03 and 1.40 respectively. The results of supply analysis revealed that mustard oil had the highest price elasticity of supply (0.65), followed by peanut oil (0.60), cottonseed oil (0.39) and sesame oil (0.18). The results of demand and supply analysis indicated that both demand and supply were price inelastic, liquid consumption of vegetable oils was more responsive to changes in income than to changes in prices. On the basis of these results, it was concluded that in times of short supply of oils, the sufferer will be the low-income householder.

6) Swaminathan M. S. (1981)\textsuperscript{20}:

Swaminathan M.S., Member, Planning Commission, in his writings “Boost to Oilseeds Production Programme – Planning Commission Recommendations”; “Agricultural Situation in India”, Vol. 36(6), September, 1981, p. 499, has pointed out that yields per hectare of most of the annual oilseed crops can be increased by 25 per cent with the current available varieties and levels of technology. This is largely because of current negligence and improper handling of the oilseeds sector.

2.2.5 REVIEW OF NEWS PAPERS:

1) Krishnan (2000)\textsuperscript{21}:

Krishnan in his article published in Hindu Business Line on 26.11.2000 emphasized his views about the edible oil in India particularly expansion in demand, healthy volume, growth, import, the domestic oil and oilseed production. In his writing he pointed out that after globalisation the agro-based industries are developing and
the numbers of edible oil companies are increasing in the industrial zone in India. This writing highlights an increasing need of edible oil in India and also an increasing import of edible oils. Further, it states changing government policies about the importing edible oils.

In this writing it is stated about straddlings price points. The mushrooming of regional breeds has also forced the national players to launch specific products targeted at the lower price points. Both Agro Tech Foods and Godrej Foods now have a portfolio of brands straddling different price points. While Godrej Foods has Godrej Cooklite, Godrej, Sunflower oil and Godrej Shakti targeted at the premium, middle and mass market respectively, Agro Tech Foods has Sundrop, Crystal and Real Gold in the corresponding categories. The national players have entered into sub-contract manufacturing arrangements with regional refiners for that purpose and prices on lower end products are revised frequently in tune with local market conditions.

2) Bipul Chatterji, Parashar Kulkarni (2004)²²:

Bipul Chatterji, Parashar Kulkarni in their article published in Hindu Business Line on 17.08.2004 expressed their views about the consumption, import of edible oils. This article reveals that India is the World’s largest consumer of edible oils, importing approximately 50 per cent of its requirement. Until 2003, higher import duties in refined edible oils hiked the prices of imported products to a higher level than the domestic product. While the subsequent scaled-down import duties on palm oil saw a surge in imports in June 2003, the duty on crude palm oil remained unchanged. This and the difference in excise duties on edible oils are anomalies to be rectified if consumer’s and industry’s interests are to be protected.
3) **Utpal Sengupta President, Agro Tech Food (2003)**

Utpal Sengupta, President, Agro Tech Food in his writing published on 22.10.2003 in Hindu Business Line emphasised on the fluctuating prices of edible oilseeds, import of edible oils and about the production of branded edible oils and the changing oilseeds cropping pattern in India.

This expressed that the farmers are not getting remunerative prices for sunflower seeds, which is pushing him to produce other crops such as pulses and minor millets. At the same time, imported oils are cheaper and worsening an already complex issue. For the medium-to long-term, the govt. will have to join hands with corporate and play a major role in enthusing farmers to grow sunflower seed. The solution is higher productivity and guaranteed income to the farmer and simultaneously making the project viable for corporate competing against the low prices of importing oil.

**Conclusion:**

In this chapter review of literature has been completed. Ph.D. thesis, M.Phil. dissertations, government reports, research articles and papers are reviewed. On the basis of this review, the researcher studied the variables in relation to working of edible oil industry in Solapur city.

**2.3 RESEARCH METHODOLOGY:**

The objective of this chapter is to describe the methodology adopted for the present investigation including selection of the problems and objectives of the study together with source of data, sample selections, period of study, scope and significance of the study and statistical tools used for data analysis.
Food is the basic necessity of human being. It is produced by cultivating the land. Agricultural crop is divided into 3 categories.

(a) Food grains - it includes cereals, millets, pulses, vegetables and fruits.
(b) Non-food grains – includes, oilseeds, sugar cane etc.
(c) Fibre crops – cotton, jute etc.

Oil is one of the important factors in balanced food. Oil provides facts necessary for human being. Edible oil is produced by crushing the oilseeds. Groundnut, sesame, linseed, sun-flower, safflower etc. are the sources of edible oil.

In India, there are many states and the people of the different states have different taste. There is difference in consumption food also. According to their customs and taste, they consume different quantity of edible oil. The persons of Kashmir consume more oil than ghee. According to them oil is more potential for the physical health and beneficial than ghee. At Bengal and Tamilnadu states, people are using coconut as edible oil. However, it is true that in all most all in the states of India, the people are consuming the oil in the large quantity.

2.3.1 Present Position of Oil Mills in India and Maharashtra:

In India there are 9026 oil mills producing 6.6 million Tonnes oil per year. The requirement of oil per year is 10 million Tonnes. So to meet the increased demand, since last 10 years the number of oil mills increased in some states particularly in Gujrat, Karnataka, Andhra Pradesh and Maharashtra. To meet the increased demand for edible oil in India, the oil mill owners established a modern heavy machinery and modern processing technology. Out of the total 6.6 million Tonnes edible oil production in India, Gujrat state contributes
30%, Maharashtra 20%, Karnataka 10% and the contribution of other states is 40%. The total production of edible oil in Maharashtra is 1.3 million Tonnes.

Each segment of India’s oilseed processing industry has small capacities and low technical efficiency compared with other major processing countries. The structure of the industry has been heavily influenced by the government policies that have, regulated plant scale, capital intensity and oil marketing, provided incentives for building new capacity and prevented imports of oilseeds for processing.

The Indian oil mills include 2 major processing technologies.

(1) Traditional mechanical crushing or expelling, used for oilseeds with relatively high oil content.

(2) Solvent extraction for processing oilseeds and expeller cake.

The traditional crushing industry has 2 segments -

(A) The very small-scale “ghanis” and small scale expellers.

(B) The processing industry also includes an oil refining sector, which primarily refines domestic solvent-extracted oils.

Solapur, Latur, Amravati, and Jalana these are the 4 major districts in Maharashtra producing 0.9 M.T. edible oil. In recent days to meet the increased demand of 0.3 M.T. oil in Maharashtra oil mill owners are using modern, heavy expellers for the extraction of oilseeds. These oil mills are facing the problem of changing crop-pattern. Out of the total 1150 oil mills in Maharashtra 40% oil mills are in the above 4 districts. Out of the total existing edible oil in the state market 50% edible oil is being supplied by the oil mills of Solapur, Latur, Amravati and Jalana districts. Since last 10 years
Solapur edible oil market is developing but at the same time Solapur edible oil production sector is facing the following problems –

The supply of electricity to city Solapur is mainly from the “Koyana Project”. Often it has been noticed that, there is a need of continuous electric supply. The supply of power is with many breaks during the period of the working of the oil mills.

There is also a problem of a shortage of raw materials. During the season the oilseeds are supplied in the market but they are also below standard. But in out-season; there is a shortage of oilseeds.

A superior expeller is in use in Mumbai, which keeps only 5.5% oil in oil cake instead of 7% to 8% which is common with expellers in Solapur.

The buildings of oil mills are not well built because of lack of capital. Small oil mill owners did not use borrowed capital, and their own capital was also limited, so they did not stock the required oilseeds.

Except the boiler-attendant and the fitter, other workers who are unskilled, are employed on daily wages.

The oil mills in Solapur are also facing the problem of sound market of oilseeds, oil and oil cake.

Since 5 years oil mills in Solapur are facing the problem of competition with solvent extraction plant located near city Solapur.

At present oil mills in city of Solapur are under the form of small scale Industries. What is the demand for oil and how much is the supply? How many producers are there? What are their problems? What are the methods of extraction of oil from oilseeds? How oil and oil cakes are sold? What is the financial position? What is the margin of profit?

All the above problems are pinching the industry.
2.3.2 Title and Scope of the Study:

The title of the study is “The Working of Edible Oil Industry in Solapur City is not Satisfactory during 1991 to 2008”.

**Figure 2.1**
Map of India
Edible oil market is composed of different types of edible oils such as refined and non-refined. The non-refined oils are produced by the private oil mill owners and the refined edible oils are produced by the edible oil companies. Out of different types of edible oils mainly groundnut, safflower and sunflower are produced by the private oil mill owners. The Solapur edible oil market consist the maximum edible oil produced by the private oil mill owners. So the research work is mainly related to the private oil mill owners.

The study is an effort in the next context of the edible oil business. After 90s the business faces more serious problems. It is necessary to evaluate the working of the traditional edible oil business. For this purpose the economy of the edible oil industry and trade needs to be deeply analysed. The working of edible oil production in Solapur and related problems are the main focus of the study. The title of the study speaks items to trace importance of oil industry in the economy of Solapur, to study the production of edible oil, its production, consumption and inflow – outflow of the edible oil in the city. It aims to analyze the problems and reasons responsible for the crisis in the market. Some remedies are suggested at the end of the study. The present study attempts to examine indices the working and problems of the edible oil industry in Solapur. It seeks to examine these problems to the point of view of oil millers and middlemen. Different varieties of edible oil like groundnut oil, safflower oil, sunflower oil, soybean oil etc. are produced and consumed in the city. However, groundnut oil, safflower oil, sunflower oils are the major variety at the centre of Solapur edible oil market. Therefore, study concentrates on the working of these edible oils industry in the city.
The issues dealt with in this study is summarised as under.

(a) To examine whether there is adequate supply to meet present increasing demand of edible oil?

(b) To examine the effect of prices on demand of oil which affects the oil mill owners and what are their efforts to meet this juncture?

(c) To study the working performance of selected oil mills i.e. production and marketing of the oil and oilcakes.

(d) How to meet the supply of raw material i.e. oilseeds?

(e) To find out the problems and to suggest remedies.

2.3.3 The Need and Importance of the Present Study:

Edible oil processing industry is the third largest agro-industry in the country. Approximately 12% of agricultural land is under the cultivation of oilseeds crop and 10% agricultural income comes from oilseeds production. So the analysis of oilseeds production with edible oil processing industry is necessary.

The consumption of edible oil in India is increasing from 6 kg. to 8 kg. per capita per annum along with increasing population. It is true that in all most all in the states of India, the people are consuming the oil in large quantity. The oil is not used only for consumption purpose, but it is also used for as a raw material for the production of other products like vegetable oil, vanaspati ghee, the production of medicines, varnish, soaps, paints, lubricants oil etc. This research study existed the consumption ratio of edible oil.

The role of edible oil industry in Indian oil industry is developing. Since last 10 years oil industry is using new techniques
and modern machinery for the extraction of oilseeds. This study enlightens the changing process of edible oil and oil cake production.

The development of edible oil industry in Solapur city creates employment opportunities and motivates the cultivators to produce oilseeds. So this study is also important to find out the state of employment and the growth of agriculture in district Solapur.

This study helps to know the effects of prices on demand of oil, production of oil and on edible oil market.

### 2.3.4 Edible Oil industry in Solapur City

Vegetable oil is an essential commodity of daily consumption and extensively used as raw material for vegetable ghee and soap. Many factors are essentially responsible for the location of this industry in Solapur. The surrounding areas are suitable for the cultivation of groundnut, sunflower and safflower. Secondly, cheap labour is available in plenty. Thirdly, Solapur is a railway junction and well connected with the rest of the country. Fourthly, as it is a big city, banking and other commercial facilities are easily available and a ready market for consumption of oil exists automatically.

Before the establishment of oil production by the expeller, the oil pressers were only in the form of small industries for the production of oil. It is true; production capacity of mill depends upon the number of expellers, and the size of the expellers. There are 2 types of expellers in use. One is known as a big expeller and other as a baby expeller.

During all the previous years and especially during the preceding 10 years, oil mills have supplied edible oil for Solapur city. There is a special location M.I.D.C. for industries. However, there is
also an Agricultural Produce Market Committee and a large part of the area has been specially kept and maintained for the establishment of oil industries from the last 10 years. At present, there are 98 oil mills as productive units including 170 expellers, the big expellers are 140 and small expellers are 30 in Solapur city. There is 1 double chamber oil expeller and 80 tel-ghanis in Solapur city.

According to the Census 2006, the total population of Solapur city was 9,16,101. The city of Solapur surrounded by many villages in the district. There are 11 talukas and 1089 villages in Solapur district. All these villages have been easily connected with respective talukas and city Solapur. Many citizens of Solapur, mainly the traders have deep outlook on the oil industries. Therefore, the oil Industries are functioning at present. Mainly these oil mills are under the private sector. These oil mills are established by sole trader who has no sound financial ability and also oil mills are established mainly under the form of organisation of a partnership by contributing the required capital and functioning on the basis of division of labour such as purchase, sales and marketing etc. These oil industries are under the head of small cottage and tinny industries. It is, however, true that these oil mills are not styled as heavy and big industries.

In city of Solapur, all these oil industries have not the same production capacity and also they do not have the same production machinery. Some oil mills are having expellers of 4 bolts and other 6 to 9 bolts and some other which are large by size of 12 bolts. Oil mills are not producing the same kind of oil from the same kind of oil-seeds. They produce different kinds of edible oil such as groundnut oil, karadi oil, sun-flower oil etc.
The population has been increased. This made to increase 0.0018 million Tonnes demand of oil in Solapur city. To meet the increasing demand the oil mills are established in good deal of number and oil mill owners have undertaken this productive activity as one of the economic activities. Thus how, it has resulted to enlist the more oil mills at present. The oil industry has played an important role in the development of Solapur as an industrial place.

2.3.5 Objectives:

(1) To take cursory review of oil mills in India and Maharashtra.

(2) To review briefly the Literature.

(3) To study socio-economic profile of Solapur city.

(4) To examine the govt. policies towards edible oil industries.

(5) To study the growth and development of edible oil industry in Solapur city.

(6) To study the organisation and management of edible oil industries in Solapur.

(7) To study the business operations of oil mills in Solapur.

(8) To study the working performance of selected oil mills in Solapur.

(9) To study the opinions and problems of oil mill owners

(10) To suggest remedies.

In short, all the above are the objectives of working of oil industries, in reference to the production, consumption, the financial aspects, the structural organization and the achievement of the maximum efficiency at the optimum point.
2.3.6 Hypothesis:

The hypothesis of the present study is as follows -

1) Oil mill business motivates to increase the crop under oilseed cultivation in Solapur district.

2) Edible oil industry can give further employment potential to the workers.

3) The business performance of oil mills in Solapur city is satisfactory enough.

4) Oil mills are facing number of problems, since globalisation.

5) Industrial development is a must for economic development of the economy in general and a region or locality in particular.

2.3.7 Research Design:

A) Area under Study:

Solapur the fourth largest industrial city in Maharashtra is in the habit of adjustments. It rose as a temple town. Later the history saw it evolving as a market, commercial and as industrial city. The study of its industrial activity, therefore, is an important aspect of its changing economic geography. Solapur has now reached the first stage of industrialisation. Its survival and development depend upon the relationship, with its “Impact Zone” calls forth the need of ‘Regional Plan’ to harmonise its land use in terms of its requirements and aspirations.

Textile mills, oil mills, bidi factories, foot-wear manufactures, tin-smiths, bakeries etc. are established in Solapur city. There are 98 oil mills and 80 tel-ghanis in Solapur city during the year 2007. Solapur’s large population constitutes a sizeable market. Moreover, the population is increasing. All these years, the local market has
also played an important role in supporting manufacturers. Edible oil is the item of export. Groundnut oil and sunflower oil goes to Mumbai.

Like other districts of Maharashtra state, Solapur district is also an agricultural one and rural life in this district is mainly depending on agriculture. Jawar, wheat, pulses, groundnut, and sunflower are grown on large scale in the district. The main crop, however, is jawar and oil-seed, which is mostly harvested in rubi season. About 70% of area under cultivation is under rubi crops.

At present there are 98 oil mills including 170 expellers, as a productive units as in the following table.

<table>
<thead>
<tr>
<th>Number of Oil Mills</th>
<th>Size of Expellers</th>
<th>Number of Expellers</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>33” x 6”</td>
<td>152</td>
</tr>
<tr>
<td>18</td>
<td>27” x 5”</td>
<td>18</td>
</tr>
<tr>
<td>Total 98</td>
<td></td>
<td>170</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Tel-Ghani Units</th>
<th>Tel-Ghani</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>160</td>
</tr>
</tbody>
</table>

B) i) Selection of Sample Oil Mills and Tel-Ghani Units:

At present there are 98 oil mills and 80 tel-ghani units in Solapur city. Out of total oil mills 69 i.e. 70 percent and 20 tel-ghani units i.e. 25 percent is selected for the present study. This selection is done with the help of random sampling technique.

ii) Selection of Oil Mill Owners:

In order to assess the problems of oil industry, all sampled oil mill owners are interviewed through structured schedule–cum-questionnaire. In all 98 oil mill owners are constituted the sample for the present study.
Besides the actual survey, personal discussions with the oil mill owners, officers of agricultural development office of Solapur district, workers and traders are made in this research work.

2.3.8 Methodology and Data Collection:

The research work is depended, mainly on primary data collected through survey, personal interviews and questionnaire. The use of secondary data to a limited extent is made wherever necessary.

A) Primary Data:

Primary data is collected through questionnaire, observation and discussions.

i) Questionnaire:

Two structured questionnaires-cum-schedules are designed. One for oil mills and ghanis another for oil mill owners.

ii) Observations and Discussions:

Formal and informal discussions are held with selected oil mill owners, traders, farmers and workers.

For the discussion of production of edible oils, market conditions, prices of oilseeds 69 oil mill owners are selected for this research work.

The formal and informal discussions are held with traders about the supply and prices of oilseeds.

In present research work farmers are also interviewed to know the cultivation of oil seeds. The workers of 69 sample oil mills are interviewed to know the wage rate and other facilities provided by the oil mill owners.

The inferences of these discussions are correlated in the present study.
B) Secondary Data:

The secondary data related to the research is collected from the various sources such as books, articles, periodicals and institutions etc. The following information were visited and consulted.

1. Indian Institute of Management, Ahmedabad
2. Sardar Vallabhbhai Patel University, Gujrat.
3. The Barr, Balasaheb Khardekar, Library Shivaji University, Kolhapur
4. The Gokhale Institute of Politics and Economics, Pune
5. The Vaikunth Mehta National Institute of Co-Operative Management, Pune.
6. The Agriculture College, Kolhapur.
10. Karnataka University, Dharwad.
2.3.9 Data Processing and Techniques of Analysis:

A) Statistical Tools:

The collected data is tabulated in the light of objectives, chapter scheme to be used. The data is processed and analysed with the help of statistical tools i.e. Ratio Analysis.

B) Graphs and Diagrams:

On the basis of collected and processed data, the effective tools like graphs, diagrams, charts (bar, pie etc.) are used in the study.

C) Excel and MS-Word Softwares:

For the data processing and preparing graphs, diagrams and charts the statistical tools, involving Computer Softwares like Excel and MS-Word Softwares are used.

2.3.10 Reference Period:

The new economic policy started from 1991 in India. This research study is covered a period of 18 years i.e. from 1991 to 2008. The financial year commences from 1\textsuperscript{st} April and ends with 31\textsuperscript{st} March of every year.

2.3.11 Outline of Study:

Chapter Scheme:

The present research work is divided into main 10 chapters in all, which has the following chapter scheme.
1) **Chapter I-A Cursory Review of Oil Industry in India & Maharashtra:**

In this chapter the present position of edible oil industry in India and Maharashtra is reviewed. This chapter also provides the present position of edible oil industry in Solapur city. It introduced the current position of agricultural sector i.e. area under oilseed crops in India, Maharashtra and in the Solapur district.

2) **Chapter II-Review of Literature & Research Methodology:**

In this chapter I have presented the review of the literatures of various authors, experts and the researchers related to the subject “The Working of Edible Oil Industry in Solapur City is not Satisfactory during 1991 to 2008”. This chapter also introduced the subject selected for the present study as a research problem and described the importance of the study as well as the research proposal. It comprises of the important aspects like objectives of the study, hypothesis, importance of the study, scope of the study, geographical areas of the study, period of the study, research design, limitations and chapter scheme of the study etc.

3) **Chapter III- Socio-Economic Profile of Solapur City:**

This chapter consist the profile of Solapur city such as introduction, historical, geographical, socio-cultural and economic features. This chapter provides the information about the base of industrial development particularly agro based industry.
4) **Chapter IV- Govt. Policies towards Oil Industry:**

In this chapter an attempt is made to review the changes of the Government policies implemented on edible oil industry in India. It also provides the programmes on edible oil industry and oilseeds implemented by the Government of India during plan era.

5) **Chapter V-Growth and Development of Oil Mills in Solapur City:**

I have presented exactly the growth of edible oil industry in Solapur city. This chapter provides the development of oil industries and oilseeds in agricultural sector.

6) **Chapter VI-Organisation and Management of Sample Oil Mills:**

This chapter introduced the organisation and management of 69 sample oil mills in Solapur city. It gives the details about the establishment, working, finance, marketing, purchase, sale by the oil mill owners and tel-ghani units.

7) **Chapter VII- Business Operations of Sample Oil Mills:**

This chapter consist exactly the working of sample oil mills, functions of oil mill owners, market situation, investment, transportation etc. This chapter also provides the present position of the sample oil mill owners and tel-ghani units in Solapur city.

8) **Chapter VIII-Performance Evaluation Based on Ratio Analysis:**

In this chapter the performance of all 69 sample oil mills are evaluated to the various ratios such as current ratio, gross profit ratio, net profit ratio, working capital turnover ratio, fixed
assets turnover ratio, operating ratio, operating profit ratio, current assets turnover ratio, total assets turnover ratio etc.

9) Chapter IX - Oil Mill Owners Problems and Reactions:

In this chapter I have presented the problems and reactions raised by the oil mill owners and tel-ghani units in Solapur city in detail. The reactions of the oil mill owners to overcome the problems related to processing, transportation, employment, finance etc. are presented in this chapter.

10) Chapter X - Conclusions and Suggestions:

This is the last chapter of the research work which highlights the major conclusions and suggestions.

2.3.12 Limitations of the Study:

This research work is completed by evaluating the operations of the oil mill owners related to processing, marketing, finance etc. In present research work, I have stated an increasing need and scope of the working of oil industries. However there are some limitations of this study bearing the objectives.

It has been mainly carried out through Questionnaire technique for the local limits of Solapur city.

The agro-market is fluctuating market, limits to collect the worth data of oilseed prices.

1. The present study is confined to oil mills in Solapur city only. The generalisation of findings would be mostly limited to this district.
2. The study is limited to 98 oil mills and 80 tel-ghani units of Solapur city only.
3. The study is limited to 18 years i.e. from 1991 to 2008.
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