CHAPTER - I

THE RESEARCH DESIGN
Statement of the Problem

Co-operative sector of the sugar industry has emerged with avowed object of promoting common economic interest, to eliminate exploitation by the middlemen and to get remunerative price. Poor performance in sugar co-operatives has been prevalent to a very great extent heading to a situation of sickness, defunct or even privatization of co-operative sector of the sugar industry. It has been found that co-operative sugar societies have been facing the operational problems for a very long time. However, studies in the area of effective management of co-operative sector were oriented more towards looking at macro level on one hand, and financial problems on the other hand.

These studies have not studied at micro level to analyze the reasons for their poor performance so that preventive action can be taken. It is in this light that an exercise in trying to predict causes finds relevance.
Though there has been a significant increase in terms of number of sugar co-operative, capital, installed capacity and production in co-operative sugar sector, the health of this sector has been deteriorating over the years. In recent years serious attempts have been made to identify the real causes but no special efforts were made to pinpoint the real reasons at ground level unit-wise. The sugar industry operating under various controls, regulations, and stringent policies right from the beginning of cane crushing, price fixation, sugar price policy, movement, storage, by-products etc.

The problems of old, worn out, non-viable size, quality, location of units and a host of other causes should not be ignored. The sugar industry is composed of private, public and co-operative sectors and they have been running in competition with each other. The main object of co-operative sector is to improve the economic status of the cane growers by establishing cane growers' co-operative sugar factories.

The Government announces every year the cane price payable by the sugar factories. It will have its affect on the cost of production and cane price. In addition to it a State Government fixes price for cane which is higher than price fixed by the Central Government.
The financial pattern of co-operative sugar factories is composed of share capital of the cane growers, whose stake is insignificant, state participation, central financing institutions etc. The societies are facing financial sickness.

Therefore, in the study three distinct questions will be examined. Firstly, the impact of Government policies on the working of the societies, secondly the factors responsible for poor production performance and thirdly, the financial performance.

**The Problem to be Investigated**

The primary objective of this work is to enquire into the structure of sugar co-operatives in sugar industry with special emphasis on performance of this sector. It is aimed to identify the impediments to the operating and financial efficiency of co-operative sector of the sugar industry at micro level.

A sectoral and regional enquiry of this nature is expected to throw some light on various problems and to identify the remedial measures to improve the operational efficiency in production, finance and marketing.

The problems to be investigated cover size, locational aspects, cane potential, geographical coverage, mobilization of resources, the problem of cane crushing, juice recovery from cane, under utilization of
installed rated capacities, adverse impact of government policies on the working of co-operative sector of the sugar industry on issues like cane price, sugar price policy, buffer stock, control orders and by products like molasses and bagasse etc., and how best this sector has been promoting the economic interest of the cane growers.

The operational and financial problems of co-operative sector in sugar industry are many and they are to be identified with a deliberate attempt like this which is made on regional basis and at micro level basis to come to national understanding. The value of the study is to be viewed in the light of the problems and the role of the policy makers and financial agencies.

For the detailed study, sample units have been chosen from Andhra Pradesh because the State has a judicious combination of private, public and co-operative sectors producing sugar in competition. The sectoral specific approach at micro level would enable to identify problems particular and peculiar to each society so that appropriate policy may be formulated to solve the problem.

Though there is a sizeable increase in installed capacity and financial support coming from various sources the performance has not been satisfactory.
All these significant areas worth studying have prompted to take up this problem for detailed investigation titled "Performance of Co-operative Sugar Factories in Andhra Pradesh (with reference to Selected Units)."

The study with reference to co-operative sector of the sugar industry in the State of Andhra Pradesh of selected sugar societies in Chittoor district is thus proposed to be presented in this volume. To highlight in detail the production performance, financial problems, marketing issues and to frame policy implications etc., prompted researcher to select this problem.

Overview of Literature

Several studies have been undertaken in the past in the area of sugar industry in general and co-operative sector of the sugar industry in particular. Most of these studies are available in the form of findings of committees, doctoral works, books, research projects and special studies.

A considerable thinking and investigations have been going on into the area of co-operatives. A plethora of research papers under referral works have gone into literature on the co-operative aspects of sugar industry.
The reviews in this study have provided a mine of information, a good backdrop of knowledge on the subject input for the present study.

A careful perusal of the existing literature available on the co-operative sector of the sugar industry detailed below summarises the current status of the work and research on the subject. They provide a wide theoretical and practical dimensions on the subject.

However, an attempt is made hereunder to review some of the previous studies in the area of sugar industry and more specifically on the co-operative sector of the sugar industry.

Sir William Weddersburn and Justice Ranade (1882) who after thorough grasp of the need of credit to the ryots prepared a scheme for starting agricultural banks. Deccan Agriculturists Relief Act, 1879, Land Improvement Loans Act, 1883 and the Agriculturist’s Loans Act 1884 provided provisions under which the agriculturists were supplied money by the Government for productive purposes. These enactments were passed as a remedial measure to the serious problem of ryots’ credit.

Nicholson, F.D. (1892) in his study, after touring extensively the European countries as to various methods they adopted to rural credit, strongly suggested the introduction of co-operative credit societies. In his exhaustive report submitted in 1895 he favoured starting of rural
banks on the model of Raiffeisen societies. In his study he suggested that "small locally worked institutions on the lines of European village institutions were ideal agencies for the supply of rural credit..."

The study of Maclagan (1914)⁴ was really a breakthrough on co-operative movement.

The Indian Industrial Commission (1918)⁵ as early as in 1918 first blessed and gave a distinctly co-operative bias to the cottage and small scale industries.

The Sugar Committee⁶ which was entrusted with the taste of enquiring and reporting on measures for the development of sugar industry in the country, recommended to the Government to constitute an enquiry committee by way of Tariff Board with the task whether protection should be given to the Indian sugar industry.

The Tariff Commission for the first time enquired into the cost structure of sugar industry and the fair price payable to the sugar industry.

The Central Banking Enquiry Committee (1930)⁷ made searching enquiries. The committee offered valuable suggestions for making the co-operative credit a success. It recommended for de-officialisation of the
movement. It hinted that the movement deserves every possible assistance from every quarter.

Tariff Board\textsuperscript{8} was constituted by the Government of India for the first time with the task of examining the question of granting statutory protection to the Indian sugar industry. The Board recommended for granting protection to the sugar industry for a period of fifteen years.

Winaker, C.H. and Smith, R.F.\textsuperscript{9} analysed 183 failed companies during 1923-1931 and showed working capital to total assets as the best indicator. The other ratios namely net worth to fixed assets and fixed assets to total assets also showed good results.

The Reserve Bank of India (1936)\textsuperscript{10} soon after its establishment studies the existing set up of co-operative organization. The Reserve Bank of India in its report in 1936 made certain recommendations in respect of co-operative movement.

The Vijayaraghavacharya Committee on Co-operation (1940)\textsuperscript{11} appointed by the Government of Madras State examined the depression effects on co-operative movement. While making suggestions for their re-construction the committee recommended the expansion of rural credit movement, to form larger size societies etc.
The Reserve Bank of India in its report of the Review of Co-operative Movement in India, (1941)\textsuperscript{12} reviewed the co-operative movement and found that the movement in India was passing through a phase of rectification and consolidation.

The review brought to light that "the war period broadened the functional range of the co-operative movement and it brought about a shift, in the lopsided emphasis from credit aspect to the productive and distributive functions or to its multipurpose potentialities, a long felt need for imparting that richness and balance which is necessary for proper development of the movement."

The Report of the Co-operative Planning Committee (1946)\textsuperscript{13} under the chairmanship of R.G.Saraiya found many lacunas in the supply of rural credit. The report pointed out that the "main causes of the limited progress of the movement was the fact that it did not, especially in its initial stages, take the life of the individual as a whole." He recommended that the primary credit societies serve as centres for the general economic development of their members.

The Rayalaseema Co-operative Enquiry Committee (1945-46)\textsuperscript{14} after enquiring into rural credit problem in Rayalaseema region expressed its favour for supplying finance to agriculturists by the Apex
Co-operative institutions directly by abolishing the intermediary co-operative credit institutions like district central co-operative banks and primary land mortgage banks. However, this suggestion, among others was not implemented.

The Co-operative Planning Committee (1945)\textsuperscript{15} headed by R.G.Saraiya emphasized the importance of co-operative sector in industrial field.

Kakade, R.G. (1946)\textsuperscript{16} emphasised in his study the historical background of various weaving communities and concluded that for most of them social life was limited to a small universe, whose physical boundaries were set by a tenement.

Anwar Iqbal Quereshi in his work on Co-operative Movement in Hyderabad State (1947)\textsuperscript{17} traced the origin and growth of co-operative movement in Hyderabad, which was a princely State then and later formed part of Andhra Pradesh. He pointed out in his work the causes for slow progress of co-operative movement and difficulties faced by it, since neither the co-operative credit Societies Act, 1904 nor the Co-operative Societies Act, 1912 was applicable to the princely state of Telangana region of Andhra Pradesh.
The Industrial Policy Resolution (1948) reiterated the role of industrial co-operatives in the process of industrialization in India. The policy divided industries into four categories. The remainder of industrial field was left open to co-operatives, individuals and private parties. The resolution gave a very important role to co-operative enterprises for decentralizing industries.

The Technical Sugarcane Committee headed by the Chairman, Sri Vijaya Raghavacharya, in its enquiry examined various aspects such as cost of production of cane, cane research and development etc.

There was a serious crisis in sugar industry in 1949. The Tariff Board Enquiry, 1949 did not emphasise fully the crisis in Indian Sugar Industry. Sugar Enquiry Committee 1950 popularly called as Gaya Nath Committee was constituted by the Government of India which probed into various aspects of crisis in sugar industry.

The Committee on Rehabilitation and Modernisation of Sugar Factories in India popularly known by the S.N.Gundu Rao Committee
constituted by the Government of India, examined the problems of the old and uneconomic units in sugar industry.

The Planning Commission (1951)\textsuperscript{22} in the First Five Year Plan expressed the performance for co-operative organization of the economic activity of the people especially of those among others of marketing, cottage and internal trade.

B.V.Narayana Swamy Naidu, head, Expert Committee, 1951 prepared schedules for determining the cost of manufacture of sugar.

In 1955 another expert committee was constituted under the chairmanship of P.A.Gopalakrishnan which studied schedules for determining the cost of sugar production as prepared by the above committee and in turn suggested certain amendments to the cost schedules. It recommended that the amended All India Schedule might be used until regional schedules were ready.

The First Working Group on Industrial Co-operatives constituted in the year 1957\textsuperscript{23} under the chairmanship of Shri J.C.Rayan submitted its report in 1958. It recommended among others, that the Government
should show a general preference for products of Industrial Co-operatives.

The Sahakari Samaj (1962)\textsuperscript{24} reported that the co-operative movement was hit hardly by the depression and suffered severely. It observed that this Great Depression gave a tremendous set back to co-operative activity. Not only did it stall the progress of the movement, but created grave difficulties for the existing institutions.

The Second Working Group on Industrial Co-operatives, was set up by the Government of India (1962)\textsuperscript{25} under the chairmanship of Shri B.P.Patel. The group submitted its report in 1963 with a number of recommendations.

The Powerloom Enquiry Committee (1964)\textsuperscript{26} remarked that an increasing emphasis was laid on the setting up of spinning mills in co-operative field in order to have adequate supply of yarn to the handlooms.

The Sen Commission\textsuperscript{27} known as the Sugar Enquiry Commission made an objective and impartial insight into the working of the sugar industry. The report covers enquiry results in the performance of the sugar industry, identified causes for sickness of sugar mills and progress and working of the sugar factories.
Tamari, M., tested 10 ratios in 28 failed companies of Israel during the period from 1956-1960. He showed that only 3 ratios namely quick ratio, net worth to total liabilities and net profit to sales had the highest productive value.

Beaver, W.H. analysed 79 failed and 79 non-failed firms for the period 1954-64 and tested 30 ratios. Like Fitz Patrick he also rated three ratios namely cash flow to total assets, net profit to total assets, and total assets to total liabilities as the best indicators.

Altman Edward, used multiple discriminant analysis to overcome the limitations of univariate model employed in previous studies. He had adopted multiple discriminant analysis consisting of a few important variables as an appropriate statistical technique. Multivariate model is popularly known as Z score model.

All India Rural Credit Review Committee (1969) recommended that efforts should be made to encourage the evolution of a structural pattern for co-operative long-term agricultural credit under which independent units will function at the primary level, managed by qualified trained and efficient staff drawn from a cadre to be constituted by the Central Land Development Bank in each State.
The co-operative system also equally participated in sugar industry. But the societies are poorly organized and managed in India. Dubhashi\textsuperscript{32} greatly emphasized on the total reorganization of the system to gear up the reorganization of the system to gear up the machinery.

Alexander Wall\textsuperscript{33} made the presentation of the system of analysis of financial statements by means of ratios. He criticized the bankers' decision on current ratio for granting of credit.

Edward, B.Deaken\textsuperscript{34} used the same methodology of Beaver and tested the same 14 ratios which proved effective in the prediction of failure. He compared 11 failed firms with 23 non-failed firms during 1964-70.

Sharma, L.V.N. & Rao, G.B.\textsuperscript{35} selected a sample of 60 firms of two categories, sound and unsound and the comparison was done on the basis of their assets. They tested 26 ratios by using the multiple-discriminative analysis for the period 1967-1970, of these 5 ratios showed good result.

Ramachandraiah, G.\textsuperscript{36} was of the view that the incidence of salaries and wages on cost of production could be reduced if the capacity of the factory was higher.
Kamat, G.S., (1978) in his book on New Dimensions of Co-operative Movement in part examined the aspects of yarn requirements of handlooms and the role of co-operative spinning mills. He further analysed the depressed nature of this sector, the extent of demand for yarn and supply, the need for expansion of the installed capacities, in the existing mills side by side the number of co-operative spinning mills to be established to meet the yarn requirements of the handlooms.

Rama Rao, K.S., said that there was no recession in the demand for sugar as the consumption increased from 5,208 thousand tones in 1979-80 to 10,221 thousand tones in 1989-90.

The CRAFICARD (1979) while studying efforts towards other improvements in long-term co-operative credit structure stated that the duration of grace period should be sufficiently long to facilitate repayment out of incremental income generated.

The report on controls and subsidies by Diegle Committee, 1979, the reports of the Agricultural Price Commission 1980 and 1981 are other relevant literature on the subject from the view point of the study. The special studies, reports and memoranda submitted by the Indian Sugar Mills Association (ISMA) and the National Federation of Co-
operative Sugar Factories (NFCSF) provide useful ground work to study the present day conditions of the sugar industry.

Gupta, G.P. (1982)\textsuperscript{40} analysed the structure of agencies providing credit in rural areas. He concluded in his study that “in the matter of structuring the agencies for rural credit, one must not only take full account of the spectacular increase in the tempo of agricultural activity, it must also be based on various other important implication of the new situation, which are emerging with the change in the outlook, occupational structure and socio-economic aspirations of the rural sector.

Rewate, M.B.,\textsuperscript{41} considered net sales as the main variable for the comparison of sick and healthy units. In addition to net sales, total assets, fixed assets and net worth also were considered for matching. He collected the data for four years prior to sickness for 10 sick and 10 healthy units. He analysed the financial statements of both categories for the period of 22 years from 1958 to 1979 and employed 19 financial ratios to predict the health of the units.

Sambasiva Rao, B., and Dharma Rao, G., (1983)\textsuperscript{42} in their survey of case study stated that the “landlords are benefiting more from the banks’ assistance. They are dominating the whole co-operative structure
by virtues of their socio-economic and political power. Nearly 90 per cent of the bank management is dominated by rich landlords. So it is natural that the loaning operations are mobilized in favour of the rich. Another defect is the delay in disbursement of the loan amount. It takes nearly 7 to 8 months to obtain the loan.”

The Sixth Five Year Plan commented on industrial co-operatives that “in providing an institutional cover of a non-exploitative nature and creating self-employment, industrial co-operatives have been considered as an ideal form of organization. In the case of traditional industries like handlooms, coir and village industries, co-operatives occupy an important place.”

Balasubramaniam, C.P. found that the main constraint for the full 100 per cent capacity utilization was non-availability of the required quantity of cane.

Kutumba Rao, M. (1985) had made a study on Management of Central Co-operative Banks in which he attempted the compatibility of democratic setup with co-operative efficiencies.

The Indian Sugar Mills Association (ISMA) pointed out that in some states factories are suffering from under utilization of capacity. These factories are utilizing hardly 60 per cent of their capacity.
Indian Sugar Mills Association\textsuperscript{47} greatly emphasized on the expansion of existing units rather than on new installations.

Sanjaya Baru\textsuperscript{48} in his work rightly pointed out that sugar policy in India was woven by the potential warp as the economic woof is by now a well known fact.

Rayudu, C.S. (1988)\textsuperscript{49} conducted a detailed study on the entire structure of co-operative organization including short-term, long-term and the role of apex bodies. Though the work is with reference to Andhra Pradesh, simultaneously he covered and traced the role of co-operative credit from the earliest times.

Rayudu, C.S. (1992)\textsuperscript{50} investigated the structure of industrial co-operatives in the State of Andhra Pradesh and in part it dealt with spinning co-operatives. The study found that production, financial performance and working results of these mills in this sector have been poor over the years in several respects.

Sundara, B. (1996)\textsuperscript{51} investigated on response of sugarcane to phosphorus application in a tropical alfisol. Phosphorous is an important nutrient element required for growth, juice quality and yield of cane and sugar. The study found that phosphorus application improved shoot
population due to increase tillering. The final stalk populations were found higher at 40, 80 and 160 Kg P2O5 levels.

Jyotirmoy Ghosh et. al., (1956) department of plant breeding, Rajendra Agricultural University conducted a study on early maturing sugarcane in autumn and spring seasons. Twelve sugarcane genotypes of diverse origin are evaluated. The study concluded that genotypes BO99, BO102, BO122, CO87263 will give higher productivity and consistent performance for cane yield and most of its components therefore could be gainfully utilized in breeding programme.

Sri Kumar, K., et. al, (1996) conducted correlation studies of red rot disease of sugarcane. The length of cane was found to be positively correlated with number of nodes.

Marathe, M.S., (1999) the managing director, the National Federation of Co-operative Sugar Factories, in his study on Role of Co-operative Sugar Federations in the Development and Growth of Co-operative Movement emphasized on the fact that among the most successful sectors of co-operatives in India is the one comprising co-operative sugar mills. He found that the reason for this success is mainly due to the strict adherence to the federal structure. The role of co-
operative sugar federation has become all the more important, as he pointed out, in the present scenario of liberalized economy.

Wright, P.G. et.al., (1999) investigated on Minimising the Effluent Flow from a Cane Sugar Factory. The paper discussed on the methods to examine the existing factory discharge patterns, model and modifying internal factory, water circuits and developing strategies for reduction of heat, solids, liquid and atmospheric wastes. It is found that there is indeed a good potential new technology and strategies suggested in the paper facilitate a reduction in the factory, water intake as well as its effluent production.

There has been a long debate whether co-operative organizations should be unitary or federal. The Report of the Committee on Structure and Role of National Co-operative Societies, under the chairmanship of Sri B.Venkatappaiah found overlapping of functions of the co-operative federations and their constituent members.

Nagrare, A.B. (1999) studied about sugar industry with reference to two selected factories each one in Buldana and Yeotmal Districts. He examined the role of co-operatives in sugar, causes for sickness, structural imbalances etc. The study prescribed the policy initiatives for the revival of sugar industry on lending policy, need-based
credit policy, dispensing with unilateral adjustment of pre-operative expenses, advance announcement of graded sugarcane price etc.

Malik, S.K. et.al., (1999)\textsuperscript{58} investigated on resource use efficiency and productivity in sugarcane production in western U.P. The study found that the regression co-efficient of irrigation and plant protection inputs were observed positive and statistically significant. The final analysis suggested a significant scope for raising sugarcane production by re-adjustment of irrigation, plant protection and human labour inputs.

Ravilochanan, P., and Murthy, P.S.R., (1999)\textsuperscript{59} in their comparative study proved that the co-operative sugar factories performed better than private factories in terms of several growth indicators and physical performance variables. The societies recorded better performance in terms of physical measures such as cane crushed, recovery rate etc.

Graeme Bullock (2000)\textsuperscript{60} examined on global sugarcane industry to be more outward looking in the overall conduct of research and development. He found that three particular actions which could assist in internationalizing sugar industry R and D, such as collaborative bench
marking of equipment performance, better accessibility of technical literature etc.

Alagar, K. (2000) in his study of Analysis of Production Performance of Co-operative Sugar Mills in India examined trend values and predicted for coming years by using a trend line. The study found that the sugar production by co-operative sugar mills in India for a period of 11 years a fluctuating trend.

Shinde, M.R., et. al, (2000) made a study on Mathematical Equation for sugar recovery trend. The research attempt was made for developing mathematical model for precise estimates of sugar recovery. The parameters adopted were cane crushing, sugar production and sugar recovery per cent cane. Sugar recovery is one of the important parameters for assessment of performance of co-operative sugar factories.

Marathe, M.S., (2000) in his published paper on Co-operatives in the New Millennium remarked that co-operatives being a value based movement has a never ending relevance. The paper further observed that it was agreed that the changing global economic order brought a set back to co-operatives in India because the co-operatives had not been
functioning in accordance with the co-operative principles and also were not keeping abreast of the changing world order.

Daxa Gohil (2000)\textsuperscript{64} made a study of An Analysis of Profitability in Sugar Industry, a case study of Bardoli Co-operative Sugar Mills. The study concluded, on the basis of the analysis, that in spite of the fact that the society was Asia's largest enterprise in terms of crushing capacity, it had been suffering from low profitability due to excess of overhead expenses, low recovery, ineffective use of funds etc.

Chinnamade Gowda, C., et.al., (2000)\textsuperscript{65} undertook a research study of Ratoon Performance of Early Duration Sugarcane varieties in Agriculture Research Station. The investigation carried out revealed significant differences among the genotypes for cane yield, commercial cane sugar yield and number of malleable canes.

Singh, R.K., and Singh, D.N. (2000)\textsuperscript{66} undertook field investigation on the Evaluation of Early Sugarcane varieties for sustaining higher sugar recovery. The study compared the pool content and also sustainability at peak maturity besides yield contributing characters of plant and ratoon crops of some elite early maturing varieties.
Veena Goel and Tajinder Kaur (2000)\textsuperscript{67} in their study on the Growth of Sugar Industry in India during the Post Green Revolution period prescribed some policy implications on statutory minimum price, regulating supplies of sugar in accordance with the consumption, discouraging diversion of cane supplies to gur and khandasari units etc.

Jagdish Lal, et.al., (2000)\textsuperscript{68} Indian Institute of Sugarcane Research made an attempt to analyse the causes responsible for the poor performance of sugar factories in India. The study found that the operational efficiency of mills was the highest in Tamil Nadu followed by Gujarat, Karnataka, Maharashtra and Andhra Pradesh. The capacity utilization was higher in most of the tropical states than sub-tropical states.

Sisodia, S.S., (2001)\textsuperscript{69} in his paper on Strategic Approach of Agricultural Co-operatives to WTO negotiations, emphasized the global solidarity of agricultural co-operatives which make them the most influential non-governmental organizations to influence WTO agricultural negotiations. He opined that the co-operative leader had to work out an appropriate strategy to safeguard and protect the rights and benefits of a number farmers in the context of liberal trade regime oriented towards unfair and unjust treatment to the rights and interests of agricultural co-operatives.
Rama Kantha Rao, R.M.V.N., (2001) made an interesting study in tune with information technology revolution. The study is on 'IT' in aid of co-operatives. He found that a quiet IT revolution is taking place in a cluster of 70 villages in Kolhapur and Sangli districts of the sugarcane rich western Maharashtra. He further pointed out that it is a revolution that has yet to be emulated by others on large scale in India.

A study was conducted by Pokharkar, V.G., et.al., (2001) on the causes of Low Productivity and Profitability of Sugarcane in Maharashtra. They emphasized the need to popularise the improved crop production technology among the sugarcane growers which will ensure reduction in the cost of cultivation on one hand and maintain the productivity of sugarcane on the other.

Rane, V.P.(2001) Director General of Vasantadada Sugar Institute investigated on the concept of Sugar Co-operatives show the way successful Hand-Shake between Research and Field. The author made a comparative study of the technical performance of the sugar industry in various States in the country and the findings revealed that the industry in the State of Maharashtra had recorded much superior performance. One of the reasons for the excellent rapport between research and field and cane growers showed extraordinary vision in
setting up research and development organization namely Vasantadada Sugar Institute for their upliftment.

Vinay Kumar, Managing Director (2001)\textsuperscript{73} while examining the role of sugar industry in co-operative sector critically analysed the role in the liberalized scenario. He opined that the changed scenario would ensure the survival of the fittest. "There is no room for lethargy and every one has to gear up and cut its cost in order to survive…. If not they may do it at their own peril."

Viswanathan, U., (2002)\textsuperscript{74} studied on Perform or Perish-Key to sustainable Co-operative Development. The author remarked that co-operative should gear up to face the challenges of liberalization and globalization. The Co-operatives thus to become the fittest, they should fit into the demands of the situation organisationally, technically, economically and managerially. He further pointed out increased productivity, world standard quality and services only can help the economic enterprise to succeed.

Jadhav, M.G., (2002)\textsuperscript{75} in his paper investigated the aspect of auditing of heat energy and determination of recoverable waste heat potential. The study found that this will help to a great extent to
overcome the present uncomfortable situation in the world market and
economic stress relieving on home front.

Objectives of the Present Study

The primary object of the present study is to collect relevant statistical data and other information relating to co-operative sugar factories with reference to selected sample units, in respect of their performance like production, finance, marketing etc. However, broadly the objectives of the present study are:

1. To present an overview of sugar industry at macro level.
2. To examine the evolution, growth and development of co-operative sector of the sugar industry.
3. To study the economic size, locational aspects and sugarcane potential to work with installed capacity.
4. To analyse unit-wise cane area, cane yield, area contracted, cane price mechanism, installed capacity.
5. To evaluate the problem of extent of under-utilization of installed capacity, cane crushed, causes for poor recovery, sugar produced and economies of by-products and joint products.
6. To investigate financial structure of the selected units.
7. To identify short term and long term finance and to evaluate the overall profitability of each unit.

8. To examine the impact of sugarcane policy and sugar policy on the performance of co-operative sugar factories.

9. To analyse critically for each unit the composition of membership and share capital.

10. To study the extent of the contribution of this sector to total sugar production.

11. To identify the problems and to offer suitable remedial measures on all matters incidental and ancillary to the above.

Methodology and Database

The present study is based on the data collected from both the primary and secondary source. The primary data was collected from the factories and records of federations and government departments. The bulk of the data used for analysis was primary in character. Data relating to cane cultivation, yield, buying pattern of cane was collected from the reports and official records and other agencies which are directly or indirectly connected with the sugar industry.

The secondary data was collected from published sources of various types. The published sources include publications of the
Government departments, State federation, national federation, sugarcane breeding institute, Indian Institute of Sugarcane Research, Indian Sugar Mills Association, the South Indian Sugarcane and Sugar Technologists' Association, Reserve Bank of India Bulletins, annual reports and auditors reports etc. They supplied a good deal of information. Thus the data and information collected from sample units dovetailed with information collected from departments and other autonomous agencies.

In addition to the primary and secondary data collected, personal discussions were held with several authorities concerned with sugar industry to elicit their views about the working and problems in co-operative sugar industry. They are supported by personal observation to know the process of production to personally identify the problems associated with productive function.

Time Span of the Study

It is time series analysis. The present study covers a period of ten years from 1991-92 to 2000-2001. The period of ten years is considered as reasonably long enough to observe the trends in the working and performance of the industries so as to draw meaningful inferences.
Universe

The universe for the present study consists of all sugar factories in the co-operative sector. At present there are 18 factories in the co-operative sector. Out of the 18 co-operative sugar factories, four factories have not been functioning for the last five years due to shortage of raw material. Besides them one society became financially sick due to low capacity utilization and high cost of production. The A.P.State Government has decided to hand over these co-operative sugar societies to private entrepreneurs. Thus today there are only 13 out of 18 co-operative sugar factories are in working condition.

Sample Units

The data needed for the accomplishment of objectives of the study are solicited from the sample units selected for the study. There are in all 18 sugar factories in co-operative sector, which have been registered with the Registrar of the Co-operative Societies. Among them some factories have not been working due to various reasons such as shortage of raw material and other operational problems. Among them some of the societies have not been working or remained dormant and had been closed down for a long period.
It may be mentioned that in respect of some societies bids have been received and the handing over of these co-operatives units to private entrepreneur is under progress.

The Rayalaseema region of Andhra Pradesh is composed of four districts namely, Cuddapah, Kurnool, Anantapur and Chittoor. The Chittoor district has good potential for cane cultivation and as such there are two co-operative societies actively working.

The sample district is Chittoor, and presently two working societies were selected for detailed study. They are:

1. Sri Venkateswara Co-operative Sugars Ltd., Tirupati.
2. The Chittoor Co-operative Sugars Ltd, Chittoor.

Hereinafter they are respectively referred as “Tirupati” and “Chittoor” throughout the study.

TABLE 1.01

PROFILE OF SAMPLE SOCIETIES

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Tirupati</th>
<th>Chittoor</th>
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<tbody>
<tr>
<td>Date of Registration</td>
<td>06.04.1972</td>
<td>22.08.1955</td>
</tr>
<tr>
<td>Date of Starting</td>
<td>22.03.1978</td>
<td>18.01.1963</td>
</tr>
<tr>
<td>Licensed Capacity TCD</td>
<td>1250</td>
<td>1600</td>
</tr>
<tr>
<td>Installed Capacity TCD</td>
<td>1550</td>
<td>1900</td>
</tr>
<tr>
<td>Project Cost Rs.</td>
<td>1080.85</td>
<td>1129.16</td>
</tr>
</tbody>
</table>

Scope

The present study is designed to make an attempt to analyse unit-wise performance to understand and critically examine the working of these two sample co-operative sugar factories in the promotion of the economic interest of the cane growers. The study observes and evaluates operations of both production, finance as well as marketing. The scope of the study covers financial strength, financial results factory-wise cane potential, cane yield, actual production, crushing, juice recovery etc.

The study also covers within its scope cane growers, Government's sugarcane policy, sugar policy and their impact on the performance of co-operative sugar sector, the role of apex body, federal society, financial institutions, and the extent of supporting and participative role of the State Government. The scope of the study is mainly confined to selected co-operative sugar factories in order to keep the study in manageable limits. With this wide scope it is proposed to make sample unit-wise appraisal of performance in various facets. So, for detailed study the Andhra Pradesh State has been selected because it is not only one of the co-operatively advanced States in sugar industry but also it has judicious combination of private, public and co-operative sectors working in competition. Another reason for selecting this State is that the State is the birth place for co-operative sugar movement, as the
first co-operative sugar factory was started in the State of Andhra Pradesh only.

**Tools of Analysis**

Based on the objectives of the study to be achieved, appropriate statistical and financial tools have been used to classify and tabulate the collected data and information so as to bring out a systematic analysis. The following tools have been employed:

1. **Testing Hypotheses**

   To test the significance of difference the following hypotheses were applied:

   a. **Null Hypothesis (Ho):** That the difference is not significant.

      \[ Ho = \mu = \mu_0 \]

   b. **Alternative Hypothesis (H1):** That the difference is significant. Therefore, the alternative hypothesis could be:

      \[ H1 : \mu \neq \mu_0 \text{ i.e., } \mu > \mu_0 \text{ or } \mu < \mu_0 \]

      \[ H1 : \mu > \mu_0 \]

      \[ H1 : \mu < \mu_0 \]
F-Test

F-Test is applied to know whether the two independent samples may be regarded as drawn from the normal population having the same variance.

For carrying out the test of significance we calculate the ratio $F$. It is defined as:

$$ F = \frac{S_1^2}{S_2^2} $$

Whereas,

$$ S_1^2 = \frac{\sum (x - \overline{x})^2}{n - 1} $$

$$ S_2^2 = \frac{\sum (x - \overline{x})^2}{n - 1} $$

2. Mean: It is calculated by dividing the sum total of variables by the number of observations, symbolically, it is expressed as under:

$$ \overline{X} = \frac{\sum X}{N} $$

3. Co-efficient of Variation (C.V.)

The co-efficient of variation was applied to measure relative variance and to compare the variability of two or more than two series.
The variables for which co-efficient of variation is great is said to be more variable and on the other hand the variable for which co-efficient of variation is less, is said to be less variable. Symbolically it is denoted as C.V. and is obtained as follows:

$$C.V. = \frac{\sigma}{X} \times 100$$

4. Growth Rate:

To know the variation, annual growth rates were calculated. It is arrived as follows:

$$\frac{P_1 - P_0}{P_0} \times 100$$

Where,

- $P_1 = $Current year
- $P_0 = $Previous year

Chapterisation

The chapter scheme of research study is presented suitably under the following chapter heads.

Chapter-1: The Research Design

In this chapter a brief description of the research methodology relating to the database and collection of data has been made. Other
aspects covered relate to the statement of the problem, the problem to be investigated, review of literature, objectives, hypotheses, tools for analysis, the significance, relevance and limitations of the study.

Chapter-II: An Overview of Sugar Industry

A brief description of the sugar industry in India is presented. In this chapter the nature of sugar industry, the economics of sugarcane cultivation, tracing the evolution of sugar industry, significant developments, government’s sugarcane policy, sugar policy, emphasis during five year plans are examined.

Chapter-III: Co-operative Sector of the Sugar Industry

The third chapter relates to the evolution, growth and development of co-operatives in sugar industry. The concept of industrial co-operatives, the federal structure, the need for co-operativisation, the place given in five year plans, the structure of industrial co-operatives, the contribution of co-operative sector etc., are presented.

Chapter-IV: Size, Location and Raw Material

This chapter deals with the size of each of the sample co-operative society, raw material potential, cane contracted, cane
Chapter-V: Production Performance

This chapter makes a critical analysis of various aspects of technical performance of sample units in relation to production management. Towards this end the chapter examines the installed capacity, utilization, extent of idle capacity, juice recovery, sugar production and other operations.

Chapter-VI: Marketing Mechanism and Financial Performance

The sixth chapter deals with financial performance to know the causes for financial sickness. It examines the extent of share capital contribution by the cane growers, State Government's participation, institutional support, working capital as well as short term and long term solvency.

Chapter-VII: Findings, Problems and Suggestions

A brief summary of findings, problems identified and remedial measures suggested to solve the problems are presented. An attempt is made to formulate policy prescriptions which are useful in the
formulation of co-operative policy to put industrial co-operatives on sound lines.

**Significance of the Study**

The significance of the present study of performance of co-operative sector of the sugar industry with reference to selected societies in the State of Andhra Pradesh needs no elucidation and cannot be overemphasized in the context of agro-based nature of the industry and co-operative character of the sector. The co-operative sector acting as a balancing sector occupies a key position in the sugar industry with a share of nearly 50 per cent of total sugar production in the country.

The significance of the study lies in the fact that it has profound influence on the economic level of activity of cane growers as well as national economy. It also brings to light the measures taken by these societies to improve the economic status of the interested people and to remove regional imbalances in the development of backward areas of the State.

Its value lies in its being not so much theoretical presentation but a model focusing the attention on the problems with empirical evidence. A summary of the suggestions along with the identified problems gives scope for further research.
It is a well known fact that co-operative sector has become non-viable and sick, so much so that the societies are in the grip of dormancy with huge accumulated losses. The closure of cane growers co-operative sugar factories will cause undue hardship to growers, consumers etc. So timely identification of such problems along with remedial measures will suggest solutions. So an enquiry into the causes of co-operative sector’s poor performance in sugar industry is, therefore, of utmost importance at this juncture.

Such causes may be both internal and external. An identification of such causes is the obvious first step towards the road to rehabilitation and revival. The study also highlights the extent of State patronage and its schematic pattern of assistance, and the role of central financing institutions in the establishment, modernization and rehabilitation of sugar factories. The study also helps to know the impact of the policies of the Government on the working and operations of the factories.

The study constitutes the most important piece of findings, formulates policy implications. The present cane grower members, perspective growers, Government, financial institutions, federations, planners, researchers, academic persons and general public are interested to know the working, performance and financial results of the co-operative sector. It has become necessary to understand how this
sector has been promoting the economic status of the growers and acting as a balancing sector.

The significance of the study to all those who are concerned is that it helps to know how best the co-operative efforts are delivering the goods to the beneficiaries and the society in general by utilizing funds provided by both the Governments and financial agencies.

Its Relevance to the Present Day Problem

Supply of sugarcane by the farmers to the factories and the reasonable price for the cane, and sugar policies of the Government have become the subject of current relevance. The study of co-operative sector of the sugar industry has great relevance to the present day problems, economic liberalization and the move towards privatization.

The basic problem today confronting the Government is whether the co-operative sector is capable of managing the agro-based nature of sugar industry in competition with private and public sectors in a globally competitive environment. In fact steps have been already initiated by the Government to handover some of the sugar societies to private entrepreneurs. The Andhra Pradesh Government has decided to privatize some of the co-operative sugar factories. It is because of the fact that their performance in areas of production and finance as well as
financial results have not been satisfactory as expected. The societies have been incurring losses continuously over the years and recorded accumulated losses. So the study of this kind at right time has great relevance to the present day problems of co-operative efforts.

The findings would have great value for formulation of appropriate future strategies. In the light of fast changing composition of the structure of sugar industry, liberalization, privatization, foreign investment etc., a revision of their working is necessary. Today there is a great need for regional studies at micro level which need different look.

Its Likely Contribution

This moderate piece of research work, is therefore, contributes a lot to the knowledge of co-operative movement in general and in particular to industrial co-operatives like sugar factories. It enriches the scanty literature on the subject on regional basis and adds to the existing co-operative knowledge on better understanding of the role of co-operative sector in the large scale sugar industrial front.

Special contribution to the existing knowledge is that it covers different aspects of crucial importance in financial and production operations which have received insufficient treatment so far. Many of
the issues in the study throw up added light in the context of wide industrial co-operative base with a tall network of federal structure.

A study of this nature would provide not only useful and necessary empirical data, analytical framework, but also theoretical information more useful for further similar studies in other regions on areas identified.

**Limitations**

The present study is a sector specific and sample unit-wise specific analysis. A study of this kind has naturally has its own minor limitations which condition the scope and contents of the study. But for these limitations the quality of the study would have been better than that has been found possible. However, specifically the following are the limitations in the present study.

1. The study was undertaken at a time when the implementation of economic liberalization was half way through.
2. The statistical tools and techniques applied for analysis are most commonly used as the nature of collected data permit and suitable for the objectives of the study to be accomplished.
3. The general conclusions and findings of the study were based on the facts and figures of only two sample units which certainly give scope for bias of representation.

4. The researcher is from the teaching faculty and had undertaken this work along with teaching and administrative work. Therefore to that extent the quality of the work had suffered.

5. The conclusions arrived at suffer from inherent weaknesses of the techniques of financial analysis.

6. Detailed financial figures uniformly in a classified way were not available because the nature of financial transactions are limited between the societies and Government. As such to that extent some financial techniques for analysis were not applied.

All these factors taken together might have worked as limiting factors. However, an attempt was made to eliminate the impact of these limitations in drawing inferences as far as possible by cross examination of the validity of information and data collected. In addition every care was taken to see that the quality did not suffer. The only way to correct such things is to check, re-check and countercheck. The study endeavoured to do so.
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