CHAPTER II
REVIEW OF LITERATURE

INTRODUCTION

Review of concepts and previous studies is useful to define precisely the concepts used in the present study, to place the problem in proper perspective and to decide the framework for analysis. Since it would enable both the collection of relevant data, and meaningful interpretation of the results of analysis, an extensive survey of the previous studies and research work has been carried out and the same is presented in the following paragraphs. This chapter has been split into two sections. In section -1, the historical perspectives, origin, growth, developments during First and Second World Wars and Plan periods have been presented. In section -2, summarized note of the previous research studies has been presented.

SECTION - I
SUGAR INDUSTRY AND ITS ORIGIN :

According to Galloway\(^1\) the history of sugar is linked with a trio of institutions, which were anything but sweet. These are plantations, slavery and slave trade. Galloway's argument is similar to that of Mintz as both emphasize that the development of sugar industry and trade was closely associated with the expansionist imperialism of the era of merchant capital.

The crop was produced in the colonial tropics and consumed in temperate Europe. The author further argues that both the dependent economic relationship between products and consumers and the pattern of production had their roots in the Mediterranean around 700 AD when the crop was first introduced from the east by the Arabs and B.C. 1600 when cheaper sugar from Brazil finally overwhelmed European production. The author describes how the crop spread
into the Atlantic islands and then in mid sixteenth century to Hispaniola, where it did not flourish and to Brazil where it did. It was in Brazil that the Atlantic slave trade found its major customers. From Brazil sugar, together with the plantation and chattel slavery, was carried by the Dutch, the French and the British into Caribbean, where also it flourished.

After tracing the movement of sugar to the Americans, the author shows how the various colonial industries developed up to BC 1800. It is a complex story. However, the presentation is an overview of some of the important changes including analysis of the relationship between the physical characteristics of different producing regions and the spread of innovations.

The second half of the book is devoted to the period (1790) when the slave revolt in St. Domingue and productive forces unleashed by the expansion of industrial capitalism in and from Europe completely altered the world of cane sugar production. Abolition of slave trade and slavery were the most severe problems of the planters. The author also analyzed the changes in market forces, political economy, technology, labour and the nature of land in American, Asian, Indian Ocean and Pacific industries during the nineteenth century.

SUGAR INDUSTRY AND DEPENDENCY OF CANE GROWERS:

Amin focuses attention on the cultivation of sugar cane by small farmers in Gorakhpur region. He analyses the socio-economic and cultural conditions under which these small farmers became dependent upon traders, landlords and other intermediaries for marketing sugarcane for the production of crystal sugar.

To begin with, the author reviews the studies covered by foreigners. There is a need to cover the studies undertaken by the Indian scholars as well. This is necessary because of their understanding of the product, socio-economic conditions in the complex web of dependency relationship with traders, moneylenders and so on. According to Amin, it was not the agency of
commercialization but the process and relation of (i.e., financial and institutional arrangements) production in the country side that provided the material conditions for the development of agriculture. He gives the impression that sugar industry was the only commercial venture existing in Gorakhpur.

Amin discusses measures taken by the East India Company (EIC) to boost system manufacturing in India. The commercial ventures of EIC in sugar production proved to be a disappointment in both Gorakhpur and Azamgarh. Therefore, sugar was not an important article of export during the first quarter of the nineteenth century. However, the company continued to procure Banaras and Azamgarh sugar as dead weight for its light cargo ships. The small investments made by EIC on Azamgarh were considered an important injection into the economy of this district and extension of area under sugar cane cultivation. The majority of the Halwas laboured for the Azamgarh residency and the Karkhanas could not sell any sugar to private traders. However, the demand for sugar from the company and private traders did not stimulate the growth of cane cultivation on Basti, Gorakhpur, and Deoria districts.

The equalization of duties on West and East Indian Sugars in 1836 and the crisis of the Caribbean sugar plantations in the immediate post-emancipation period opened up manufacturing of rum and preparation of mytho1 and its initial success in the Canadian rum market led to measures such as a jungle grant in Gorakhpur and the system of daddan advances for cultivation of sugar cane and consequently to European sugar manufacturers. The honeymooning of sugar cane cultivation and jungle clearance was over by 1840 and the depression in sugar industry set in because of closure of London market.

Trade route of sugar reverted to its old route of Mirzapur and the total quantum of sugar production and trade remained unaffected. According to Amin, the traditional system of sugar production continued without any serious setback. The fluctuation characterizing of the earlier phase of linkage with London market were on the wane. Further import of beet sugar did not replace gur as an article of direct consumption in the rural areas. Its impact was felt mainly in the bigger towns where Halwas (confectioners) for the manufacture of "mithais"
not only replaced more expensive indigenous sugar with a cheap sugar refined with bone charcoal but also adulterated a superior quality of material "khoya" for preparation of "burfi" and pera without making them too sweet and deteriorating their nutritious value and ultimately making more profit out of the whole business. The only sweetener which suffered serious losses was Khandasari in Uttar Pradesh. Consequently, cultivation of sugarcane declined and a considerable migration of sugar refiners from Azamgah and Ballia districts of Gorakhpur took place.

Gur production on Gorakhpur was linked with the demand of the capitalist gur refineries of Kanpur, because gur produced from sugarcane grown in this district had a high sucrose content, which ideally suited the refiners. Of course the quality of gur produced depends upon the quality of sugarcane grown. In contrast of gur produced in Meerut, gorakhpur, gur contained more water, did not stand handling and storage and was most unsatisfactory for direct consumption. The proportion of sugar manufacturing from gur remained profitable during the first quarter of the twentieth century. However, the linkage of gur production in Gorakhpur to the capitalist refineries in Kanpur did not alter the institutional arrangement within which sugarcane was cultivated and gur manufactured and marketed.

The setting up of sugar mills was started in 1920 but its pace was fastened with tariff protection conferred on sugar industry in 1932. The factor, which contributed to rapid development of sugar mills, was the supply of raw material and labour. Though, in the beginning, the sugar industry did feel the dearth of skilled manpower, later it was made up by experienced labour from Bihar. The growth of sugar mills was also evident from the increase in sugar cane consumption, which was 25% during World War I and increased to 28% in Gorakhpur. Most of those factories were located on the rail way network. In the case of Deoria, Pipraich and Ramkola, more than one factory was located at the same station. Consequently, the cropping pattern in this district changed, with a decline in acreage and food crops production. The sugar mills depended upon the landlords and Sahukars for the procurement of cane supplies.
Most of the big sugar mills owned sugarcane plantations while only half a dozen were profitably undertaking the manufacture of sugar, which suggested the attractive perspective to capitalists. This was because of the supply of abundant and cheap sugarcane and labour. However, data given suggest that the returns from sugar production were minimum in Goarkhpur district in comparison to those of other regions. The supply of labour to sugar mills posed no problem. Despite the increasing imports of sugar from Java, the number of sugar mills registered a considerable increase in 1920's though at that time there was a sluggish growth of the industry in India as a whole. In order to overcome the problem of procurement of sugarcane from small peasants, some of the firms started cultivating their own sugarcane. Cultivation of sugarcane by factories was of marginal importance and small cultivators cultivated sugarcane on rented land. It was not the only crop on these peasant farms, it was grown along with rice and other inferior grains under a three years rotation system. In addition, there was a distinct class of sugarcane farmers who owned farms. Zamindar Farmers Association accounted for the production of about 60 lakh mounds of sugarcane. Only 1500 acres of land was held by European members and could not boast of such an institution. However, the sugarcane cultivation was a normal and integral part of the agricultural activity and annual crop rotation by the peasantry.

There existed an arrangement by which the mill owners used to get right quantities of sugarcane at right time from the multitude of petty suppliers of sugarcane.

Gradually gur production declined and more and more sugarcane began to be taken to sugar factories. The competition for purchase of sugarcane was not allowed to continue for a long time by the Indian sugar mills association. However, occasionally the price of sugarcane was pushed up at some purchasing centre. In order to eliminate competition, sugar mills were employing middlemen for procuring sugarcane from small farmers in the countryside.
Transport of sugarcane from farm to mill was another crucial problem to be tackled for efficient production of sugar. It appears that the major share of sugarcane was being transported by bullock carts. The issue in this context looked into by the author are the number of bullocks available, use of bullocks for various transportation jobs other than ploughing and the ownership of carts. However, the interests of cane growers and mill owners were not complementary rather they were mutually opposed. Some measures were taken by the government to protect the cane growers from middlemen, such as fixing the price of sugarcane and the sponsoring of co-operative marketing.

The author lays emphasis on the dependency and exploitation of cane growers by landlords, traders and middlemen. The exploitation underlines the socio-economic conditions of the cane growers and the type of technology used for production of gur. The dependency and exploitation increased further with the introduction of crystal sugar production in Gorakhpur. Amin feels that some of the measures taken by the government increased the exploitation of cane growers.

Singh N P - Another micro study on sugar industry in Bihar presents the growth of sugar industry in terms of sugar companies set up, area under sugarcane cultivation, export of sugar, price of sugar, sale of Bihar sugar in London markets. Introduction of western method of cultivation of sugar and sugar manufacture, etc. The author gives the details of the various biological agents used for refining raw sugar in different parts of Bihar during 1793 - 1800.

Naqvi describes various centres of sugar production in upper India during 16th to 18th centuries. She dwells upon methods of sugar manufacturing, practices of sugarcane cultivation and the regional variations. She elaborates upon trade in sugar covering various centres from where sugar being exported and places to which it was being exported on account of the East India Company.
Altwood Donald\textsuperscript{5} has studied another dimension i.e., capital and transformation of agrarian class system - A case study of sugar production in India. In this paper the author has raised two issues

1) Why do some agrarian systems generate more economic growth than others? and

2) Why do some undergo structural transformations leading to further growth while others stagnate?

These issues have been discussed in terms of different kinds of agrarian class systems, which either promote or inhibit economic innovations and economic forces in terms of different levels of capital investments and managerial skill required for different kinds of production and distribution systems. His conclusion is that ownership control of land is not relevant to productivity of sugarcane farm in Maharashtra.

R.K. Gupta\textsuperscript{6} feels that it is the landed interest, which could increase sugarcane cultivation and in turn sugar production in Birbhum district of West Bengal. The cropping system requiring heavy capital investments stimulates search for efficient management which in turn stimulates the adoption of both technical and organizational innovations including efforts to mobilize new sources of capital, gain access to new markets and experiments with new forms of vertical integration. The high demand for managerial ability tends to stimulate education and supply of expertise for the management of new enterprises, such as co-operative sugar factories.

Studies have been conducted in plenty with regard to technical and economic aspects of sugar industry, but there is a paucity of studies in connection with productivity and profitability of sugar industry.

Inamdar\textsuperscript{7} indicated that the institution of co-operative sugar factory represents the rising economic power of the landlord rich peasant class. Breman\textsuperscript{8} has also indicated in this article in 1978 that the institution of co-operative sugar...
factory represents the rising economic power of the landlord rich peasant class 
Bagchi viewed that state intervention in the sugar economics in the pre-independence period broadly conforms to the imperial economic policy

SUGAR INDUSTRY: 1760 – 1858

From 1785 very high prices prevailed in the sugar market in the United Kingdom. Two factors which contributed to a rise in sugar price were

1) Increased tea consumption and
2) The sudden discontinuation of the supply of sugar from the French colony of St. Deminga, consequence of Negro revolt in August 1793

Under the circumstances the company largely depended on Bengal for a considerable part of the needed supply of the United Kingdom.

After a gap of almost a century, there is evidence showing that agents of the company were exporting enormous quantities of sugar from Benares, Ghazipur and Jaunpur. From Benares alone in 1790 sugar worth Rs 15,000 alone with fifteen hundred maunds from adjoining villages was to be bought. Similarly in 1792, twelve thousand maunds of sugar was exported from Benares and Mirzapur and thirty five thousand maund from Ghazipur. Export of Chinese from Bengal showed rapid increase. The quantity exported in 1791 – 92 was nearly two and a half times the quantity exported in 1787 – 88.

The reasons for the increase were

1) Abolition of the various raah – darry duties,
2) Establishment of regulations for the customs,
3) Steady and impartial administration of justice, salutary effects of land settlements made in 1788 – 89 etc.

The exports of the kinds of sugar, such as shukar and raab also increased. Since 1792, the company had regularly been exporting Bengal sugar to England. Parallel developments were reported from Birbhum residency. The sugar pykars
(Itinerant on whole sale traders) of Birbhum had been delivering the article to the company since 1792. From the very year of the English company started "investment on sugar the article was almost entirely transported to Calcutta and then exported to European and other foreign markets since it enjoyed special preference there. In 1792, a quantity of 18,798 maunds was estimated to have been produced in the district and retaining 4699 maunds for some consumption, the rest was exported. Petterson, an expert in sugar manufacture, found that Birbhum sugar cane was "infinitely richer than that in any other part in India and consequently best suited for manufacture of a strong grained high flavoured sugar. All these exports were on account of the company and used to be despatched to Bengal for export to other countries.

The first privately owned European sugar factory in India was established in 1784 by the Civilian Crofts at Sooksagar, an estate on the Hughli. Opposite Bandel, now submerged in the Hughli. Crofts obtained a contract to supply rum to the company's marine services and records that the concern was prosperous till 1795. By this time sugar industry in India was exclusively in the hands of local people. The Ghazipur operators of the East India company reported that all the established works in the districts were held by natives. Similarly, at Patna, the natives owned the industry till 1793, though the area has passed into the company's hands in 1765. East India company was proposed to be instituted by the court of Directors to assess, "the past and present status of the culture of sugar in Bengal and adjacent provinces with a view particularly to ascertain what improvements have already been produced from the regulations that have already taken place and in what degree it is capable of being further extended under the present or any other suitable encouragements that may be afforded". The information was to be collected from each collector.

Since 1791, the East India Company and its capitalists started paying special attention to the cultivation of sugarcane and manufacture of sugar in India. For this the company invited Mr. John Petterson and Mr. Richard Cardin.
for introduction of the West Indian modes of sugar cultivation and sugar manufacture. An attempt to manufacture sugar was made by Lieutenant John Petterson in 1791. Petterson was considered as being perfectly conversant with the culture and management of the most approved method in practice in the East Indies. An agreement was signed between him and the company stating that the company shall render all possible helps in procuring land for sugar plantation and employing three Europeans in the sugar works. In addition, he had obtained a loan of Rs 25,000 for the establishment of a plantation and sugar factory in Bihar in pursuance of the agreement. Petterson arrived in Bengal in 1792 and his first endeavour was to establish himself in Birbhum. After some time, he shifted to Champaran, where he appears to have manufactured sugar, but could not deliver any to the company. The Board of Trade having given a loan got disappointed and noted that cultivation of cane in Bengal was extremely difficult, not because of want of skill, but for want of means of cultivation which prevented them from cultivating sugarcane. While Petterson failed, Johncheap, the commercial resident of Sonamakh, was running at Surat his own sugar factory known as “Chhota Kuthi”. He imported an improved type of apparatus from Europe for the manufacture of sugar. He purchased some quantity of gur from the cultivators and produced a little sugar himself.

The financial stringency faced by the company led to severe curtailment of its investment on sugar and trade in sugar in early nineteenth century. After 1805 came a prolonged depression as a result of which there was remarkable decline in trade with Great Britain. In addition, the demand of Bengal sugar was being replaced by Saltpetre, which even a dead weight ships was preferred. The court of Directors in 1808 directed the board of trade not to despatch sugar to England, which could interfere with required quantity of Saltpetre. Consequently, a lot of confusion and fear was created among the Pykars and they feared severe financial loss. In order to save themselves from ruin, they were ready to part with their stock at a reduced rate of six annas per maund but the company did not buy their sugar. Rather the board by an order of November
1810 totally stopped sugar investment in Sonamukhi Residency from the ensuing seasons. Discontinuation of the company’s investment gave a severe blow to the sugar industry of the district. Consequently, many sugar factories were closed down and the sugarcane cultivators shifted to cultivation of paddy.

From 1814 onwards the Bengal sugar trade witnessed a spectacular revival. This was aided by wild speculations on the part of British private traders that followed the Charter Act 1813 abolishing the company’s trading monopoly and slavery throughout the British dominions. Another feature worth noting was the predominance of the Indians in the sugar industry of the district, which was probably due to participation of Landlord interest, who could increase sugar cane cultivation wherever necessary, in comparison with the European entrepreneurs. There were about 45 sugar factories which exhibited great power of sustenance of the industry through out the 19th century in spite of a number of vicissitudes it encountered.

Edward Campbell was engaged in sugarcane planting in Madras. Another planter Robert Campbell who turned to Indigo in 1799 clearly mentioned to the company that for a successful manufacturer it is necessary that he should be a land owner or have access to the supply of sugarcane. Efforts were also made to establish an industry in Bombay. Helenus, Scott, Robert Stewart and John Twiss in 1792 offered to engage themselves in production of sugar at Salsette. In 1801 Dr. Scott began producing sugar at Powey. W.J. Colley built a factory in Mynsurk, which produced 3000 tonnes of sugar annually. He recognized the value of molassess and refused to sell his sugar to the company if he was not given a contract to supply the government its requirements of rum.

After Charter Act 1813, the monopoly of East India Company was partially ended. Consequently, India's foreign trade underwent some fundamental changes, after having remained undisturbed for some centuries. The quantitative and qualitative changes in the trade on one hand made India a raw material supplier to meet the growing needs of UK undergoing fast
industrialization and food for the expanding population, while on the other hand, India was left without any protection for competing with British manufacturing industries. Consequently all the Indian conventional industries were destroyed and Indian cultivators were forced to produce commercial crops for the export market at the expense of food crops and subsistence agriculture at global level. However the opening of inland trade to private merchants in 1813 and the growth of an extensive market for eastern regions in 1820’s weakened this link to some extent. Private traders from Calcutta made their presence felt for the first time in 1817 when they were reported to be scrounging the arrangements and catchment’s areas at the rate of 41 to 43 per bale to the Karkanedars in the mufassil. During 1820 a concerted campaign against slavery and slave produced sugar was fast building upon England in which the private trade interests which then dominated the court of Directors, were playing an important role. Since 1822, these free-trade elements within the company were trying to bargain for a lower duty on sugar in return for this agreement to the proposed East India Bill. In response to this, the company published a number of papers dealing with the cultivation and manufacture of sugar in the East Indies. George Tucker argued that the virtual inability of the company to remit its trade surplus through sugar and the resulting import of bullion would depress agricultural prices in India and lead to a shrinkage of land revenue as well.

In 1832, winding up the company’s sugar business at Banaras the commercial resident observed, “so long as the central Indian demand lasts, the influence of prices in Calcutta or London will be felt less on Eastern U P than a first sight might naturally be supposed.” The bigger private merchants operating in a booming sugar trade could now match the kotih in manipulating sugar prices. They used to hold back stocks and raise sugar rates in bazaars.

The introduction of Mauritius and other canes into India may be said to be another step taken by East India Company in the direction of putting Indian sugar industry on the path of prosperity. However the attempt made by the company
to encourage European planters to grow introduced canes after the method practiced in the West Indies was doomed to failure, because the introduced tropical varieties of canes were unsuitable for the subtropical tracts of Bihar and Bengal.

In the year 1827, that Captain Sleeman brought the Mauritius canes into India and deposited them in the "Botanical Gardens of Calcutta". The transactions of the agricultural society contain details of the cultivation of these and other foreign canes. It must also be mentioned here that captain Sleeman received the gold medal of the above society in recognition of being the most energetic worker in the experimentation and introduction of foreign canes.

The Charter Act of 1831 became the instrument of the new born British capitalism, the regiments of the company's free booters were now replaced by British entrepreneurs. The Act completely diverted the company of its remaining monopoly rights, throwing open the gates of India to the British capitalists to exploit its natural resources to feed and support British manufacturers, which the Industrial Revolution of the age demanded. The principle of Laissez Faire in trade, which inspired Act, led a flow of British capital into India. Though the company's policy was somewhat in the nature of a damper.

It was expected that free contacts with the Indians will lead to an enhancement in their standard of living involving indulgences in English luxuries like wine which correspondingly inspired increase in demand for consumer goods from Britain. Thus both as a market for finished goods and as a depot of new materials the stage was set up for a complete annihilation of the industries and mercantile communities in India. Consequently, the upper classes of the mercantile communities of India turned their attention to other fields of investments for their attention to other fields of investments for their money capital and lower classes like ordinary traders, artisans and weavers to cultivation, while others finding no other opportunities of employment, because
of limitations of industrial activities, migrated to colonial plantations of European power in Africa and West Indies.

In 1848, Lord George Bentinck stated "an Bhurtpur district of Bengal in 1844 nineteen engines of 240 horse power have been erected and 15 more of 180 horse power are in course of erection". The factories established in Madras included those at Chiltwasah and Nellikuppam and the one set up by the firms of Binny and Co and Parry and Co.

Binny and Co initiated the factory in Ganjam, which later under Minchin's supervision developed into a pioneer cane diffusion factory, while Parry and Co financed a factory at Neelikuppam and remained till 1947 a well-founded and secure undertaking. In South India, after Binny and Co had been compelled to transfer their sugar interest to Parry and Co, the later came to hold a practically monopolistic position in respect of production of white sugar and spirits. In the case of white sugar this monopoly was because of foreign competition. In respect of spirits Parry and Co were the sole suppliers for many local governments. With the adoption of a free trade policy by the Home Government, almost the whole of the industry in India collapsed. In Madras only the concerns managed by Binny and Co and Parry and Co survived till 1947.

GROWTH OF SUGAR INDUSTRY UPTO WORLD WAR.

By 1862 the number of sugar manufacturers increased from 30 to 52 and export from Calcutta had increased from 16,000 to 20,000 maunds per year. In Pragana South Haveli areas under cane cultivation had increased from 100 acres in 1837 to 7844 acres in 1862 and whereas there was no sugar manufacturer worth the name earlier. During 1867-68 India imported refined sugar about 4,34,306 CWT and in 1885-86 the quantity imported had increased to about 1,64,071 CWT. Till 1900-1901 the amount of sugar imported was about 37,70,144 pounds. The main causes for increase in the quantity of sugar imported in India was its low cost. In addition, America had put an embargo on imports of sugar. Consequently Germany and other countries entered in the sugar market and Indian sugars being costly could not compete with the imported
sugars. The reasons assigned for this include the use of defective and wasteful process for the manufacture of sugar. The recovery was very poor due to wooden rollers used for juice extraction. Later iron mill for crushing cane was introduced. In spite of the iron mill use, indigenous refined sugar was costly in comparison to the imported sugar, with the result that the imported sugar had an edge over the locally produced sugar.

The first factory style gur refinery was set up in 1874. This was the Cawnpore sugar factory of Begg Southerland and company erstwhile indigo traders and managing agents who in the wake of the depression switch to sugar in the early twentieth century.

One of the remarkable features of foreign trade during 1890 - 1900 was the rapid rise in sugar imports. Sugar was imported mainly from Mauritius and Java. It was only when the beet sugar imports started after a protective tariff had been placed on them in America that the real blow was struck at the Indian sugar industry. Beet sugar forced prices down to extremely low levels and consequently sugar refining in Indian factories became unprofitable. Between 1895 and 1900 alone more than 180 small refineries in the United Provinces had to close down and many went out of production. Thus, sugarcane cultivation began to be abandoned in favour of other more paying crops. The foundation of the sugar industry was not stable for the following reasons:

i) The methods employed were crude and wasteful

ii) Most of the factories hardly used any modern machinery

iii) The fact that sugar was manufactured from gur and not from cane juice told heavily upon the health of the industry

iv) The refusal of the Government to give permission to prepare rum from molasses, which is more profitable

v) The system of cultivation in India caused obstructions in the way of revival of the industry
In 1904, the Government officials as well as nationalists also demanded expansion of the sugar industry. Noel Panton from the commerce intelligence department, Government of India presented a note on the development of sugar industry in India on 13th July 1907. In this memorandum, keeping the problems of both foreign and Indian capitalists in view, a proposal for setting up a central sugar mill under the aegis of the then British Government was made. The places suggested for the proposed sugar mills were Gorakhpur, Meerut, Banda and Bellary. But the British government declined the proposal finally.

In 1905, after the industrial conference through Pandit Madan Mohan Malviya's intensive efforts, a local company was established. The company established a sugar workshop at an expenditure of Rs 3 lakh. It was suggested that the mill should refine gur instead of producing sugar from sugarcane juice so that it could work for 10 months in a year. Despite these developments there was a decline in the area under sugarcane cultivation and in the number of unskilled employees because of the introduction of machines on sugar industry.

In 1914, a sugar factory was established at Tamkhoi, followed by factories at Govri Bazar, Rayam, Sardar Nagar, New Savan, Pachrukhi, Chughli, Bhatni, Samastipore, Padravna and Belar, either during or immediately after the First World War.

The sugar industry in India got effective protection during the first world war due to a fall in imports of sugar from foreign countries. Consequently, both the output of sugar and area of sugarcane went up, though the increases were moderate. The supplies of machinery from abroad were restricted and this acted as limiting factor for growth of sugar industry, as an industrial sector. The war however, also stimulated the interests of then government of India in the industry. Sir James Mackenna, agricultural advisor to the Government of India, submitted a scheme for a sugar bureau which would comprise a factory expert, an engineer, a chemist, an agriculturist and a botanist with an officer a secretary to the bureau was appointed and he did some valuable work in assembling a mass information on the trade side and disseminating information on Coimbatore cane in Bihar.
SUGAR INDUSTRY AFTER FIRST WORLD WAR:

In 1919, the Indian Sugar Producers Association Kanpur, approached the Government of India for appointing a sugar committee to advise on all aspects of the industry. It was realized that the smallness and inefficiency of the Indian factories were mainly attributable to their difficulty in adequate supplies of cane. An enquiry conducted by the committee reveals that there were 22 factories in India working mainly with sugarcane. Of these, 10 were in Bihar and United Provinces and three in Madras. None of the Indian factories worked up to full capacity and half of them crushed only half of the cane their mills could deal with.

The recommendations of the Indian Sugar Committee were rather mild, it wanted the government to set up a Sugar Board with five officials and six non-official members. It also recommended the establishment of a sugar research institute with three divisions, agricultural, chemical and engineering, a pioneer model sugar factory in northern India and school to train sugar technologies. It also wanted the government to fix a scale of prices for sugar cane products, so that the latter were protected against exploitation by sugar factories.

In 1929, the Government of India addressed all local governments on the status of sugar industry. The three Provincial governments most interested in sugar industry, namely, the government of Punjab, the United Provinces and Bihar and Orissa together with the government of Bombay had asked for an enquiry by the tariff board on receipt of replies to the government's letter, the question was examined by a special committee appointed by the imperial council of Agricultural Research in 1929. The committee consisted of civil servants, technical experts and representatives of the sugar industry. Of the suggestion of the committee made in its report, the council resolved that the government of India be asked to refer the general question of the import duties on sugar for investigation by the Tariff Board. It was this resolution, which led the Indian Tariff Board to examine the question of according statutory protection to the sugar industry.
Therefore, the Tariff Board decided that in view of the importance of sugarcane for the agricultural economy of India, the interests of sugarcane growers should be protected by the state. The Board concluded, "it is essential in the national interests that a fresh outlet should be provided for cane by encouraging the expansion of the white sugar industry. Unless steps are taken to develop the white sugar industry, a disastrous slump in the gur market is probable, which will seriously affect the agricultural classes disorganize the agricultural system and involve the abandonment of better cane cultivation in large areas." 35

The government accepted the Tariff Board's recommendation with the stipulation that the position would be reviewed by a statutory enquiry before the end of seven years of protection. The select committee of the Legislative Assembly, however inserted a clause in the preamble to the Indian Sugar Bill of 1932 to the effect that protection was to continue until 31 March 1946, and that the statutory enquiry before 31st March 1938 would only determine the form in which and the extent protection was to be given.

Though it was generally recognized that India had reached a stage when she could produce its requirements of sugar from internal sources without depending at all on supplies from foreign countries during 1934 - 35, yet the industry was confronted with a host of new problems.

Gandhi M P 36 in his studies - The Indian Sugar Industry - its Past, Present and Future - has mentioned many problems.

Some of the important problems were

1) Utilization of molasses and bagasse
2) Reduction of cost of cane
3) Improvement of quality of cane
4) Undue competition in purchase of cane
v) Supplies of cane in areas adjacent to factories
vi) Provision of irrigation and drainage facilities
vii) Extension of duration of crushing of cane
viii) Marketing and distribution of sugar
ix) Technological research on ways on which increasing percentage recovery of sugar
x) Fixation and improvement of standards of quality of sugar

There was a considerable improvement in the quality of sugarcane. The production of sugar in the country increased from 350 thousand tonnes 1930-31 to 1250 thousand tonnes in the year 1936 - 37 and 920 thousand tonnes on 1946-47. The number of factories increased from 29 in 1930-31 to 140 in the year 1936 - 37 and 170 in the year 1946 - 47. During the same period import sugar fell from 809 thousand tonnes to 22 thousand tonnes. The import of sugar was reduced in 1946 - 47.

During thirties and forties the establishment of new sugar factories as well as production were concentrated in UP and Bihar. However there after the establishment of sugar factories in Bombay and Madras received a marked impetus. It also resulted in the abolition of sugar import into India.

In respect of sugar industry, the then government policy had emphasized two points

i) The industry would be under central control

ii) The government would undertake licencing of new units

The postwar reconstruction plan of each province had two components

i) Non-industrial agriculture also including the development of sugarcane and

ii) Industrial containing plan for sugar industry
Another important feature of postwar reconstruction plan was that since 1937 sugar industry was operating under the protection law enunciated by the government and the law was extended until the end of 1946. Therefore, the official view was that no change in the post practice was necessary. In Uttar Pradesh, it was decided to launch a big project of agricultural research worth 9.72 crores. It proposes a development of co-operatives for marketing of sugar cane was also on the agenda. A scheme of exploiting the surplus molasses for production of industrial alcohol and technical advice and control of distilleries and training personal was drawn up. Most of these schemes were focused on the development of roads, irrigation facilities and electric power. Though Bombay laid emphasis on the expansion of sugar industry while Madras, the South Indian Chamber of Commerce stressed the need to install without delay more power alcohol plants and take steps to increase the cane area.

A concrete scheme for marketing organization was placed before a conference of representatives of sugar industry from all parts held in Calcutta in August, 1934, but it was not until the early part of 1937 when the precipitate crash in the sugar market made immediate action imperative that the Indian sugar syndicate was actually formed in June 1937. In 1938 the syndicate controlled about 100 factories in Northern Indian. There were always the danger and the temptation on the part of a monopolistic organizations like syndicate to raise profits, yet the credit went to syndicate for successfully maintaining the price of sugar in the Indian market. The mills were given assurance that the Indian Sugar Syndicate would convert itself into an organization for the sole purpose of selling sugar. The government would fix the quotas for sale and limits of prices for each factory within the norms prescribed by the respective governments.

FEATURES OF THE DEVELOPMENT OF SUGAR INDUSTRY

Setting up of sugar factories in the co-operative sector largely due to the government policy of giving preference to co-operatives in the matter of licensing. Accordingly, the number of cooperative sugar factories have gone up from 2 in 1950-51 to 252 in 31st May 2002. Setting up of new sugar factories in the tropical region as result of which the expansion of industry has been mainly
In western and southern India, progressive increase in the tonne crushing capacity per day from 1000 TCD to 2500 TCD and 5000 TCD. In order to encourage the setting up of new sugar factories and expansion projects, government has been operating various incentive schemes from 1975 onwards under which a higher percentage of free scale quota is allowed for a specific number of years to such factories to enable them to service the term loans taken by them for executing the projects and thus become viable.

The average recovery per capita cane, which is a combination of cane quality and efficiency of conversions were 10% during the last decade. However, it is seen that recovery has consistently been above 10% in the western/southern states of Maharashtra, Tamil Nadu, Andhra Pradesh and Karnataka. The economic and social considerations and international commitments have always exerted great influence on the level of technology which has been upgraded from time to time to improve productivity, conserve energy, eliminate human error, reduce elements or labour cost and reduce cost of consumable.

Research and development activities pertaining to process and sugar mill equipment were being undertaken at the following institutions:

1. National Sugar Institute, Karnataka
2. Vasant Dada Sugar Institute, Pune
3. Central Electronics Engineering Research Institute, Pilani
4. Council of Scientific & Industrial Research

Work on improving the productivity and quality of cane is being carried out by a number of institutions, prominent among them being:

1. Sugarcane Breeding Institute, Coimbatore
2. Indian Institute of Sugarcane Research, Lucknow
3. Agriculture Universities (T N Agricultural Universities, A P Agricultural University)
4. Research centers of Indian Council of Agricultural Research
Reduction of sugar loss in bagasse and final molasses have significantly contributed to the improvement in productivity. With a view to improving and maintaining the quality of sugar as well as bringing down the cost of conversion, Government of India introduced in May 1988, certain norms of efficiency to be achieved by all sugar factories in the country. To encourage healthy competition, a system of National Awards for efficiency has been introduced. New sugar factories and expansion projects are also penalized in their incentive quantum for non-achievements of the prescribed norms. Sugarcane production has increased enormously over the years to keep in tune with the increase in crushing capacity of the sugar factories.

The rapid increase in the production of sugar over the years has been achieved mainly by diverting larger area to cane. However, efforts are under way to bring about further increase in yield through development of newer varieties, better agronomical practices providing adequate fertilizer and irrigation and adoption of proper plant protection measures.

In the northern states a fixed cane price is paid to the farmer on delivery. This price is decided in advance of the season by the concerned state governments. In the western and southern states, the system is vogue in that an initial advance cane price is paid to the farmer on delivery and thereafter, at the end of the season, on the basis of actual realizations from the sale of sugar, an additional cane price is determined and paid to the farmers. The cane price payment is being made on the basis of weight. Efforts are underway to devise methods for making payment on the basis of sucrose content and in fact this stipulation is being incorporated in the new licenses which are being sanctioned. For the development of a sugar industry, a fund known as the "sugar development fund" has been created which is being financed through the cess levies on each bag of sugar produced by each sugar factory in the country. This fund is utilized for advancing programmes as also for cane development schemes in their areas of operation.
The government has been following a policy of partial control with dual pricing system since 1967. Under this policy, a specified percentage of the total sugar production of each sugar factory is procured by the government at controlled ex-factory levy prices for distribution through the Public Distribution System, (PDS) at a uniform retail issue price throughout the country. The balance production is allowed to be sold by the factories in the open market as free sale sugar through the mechanism of monthly releases. The present ratio between levy and free sale sugar is 40:60 in 1992-93 and it has been revised to 30:70 in the year 1999-2000.

The ex-factory prices of levy sugar are determined with reference to the statutory minimum price of sugarcane fixed each year by the government. In actual practice, the sugar factories pay much higher cane price than the statutory minimum price on the advice of the state government. The sugar factories are expected to recoup their deficit in the supply of levy sugar through the higher realizations they receive from free sale sugar.

It may, however be relevant to point that on the average about 50% of the cane production in India is utilized by the organized vacuum pan sugar industry. Allowing about 12% for seed, chewing etc., the balance nearly 38% is processed by the jaggery/Kandasari sector. The production of jaggery/kandasari is about 9 million tonnes during the year 1992-93.

Tripathy, S.K.,42 in his research work on “Indian Sugar Industry – a Profile of Co-operative Sugar in the year 1993” give the following suggestions for developing the sugar industry:

1. The installed capacity of the sugar industry to be increased in internal consumption and export orders.

2. Great stress should be laid in proving the process, design and engineering of the machinery with the modern technology upgradations.
Priority is being accorded to allow securities to expand at least to the minimum economic level. For this purpose, loans from financial institutions in co-ordination with the sugar development fund are being utilized for financing these projects.

In order to meet the cane requirement, stress is being laid on increasing the yield and quality of cane. Various programs for varietal improvement, adoption of improved agronomical practices, ratoon management, are being taken up through the factories.

Government of India is laying great stress on the installation of efficient treatment plant and air pollution control devices to control environmental pollution caused by the sugar factories. As per the latest information available, 321 sugar factories have so far installed effluent treatment plants and 233 have installed air pollution control devices.

Setting up of sugar complexes is being encouraged. Sugar factories located in rural areas act as a focal point for the economic progress of the rural masses. Many of the sugar factories, specially in the co-operative sector, have already taken up various development programmes for providing educational and medical facilities, construction of small irrigation projects, roads, etc. Some of the factories have also setup distilleries, chemical units, paper units, etc., for the utilization of by-products. It is a landmark achievement of Indian sugar industries during the year 1990-91.

However, the focus now is on co-generation of electricity and on setting up of by-product based industries such as distillers, chemical plants, animal feed units, paper units, etc., in an integrated manner and therefore, develop them into sugar complexes.

Marathe, S., Managing Director National Federation of Co-operative Sugar Factories Ltd, has narrated in his article titled problems and prospects of development before co-operative sugar industry in India.

The co-operative sector of sugar industry is facing problems and is likely to face many more problems under the new economic policy and this may considerably affect the prospects of development of co-operative sector of sugar industry in future in our country.
The co-operative are essentially organizations of persons of limited resources. Initial support of the government in equity participation, guarantees to financial institutions and incentive scheme is essential.

Sugarcane price as well as sugar price are very sensitive, issues which guide the working of the sugar factories to a very great extent. The dual control on sugar factories in the sense that the factories have to give a certain percentage of their production as levy quota for public distribution system at much below the actual cost of production and the balance of quota for sale in the free market at prices determined by the supply and demand factor. The price of sugarcane is influenced by the state governments in the interests of sugarcane farmers while sugar price is influenced by the government of India in the interest of consumers.

The cost of cultivation of sugarcane is increasing by leaps and bounds due to the following influencing factors, they are shifting of more cane growers to various urban occupations, demand for higher labour rates, increase in power tariffs by state governments, the double fold increase in prices of chemical and ingredients, considerable increase in packaging and transportation charges. The compulsory acquisition of some quota from sugar factories for public distribution system, below the cost of production ensures with certainty losses whereas it is not known whether these losses will be made good by sale of sugar in the free market. It is uncertain and competitive price may not be helpful to compensate the losses incurred by co-operative sugar factories due to the existence of private sector factories in the fray in the free market.

The co-operatives are basically a golden mean between private sector and public sector in a co-operative sugar factory, the ownership of sugarcane land in private while ownership of processing unit is common and co-operative. Any organization which is made of two sectors may lead to following alternatives.
It combines advantage of both and avoids disadvantages of either, or

It combines disadvantages of both and advantages of neither

Marthe S, suggested the following

The co-operatives have bright future only if the following conditions are fulfilled

a) Location of factory is at proper place of cane availability without minding political pressures

b) Invite government support but management should remain in the hands of growers representatives

c) Democratic leadership is in responsive to members aspirations and forward looking

d) Management is left in the hands of professionals

Amin, S S 44 clearly brings out how the various mechanisms of vertical capitalist penetration, we have been describing, come together though differently for different crops with the particularity of the crop adding its own variations. For the pre-sugar factory period 1850 – 1920, Amin describes the dependence of rabi producing peasants on the sugar refineries. Later gradually came to exercise the virtual control over the production process of such peasants through a system of advances which were either given directly or through land lords, to whom the peasants paid rent in any case

Moreland also describes different methods of sugarcane processing and points out the above phenomenon. He says gur producers are generally small growers, who for any profitable business must depend upon rabi producer 44

The study of Baviskar, which is a quite exhaustive in nature, attempts a situational and structural analysis of one of the oldest co-operatives in Maharashtra. The most interesting feature of such a “growers co-operative”
organization is that the composition of its share holders was a representative of the major caste groups in the state, whereas the lower caste people usually employed for menial work.  

The advantage to individual growers in such a co-operative and mainly higher prices, credit for crop loans, lift irrigation and even trucks, provision of inputs and advice from hired agricultural experts, a centralized professional service for performing managerial tasks for cutting, transportation and marketing etc. Apart from all these, they are also provided with social service activities like school, college and health centers. However, such facilities have come about as an indirect request of "selfish" economic and political interests of the leaders, who dominate in the factory’s organization.

Chithelan in a review of Baviskar depicts different relational mechanisms operating in the organizational set up as follows “A sugarcane cultivator is by and large a rich farmer. From amongst the cultivators, those with large plots and greater resources have gained enormously by the co-operatives, much more than the smaller ones”

Raju and Saikumar narrated the changing profile of sugar industry in India. They gave the following pointer to the prospects of this industry.

Modernization of existing sugar mills requires financial assistance. It is suggested that the period of free sale quota in the form of incentive schemes for new factories be raised, so that the economy position of the factories could be strengthened. In order to produce more cane in the country, first and foremost, step is minimum cane price announced by the government should be made attractive in comparison with other groups. Since sugarcane is a highly perishable crop it requires speedy transportation. Since almost all the sugar factories in the country are located in rural areas, there is a need for better road facilities. In this connection it is suggested that the government has to release the cess collected from the factories under Sugar Cess Act for the construction of better roads in the sugarcane cultivation.
SECTION - II
GENERAL REVIEW OF LITERATURE ON SUGAR INDUSTRY

Katzel R A* - Main emphasis is laid on job satisfaction, which motivates workers to higher productivity. This is a break from financial motivation.

Prokopenka Joseph* - the paper stresses on the particular problem of developing countries in improving productivity. Those can not be compared with those of developed countries.

Bemolak Imme* - The study examines dimension of productivity problems at micro and macro levels. The problems at macro level cannot be compared with those at micro level.

Kathleen New Land* - The paper reviews the concept of productivity in the changing economic scene. The technique of production art of management etc changes so also the concept of productivity.

Magsikap B Mole* - The study highlights different aspects of productivity and in the manpower forum especially as a human engineering concept.

Patrick E Haggerty* - The research study brings out the changing ideas of productivity in the context of changing technology and hence the newly evolved human relations. The change in technology aspects of the people and so the idea of productivity has to adopt to this change.

ILO* - This work analyses all aspects of work study and points out the movements as to how to go about it. It involves not only human movement, but also material movements and the time involved. Alexander Hamilton Institute, “Quality Circle New Approach to Productivity, New York (1981).
Saxena A N\textsuperscript{56} – This paper points out to the special problems of management in dealing with productivity in developing countries. They have to face so many constraints – physical, financial and political. The special problems in Indian situations are highlighted.

K Ramasamy\textsuperscript{37} – This study highlights the working of Salem co-operative sugar mills ltd with special reference to productivity and profitability.

Muthuraj\textsuperscript{38} – In his study, he has thrown light on all the aspects of productivity, particularly as applied to the co-operative sugar mills in Mohanpur. Labour productivity and financial productivity are clearly outlined.

Murthy P S R \textsuperscript{39} – In his study an effective comparison is made between the performance of sugar industries in Tamil Nadu and Andra Pradesh with particular reference to problems faced by them.

Muthuraj K \textsuperscript{60} – This study has attempted to appraise the productivity of sugar industry in Tamil Nadu.

REFERENCES:


