PERFORMANCE ANALYSIS AND MANAGEMENT OF BHIMASHANKAR CO-OPERATIVE SUGAR FACTORY LTD. IN PUNE DISTRICT

A Thesis submitted to the

MAHATMA PHULE KRISHI VIDYAPEETH,

RAHURI-413 722, DIST. AHMEDNAGAR,

(MAHARASHTRA)

BY

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(Reg. No. 07/225)

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MAHATMA PHULE KRISHI VIDYAPEETH

COLLEGE OF AGRICULTURE, PUNE-411 005

MAHARASHTRA STATE (INDIA)

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2009

CANDIDATE'S DECLARATION

I hereby declare that this thesis or part

there of has not been submitted

by me or any other person

to any other University

or Institute for

Degree or

Diploma.

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Date : / /2009

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CERTIFICATE

This is to certify that the thesis entitled, **"PERFORMANCE ANALYSIS AND MANAGEMENT OF BHIMASHANKAR CO-OPERATIVE SUGAR FACTORY LTD. IN PUNE DISTRICT"**, submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar (Maharashtra) in partial fulfilment of the requirements for the degree of **MASTER OF SCIENCE (AGRICULTURE) in AGRICULTURAL BUSINESS MANAGEMENT**, embodies the results of a piece of *bonafide* research work carried out by **Mr. MENGADE NARENDRA KISANRAO** under my guidance and supervision and that no part of this thesis has been submitted to any other university for degree or diploma or publication.

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This is to certify that the thesis entitled, **"PERFORMANCE ANALYSIS AND MANAGEMENT OF BHIMASHANKAR CO-OPERATIVE SUGAR FACTORY LTD. IN PUNE DISTRICT"**, submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar (Maharashtra) in partial fulfilment of the requirements for the degree of **MASTER OF SCIENCE (AGRICULTURE) in AGRICULTURAL BUSINESS MANAGEMENT,** embodies the results of a piece of *bonafide* research work carried out by **Mr. MENGADE NARENDRA KISANRAO** under the guidance and supervision of **Prof. N. K. KALE**, Assistant Professor of Agricultural Economics, College of Agriculture, Pune-5 and that no part of this thesis has so far been submitted for any other degree or diploma or publication.

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Date : / /2009 Associate Dean

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Place: Pune

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ABSTRACT

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2009

Research Guide	**:**	**Prof. N. K. Kale**
Department	**:**	**Agricultural Economics**

The present study was undertaken to examine the organizational and management aspects of factory, to estimate cost and return structure of sugar production along with which management efficiency of factory with regards to inventory control and utilization of by-product was the another aspect. SWOT analysis is also studied in the present investigation, to determine the performance of Bhimashankar Sahakari Sakhar Karkhana Ltd; Dattatryanagar. The study was based on the information obtained by the personal interview of the officials of factory and data from annual report for the period of 2001-02 to 2007-08.

Since 1956 Government of India started open preference for licensing and financial backing to co-operative sugar factory, because of which the number of factories reaches upto 459 in 2007-08

The management is divided into four major sections Agriculture section primary deals with cane supply and cane development activities. Manufacturing section deals with production of quality sugar and storage. Engineering section with maintaining the mechanical part and Account section is primarily concerned with the financial activity.

The share of planted cane was greater i.e 401129.80 MT than that of the area under ratoon cane i.e. 244130.17 MT for the year 2007-08. It is quite appropriate as the planted cane always given more yield. It was observed the productivity of sugarcane was found to be highest i.e. 75.99 MT per ha. in year 2007-08. Highest crushing efficiency was observed in the year 2007-08 (120.62 percent) with 193 days of working. On the other hand highest capacity utilization was observed in the year 2006-07 viz., 137.95 percent for smooth functioning of the sugar factory. Total paid up share was also increased from Rs. 926.25 (2001-02) to Rs. 2081.20 lakh (2007-08).

The total expenditure made on sugar production had increased upto 9029.75 lakh in year 2007-08. Per bag cost of production of sugar was observed Rs. 1127.43 in year 2007-08. Purchase cost of sugarcane accounts more than 50 percent of the total manufacturing cost of sugar. Expenses on machinery and maintenance showed an

increasing i.e. from 113.73 lakh (2001-02) to 659.19 lakh (2007-08).

The share of the income from sugar sale was ranging between 80 to 96 percent during the period. A comparison with receipts and expenditure, it could be observed that sugar factory earned highest profit in year 2003-04 (Rs. 301.38 lakh) and highest loss in year 2005-06 (Rs. 730.64). Out of total number of share holders, about 99 percent are producer member.

In respect of value of sugar percentage in inventory was highest in year 2001-02 (i.e. 93.26 percent). The value of store material in inventory also increased from 176.25 lakh (2001-02) to 221.27 lakh (2007-08). Sugar to be produced for Break even analysis in year 2007-08 was 9.00 lakh quintal while actually produced by factory was 8.01 lakh quintal. Break even analysis clearly indicates that the sugar factory was not undertaking the production activities or decisions in accordance with the market situations.

Shares of the factory can be increased by the involvement of producing as well non producing members, efforts to increased sugarcane production within jurisdiction.

Pages 1 to 110

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1. INTRODUCTION

The origin of sugarcane crop is in India. Therefore India is known to be the country of origin of sugarcane crop, especially saccharum barberi. Reference to “Sweet Grass” sugarcane exist in ancient epics of dating back to 3000 B.C. North Eastern India was regarded as centre of origin from where sugarcane seems to have been carried to china by early travelers and nomadic some time between 1700 and 1800 B.C. later it was spread to Philippines, Jawa and other places including Caribbean islands by explorers which established the growth of sugarcane in many countries along with production of sweetening materials, like sugar from sugarcane. The use of a different food form was originally practiced in china.

If we look at history we get reference to sugarcane crop. The god of love, Lupid is symbolized having a bow made of sugarcane stalks. Charka and susruta made mention of sugarcane. The Sanskrit word ‘sharkra’ means sugar. The Sanskrit word used for sugarcane in Atharvaveda is ‘Ikshu’ linked with Ikshvaku, son of Manu and a legendary solar king. Alexander, the great and his soldiers carried sugarcane (the honey reed) from India west by about 325 B.C. Columbus in his second voyage to new world in 1493 carried sugarcane to hispanola (Haity). Chinese canes were introduced into India by Roxburgh in 1796 and gave the same s. sinens and simultaneously the thick cane introduced in India in 1827 by captain steeman.

Large quantities of white sugar were imported mostly from Java (Indonesia) during the early part of 20th century. Pandit Madan Mohan Malviya raised an agitation in the legislature of those days that “something should be done to save the Indian sugarcane industry from perishing.” Added to this was the sad plight of indigo- cultivators of Bihar with the advent of synthetic dye. This led to the birth of sugarcane breeding station at Coimbatore in 1912 to improve sugarcane industry by cane hybridization.

The importance of sugar industry in India can be judged from the fact that about 45 million sugarcane grower and large number of rural labours depends on sugarcane and sugar industry for their livelihood. Sugar cultivation accounts for 3 % of total cultivated area and contributes 7 .5% of gross value of agril. Production

Bhimashankar Sahakari Sakhar Karkhana Ltd., DattatrayaNagar, (BSSKL) is one of very well known mill in the State of Maharashtra. The original mill of 2500 TCD capacity was established in the year 2000-01 and located at Pargaon and the bank of perennial Ghod river, which is 80 Km. away from district Head Quarter of Pune, in Maharashtra. BSSKL is located on the bank of Ghod river site in the near Pargaon, Tal. Ambegaon which is connected to Pune-Nashik highway by an important National highway (Paragon-Manchar-20km) the site is 80km away from Pune, which is the metro city and has all infrastructure facilities required for industrial and agricultural development and accessibility to various market.

BSSKL having 12610 share holder and covering 303 villages in the area of operation till 2007-08.

1.1 Present status of sugarcane crop in India:

Sugarcane being an important cash crop is mainly used for large-scale sugar production through out the world. Sugarcane occupied an important role in national economy and involved millions of cultivators and workers and technicians.

The sugar industries occupy an important place among agricultural-based industries. This industry took a shape of large industry in the beginning of 20th century. Sugar industry is the second largest after cotton textiles industry among agri-based industry of the country. The area under sugarcane was steadily increased from 11.76 lakh hectares in 1930-31 to 50.43 lakh hectares in 2007-08.While production of sugarcane increases from 363.54 lakh ha in 1930-31 to 3405.57 lakh ha. in 2007-08.

As regards production of sugar among the states Maharashtra ranks first in production of sugar (90.75lakh tonnes) follwed by Utter Pradesh (73.19 lakh tonnes), Karnataka (29.00 lakh tones), Tamil Nadu (21.41lakh tones) Gujarat (13.66 lakh tonnes). (Co-operative Sugar March 2009).

1.2 Present status of sugarcane crop in Maharashtra:

Maharashtra state occupied a well-recognized place of pride on the sugarcane map of the country. The area under sugarcane in Maharashtra is 76.17 lakh tonnes. While the production of sugarcane is 735.69 lakh ton. Total sugar

production in Maharashtra is 90.75 lakh tonnes and sugar factories in Maharashtra are 173 in year 2007-08.

The sugar production is 68.50 lakh tonnes highest in Western Maharashtra region, 17.5 lakh tonnes in Marathwada, 2.79 lakh tonnes in Khandesh while 1.96 lakh tonnes in Vidarbha in year 2007-08.

1.3 Importance of sugar industry:

The sugar industry occupies an important place in the economy of our country, being the largest agro- based industry after textile, being necessarily located in rural areas and largely established in co-operative sector, which produces 52 percent of the national sugar output. The sugar factories in the country act as catalyst for rural development. As a matter of fact there is no other industry in the country where the interaction between the industry and agriculture is as direct and intimate as in the case of sugar industry. The sugar industry is the largest industry in rural areas, providing employment to nearly 3.50 lakh workers. Besides, sizable indirect employment is also generated in ancillary activities of harvesting and transportation of sugarcane. The industry also contributes sustainability to the central government with annual excise collection to the tune of more than Rs. 500 crores. Besides, state government also collects nearly Rs. 500 crores per annum by way of purchase tax and cess on sugarcane.

In an agriculturally dominant country like ours, sugar industry plays a major role in a process for regeneration of the rural economy. It exerts a visible influence on the agro

technological, socio-economical aspects of the rural areas. Development of this industry especially in the co-operative sector has made it possible to achieve social reformation, educational awakening, rural industrialization and employment for intellectuals, technocrats, scientists, million of skilled and unskilled labours.

Sugar industry, processing local agricultural produce and located in rural area in Maharashtra state has a massive and eye catching development impact on the rural community. It has become a powerful instrument in the development and mobilization of natural human and financial resources of the state. These sugar factories, being located in different regions of the state, provide balanced regional development. They tap initiate, enthusiasm of resource fullness of local people. A large contribution towards the success of the green revolution and white revolution has been made by these sugar factories, which also made provision of medical, educational, banking and irrigation facilities in the rural areas.

1.4 Present status of sugar factories in India and Maharashtra:

At present there are 459 sugar factories in India, out of which 55 per cent are in co-operative sector. While in Maharashtra, there are 173 are in running stage. Among these 145 sugar factories are in co-operative while 28 sugar factories are in private sector, which is an indication of the speedy development of co-operative movement in Maharashtra.

Average recovery of sugar in India is low when compared to Maharashtra. In Maharashtra average recovery is 11.94 per cent which is the highest as compared to other sugarcane producing states in India such as Uttar Pradesh, Karnataka, Andhra Pradesh, Tamil Nadu, Gujarat, Haryana, Punjab, Bihar etc.

1.5 Topic of the Study:

Although Maharashtra state contributes 23.75 percentage of sugar factories in India, including 173 sugar factories in which most are co-operatives. In Maharashtra various factories are sick. Various factors are responsible for this condition and inefficient management is one of them. There are different areas of management in sugar factory. Progress and performance of sugar factory being dependent upon proper capacity utilization and cane supply, cost and returns of sugar production, better financial managements, efficient use of workers and officials, adequate use of byproducts, etc. which are dependent upon the efficient management.

Considering the above points “Bhimashankar Sahakari Sakhar Karkhana ltd.” is selected for the present study. This factory is newly established in the area and hence the study on areas of management and its performance was not yet studied.

1.6 Objectives of the Study:

The study was under taken with the following specific objectives

1. To study the organizational structure and management aspects of factory.
2. To study cost and returns structure of sugar production.
3. To study management efficiency of the factory with regards to inventory control and utilization of by products.
4. To study SWOT Analysis.

1.7 Utility and scope of the Study:

As the study is centered on the performance, evaluation and management of Bhimashankar Sahakari Sakhar Karkhana ltd. the findings of the same will be useful to the planners, management personnel and sugarcane producers. Findings of the study will be helpful to the planners for the formulation of suitable policies for the development of sugar industry. The management personnel can get detailed idea about the profitability of the sugar factory on the basis of findings of the study. The study related to different areas of management in sugar factory will also helpful to management personnel for efficient management practices. It is also true that cost and returns structure of the sugar industries undergoes a change over a period of time in response to changes in the prices of inputs and output, changing demand and supply conditions and government policies.

2. REVIEW OF LITERATURE

The review of literature gives an idea about the research carried out by other research workers in the past. Besides, this also helps the new research worker to formulate a proper methodology, which should be undertaken for the research study. Thus, this chapter is, therefore, designed to present the reviews relating to the various aspects of the study.

In order to get the better idea about the references collected the available reviews are being classified as:

2.1 General studies on sugar factory

2.2 Management in sugar factory

2.3 Economies and diseconomies of scale

2.4 Inventory control and utilization of byproducts

2.1 General studies on sugar factory

Jugale (1994) concluded that irrespective of the low wages, the workers are being exploited at various levels. Migration from drought to the destination of sugar belt is a continuous phenomenon. Even if the workers refuse to migrate, the local level such labour force is not sufficiently available. The CSFS begin their destination. Now-a-days the co-operative sugar factories are refusing to make a direct agreement with the contractors of the workers, which is because of the changed industrial relation. By the way the sugar industry is swinging because of growing sickness, lack of quality of raw material. Changing attitude of the farmers and unfavorable policies towards sugar industry.

Mangal sing (1996) in his viz., sugar industry in India-an overview discussed industry regulation, development of the sugar industry in India, government incentives for promotion of new projects and expansion status of technology and up gradation, etc. from this he concluded that the sugar industry in India is in rapid phase of growth and is poised to maintain its first position as the highest producer of sugar in the world and should be in the export market soon in sizable way.

Weragoda (1997) while studying sugar industry development, trends and challenges in Srilanka indicated that the high cost of establishing new factories and the limited availability of suitable land for sugarcane cultivation a hindrance to the expansion of the sugar sector in Srilanka. However, development of the domestic sugar industry would pave the way for the generation of employment and save foreign exchange to great extent.

While analyzing the rate of growth in the production of sugar, the present trend of per capita consumption and the annual population growth, it is evident that Srilanka would continue to be a market for sugar producing countries.

Ambhore (2004) to solve problem of sugar industries both central and state governments took strong decision to cancel or less excise duty on sugar, to cancel sugarcane tax, to give the subsidy on export, to cancel tax on molasses etc. The government has also taken decisions to control import of sugarcane from other country and to less subsidies on European countries sugar.

Shanmugasundaram and Natarajan (2004) studied that the co-operative sugar factories with their manifold advantages play very crucial role in bringing out the socio-economic development of rural areas. The sugar co-operatives are the best means to protect the interest of an ideal Indian farmer who is poor, illiterate and indebted. In respect of the performance of sugar co-operatives they were producing more than 55 percent of the national sugar output. Inspite of the tremendous role played by sugar co-operatives in national as well as state development and growth, today they stand at cross roads. Under the new economic policy, they have to face formidable challenges with uneconomical working due to overstaffing, competition from private sugar industries, inadequate sugarcane, technical inefficiencies and increased cost of production. In order to sustain and grow, they will have to adapt themselves and reorient their strategies in keeping with the new situation.

B K S Prakash Rao and Bh Venkateswara Rao (2005), while studying problems and prospects of sugar industry in India. They concluded that Sugar is the second largest agro-based industry in India. The industry provides employment to about two million skilled and semi-skilled workers besides those who are employed in ancillary activities, mostly from rural areas. Though the industry contributes a lot to the socioeconomic development of the nation, it is plagued with a number of problems such as cyclical fluctuations, high support prices payable to farmers, lack of

adequate working capital, partial decontrol and the uncertain export outlook. Despite the problems, the industry has good growth potential due to steady increase in sugar consumption, retail boom and diversification into areas such as power generation and production of ethanol. In addition to this, strong possibilities exist for counter trade, if the Government designs and develops sugar industry-oriented policies.

Bhamare and Patil (2006) while studying on wage policy in co-operative sugar factory of Maharashtra, with reference to vidarbha region they concluded following points

i) scale of wages in co-operative sugar factory needs review
ii) There is irregularity regarding payments of co-operative sugar factories workers
iii) There is significant difference between permanent and temporary workers regarding wages
iv) Part time job and business activity accepted by temporary workers shows high percentage as compare to permanent workers

Singh et. al. (2007) while studying on sugar industry in Utter Pradesh they concluded that the sugar industry is major industry of Utter Pradesh where cropping pattern is largely subsistence- oriented and sugarcane is one of the important cash crop. During 2001-02, the state had 20.35 lakh ha area under sugarcane out of the total 44.03 lakh ha area under sugarcane in the level of production as a result of inter-dependence and inter-relationship between

sugarcane, gur, khandsari and white sugar. These fluctuations emanate from the presence of various processing sectors and the differential governmental policies. Such an uncertain state of affairs is neither conducive to sound growth of the industry nor the growers. In view of the scenario, it was felt necessary to carry out an investigation, which can reveal the present status of sugar industry in terms of its efficiency in operations. The study has revealed that most of the mills were in the efficiency of the 60-80 percent. Efficiency was higher in the private sector (81%), followed by the Public (73%) and co-operative (66%) sectors. Though this study has advocated the continuation of partial decontrol policy, it has urged the policymakers to streamline strategies that promote stabilization of sugarcane economy and make the state a credible supplier of sugar in the international market, benefiting growers, processors and in turn, consumers.

2.2 Management in sugar factory:

Hinge (1984) after studying the problems of sick cooperative sugar factories in Maharashtra recommended that the overall inefficiency in managing the sugar production activity is the root cause of the phenomenon of sickness in the co-operative sugar industry. Suitable measures/ punishment may be advocated in order to control the present practices of mismanagement in the cooperative sugar factories.

Srinivasan (1985) concluded that it is a sad ironic fact that the rapid growth in the country's sugar production and

consumption instead of bringing buoyancy has cripped the viability of many units. The chief villain of sickness is the lack of objectivity on the part of parameters. Managerial deficiencies have multiplied the misery.

Daman Prakash (1989) defined the term management as it is the art and science of organizing and directing the resources of an enterprise towards the achievements of its objective. He also indicated that in a co-operative the management structure, as a whole consists of components. viz., general membership, elected boards or committees and (casually employed) managers.

Jauhari (1996) while studying market information system in agricultural co-operatives with focus on Indian co-operative describe the management information systems used in six activities, using the case of a co-operative sugar mill in Uttar Pradesh sugarcane management, plant and machinery management, general accounting, manpower planning and training, inventory management and production, stock and sale of sugar. Types of reports were produced and the use of computers in accounting, preparing reports and statements and inventory management are noted.

Narasaiah and Jayachandra (1996) after studying on cash management of co-operative sugar factory indicated that for smooth functioning of the factory, it should maintain the current ratio above the standard ratio of 2:1. The factory must increase its liquidity assets, to meet the current liability. The reduction in the investment in the

inventory is necessary which will help the factory to maintain a standard ratio of 1:1.

Baviskar (1997) while studying sickness in co-operative sugar factories indicated that mismanagement is one of the main cause for the sickness. The performance of the sugar factory is depending on the efficiency and effectiveness of the management. Also there should be positive approach for the overall progress of the factory. Most of the factories are sick due to lack of good management. The impact of decisions taken by management leads to progress or sickness of the factory. It is management's duty to take only such decisions which are beneficial to the factory particularly purchase procedures should be followed strictly. Stores inventory should also be according to the norms.

Mangal Singh (1999) while giving scenario reproduced for the present status of the sugar industry operating indicated that numbers of powerful inspectors continuously hover around the factories; one of the main functions of the factory management is to entertain them. Manager's time sheet analysis shows it. Sugar mill managers remain occupied in representing to government. On one or other grievance or complying with statutory obligations which are too many. Where is time to innovate? He also indicated that everyone knows more controls more controls more corruption. Can the situation be improved is the question. Sugar managements still look for being liberated.

Patil (2000) suggested that effort should made to motivate the farmers within jurisdiction under cane development activities nurseries at factory site be expanded so that the seed of high yielding variety will be made available to the cultivators. The inputs like fertilizers are provided by the factory at appropriate time and required quantity. Finance for this purpose also be provided and factory management should maintain number of labours in the factory according to norms given by Sakhar Sangh. It will reduce the expenses on wages and salaries and other activities.

Keerthipala and Thomson (2000) revealed that the existing cane payment systems adopted by Srilankan sugar companies do not offer incentives for the farm producers to produce high quality cane or for the companies to improve their processing efficiencies nor they are designed to split proceed from sugar and byproducts between farmers and the company in proportion to their economic contribution to the overall cane production and manufacturing process. The author further developed an alternative formula to overcome these shortcomings, which increases the cane price for the farmers in three sugar companies and both farmers and companies receive more equitable shares of proceeds.

Raj and Gandhiraj (2004) while studying on human resource management in sugar co-operatives. He concluded that the reasons for the poor performance of mill are lack of co-ordination between the management and employees. From the study it was observed that the main causes for

poor performance of mills is due to detective human resource management practices. The factors for human resource management are recruitment qualification of appointment training, promotion policy transfer and working conditions of the employees, in order to improve the operational efficiency of the sugar mills all the vacancies must be filled. The salary structure of the sugar mills and promotional opportunities provided are satisfactory to the employees, Employees are motivated by the higher level officials of the management. This has led to co-ordinal relationship between the employer and the employees. Adequate welfare measure and grievances redressal system operate in this sugar mills. There is scope for improving the performance of the employees by providing adequate infrastructure facilities.

Tekekar (2004) while studying management of working capital in sugar co-operatives with reference to Marathwada region he concluded following points

i) Co-operative sugar factories have no internal source of working capital except small source of refundable and non refundable deposits.

ii) All sugar factories show growing tendency of current assets

iii) Free sale of sugar is not allowed to sugar factories. All factories have to sale sugar under the control of government..

iv) There are some problems of recovery of advances to harvesting and transportation contractors.

Satya Raju and Apparao (2004) suggested that the management of organization needs to introduce professionalism. All people should understand implication of globalization and role of employees. The employees should attend training and development activities. They have to posses multi-skills and their mind set is to be changed. The factory is to be updated with computerization and latest technology. The new methods of production processes can also be implemented to utilize raw material at right time. Reduction of employment under VRS also helps for reducing the total cost. Estimation of wastage (material and expenses) is required mindset among people and management is to be changed towards co-operation, collaboration, and profit orientation. The coordinated approach from the government, employee unions and management is highly required to make organization turn around. The farmers are to be educated and employees are to be motivated and committed. The management has to introduce some new management practices to improve efficiency of the organization.

2.3 Economies and diseconomies of scale:

Like any other industry the sugar industry is also characterized by economies/diseconomies of scale. The high cost of machinery and other assets like buildings, vehicles, etc; increase the requirement of finance at the initial stage of the establishment of a sugar factory. The investment in such assets is of permanent nature and they do not vary in the short run time period. The sugar factories are able to

increase their profitability by way of reducing per unit fixed cost through fuller utilization of production capacity. The analysis relating to economies / diseconomies of scale, therefore, is of immense use in order to determine optimum plant size for the sugar factories under varying conditions.

In 1961, the Reserve Bank of India conducted the study on profit related to the assets of the companies in the sugar industry for the period 1955-1959. This study revealed that the profitability of the companies increases with the size of assets. Thus, study was conducted under the chairmanship of Shri. Gundurao, the expert on the sugar industry. In this study, the measures of rehabilitation and modernization of sugar factory have also been brought out.

Pittie (1975) concluded that the production of sugar from newly established units was uneconomical as setting up of new units was high capital intensive and fuller capacity utilization was the only solution for overcoming the problems of low returns from new sugar units.

Ferran (1976) has rightly said that there is a necessity of determining the most economic size of sugar mill in order to safeguard the industry from the problems of diseconomies. The basic consideration in determines the milling capacity of sugarcane mill must, therefore, be illustrated as the basis of production costs and performance figures of factory.

While stressing the need for optimum capacity, phadnis (1976) rightly said that, as size of plant increases

beyond a certain limit there exists a diseconomy of scale due to inefficient management of the plant. If the factory is run at optimum capacity, there will be efficient management, which ultimately leads to reduce the cost of production and also to maintain consistently high price to cane growers.

Kawade (1977) found that the supplies of sugarcane to the large factories are inefficient in relation to installed capacity, thereby resulting into under utilization of installed capacity, low rate of return on capital investment and diseconomies of scale.

Shinde (1981) stated that the escalation in the cost of plant, machinery and civil works has been major source of sickness and a new co-operative sugar factory requires 4-5 years to break even. Till that time it incurs annually a loss of Rs. 25 lakhs to Rs. 40 lakhs. The losses accumulate rapidly due to high interest rate and the unit falls sick.

Waghmare et al. (1993) while studying performance of shri chhatrapati co-operative sugar factory, Bhavaninagar (Pune) concluded that there was increase in the area, production and recovery percentage of the sugarcane in the jurisdiction of the sugar factory. The sugarcane produced by the members constituted around 70 percent of the total sugarcane crushed by the factory and remaining 30 percent of the total cane crushed was brought from outside of the operational area of the factory to have full utilization of the installed capacity. It resulted in low cost of production of sugar and better prices for sugarcane to the members.

Rao (1993) in his study on ‘co-operative sugar industry in India- A time series analysis’, concluded that cost of maintenance has increased at a higher rate of growth than rate of growth in sugar production and it is more so during 1976-84 period. Hence management and technologist should take necessary steps to rectify the bottlenecks so as to improve the efficiency of the industry, and to make it competitive in an open market economy.

Kaveri (2003) while studying on financial management in sugar industry in Maharashtra she suggested that it is desired both the banker and borrower should sit together and resolve various issues relating to financing sugar factory in this context, Federation of sugar factories may organize “interface- session” between banks and sugar units. Since cash is a scarce commodity, sugar units are advised to handle it more seriously. As stated above, ‘cash budgeting’ as technique should be strengthened. By adopting a professional approach, it is possible to improve the quality of overall financial management in sugar industry. In any case, more dialogue between banker and borrower is the need of the hour when sugar industry is passing through a crucial stage.

Kodag (2003) while studying New challenges before co-operative sugar industries in Maharashtra –a study of Sangli district. He concluded that there is need to control and reduction in production and processing cost. Administration expenses must be minimizing. Sugar co-operative have to do production of by-products such as

alcohol units, power generation, and ethanol production units.

Bujbal (2005) while studying performance of Shri. Shankar Sahakari Sakhar Karkhana in Solapur Districts. He concluded that the total expenditure on sugar had increased. Per bag cost of the production of sugar sale was ranging between 91.48 to 99.77 percent during the period (1992-93, 2001-02). A comparison with receipts and expenditure, it could be observed that sugar factory earned highest profit in one year 1999-00 (Rs. 36.13 lakh) and highest lost in year 1998-99 (Rs. 36.16 lakh).

2.4 Inventory control and utilization of by products:

Dhanuka (1977) found that the government comes to the rescue of an industry only after it becomes considerably sick and thus the recovery from sickness becomes very difficult and expensive too. The sickness in the industry is due to the defective policy of the government while giving the reasons for making sugar factories, he revealed that high stock of sugar in inventory was one of the important reasons for this. Hence, according to him inventory control was one of the important factors in sugar factory.

Manohar Rao (1980) rightly pointed out that at the current international prices of sugar and molasses, every sugar producing country has a strong reason to convert sugarcane into sugar and molasses to earn foreign exchange required for keeping up the balance of trade. It may be even economical to import crude oil of the foreign exchange earned by export of sugar and molasses. However as the

international price of sugar is fluctuating widely and for reducing the dependence on other countries for import of crude oil gradually for political reasons, the sugar producing countries may have to convert the molasses into alcohol and also consider the possibilities of converting a part of the sugar juice into alcohol. He further concluded that it was more economical to convert sugarcane into sugar and molasses and to use molasses as raw material for production of ethyl alcohol. The economies of these activities will however, largely depend on the international price of sugar, molasses and ethyl alcohol.

Pathak (1981) indicated that in view of the current shortage of sugar and the relative pricing of sugar and alcohol, it is not practicable to either grow sugarcane for alcohol; it is not practicable to either grow sugarcane for the production of power alcohol. The escalating petroleum prices and its global shortage can create economic compulsion in future to put more areas under sugarcane so that large quantities of power alcohol can be produced.

Narasaiah and Jayachandra (1996) in their 'Inventory management in Kovur Co-operative Sugar Factory Ltd. Nellore (A.P) made the notes about the inventories of raw materials sugar in process, finished goods, and spare parts at kovur cane sugar factory in India, their percentages of the total inventory value are indicated for each reason from 1987-88 to 1991-92.

Jain (1996) indicated that comprehensive use of sugarcane through its by-products and other value added

products is one of the principal lines of action that sugar producing countries are attempting these days. India has made a sufficient leap in this direction.

Baggase, the residue after extraction of juice is rich in cellulose fiber which is a major source of energy and power besides being the major substitute as raw material for wood and bamboo used in the paper and pulp units. There are a number of captive paper plants in operation in many sugar mills with 30 to 50 tonnes capacity per day. But they have not been found to be economically viable as compared to the normal size paper plants in sugar factories and this trend is catching up. Molasses the other important by-product of the sugar industry is the store- house of organic chemicals. These chemicals can be produced in medium scale industry capable of quick exploitation vis-à-vis mega units producing similar organic chemicals based on naptha.

Vivek saroagi (1996) while studying 'problems and prospects of the sugar industry' discussed molasses problems. In this he revealed that the large sugar production in 1995-96 has also created a serious problem of disposal of unprecedented stocks of molasses which was not adopted in all the Northern Indian States. There the problem of disposal of molasses stocks has assumed serious proportions. In some instances, molasses tanks have burst last summer resulting in a loss of human lives apart from financial problems. If immediate corrective measures are not initiated, many sugar mills, particularly in North India, may be forced with premature closure because of the non-

availability of storage space for molasses. Almost their entire available space is already bulging with large molasses stocks.

Mizerska (2000) revealed that provisions of several recent environmental laws enacted in Poland has influenced on the waste produced by the sugar industry. Chemicals analysis showed that various types of waste produced by sugar factories can be used for soil improvements. These wastes include sediments from the fermentation process and from waste water and soil washed of harvested sugar beet.

Deshmukh (2002) concluded that the material management plays a dual role in improving the production efficiencies, first, it helps in reducing production costs through efficient materials management practices and secondly, an effective control of materials helps to reduce inventories and thus, the total investment, leading to increased organizational productivity and profitability.

Patil (2003) while studying co-operative sugar factories waste control and the role of public relations on Warana experience of co-operative sugar factories in South Maharashtra. He concluded that the recycling of sugar factories waste by using and clarifies methods has benefited on large scale. It has multiplied its profits at one side and it has established its image on other side the top performance in alcohol production has been possible to generate new areas of employment and new areas of profit making. It could spread its wings in alcohol production, energy co-

generation and paper production. The public relation unit has accelerated to train and develop manpower suitably for each unit.

Deshmukh (2007) studied that stores play a vital role in the operation of a manufacturing organization. It is indirect touch with user departments in its day to day activities. The most important purpose served by the stores is to provide uninterrupted service to the manufacturing divisions. Receiving, storing and issuing of the raw materials and components needed for the end-products are the singularly important activities of the stores function in a manufacturing organization. The efficiency of the stores function in a manufacturing operation, in turn, largely depends on the efficient functioning of the receiving, storing, issuing and transportation activities of stores function in the organization.

3. METHODOLOGY

Research methodology is regarded as a foundation of every scientific study and needs to be elaborate in detail in order to facilitate the readers and other research workers to understand the conclusion drawn from this study. In view of this the present chapter discusses in detail the research methodology adopted for the study. It deals with the sources of empirical data used in the study, analytical procedure adopted for arriving at meaningful results for accomplishing requirements of the objectives of the study and discussion about various concepts underlying the study.

The chapter is divided into four main parts viz. sources of the data, selection of the sugar factory, and the collection of data and analysis of data.

3.1 Selection of factory:

The Bhimashankar Sahakari Sakhar Karkhana ltd. was selected purposively for the study which was established during 2000-2001. It was ascertained that so far no researcher has made any attempt to study its management, performance its related efficiency measures. In view of this, the factory was purposively selected. Hence an attempt was made to collect the data from its annual reports and by interviewing the officials of the factory.

3.2 Sources of the data:

It was necessary to obtain data on the various aspects of the sugar factory. These aspects included areas of management in the sugar factory, its cost, and returns and other relevant statistics determine the performance of the

factory. The year wise annual report of the sugar factory was the main source of the data. Similarly different records of sugar factory like financial records, records of the different sections in sugar factory are the sources of the data. Schedules were filled in by personal contact with officials of sugar factory. Other relating information was obtained from the 'Economic survey of Maharashtra 1999'. Information was also obtained from journals viz. 'Indian Sugar and Co-operative Sugar' published by Indian Sugar Mills Association, New Delhi and National Federation of co-operative sugar Factories Ltd. Vaikunth, New Delhi.

3.3 Collection of data

The present study is based on the data obtained from the annual reports of the factory and personal interview of the officials. Annual reports contain detailed information on various aspects of the factory. Information relating to different areas of management is obtained by personal interview of the officials of the factory. Similarly information or data relating to cost and returns structure of sugar production activity and inventory control and utilization of by-products was obtained from the annual reports of the factory. The data not available in annual reports were collected from the 'Directorate of sugar, Pune.

3.4 Analysis of the data and the cost concepts:

As indicated earlier the information was collected on various aspects in relation to areas of management. For studying cost and returns structure of sugar production of

factory, data were used from annual reports. The final tables were prepared and the results were interpreted.

3.4.1 Tabular analysis:

It was adopt to study input requirement, estimation of cost and returns and output input ratio etc. was done by tabular analysis

3.4.2 Cost concept:

It is classify under following categories

Cost of production of sugar:

The cost of production of sugar has been estimated on the basis of the data obtained from the "Manufacturing account" of the annual reports of 2001-02 to 2007-08. Following items of cost have been considered for estimating the cost of production of sugar.

1. Price of sugarcane
2. Sugarcane purchase tax
3. Sugarcane development
4. Harvesting, transport and other related expenses
5. Manufacturing expenses
6. Salaries and wages
7. Depreciation
8. Store consumed, repairs and maintenance
9. Interest paid on loan and deposit
10. Other expenses

Thus the total expenditure made was estimated and we can treat it as the cost of production of sugar. While

working out economics of sugar production, all the cost (total cost) were classified under two main categories viz.,

1 Total variable cost:

It is that cost which varies directly with level of production and includes all the items of total cost of production except depreciation and overhead cost. It also includes the cost on account of excise duty and the cost of marketing of sugar.

2 Total fixed cost:

It is the cost that does not vary with the level of production it is fixed in nature irrespective of the level of production. It includes following items:

i. Interest, bank charges and commission.

ii. Salaries and allowances of administrative staff.

iii. Administrative expenses

iv. Social and educational expenses.

v. Traveling and attendant fees.

vi. Depreciation.

vii. Other expenses.

The costs on account of these items will available from the “profit and loss” of the annual reports.

Gross receipts:

It include the value of sugar sale, value of sale of by products, interest received and dividend realized from the shares of other institutions and receipts from other activity under taken by the sugar factory.

Net profitability:

It has been estimated by deducting the total expenditure from the total receipts or income.

i.e. Net profit = Total income – Total expenditure

3.4.3 Break- even analysis in sugar production:

The capacity at which the total returns equalized the total costs was taken as break-even point. The quantity of sugar to be produced for break-even estimated as,

$$Ps \times Q = F.C. + V.C. \times Q$$

Where,

Q = Quantity of sugar in quintals required for break- even.

F.C. = Total fixed cost.

Ps = Sale price per quintal of sugar.

V.C. = Variable cost per quintal of sugar.

By transferring the terms and solving for Q we get,

$$Q = \frac{F.C.}{(Ps - V.C.)}$$

After estimating the quantity of sugar required to be produced for break- even, the quantity of sugarcane (QS) to be crushed is calculated as:

$$Q.S. = \frac{\text{Quantity of sugar produced}}{\text{Recovery percentage}} \times 100$$

3.4.4 Crushing efficiency of the sugar factory:

The crushing efficiency was worked out with designed crushing capacity of factory with an expected 160 days in a year.

$$\text{Crushing efficiency (\%)} = \frac{\text{Actual crushing days}}{\text{Expected crushing days in a year}} \times 100$$

3.4.5 Capacity utilization:

An attempt was also made to estimate capacity utilization as:

$$\text{Present Capacity Utilization} = \frac{\text{Quantity of Cane crushed per day}}{\text{Installed capacity}}$$

Where,

$$\text{Quantity of cane crushed per day} = \frac{\text{Total cane crushed.}}{\text{Number of actual crushing days}}$$

3.4.6 SWOT Analysis will be employed.

S = Strength

W = Weakness

O = Opportunity

T = Threat

4. ORGANIZATION PROFILE

4.1 Name of the Factory:

Bhimashankar Sahakari Sakhar Karkhana Ltd., Dattatryanagar, Paragon via Awasari Budruk.

4.2 Registered office:

Market yard compound,

At Post : Manchar,

Tal : Ambegaon,

Dist : Pune.

4.3 Registration number:

P.N.A/A.G.N/P.R.G (A) S- 47 (1994)

DATE: 31st March 1994

4.4 Industrial license number:

L.I. /167 (1994)

DATE: 22nd March 1994

4.5 Location:

It is located at Pargaon and the bank of perennial Ghod river, which is 80 Km. away from district Head Quarter of Pune, in Maharashtra. BSSKL is located on the bank of Ghod river site near Pargaon, Tal- Ambegaon which is connected to Pune-Nashik highway by an important National highway (Paragon-Manchar-20km) the site is 80km from Pune, which is the metro city and has all infrastructure facilities required for industrial and agricultural development and accessibility to various market.

4.6 Different areas of Management:

Management is an art and science, which aims at use of each and every part of the productive resource efficiently to get the maximum returns from production activity. Thus, it is a discipline and management functions and behaviour defines the role of manager and decision making in sugar organization.

The policy of management has got a direct correlation with working of the organization. The policies which are to be inconsistent with the aims and objective of the organization. In co-operative sugar factory final authority of management of the organization vests with the general body of member.

- **Board of management:**

There are 15 representative (Directors) elected from producer members and the other 8 are nominated directors as one from co-operative society, one from backward class, two ladies representatives, one from Maharashtra state co-operative bank, one nominated by the State Government and one Managing Director.

The general body consists of the members of co-operative sugar factory, each having one vote irrespective of the share he has held. The nominal members do not have the voting rights and thus they have no role in the management. Thus, these activities are having direct effect on the management of the factory and thus help in decision making process.

- **The different areas of management of the factory:**

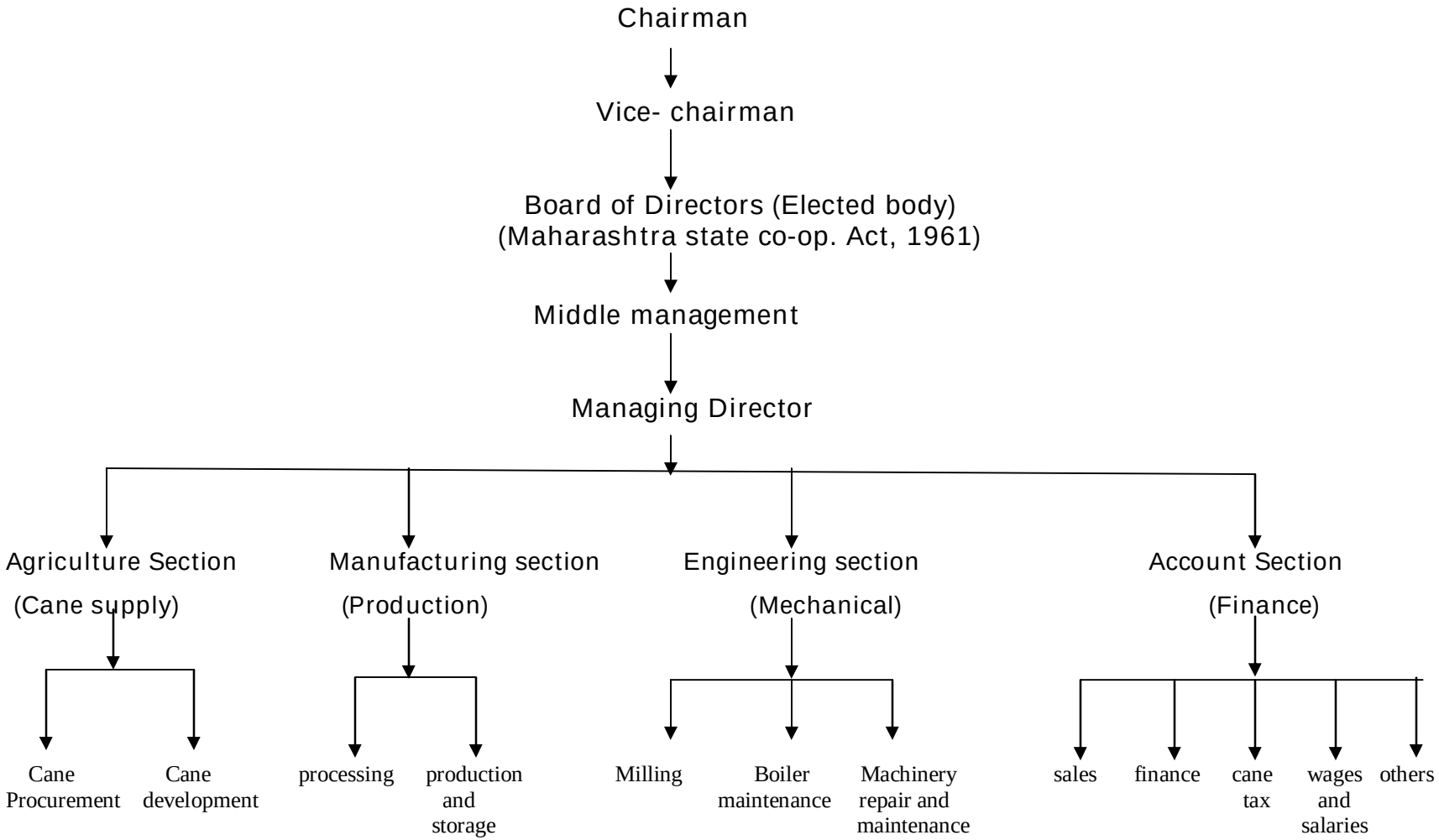

Fig 1 Different areas of management of factory

- **Board of directors:**

Shri. Devdatta J. Nikam [Chairman]

Shri. Sudamrao M. Kale [Vice-Chairman]

Shri .Shivajirao Dhobale	Shri. Devram Walase Patil
Shri. Dr. Sudamrao Khilari	Shri. Babasaheb Khalkar
Shri. Dagadu Shinde	Shri. Dyaneswar Gawade
Shri. Bhagavanrao Bende	Shri. Pandurang Said
Shri. Sanjay Bankhele	Shri. Dashrath Kale
Shri. Bajirao Barwe	Shri. Sharad Mali
Shri. Ramsheth Kale	Shri. Uttam Thorat
Shri. Subhash Marmare	Shri. Nivruttianna Govari
Shri. Ashok Bhagwat	Shri. Yaswant Kanade
Mrs. Hirabai Pavale	Mrs. Anjali Ghule

- **Top Management:**
  - Managing Director : Shri. Vijay Wabale
  - Chief Accountant : Shri. Chandrakant Daghe
  - Chief Engineer : Shri. Shirish Surve
  - Chief Chemist : Shri. Bhagvat Patil
  - Chief Agril. Officer : Shri. Sadashiv Barge
  - Office Superintendent : Shri. Ramnath Hinge
  - Incharge Purchase officer : Shri. Brigesh Lohot

Thus, the sugar factory management is grouped into four different categories as given below:

- Agricultural section- deals with cane supply
- Manufacturing section- deals with the production
- Engineering section- deals with the mechanical aspects
- Account section- performs the activities of finance

From the personal interview of the officials of sugar factory following areas of management were identified.

4.6.1 Agricultural Section:

This section primarily deals with the cane supply activities. Thus ultimate aim of this section is to focus on varietals improvement and area management under sugarcane crop. This section again categorized into two as below:

1. Cane procurement
2. Cane development

The both activities are concerned with the varietals improvement and area management. The agricultural section, before start of each crushing season has to collect information on the sugarcane production in the factory zone as under:

i. Total cultivated area
ii. Area under sugarcane
iii. Varietals distribution
iv. Average yield per hectare
v. Total cane produced (tonnes)
vi. Total cane bonding
vii. Expected cane supply

Under cane development activities, it was seen that the agricultural section has prepared the scheme of operation for sugarcane development in area. It has provided technical support to farmers by providing information about new varieties and distributed tissue culture seeds of those varieties. They inform the farmers about agricultural

practices for the growth of sugarcane such as interculturing in sugarcane, intercropping, etc. They provide technically all the assistance for the water management at the field level, through subsidizing drip systems up to an amount of Rs. 5000 per hectare. They suggested the farmers to plant sugarcane under 5 feet distance i.e. to follow patta system for effective water and cane management.

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Beside this, the factory has also provided inputs for effective control of weeds, insects or pest at subsidized rates. They provide three bags of mixed fertilizers as a basal dose. Beside they collect the soil samples of farmer and send to the soil testing laboratory at the Vasantdada Sugar Institute, Pune and on the basis of these results they recommended the farmers about the nutrient status.

4.6.1.1 Season wise plantation of sugarcane crop and production

It was observed from Table 4.1 that, area under the planted cane (suru, preseasonal and adsali) was always greater than that of the area under ratoon cane and also yield is more. It is also observed that area under adsali sugarcane was highest than area under preseasonal and suru crop. It was seen to be good thing because the recovery of sugar is higher in the adsali crop. But there is need to increase sugarcane plantation in preseasonal and suru season.

It was also seen that production of adsali crop is higher than the other season crop. In year 2005-06 there was not seen higher plantation as well as production was also see lower.

4.6.1.2 Growth in the area under promising varieties:

From Table 4.2 it could be observed that the varieties Co-86032, Co.C-671, are getting more popularity and covered large area of cultivation over the period. This is a good sign as these varieties are very promising and are having good sugar content, which ultimately benefited the factory. These varieties yield 100 to 130 MT per hectare and are early maturing varieties resistance to different diseases and pests.

Table 4.1 Season wise plantation of sugarcane crop and production:

Season		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Adsali	Area (ha)	1840.10	1750.21	1820.79	760.30	79.96	1609.76	574.76
	Production (MT)	146478.75	138743.53	142364.28	70474.275	5580.57	125345.96	57025.00
Pre-seasonal	Area (ha)	1220.80	1440.30	1310.67	384.62	54.14	1333.70	1291.99
	Production (MT)	96764.65	122654.51	99746.83	24002.94	3629.26	94871.98	112011.75
Suru	Area (ha)	320.25	721.40	658.12	128.77	165.45	2025.34	2882.87
	Production (MT)	12876.34	24756.03	18645.93	5555.94	8255.59	138491.45	232093.06
Ratoon	Area (ha)	2199.32	1658.48	2105.92	2589.71	1171.10	1246.74	3742.06
	Production (MT)	159891.30	39303.93	134656.00	115569.84	46991.56	62067.59	244130.17
Total	Area (ha)	5580.47	5570.39	5895.50	3863.40	1470.65	6215.54	8491.68
	Production (MT)	416011	325458	395413	215603	64457	420777	645260

Table 4.2 Growth in the area under promising varieties in the area of operation of the factory

Variety		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Co-86032	Area (ha)	4934.62	4306.03	5039.21	3334.47	1281.86	4888.28	6904.38
	Production (MT)	389557.80	257212.80	362761.30	193529.06	58706.77	346731.88	542765.65
Co.C-671	Area (ha)	645.85	1264.36	856.29	527.23	188.79	1327.26	1478.85
	Production (MT)	26453.20	68245.30	32651.70	22002.07	5750.22	74045.11	95488.62
Co-740	Area (ha)	0.00	0.00	0.00	0.10	0.00	0.00	0.00
	Production (MT)	0.00	0.00	0.00	4.178	0.00	0.00	0.00
Co-7219	Area (ha)	0.00	0.00	0.00	1.50	0.00	0.00	0.00
	Production (MT)	0.00	0.00	0.00	63.716	0.00	0.00	0.00
Co-8014	Area (ha)	0.00	0.00	0.00	0.10	0.00	0.00	0.00
	Production (MT)	0.00	0.00	0.00	3.960	0.00	0.00	0.00
Co-94012	Area (ha)	0.00	0.00	0.00	0.00	0.00	0.00	108.45
	Production (MT)	0.00	0.00	0.00	0.00	0.00	0.00	7005.75
Total	Area (ha)	5580.47	5570.39	5895.50	3863.40	1470.65	6215.54	8491.68
	Production (MT)	416011	325458	395413	215603	64457	420777	645260

4.6.2 Manufacturing Section:

This section is concerned with the production activity (i.e. sugar production). Thus, according to activity undertaken it is again divided into two:

i) Processing:

ii) Production and storage:

As the section is concerned with the production activity, the primary aim of this section is processing of the resources i.e. cane and production of good quality sugar with the minimum process losses, different practices are carried out according to the reports prepared by mills, which is managed by the Chief Chemist with the help of other staff. It was also seen that efforts are being made to produce quality sugar with minimum expenditure.

After the processing and production activity, the storage of that processed product was undertaken. If suitable market situations are arrived then the produce will be disposed in the market or it may be stored in the storage house till the favorable situation will be seen. The details about sugar and byproducts in inventory (storage) are discussed in the later part of this chapter.

Flow Diagram

Sugarcane

Maceration water → Mills

Bagasse → Boiler ↔ Bagacillo

Mixed juice → clarification → Settling

Rotary Filter → Mud

Muddy juice → Filtrate (Recycled to mixed juice)

clear juice → Evaporation → Syrup Bx 55 (SO2 is applied before) → Feeling in pan- pans → Massecutes → Crystallizes → Pug mill → Centrifugal machines

("A" Molasses and "A2" molasses used for further boiling and then finally exhausted molasses tanks as final molasses goes to storage tanks from where it is sold out)

→ Sugar → Drying → Grading → Bagging → Godown

Fig 2: Flow diagram of processing of sugar

4.6.3 Engineering Section:

This section is headed by Chief Engineer and other staff. This section is grouped into three as:

i. Milling

ii. Boiler and maintenance

iii. Plant and machinery maintenance

This section tries to keep all the equipments or machineries in good condition so that good milling or working should be there without any interrupts. The milling and boiler section has direct relation with sugar production and inefficient working of it may result into losses of sugar or loss to the factory. Thus proper correlation and maintenance should be there to get good results and which are performed by this section

From Table 4.3 it was revealed that the expenditure on machinery repair and maintenance and allied expenses was increased at higher rate. In year 2001-02 expenditure on machinery and maintenance was Rs. 27.93 lakhs (24.55 percent), which increased to year 2007-08 was Rs.126.37 lakhs (19.18) percent.

In respect of expenditure on manufacturing and allied expenses was in year 2001-02 was 85.80 lakh (75.45 percent) which is increased steadily which is in year 2007-08 was 532.82 lakh (80.82 percent). But it was observed that the percentage rate of expenditure shows slightly increased or constant.

Table 4.3 Yearwise expenditure on machinery repair, maintenance and manufacturing allied expenses.

(Rs. in lakh)

Year	Machinery repair and maintenance	Manufacturing and allied expenses	Total expenses
2001 -02	27.93 (24.55)	85.80 (75.45)	113.73 (100)
2002-03	38.45 (20.30)	151.00 (79.70)	189.45 (100)
2003-04	55.45 (20.73)	212.11 (79.27)	267.56 (100)
2004-05	70.13 (21.36)	258.11 (78.64)	328.24 (100)
2005-06	85.27 (19.70)	347.43 (80.30)	432.70 (100)
2006-07	108.14 (19.93)	434.25 (80.07)	542.39 (100)
2007-08	126.37 (19.18)	532.82 (80.82)	659.19 (100)

(Figures in parentheses indicate the percentage to the total expenses)

As this expenditure increased the cost of manufacturing is increased. It is necessary to minimize these expenses by improving the efficiency of machinery.

4.6.4 Account section:

This section is headed by Chief Accountant and this is concerned with all the financing activities of the factory and also to keep the records of the same. According to different activities performed this section is again grouped as: 1.Sales, 2. Finance, 3. Cane tax, 4.Wages and salaries,
5. Other.

The sale of the sugar is a controlled activity and thus the available sugar is divided into sub groups as levy sugar and free sale sugar. The levy sugar was sold to government or other institutions at the rate decided by the government and generally which are lower than that of the free sale sugar. The free sale sugar was generally sold in open market or it may be exported to the foreign countries

The term finance is having broad meaning, in which this section was primarily related to delivering timely payments of the grower member for their cane and also kept records of the same. They also kept records of the payments paid to the customers of the factory. This section also keeps an account of different loans and investments undertaken by the factory and transactions made whenever necessary. Account section also deals with the timely payment of the cane tax to the government and keeps the records, which are produced whenever demanded by the authority. On the other hand, the account section is also concerned with the delivering the wages and salaries and payments of the worker timely and also to make arrangement to pay some unexpected payments, etc.

Many studies made on the management aspects or sickness in the co-operative sugar factory are concentrated at a single point or findings of them are matched with a conclusion that in any factory the sickness was mainly due to the inefficient management or Mismanagement.

Mismanagement is the root cause of sickness and punishment may be advocated for it (Hinge, 1984). On the same line, the study made by Shrinivasan (1985), Jauhari (1996), Baviskar (1997), etc., concluded that for proper run of the industry the management should be efficient and they suggested different steps for the proper management. From the study made and their recommendation, it could be said that the management of the Bhimashankar sahakari sakhar karkhana ltd., Pargaon was performed well during the period. Thus, it could be seen from the financial results which are discussed in the later part of this study.

4.7 Personnel management:

Personnel management is described as a special branch of management dealing with the human factor and relationships in industry. It is concerned with development and application of manpower planning, recruitment, selection, placement, termination, education, career development, terms of employment, methods and standards of remuneration, working conditions and employee services, formal and informal communication and consultation both through representatives of employees and employers at all levels throughout and enterprise. The information was collected from Bhimashankar Sahakari Sakhar Karkhana ltd., Pargaon by the method of personal interview as follow; Personnel management of the factory is maintained by the personnel and administrative department including one labour officer and

other 16 staff members. For efficient management personnel department is divided into divisions viz; Time office and labour office which performs managerial functions.

4.7.1 Wage and salary administration:

It is managed by time office. It was seen that the need of employees was fulfilled. Pay sheets of all the employees were prepared. Factory management is concerned with retention allowances, bonus and payments of employees. Leave records, final payments, gratuity and provident fund records of employees were kept.

4.7.2 Attendance:

For maintenance of proper attendance it is seen that there is card and muster system. For unofficial employees there was card system and for office members there was muster system. Attendance report was sent to board of directorate by time office. It was observed that there were three shifts.

1st shift - 4-12 a.m.

2nd shift - 12-8 p.m.

3rd shift - 8-4 a.m.

4.7.3 Recruitment and Selection:

Recruitment and selection was one of the important functions of labour office. For recruitment purpose, recruitment committee was formed. This committee publishes advertisement in newspapers and calls applications for

recruitment. Then according to educational status employment was offered to the employees.

4.7.4 Personal record:

Keeping personal record is the important function of personal department for efficient management. Record of every employee from his date of birth was maintained by the factory. Personal record of every employee containing birth date certificates, family history blood group etc; were kept.

4.7.5 Motivation

In Bhimashankar sahakari sakhar karkhana, it was observed that for motivating the employees social requirements like clothes, shelter and other facilities like canteen, guest house, sanitation, rest room, etc; were fulfilled. It is also seen that scholar children of employees were awarded the prizes on 26th January and 15th August by Honorable persons. Employees who show the better performance were also awarded along with sugarcane growers showing better performance. During Ganesh Festival various cultural programmers, dramas arranged. The factory also has given bonus to employee, provident fund been also given to the employee.

4.7.6 Training and Development:

It is seen that training was given to employees relating to their job, in factory. In case of high level and middle level key persons generally trained persons were appointed.

4.7.7 Welfare and industrial relations.

Labour officer and welfare officer were appointed in the factory. Factory takes care of employee's security. Facilities like canteen, air and light, facilities, etc; were provided. Key persons or senior executives were given car and furnished accommodation. Festivals, social functions, were celebrated where chairman and other executives participated holiday homes facilities were offered. Medical facilities were also provided. Factory has provided medical facilities up to first three days if there was any accident. Similarly medical facilities according to present compensation act 1926 were also provided. Factory has given six months paying holiday to the employees attacked by cancer, heart attack and leprosy with all medical expenses according to medical certificate.

Raj and Gandhiraj (2004) while studying on human resource management in sugar co-operatives. He concluded that the reasons for the poor performance of mill are lack of co-ordination between the management and employees. From the study it was observed that the main causes for poor performance of mills is due to detective human resource management practices. The factors for human resource management are recruitment qualification of appointment training, promotion policy transfer and working conditions of the employees, in order to improve the operational efficiency of the sugar mills all the vacancies must be filled. The salary structure of the sugar mills and promotional opportunities

provided are satisfactory to the employees, Employees are motivated by the higher level officials of the management. This has led to co-ordinal relationship between the employer and the employees.

Raju and Apparao (2004) suggested that the management of organization needs to introduce professionalism. All people should understand implication of globalization and role of employees. The employees should attend training and development activities conducted by various organizations in India and abroad

All these points indicate personnel management in Bhimashankar Sahakari Sakhar Karkhana, Ltd. Pargaon.

4.8 Capital structure:

The paid up share capital in 2007-08 was Rs. 2081.24 lakh including Government share capital contribution:

i. Government share capital	: 1440 lakh
ii. Grower membership	: 542.63 lakh
iii. Co-operative society	: 6.34 lakh
iv. Share anamat	: 92.27 lakh
Total	: 2081.24 lakh

4.9 Area of operation:

The area of operation of Bhimashankar sahakari sakhar karkhana ltd., Dattatryanagar, Paragon via Awasari Budruk is in Ambegaon Tahsil of Pune District in Maharashtra state.

According to the original by-laws of the factory its area of operation for enrolling share holders covered 303 villages. In

which 133 villages from Ambegaon, 65 villages from Shirur, 60 villages from Khed and 16 villages from Junner Tahsils respectively in Pune district while 29 village from Parner Tahsil in Ahmadnagar district.

The sugar factory is an integral part of social, economical and political life of Ambegaon Tahsil and District.

4.10 Annual general meeting:

The annual meeting of the share holders and meeting of general body called only after fixation of cane price in each year and hold discussion on rural area development, dividend, new erection plan and other subjects.

4.11 Special general meeting:

Whenever there is sudden occurrence of any special issue a special general meeting of there holders will be called for an agreement

4.12 Plant and its capacity:

The factory has its sanctioned capacity of 2500 TCD and installed capacity is 2500 TCD in 2007-08.

4.13 Salient features of the factory:

1. The factory is owned by small farmers and is based on co-operative basis.
2. Factory has implemented LIC's salary saving scheme for its employees.
3. Factory has implemented soil testing programmed for sugarcane growers.

According to the action plan, BSSKL will bring in more than hectare of additional area under cane in their command area by adopting the following measures:

1) Assistance to farmers by providing better quality seeds and seeds of improved varieties, ratoon management, chemi Ferti's according to soil testing etc.
2) To educate and give assurance for lifting the cane at attractive prices.
3) Assistance to farmers in command area for providing more and more irrigation.
4) Supply of sun- hemp seed on credit.
5) Supply of micronutrients, integrated chemical fertilizers and bio-fertilizers, Pesticides, Fungicides, Weedicides, etc. according to recommendations and availability to recommendations and availability of nutrient in soil.
6) Arrangement of meetings, seminars on village level guidance on technical aspects, arranging various field demonstrations, arranging farmers training of technical knowledge of sugar cane growing at research station such as Vasantdada Sugar Institute, Pune.

Fig 3 Map showing area of operation of sugar factory

Plate 1: Building of Bhimashankar Sahakari Sakhar Karkhana Ltd.

Plate 2: Transportation and weighing of sugarcane

Plate 3: Chimney, Boiler and processing machinery of the sugar industry.

Plate 4: Raw sugar, white sugar, bagging of produce and godown of sugar industry

5. RESULTS AND DISCUSSION

In order to study the performance and management in Bhimashankar Sahakari Sakhar Karkhana Ltd. it was necessary to identify different areas of management in the factory. The different areas of management were identified by the personal interview of the officials. An attempt has been made to focus important information related to these areas in this chapter. Cost and returns structures and managerial efficiency regarding inventory control and utilization of byproducts was attempted with a view that such a type of analysis will bring out the performance of the factory. The performance of the factory under different technical criteria was also dealt with.

The present chapter, therefore, deals with the empirical analysis of the areas of management in the sugar factory with structure of management in the factory, cost of production of sugar, gross returns and net profit of the co-operative sugar factory for the years 2001-02 to 2007-08. Besides, the chapter also deals with details of inventory control and utilization of byproducts during the years and the technical performance of the factory.

5.1 General Information of the Factory:

The sanction of Bhimashankar Sahakari Sakhar Karkhana ltd. was awarded on 31st March, 1994. The initial sanctioned crushing capacity of the factory was 2500 TCD. The general information about factory is as following

5.1.1 Villages in the operational area:

The operational area of the factory consists of 303 villages. In which 133 villages from Ambegaon, 65 villages from Shirur, 60 villages from Khed and 16 villages from Junner Tahsils respectively in Pune district while 29 village from Parner Tahsil in Ahmadnagar district.

5.1.2 Sugar and sugarcane production in area of operation:

The information about area under planted cane, total production of sugarcane, sugar production and recovery of sugarcane is given in Table 5.1

Table 5.1 sugar and sugarcane production in area of operation

Year	Total Area under planted cane (ha)	Total sugarcane production (MT)	Average yield of planted cane (mt/ha)	Total Sugar production bags (quintal)	Sugarcane recovery (%)
2001-02	5580.47	416011	74.54	492388	11.84
2002-03	5570.39	325458	58.43	377936	11.58
2003-04	5895.50	395413	67.07	496241	12.53
2004-05	3863.40	215603	55.81	235369	10.87
2005-06	1470.65	64457	43.83	69003	10.65
2006-07	6215.54	420777	67.70	512909	12.17
2007-08	8491.68	645260	75.99	800911	12.40

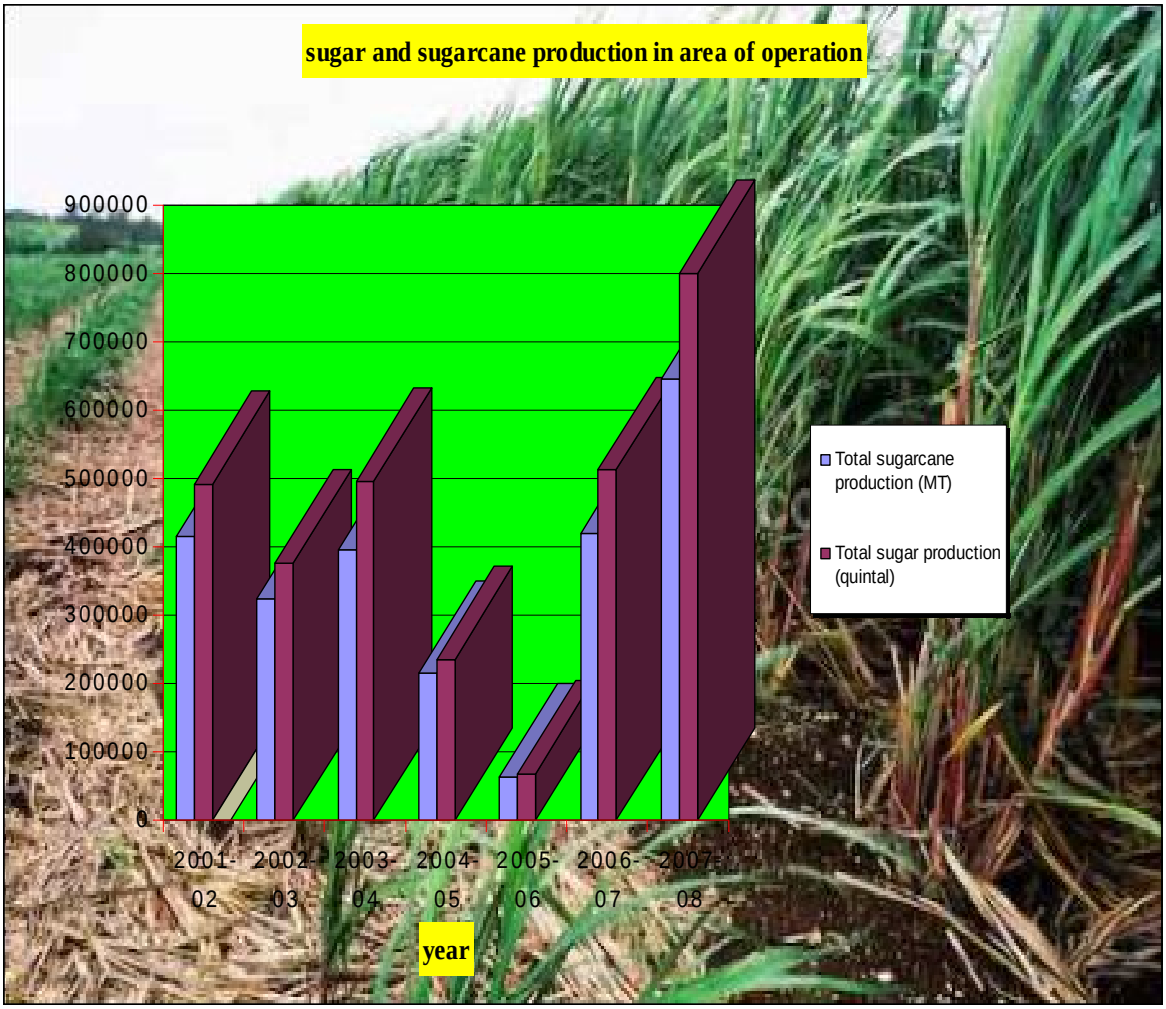

Fig 4: Total sugarcane and sugar production

It was observed that Area under planted cane was showing increasing and decreasing trend. In year 2001-02 it was 5580.47 ha. after that it shows slightly increasing in next two years respectively. but in next two years 2004-05 and 2005-06 it was seen decreasing in area which is 3863.40 ha and 1470.65 ha. respectively. after that it was seen that increasing trend from year 2005-06 to 2007-08. In respect of average yield of planted cane in 2007-08 is the highest i. e. 75.99 mt/ha while the lowest is in 2005-06 i. e. 43.83 mt/ha. While in other years average yield shows more than 50 mt/ha.

In respect of sugar production the highest total sugar production was in year 2007-08 which is 800911 quintal. While lowest is in year 2005-06 which is 69003 quintal. The recovery percentage is shown more than 10 percent from year 2001-02 to 2007-08. In year 2003-04 shows the highest recovery shows 12.53 percent and in year 2005-06 shows lowest recovery which is 10.65 percent.

5.1.3 Supply of Sugarcane:

The sugarcane was received from villages both within and outside jurisdiction of the factory. The quantity received within and outside jurisdiction during the period 2001-02 to 2007-08 is given in the Table 5.2

It was observed from table that factory received sugarcane within jurisdiction during initial year 2001-02 was 10.06 percent while outside jurisdiction it was 89.94 percent that means it shows the high effort by the factory management.

Table 5.2 Sugarcane received within and outside jurisdiction (MT.)

Years	Sugarcane received		Total sugarcane received
	Within Jurisdiction	Outside Jurisdiction	
2001 -02	41826 (10.06)	374185 (89.94)	416011 (100)
2002-03	95607 (29.38)	229851 (70.62)	325458 (100)
2003-04	117130 (29.63)	278283 (70.37)	395413 (100)
2004-05	72427 (33.60)	143176 (66.40)	215603 (100)
2005-06	22819 (35.40)	41638 (64.60)	64457 (100)
2006-07	100556 (23.90)	320221 (76.10)	420777 (100)
2007-08	173897 (26.95)	471363 (73.05)	645260 (100)

(Figures in parentheses indicates percentages to the total sugarcane received)

After that there was increased in sugarcane received within jurisdiction from year 2002-03 to 2005-06. But sugarcane received outside jurisdiction shows that it was decreasing but still it was not less than 60 percent.

Many studies revealed that there is insufficient availability of the sugarcane to the sugar factory. Thus, Sampath committee, Shri. Rao, Shri. S. M. Patil and many others recommended that the proper area and cane management should be done for smooth functioning of the sugar factory. It could be interiorly to see whether the sugar factory under the study has suffered with these problems

and showed increase in the area under sugarcane and thus cane crushed.

5.1.4 Crushing efficiency of the factory:

The study of crushing efficiency gives better understanding of the administrative and technological background of the factory. The crushing efficiency was worked out with an expected 160 days in a year and presented in Table 5.3

Table 5.3 Crushing efficiency of the factory

Year	Expected crushing days in a season	Actual crushing days in a season	Crushing efficiency (%)
2001 -02	160	170	106.25
2002-03	160	121	75.62
2003-04	160	133	83.12
2004-05	160	89	55.62
2005-06	160	53	33.12
2006-07	160	122	76.25
2007-08	160	193	120.62

The efficiency of the sugar factory was calculated with expecting 160 days of working in a season. It was observed that the highest actual crushing days were 193 in a year2007-08. also highest efficiency was 120.62 percent.

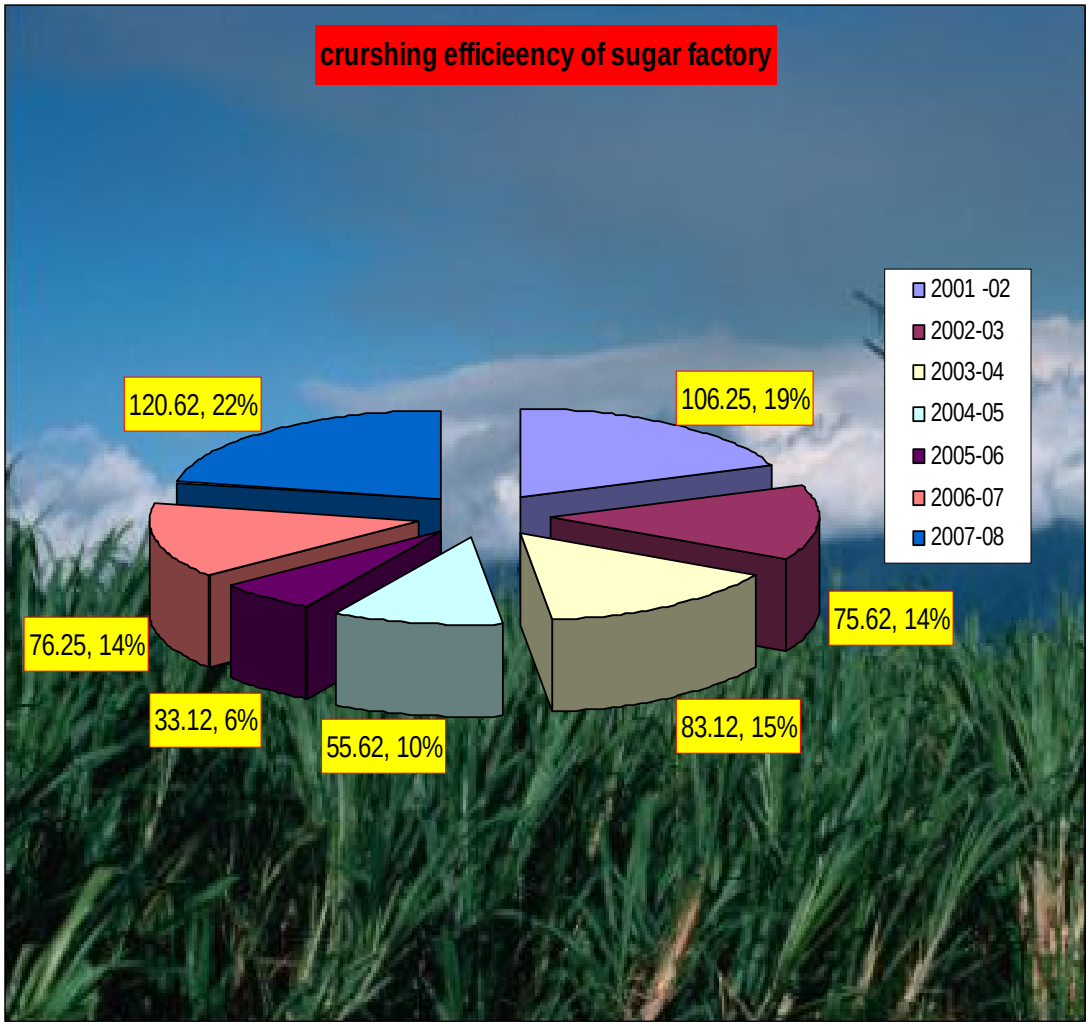

Fig 5: Crushing efficiency of sugar factory

It could be revealed that the factory has used the installed capacity efficiently. Thus, the calculated efficiency was 75 to 100 percent except in year 2005-06 in which crushing efficiency was 33.12 per cent which is less than 50 percent.

5.1.5 Capacity utilization of the sugar factory:

The information regarding year wise capacity utilization is given in Table 5.4

It was observed that the sanctioned capacity of factory was 2500 TCD and factory installed capacity was also 2500 TCD. The results showed that highest capacity utilization was in year 2006-07 i.e. 137.95 percent. During the years 2002-03, 2003-04 and 2007-08 it was 107.58, 118.92 and 133.73 percent respectively. The lowest crushing efficiency was observed during the year 2005-06 it was 48.64 percent.

The actual crushing days was the lowest in year 2005-06 it was 53 days only because of the unavailability of the sugarcane while the highest actual crushing days in year 2007-08 it was 193 days.

The highest cane crushed per day was in year 2006-07 it was 3448.99 MT. while the lowest cane crushed per day was in year 2005-06 it was 1216.16 MT.

It was observed that sugar recovery percentage of the factory was more than 10 percent. The highest recovery percentage in year 2003-04 it was 12.53 percent.

From the above results it was revealed that there was proper utilization of the factory. It was most of the time shows more than 100 percent.

Table 5.4 Capacity utilization of the sugar factory

Sr. No	Particulars	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	Sanctioned capacity (TCD)	2500	2500	2500	2500	2500	2500	2500
2	Installed capacity (TCD)	2500	2500	2500	2500	2500	2500	2500
3	Actual Crushing days	170	121	133	89	53	122	193
4	Cane crushed (M.T.)	416011	325458	395413	215603	64457	420777	645260
5	Cane crushed Per day (M.T)	2447.12	2689.73	2973.03	2422.50	1216.16	3448.99	3343.31
6	Crushing efficiency (%)	106.25	75.62	83.12	55.62	33.12	76.25	120.62
7	Utilization of Installed capacity (%)	98.24	107.58	118.92	96.90	48.64	137.95	133.73
8	Sugarcane recovery (%)	11.84	11.58	12.53	10.87	10.65	12.17	12.40

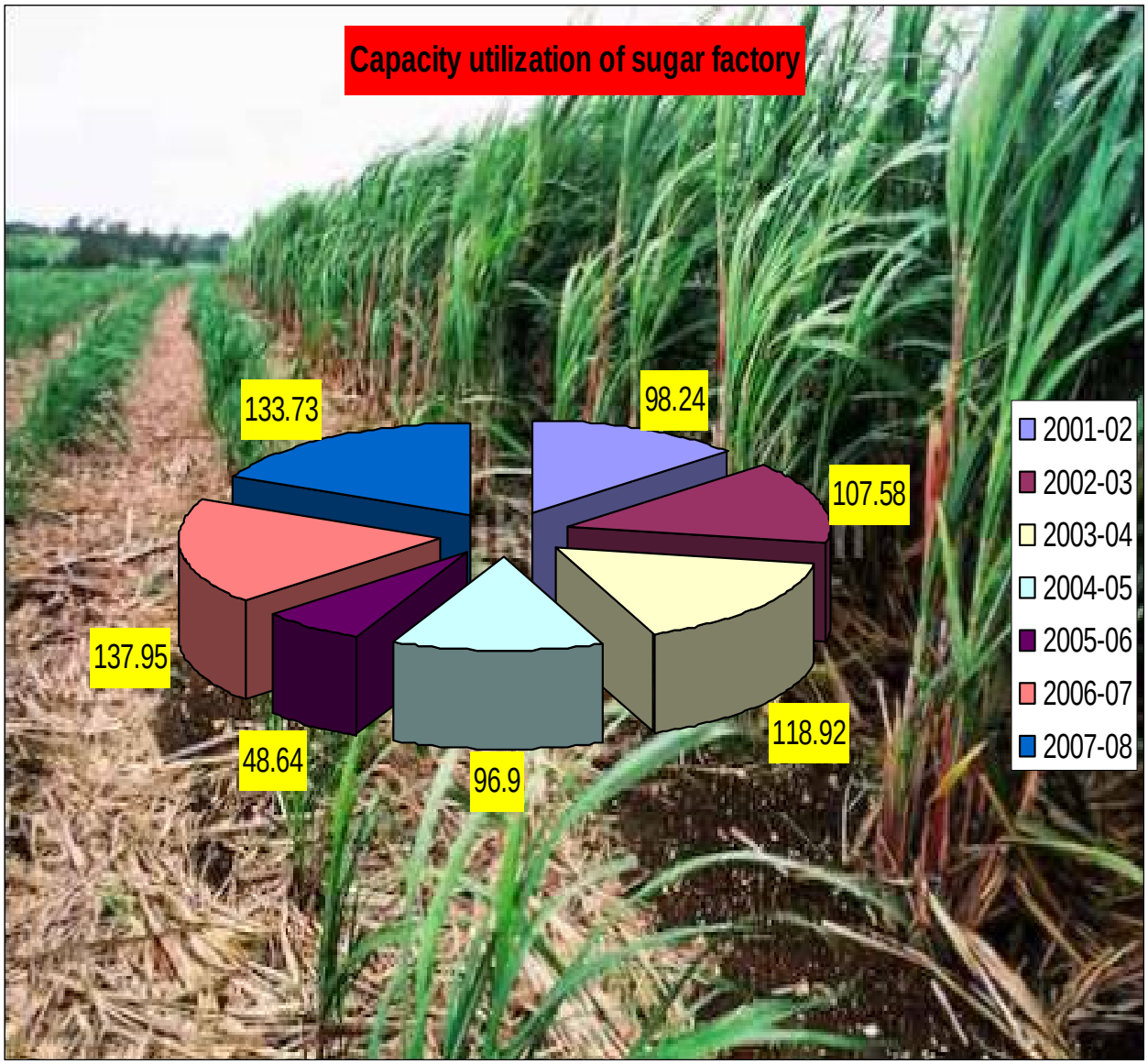

Fig 6: Capacity utilization of sugar industry.

The inefficient utilization of the installed capacity leads to diseconomies of scale and affect the returns (Kawade, 1977; Waghmare, 1993). On the other hand, utilization of installed capacity which leads to low cost of production of sugar and better prices for sugarcane to the members. Thus, according to this, the sugar factory should utilize the full capacity of the factory and which can be done by promoting the farmers to grow more cane, putting restrictions on cane sold to other factories and by purchasing cane from outside the jurisdiction. From previous experience it can be concluded that the sugar factory had utilized its crushing capacity very efficiently.

5.2 Financial status of sugar factory and statement showing its expenditure and returns:

5.2.1 Capital formation:

The own capital of the co-operative sugar factory is to be collected in the form of share capital from members. Depending upon the size of the sugar factory and the project cost estimates the share capital requirements to be collected from the members differ. The estimated cost of the project of the units licensed during 1994 was 2500 TCD. It is estimated that the project cost of 2500 TCD sugar factory will be around Rs. 5000 lakh. The increase in the cost is mainly due to rise in the prices of the plant and machinery. Thus, the initial capital required to be collected from the members with the estimates of the project cost. The details of share capital during the period are discussed in subsequent paragraphs.

5.2.1.1 Growth in the number of share holders:

The ultimate source of capital to any co-operative sugar factory is the share of each member and to fill up the growing needs of the factory there should be increase in share of each member and number of share holders. Thus, the growth in the share holders is given in the Table- 5.5

Table 5.5 Number of Shareholders

Years	Producing member	Co-operative society	Government member	Total members
2001 -02	7461 (99.75)	18 (0.24)	1 (0.01)	7480 (100)
2002-03	11830 (99.83)	18 (0.15)	1 (0.02)	11849 (100)
2003-04	11832 (99.83)	18 (0.15)	1 (0.02)	11851 (100)
2004-05	12134 (99.84)	18 (0.14)	1 (0.02)	12153 (100)
2005-06	12461 (99.79)	24 (0.19)	1 (0.02)	12486 (100)
2006-07	12501 (99.36)	79 (0.62)	1 (0.02)	12581 (100)
2007-08	12519 (99.27)	90 (0.71)	1 (0.02)	12610 (100)

(Figures in parentheses indicates percentages to the total)

It is revealed that from the data presented in the table that the proportion of shareholder remained around 99% during period of 2001-02 to 2007-08. Co-operative society members are

showing increasing the rate of members which is 24 in year 2005-06 to 90 in year 2007-08 and Government nominated only one member.

5.2.1.2 Total share capital of the sugar factory:

The details about the availability of funds of the factory are presented in Table-5.6

i. Authorized share capital:

It's maximum limit upto which the co-operative sugar factory is authorized to collect the share capital from the members by laws.

The data presented in the Table 5.6 indicate that authorized share capital for the sugar factory in 2001-02 and 2002-03 was Rs. 1800 lakh and in 2003-04 to 2005-06 it was 3000 lakh and in year 2006-07 and 2007-08 it was 3750 lakh. Thus, the increase in the authorized share capital was due to increase in the crushing capacity of the sugar factory.

ii. Total paid-up share capital:

The paid-up share capital is the actual amount which was contributed by each member to the capital of the sugar factory.

The data presented in the Table 5.6 indicates that total paid-up capital of the factory increased over a period of time. It was observed that in 2001-02 total paid-up share capital was 926.95 lakh which was in 2008 is 2081.20 lakh. The share of

Table 5.6 share capital of the factory

(Rs. in lakh)

Sr. No.	Season	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1.	Authorized share capital	1800.00	1800.00	3000.00	3000.00	3000.00	3750.00	3750.00
2.	Total paid-up share capital	926.95 (100)	1684.40 (100)	1713.60 (100)	1781.80 (100)	2035.60 (100)	2059.30 (100)	2081.20 (100)
	i. Grower member	232.08 (25.02)	258.20 (15.32)	307.85 (17.96)	506.28 (28.41)	525.45 (25.81)	530.75 (25.75)	542.62 (26.06)
	ii. Cooperatives	2.58 (0.31)	2.58 (0.17)	2.60 (0.17)	2.66 (0.16)	3.00 (0.16)	5.77 (0.24)	6.34 (0.32)
	iii. State Government	600 (64.72)	1200 (71.24)	1200 (70.02)	1200 (67.34)	1440 (70.73)	1440 (69.92)	1440 (69.19)
	iv .Share assessment	92.29 (9.95)	223.63 (13.27)	203.20 (11.85)	72.91 (4.09)	67.19 (3.30)	82.78 (4.09)	92.27 (4.43)

(Figures in parentheses indicates percentages to the total paid-up share capital)

the grower member in 2001-02 was 232.08 (25.02) and in 2007-08 was 542.62 (26.06). It was observed that the percentage of paid up share the grower member was not so increased. In respect of the co-operatives shows negligible role because from year 2001-02 to 2007-08 it was not more than one percent. State government shows important role in paid up share because it was seen that state government paid more than 60 percent. while paid up share in respect of share amount gain 5 to 13 percent.

As per the discussion made above it is clear that no special attempt made to increase the share capital of the producing member there should be made by providing some incentives. There is a great scope to increase share of co-operative societies and non-producing members to fill-up the gap between authorized share capital and total paid- up share capital.

5.2.2 Year wise expenditure made on sugar production:

The expenditure made on sugar production depends upon the crushing capacity and yearly availability of raw material i.e. sugarcane. The information on item wise cost of production is presented in Table 5.7

As regards year wise expenditure of production of sugar it was observed that the expenditure on account of sugarcane price was the main item of cost which accounted more than 40 percent of the total cost except year 2005-06 (31.56%). The cost on account of sugarcane harvesting and transportation

Table 5.7 Year wise expenditure made on sugar production

(Rs. in lakh)

Sr. No	Expenditure on sugar production	2001-02		2002-03		2003-04		2004-05	
		Expenditure	Rs/bag	Expenditure	Rs/bag	Expenditure	Rs/bag	Expenditure	Rs/bag
1	Sugarcane purchase price.	2738.01 (53.90)	556.06	3245.30 (43.85)	858.69	3022.06 (44.03)	608.99	1851.77 (42.31)	786.75
2	Sugarcane H & T charges	1267.70 (24.95)	257.45	1528.81 (20.68)	404.51	1042.26 (15.20)	210.03	522.79 (11.95)	222.11
3	Manufacturing and related expenses	554.10 (10.90)	112.53	434.38 (5.88)	114.93	468.48 (6.83)	94.40	432.70 (9.90)	183.83
	Variable cost	4559.81 (89.76)	926.04	5208.49 (70.41)	1378.13	4532.80 (66.06)	913.42	2807.26 (64.16)	1192.69
4	Excise duty expenses	118.35 (2.35)	24.03	499.44 (6.74)	132.14	209.65 (3.05)	42.24	239.22 (5.46)	101.63
5	Salaries and wages expenses	45.87 (0.90)	9.31	169.79 (2.30)	44.92	178.48 (2.60)	35.96	164.77 (3.76)	70.00
6	Interest on term loan	226.78 (4.46)	46.05	779.16 (10.52)	206.16	1110.10 (16.17)	22.37	799.89 (18.29)	339.84
7	Administrative expenses	39.65 (0.78)	8.05	154.15 (2.08)	40.78	146.39 (2.13)	29.49	160.51 (3.66)	68.19
8	Other expenses	-	-	479.34 (3.35)	126.82	247.99 (3.61)	49.97	-	-
9	Depreciation	89.43 (1.76)	18.16	109.47 (1.49)	28.96	437.16 (6.38)	88.09	204.25 (4.66)	86.77
	Fixed cost	520.08 (10.46)	105.06	2191.35 (29.59)	579.78	2329.77 (33.94)	268.15	1568.64 (35.84)	666.47
	Total cost	**5079.89 (100)**	**1031.64**	**7399.84 (100)**	**1957.91**	**6862.57 (100)**	**1181.57**	**4375.90 (100)**	**1859.16**

(Figures in parentheses indicates percentages to the total expenditure)

Table 5.7 Continued

(Rs. in lakh)

Sr. No.	Expenditure on sugar production	2005-06		2006-07		2007-08	
		Expenditure	Rs/bag	Expenditure	Rs/bag	Expenditure	Rs/bag
1	Sugarcane purchase price.	679.12 (31.56)	984.18	5156.32 (54.40)	1005.30	4967.96 (55.01)	620.29
2	Sugarcane H & T charges	251.90 (11.70)	365.05	1327.33 (14.00)	258.78	1440.79 (15.96)	179.89
3	Manufacturing and related expenses	109.69 (5.10)	158.96	503.71 (5.31)	98.20	659.19 (7.30)	82.30
	Variable cost	1040.71 (48.36)	1508.19	6987.36 (73.71)	1362.28	7067.94 (78.27)	882.48
4	Excise duty expenses	79.31 (3.70)	114.93	-	-	-	-
5	Salaries and wages expenses	142.43 (6.61)	206.41	205.57 (2.18)	40.07	249.19 (2.75)	31.11
6	Interest on term loan	710.76 (33.03)	1030.04	650.02 (6.85)	126.73	717.18 (7.95)	89.54
7	Administrative expenses	82.52 (3.84)	119.58	67.10 (0.70)	13.08	101.35 (1.12)	12.66
8	Other expenses	96.00 (4.46)	13.91	1011.34 (10.68)	197.17	522.29 (5.80)	65.22
9	Depreciation	-	-	557.26 (5.88)	108.64	371.80 (4.11)	46.42
	Fixed cost	1110.99 (51.64)	1484.91	2491.29 (26.29)	485.73	1961.81 (21.73)	244.95
	Total cost	**2151.70 (100)**	**2993.10**	**9478.65 (100)**	**1848.01**	**9029.75 (100)**	**1127.43**

(Figures in parentheses indicates percentages to the total expenditure)

charges was in the range between 11 to 25 percent. Another important item of cost of production of sugar was manufacturing and related cost, which was ranged between 5 to 11 percent. Excise duty expenses were ranged between 2 to 7 percent.

Another important expenditure was made on salaries and wages was ranged between 0.90 to 6.6 percent. It showed that over the period, expenditure on this item was not high which a good sign. The interest paid on term loan also contributed a great share in the expenditure and was ranged between 4 to 34 percent. This shows too much fluctuation. The depreciation of the machinery and other material was calculated which was remained around 1 to 6 percent. Others expenditure were ranged between 1.86 to 10.66 percent.

Through the overall discussion, it could revealed that in sugar factory, an attempt should be made to reduce the per ton cost of processing by reducing the cost on sugarcane supply and related expenses, interest on term loan, salaries and overheads by following proper investment policies and efficient management. According to the committee on Rehabilitation and modernization of sugar factories in India, the reduction in the cost of sugarcane and ultimately reduce the cost of production. Also Kodag (2003) concluded that there is need to control and reduction in production and processing cost. Administration expenses must be minimizing. He suggested that Sugar co-operative have to do production of

by-products such as alcohol units, power generation, and ethanol production units.

5.2.3 Income statement of the factory:

The data on total income from different sources to the factory are presented in Table 5.8 for any sugar factory; the main source of income is through sale of sugar and the subsidiary income is through byproducts sale and income from other activities viz., sale of co-generation, sale of petrol, diesel, interest on deposits, dividend on share purchase of other industries, etc.

It was observed from table that the total receipt of the factory accounted from sugar sale was ranged between 80.22 (2005-06) to 96.79 (2001-02) percent. The income from sugar sale was the highest in the year 2001-02. while it was recorded as 89.10, 89.30, 92.73, 80.22, 93.35, and 94.10 percent in the year 2002-03, 2003-04, 2004-05, 2005-06, 2006-07 and 2007-08 respectively. Income from the byproduct sale was also contributed little to the total income. It was the highest i.e. Rs. 563.67 lakh in year 2006-07 and ranged between 3.16 (2001-02) to 18.48 (2004-05) percent.

Receipts from other sources i.e. diesel sale, sale of scrap, tender form sale, dividend on investment in the other institutes was also a major source of income. It was the highest i.e. 458.49 lakh in year 2003-04. another years it was ranged between 0.05 to 5.03 percent.

Table 5.8 Income statement of the factory:

(Rs. in lakh)

Sr. No.	Income head	2001-02		2002-03		2003-04		2004-05	
		Income	Rs./bag	Income	Rs./bag	Income	Rs./bag	Income	Rs./bag
1	Sugar sale	4921.00 (96.79)	999.41	6365.80 (89.10)	1684.35	5866.58 (89.30)	1182.20	3380.16 (92.73)	1436.11
2.	Byproduct sale	160.70 (3.16)	32.63	319.80 (4.48)	84.61	372.07 (5.67)	74.97	176.78 (4.85)	75.10
3.	Other heads	2.75 (0.05)	0.55	458.49 (6.42)	121.30	331.30 (5.03)	66.75	88.32 (2.42)	37.51
Total Income		**5084.50 (100)**	**1032.61**	**7144.09 (100)**	**1890.29**	**6569.95 (100)**	**1323.94**	**3645.26 (100)**	**1548.74**

Sr. No.	Income head	2005-06		2006-07		2007-08	
		Income	Rs./bag	Income	Rs./bag	Income	Rs./bag
1	Sugar sale	1384.48 (80.22)	2006.40	8940.50 (93.35)	1743.09	8503.47 (94.10)	1061.72
2.	Byproduct sale	319.02 (18.48)	462.32	563.67 (5.88)	109.89	328.23 (3.63)	40.98
3.	Other heads	22.30 (1.30)	32.31	73.25 (0.77)	14.27	205.81 (2.27)	25.68
Total Income		**1725.80 (100)**	**2501.05**	**9577.42 (100)**	**1867.27**	**9037.51 (100)**	**1128.40**

(Figures in the parentheses indicate to the total income)

The income per bag was found to be increasing. It was Rs. 1032.61, Rs. 1890.29, Rs. 1323.94, Rs. 1548.74, Rs. 2501.05, Rs. 1867.27 and Rs. 1128.40 in the years 2001-02, 2002-03, 2003-04, 2004-05, 2005-06, 2006-07 and 2007-08 respectively. It is suggested to the factory to make an attempt to export the maximum quantity of sugar produced as to get good prices and thus they should target distant market. On the other hand, instead of selling the byproducts such as molasses, bagasse etc.

5.2.4 Net profit or loss of the sugar factory:

From the income expenditure statement, the information about net profit or loss to the factory is shown in Table 5.9

It could be revealed from data presented in table that the sugar factory had obtained net profit amounting to Rs.4.61, Rs.301.38, Rs 98.77 and Rs. 7.76 lakh in the years 2001-02, 2003-04, 2006-07 and 2007-08 respectively. Whereas the loss amounting Rs. 255.75, Rs. 730.64 and Rs. 425.90 lakh in the years 2002-03, 2004-05 and 2005-06 respectively. Thus in the year 2003-04 the factory had obtained the maximum net profit amounting Rs. 301.38 lakh, which was due to the low expenditure and high sale of produce. On the other hand the highest loss amounting to Rs. 730.64 lakh in the year 2004-05 was low recorded.

Table 5.9 Net profit or loss of the sugar factory

Year	Total Income (lakh)	Income per quintal (Rs)	Total Expend-ture (lakh)	Expen-diture per quintal (Rs.)	Profit or loss (lakh)	Profit or loss per quintal (Rs.)
2001-02	5084.50	1032.61	5079.89	1031.64	4.61	0.97
2002-03	7144.09	1890.29	7399.84	1957.91	-255.75	-67.62
2003-04	6569.95	1323.94	6268.57	1181.57	301.38	142.37
2004-05	3645.26	1548.74	4375.90	1859.16	-730.64	-310.42
2005-06	1725.80	2501.05	2151.70	2993.10	-425.90	-492.05
2006-07	9577.42	1867.27	9478.65	1848.01	98.77	19.26
2007-08	9037.51	1128.40	9029.75	1127.43	7.76	0.97

It was also seen that the profit per bag was Rs 0.97, 142.37, 19.26 and 0.97 in the years 2001-02, 2003-04, 2006-07 and 2007-08 respectively. Whereas the loss per bag amounting Rs. 67.62 , Rs. 310.42 and Rs. 492.05 lakh in the years 2002-03, 2004-05 and 2005-06 respectively.

Fig 7: Total receipts and expenses of sugar factory

It was seen that total loss in the year 2004-05 is 730.64 and in respect of per bag it was 310.42 while in the year 2005-06 the total loss is 425.90 and in respect of per bag it was 492.05 such situation is happened because the production in the year 2004-05 was 235369 quintal while the production in the year 2005-06 was only 69003 quintal

5.2.5 Financial results of the sugar factory:

The data on financial results of the sugar mill for the different years are presented in Table 5.10 from which it could be observed that the profit before deducting the depreciation and interest paid on term loans has shown that in first three year (2001-02, 2002-03 and 2003-04) there was increasing tendency after that in the two years (2004-05 and 2005-06) shows decreasing then again it shows increasing in next year and in the last year it was decreasing.

The cash profit was observed to be increasing over the period from the minimum i.e. Rs. -526.39 lakh (2004-05) and maximum i.e. Rs 738 lakh (2003-04) Thus, we can conclude that the sugar factory had need to a good financial growth and maintained its financial status satisfactorily.

Table 5.10 Financial results of the sugar factory

(Rs. in lakh)

Sr. No.	Item	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	Gross income	5084.50	11667.80	6569.95	3645.26	1725.80	9577.42	9037.51
2	Gross expenditure	5079.89	11995.49	6862.57	4375.90	2151.70	9478.65	9029.75
3	Profit before depre-ciation and interest	320.82	632.88	1848.64	273.37	284.86	1306.05	1096.74
4	Interest on term loan	226.78	779.16	1110.10	799.76	710.76	650.02	717.18
5	Depreciation	89.43	109.47	437.16	204.25	NA	557.26	371.80
6	Net profit	4.61	-255.75	301.38	-730.64	-425.90	98.77	7.76
7	Cash profit	94.04	-146.28	738.54	-526.39	-425.9	656.03	379.56

5.3 Inventory management statement and utilization of by-products:

Inventory control is a management aspect which is very important because the maintenance of high stocks of sugar and byproducts inventory leads to blocking of working capital and increase cost due to the burden at high interest on short term loan borrowings. Thus for any factory the inventory of the store product should be optimum for smooth functioning of that organization. With the same intention this topic has been included in the study.

Besides inventory management utilization of byproducts is the most important factor which is also important for any factory to get better returns. Sugar industry produces a large quantity of byproducts viz., bagasse and molasses; while the production of sugar having industrial use. With the proper utilization of these byproducts the sugar factory could get additional income at the same level of expenditure.

5.3.1 Inventory of store product:

The inventory details of the store sugar and byproducts are presented in Table 5.11

It is revealed from table that the sugar factory had maintained almost more than one third of the sugar output as stock in the inventory. For any factory the inventory of the product should not cross the limit of 50 percent. But in this aspect the sugar factory was maintained more than that in year 2001-02 and 2006-07.

Table 5.11 Inventory of store product:

(Rs. in lakh)

Sr. No.	Particulars	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	Value of sugar produced	4831.48	10698.92	11034.14	8762.89	4177.43	10702.26	16489.15
2	Value of sugar in inventory	4506.13	5167.55	5382.72	2792.95	1761.76	7985.67	7565.18
3	Sugar percentage in inventory	93.26	48.30	48.78	31.87	42.17	74.61	45.88
4	Value of the byproducts produced.	160.70	391.80	372.07	176.78	319.02	563.66	328.21
5	Value of the byproducts in inventory	89.50	190.59	155.41	150.36	174.21	315.75	121.47
6	Byproduct percentage in inventory	55.69	48.64	41.76	85.05	54.60	56.01	37.01

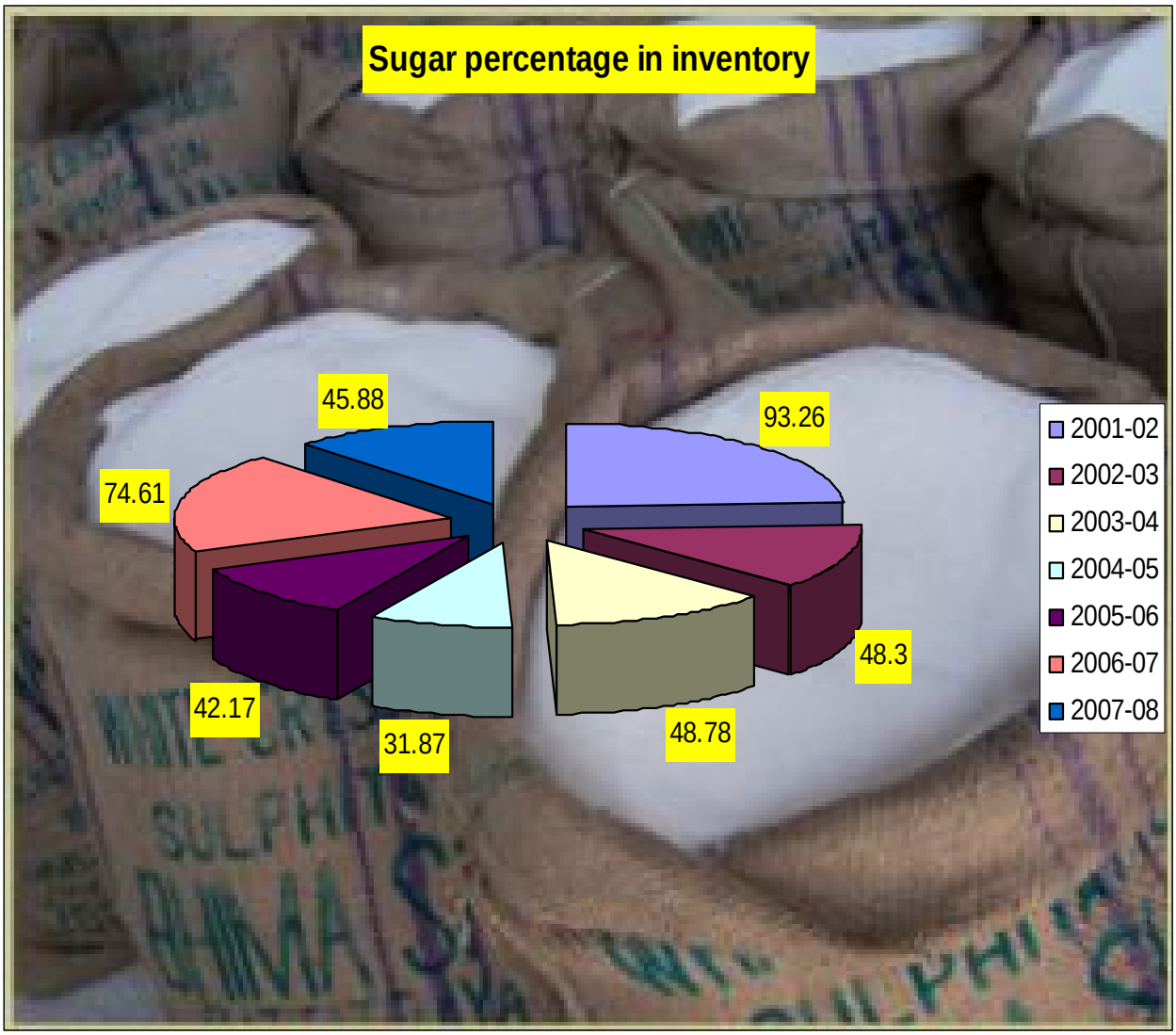

Fig 8: Sugar percentage in inventory.

It could also be revealed that the inventory stock of the byproducts was also high. It was the highest i.e. 85.05 percent (2004-05) and the lowest 37.01 percent (2007-08) while the remaining years seems to be gathered in between 40 to 60 percent of the total value of the byproducts.

Thus, from the above discussions we can conclude that the sugar factory had not taken any action about the inventory control and as the byproduct stock was so high, there is a great scope to process it. Hence, it is suggested that the factory management should take corrective measures in this regard.

5.3.2 The inventory of different store and spares of the sugar factory:

To maintain lower inventory level, inventory management system is being followed in Bhimashankar Sahakari Sakhar karkhana ltd. It was observed that for management purpose store items have been divided in sixteen categories. Each category is further subdivided, accordingly. In case of store, it was seen that there were Receipt section and Issue section. Thus, accordingly, they maintained the records of the store material in inventory.

The details of these different groups of inventory are presented in Table 5.12, from which it could be observed that out of these sixteen groups, the machinery store, electrical store, agricultural and general store were the main contributors to the store material. Out of these stores, it was

Table 5.12 Inventory of different store and spares of the sugar factory: (Rs. in lakh)

Sr.No.	Particulars	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	Machinery stores	39.92	79.96	67.75	79.47	73.52	85.41	100.54
2.	Electrical stores	13.78	14.36	14.11	15.56	13.27	14.95	13.21
3	Vehicle and T.B.C stores	39.79	0.34	1.91	1.49	1.45	1.36	3.38
4	Agriculture and general stores	27.52	29.55	38.11	24.04	26.89	27.29	38.73
5	Pipe and pipe fitting stores	1.11	4.68	4.91	5.44	4.95	9.76	11.96
6	Iron and steel stores	2.08	4.48	6.38	4.95	3.35	5.00	5.52
7	Paint and warmish stores	0.04	0.61	1.35	0.52	0.40	0.52	2.18
8	Oil and fuel stores	8.75	6.55	3.01	3.41	7.98	3.47	5.40
9	Packing material stores	6.19	2.05	0.06	0.49	0.12	2.56	0.24
10	Chemical stores	17.83	9.91	9.04	10.81	9.60	8.08	19.09
11	Transmachine goods stores	6.65	12.16	13.36	11.99	11.06	12.76	15.11
12	Hardware stores	2.36	2.89	2.85	3.11	2.84	3.42	3.35
13	Building stores	-	0.08	1.06	0.41	0.32	0.43	0.45
14	Computer hardware software stores	-	0.84	0.89	99.197	1.01	1.67	2.11
15.	Printing and stationary stores	10.23	-	-	0.02	-	-	-
16.	Fertilizers	-	29.48	-	0.02	-	-	-
	Total	**176.25**	**197.94**	**164.79**	**260.92**	**156.76**	**176.68**	**221.27**

seen that the highest inventory was on machinery stores then followed by agriculture and general stores after that chemical stores and then electrical stores such inventory shows more than 50 percent role while remaining inventory shows the negligible role. Thus it could be suggested to the factory that they should try to maintain the lower level of the store in inventory.

Deshmukh (2007) studied that stores play a vital role in the operation of a manufacturing organization. It is indirect touch with user departments in its day to day activities. The most important purpose served by the stores is to provide uninterrupted service to the manufacturing divisions. Receiving, storing and issuing of the raw materials and components needed for the end-products are the singularly important activities of the stores function in manufacturing organization. The efficiency of the stores function in a manufacturing operation, in turn, largely depends on the efficient functioning of the receiving, storing, issuing and transportation activities of stores function in the organization.

5.3.3 Total expenditure made on store:

The details about the total store used in the production per ton of crushing and per bag of production are presented in Table 5.13

It was observed from table that the total expenditure on stores from Rs.113.73 (2001-02) to Rs. 659.19 lakh (2007-08). It was observed that there was increased in total expenditure

Table 5.13 Total expenditure made on the store

(Rs. in lakh)

Year	Total expendi-ture on store	Total crushing of the season	Rs/MT	Total bagging of the season	Rs/bag
2001-02	113.73	416011	27.33	492388	23.09
2002-03	189.45	325458	58.21	377936	50.12
2003-04	267.56	395413	67.66	496241	53.91
2004-05	328.24	215603	152.24	235369	139.45
2005-06	432.70	64457	671.30	69003	627.07
2006-07	542.39	420777	128.90	512909	105.74
2007-08	659.19	645260	102.15	800911	82.30

year by year. But on the other hand, the expenditure per metric tonne of crushing was highest in year 2005-06 it was Rs.671.30 it was increased because low crushing of sugarcane. While the lowest expenditure per tonne was in year 2001 -02 it was RS. 27.33. The decrease in the expenditure per metric tonne was due to the increase sugarcane crushing of the factory.

It was also observed that the expenditure per bag shows increased trend from year 2001-02 (Rs. 23.09) to 2005-06 (Rs.627.07). then it was shows decreasing in year 2006-07 (Rs. 105.74) and in year 2007-08 (Rs. 82.30). The sugar factory should try to reduce the cost of production of sugar. A huge

amount of capital was invested in the inventory and the store material in the inventory crossed the limit, which directly affects the management of the sugar factory and hence the decision making process in sugar factory. The study carried out by Narasaiah and Jayachandra (1996) suggested that an investment in inventory should have ratio 1: 1, which was not observed in case of the factory. The ratio was always more than the standard one and hence the factory should make an attempt to reduce it. On the same line, Baviskar (1997) and Dhanuka (1977) concluded that the inventory management is important factor in manage a sugar factory and stock of the inventory should be according to the norms.

5.3.4 Byproduct utilization of the factory:

Besides sugar production, sugar factory producing a large quantity of byproducts viz., molasses, bagasse, pressmud, boiler ash, scrap material, etc., which are having many alternative uses. The amount of the byproducts presented in Table 5.14 indicates the importance of the byproducts to any sugar factory. If sugar production of factory increased, it also boost the production of byproducts automatically. Thus, these byproducts help the factory to earn an additional income over the income from the sugar production, which leads to profit maximization. The different steps undertaken by the sugar factory under study for the utilization of byproducts is discussed below:

i. Molasses:

It is produced in huge quantity while sugar production, having a great industrial use. It is used in distillery for manufacturing rectified spirit through fermentation. Beside this, the sugar factory sold all of the molasses produced by calling tender on suitable terms and conditions.

ii. Bagasse:

This byproduct is generally used for the preparation of particle boards or plywood. Sometimes the poor quality bagasse is consumed by the factory itself as a fuel for the boiler system. It was observed that the sugar factory grouped the produced into two grades viz., 'A' and 'B'. Out of which, the 'A' category bagasse was generally sold by calling tenders and 'B' grade was consumed by the factory itself as a fuel material for boilers.

iii. Other byproducts:

The other byproducts viz., pressmud, boiler ash and scrap material was used by the factory as a fertilizer mixture and distributed to the farmers by charging nominal amount. Besides this, pressmud was used as manure, boiler ash as fuel assistance to the brick manufacturer, etc. The factory sold these items either by calling tenders or through open auction.

From the above discussion we can conclude that the sugar factory was not rational about the utilization of byproducts and hence there is great scope for the same. If the

factory undertakes the manufacturing of alcohol from molasses and are uses the sugar factory will be able to get better returns and could pay better prices to the cane of the grower members which in fact make it economically viable unit and keep itself in sound position to serve the rural masses.

5.4 Break even analysis:

It is a point at which the total expenditure is matched with the total revenue from the production activity. Thus, if any factory has to remain in sound position or to earn more net profit it should operate above the break even point. Since the profitability of the sugar factory is largely dependent upon production performance of the sugar factory, the break even analysis was attempted to find out the minimum quantity of sugarcane to be crushed so that factory will not sustain any losses under the existing cost and price structure. Table 5.15 presents the quantities of sugar to be crushed for break even analysis along with the actually quantities of sugar produced and the sugarcane crushed.

From table it could be revealed that sugar factory had not made any attempt to take out the production levels or to reduce the expenditure cost according to the market prices of the sugar. It was observed from the same table that the sugar factory had do not crossed the break even point once during the study period. But most of times it reaches nearly to the break even point. In year 2001-02, where the sugar to be

produced for break even was 5.92 lakh quintals and sugarcane to be crushed for was 5.00 lakh metric tonnes.

Table 5.15 Break-even analysis:

Year	Sugar to be produced for break-even (lakh quintal)	Sugar actually produced by the factory (lakh quintal)	Sugarcane to be crushed for break-even (lakh metric tonnes)	Sugarcane actually crushed (lakh metric tonnes)
2001 -02	5.92	4.92	5.00	4.16
2002-03	4.91	3.78	4.24	3.25
2003-04	5.61	4.96	4.47	3.95
2004-05	4.22	2.35	3.88	2.17
2005-06	1.70	0.69	1.59	0.64
2006-07	6.09	5.13	5.00	4.20
2007-08	9.01	8.01	7.26	6.45

While in 2002-03, the sugar to be produced for break even was 4.91 lakh quintals and sugarcane to be produced for break even was 4.24 lakh metric tonnes. It reaches near to break even point.

In year 2007-08, the sugar factory looks lack behind from break even point. Also rest years are observed that not nearly to break even point. The difference between the quantities for break even and actually produced clearly indicated that the

sugar factory was not cautious about, to match the market prices with that of the expenditure. Hence, it is suggested that to the sugar factory management that they should reduce the cost of production and took out the production levels according to the market conditions.

5.5 SWOT ANALYSIS:

A) STRENGTHS:

- Bhimashankar Sahakari Sakhar Karkhsna Ltd. is located in a traditionally sugarcane growing area, Pune District in Maharashtra is slowly turning out to be a sugar cane bank.
- Sugarcane growing is well established for many years.
- The soils are conducive to sugarcane growing.
- Adequate ground water potential is available in the zone for augmenting sugarcane production to ensure 100% capacity utilization.
- The agro-climatic conditions obtaining in the zone are ideal and conducive for quantitative yield of sugarcane with proper varietals manipulation and agronomical practices.
- The farmers, the workers and the general public are strongly rooting for revival of the plant.
- The plant and machinery is generally in good state of health and has a life of another 18 to 20 years.
- All liabilities cleared by Govt. of Maharashtra
- The sugar industry long term economic contribution to the region has resulted in its positive positioning in the minds of local residents.

- Sugar has a heritage association with the region.
- The sugar industry is accepted as important to the local economy.
- It is deemed important in influencing local quality of life.

B) WEAKNESSES:

- Huge financial losses and erosion of Net worth.
- Non-operation of the plant at viable capacity.
- Attention not having been paid to achieving higher efficiencies.
- Not having educated the farmers in the improved cane growing techniques.
- Not having supported the farmers financially to grow cane leading to achieve higher yields qualitatively and quantitatively.
- Alienating the farmers from sugarcane growing by not paying them cane price in time.
- No rapport built up between the management and sugarcane growing fraternity.
- The reputation of the poor relations the erstwhile managements had with the farmers and the work force in the plant.
- Poor proactive communication channels between the local sugar industry, environmental groups.
- Failure to communicate in a consistent manner with stakeholders.
- Lack of a recognized spokesperson for the industry.

- Lack of positioning.
- Fragmented nature of industry.
- Lack of conflict resolution/negotiation training of officers handling complaints.

C) OPPORTUNITIES:

- Availability of adequate reserves of ground water potential and other irrigation resources in the zone, affords scope for augmenting area and production of sugarcane.
- As no competitive cash crop exists to sugarcane, if the farmers are supported with proper subsidies and incentives, they are willing to produce sugarcane and supply to mills.
- The richness of soil and availability of huge tracts of uncultivated lands affords the possibility of raising sugarcane crops to enable the sugar mill capacity to be increased in future.
- Due to inadequate infrastructure existing in the area, diversification to establish an agro complex producing down the line products can be planned.
- Develop closer ties with the community and stakeholders
- Educate the community about industry issues.

D) THREATS:

- Unless the capacity crushing is established at the earliest, sugarcane diversion to Jaggery manufacture and supplies to near by sugar mills will take enormous proportions.

- Varietal manipulation and ensuring varietal purity are to be urgently addressed for higher quality of sugarcane, without which higher sugar recoveries cannot be achieved.
- Unless the crushing capacity is established and the farmer gets confidence that his produce can be exhausted in a reasonable period of time, it will be difficult to convince the farmer to grow sugarcane.
- Unless the farmer confidence is reinstated by ensuring prompt payment of cane price, it will be difficult to achieve 100% capacity utilization and make the venture economically viable.
- Unless a new work culture is introduced in the plant by making the workers understand the importance of making the plant operate at optimum level, and on this aspect alone their future survival depends, the plant may disintegrate earlier than its life.
- The direct impact of higher overheads will have a bearing on the cost of conversion and hence on the economic viability of the venture.

6. SUMMARY AND CONCLUSIONS

The Indian sugar industry has made tremendous progress with the establishment of a large number of joint stock and co-operative sugar factories in various states, since independence. At present there are 478 sugar factories in India, out of which 55 percent are in co-operative sector. The establishment of a large number of co-operative sugar factories has enabled the country not only to become self-sufficient in sugar but to have potentialities for export.

The co-operative sugar industry occupies a place of pride in the industrial economy of Maharashtra and shines brightly on the horizon of the Indian sugar industry with a contribution of about 46 percent of the country's total sugar production.

At present in Maharashtra 173 running sugar factories in the state responsible for green revolution resulting in social and economical reforms in rural areas. Among these 145 sugar factories are in co-operative while 28 sugar factories are in private sector. In Maharashtra number of sugar industries are in sick condition various factors are responsible for this condition. Considering this fact, the topic entitled "An economic evaluation of performance and management of Bhimashankar Sahakari Sakhar Karkhana Ltd. Pargaon in Pune district" was undertaken for the study with the following specific objectives:

1. To study the organizational structure and management aspects of factory.
2. To study cost and returns structure of sugar production.
3. To study management efficiency of the factory with regards to inventory control and utilization of by products.
4. To study SWOT Analysis.

The study was based on the data obtained from the annual reports of the sugar factory and personal interview of officials of the factory.

6.1 Summary:

1. Sugarcane received to the factory outside jurisdiction was more i.e 89.94 (2001-02) to 73.05 (2007-08) than within jurisdiction i.e. 10.06 (2001-02) to 26.95 (2007-08).
2. The sugar factory had crushed more than 100 percent of the cane from its jurisdiction twice and in other years it was seen to be around 50 to 85 percent. The lowest crushing efficiency is in the year 2005-06 i.e. 33. 12 percent and remaining need was fulfilled from the area of jurisdiction
3. Actual crushing days were highest in the year 2007-08 viz., 193 days with the highest crushing efficiency i.e. 120.62 percent. For the other seasons it was remained more than 100 days except in 2004-05 (89 days) and 2005-06 (53 days)
4. The capacity utilization was highest in the year 2006-07 i.e. 137.95 percent and lowest in the year 2005-06 i.e.

48.64 percent. There was no proper utilization of installed capacity. The higher cane crushed was observed during the year 2007-08 (6.45lakh metric tonne)

5. For cane management sugarcane development scheme was prepared by the factory management for efficient management. Cane department has also collected information on the sugarcane production on the factory zone before each crushing season. Payment procedure was also followed.
6. Manufacturing section is primarily related with the production of sugar with minimum losses to maintain good quality storage activities were also undertaken.
7. For operating plant and machinery at the optimum level and production of better quality, the technical or engineering department was divided into milling, boiler maintenance and plant and machinery maintenance it was seen that expense on machinery and maintenance showed an increasing i.e. from 113.73 lakh (2001-02) to 659.19 lakh (2007-08).
8. Account section is divided into different parts of sales, finance, cane tax, wages and salaries, and other. These departments are concerned with the financial activities of the factory and maintenance of records.
9. Out of total number of share members, cane-producing members were always remained around 99 percent. Co-operative societies and government in remaining 1 percent. Total paid up share was also increased from Rs. 926.25 (2001-02) to Rs. 2081.20 lakh (2007-08). Share of

state government and grower members plays important role in sugarcane industry.

10. The purchasing cost of sugarcane contributes around 50 percent of total manufacturing cost of sugarcane. It was highest i.e. 55.01 percent in 2007-08. The expenditure on sugarcane harvesting and transportation was observed to be around 10- to 25 percent of the total. The expenditure on manufacturing and related expenses ranging from 5 to 10 percent while expenses on excise duty salaries and wages, interest on term loan, administrative expenses and depreciation expenses ranging from 1 to 6 percent.
11. Receipt from sugar sale was the main source of income to the factory, which contributes about 80 to 96 percent of the total income. Income from the by-products contributes about 3 to 6 percent except in the year 2005-06 (i.e. 18.48 percent)
12. Factory had received the highest profit i.e. Rs. 301.38 lakh in 2003-04 while highest loss in the year 2004-05 i.e. Rs. 730.64 lakh.
13. The percent in inventory was highest in year 2001-02 i.e. 93.26 percent while lowest in 2004-05 i.e. 31.87 percent while by-product percent in inventory was highest in year 2006-07 (56.01 percent) and lowest in year 2007-08 (37.01 percent)

6.2 Conclusions:

On the basis of foregoing discussion the following conclusion could be drawn:

1. Sugarcane received to the factory outside jurisdiction was more than within jurisdiction
2. Area under sugarcane was increased from 5580.47 ha (2001-02) to 8491.68 ha (2007-08) as well production was also increased from 416011 MT (2001-02) to 645260 MT (2007-08).
3. The crushing efficiency was highest i.e. 120.62 percent in the year 2007-08 with 193 crushing days in that year. While another year it was around 100 percent
4. Capacity utilization was highest i.e. 137.95 percent in 2006-07. During 2007-08 the cane crushed was highest i.e. 6.45 lakh metric tones
5. Factory has made proposal under development scheme for increasing the production of sugarcane. For better sugarcane management factory has collected information on sugarcane production in the factory zone before each crushing.
6. Machinery repair and maintenance; Manufacturing and allied expenses was increased from 113.73 lakh (2001-02) to 659.19 lakh (2007-08).
7. The standard manpower fixed by government of Maharashtra is 878 for 2500 TCD crushing capacity factory but the factory had maintained 425 workers it was satisfactory but proportion of the agricultural graduates was less.

8. Bhimashankar Sahakari Sakhar Karkhana Ltd. has also maintained more than one third of the sugar output as stock in inventory. Factory has also maintained a large quantity of by-products in inventory. The value of store material in inventory also increased from 176.25 lakh (2001-02) to 221.27 lakh (2007-08).
9. Purchase cost of sugarcane accounts more than 50 percent of the total manufacturing cost of sugar.
10. Marketing of sugar is controlled activity by the central government.
11. Per quintal cost of production of sugar was increased over the period of time and reach to Rs. 2993.10 per quintal in year 2005-06.
12. The sugar factory received 80-96 percent income from sugar sale only
13. Sugar factory received the highest net profit i.e. Rs. 301.38 lakh in 2003-04 and highest net loss i.e Rs. 730.64 in 2004-05

6.3 Policy implications:

The findings of the study lead to the following suggestions

1. As there is difference between the authorize share capital and paid up share capital, it indicates that the sugar factory can increase share capital up to that level which can be use for the development of the industry. They can increase the share capital by promoting co-operative institute or non-producing members.

2. Efforts should be made to motivate the farmers within jurisdiction. Make arrangement for the distribution of drip irrigation system from the least cost to the producing member, which reduces the excess use of water.
3. The factory should develop nursery at a factory site so that a seed of high yielding variety will be made available at appropriate time and require quantity
4. Other inputs like fertilizers be provided at the reasonable price, appropriate time and adequate quantity
5. Financial subsidies should be made available by proper financing institute
6. Suitable transportation channel should made available in a proper time
7. Well qualified and recommended number of staff should be used for factory management
8. It is a kind suggestion to the factory that the by-product such as ethyl alcohol should be use in a rational way.
9. Soil testing facility should be provided control at the factory site at a cheap rate for optimum land resource utilization.
10. If possible, harvesting programme should base on brix reading instead of date of planting and prices should pay according to the brix reading only.
11. The different schemes proposed by government should be implemented directly on the farmer's field without any personal interest.

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APPENDIX

Questionnaire

Name of student : Mengade Narendra Kisanrao

Reg. No. : 07/225

Name of the Topic : "Performance analysis and management of Bhimashankar co-operative sugar industry Ltd. in Pune district".

1 Name of the Factory:

2 Registered office:

3 Registration number:

4 Industrial license number:

5 Board of directors:

6 Top Management:

7 Location:

8 Board of management:

9 Capital structure:

10 Area of operation:

11 Annual general meeting:

12 Special general meeting:

13 Plant and its capacity:

14 Salient features of the factory:

Table 1: Area under sugarcane in area of operation

Year	Area under planted cane (ha)	Average yield of planted cane (mt/ha)	Area under ratoon (ha)	Average yield of ratoon (mt/ha)	Total Area (ha.)	Average yield (mt/ha)
2001 - 02						
2002-03						
2003-04						
2004-05						
2005-06						
2006-07						
2007-08						

Table 2: Sugarcane received within and outside jurisdiction (M.T.)

Years	Sugarcane received		Total sugarcane received
	Within Jurisdiction	Outside Jurisdiction	
2001 -02			
2002-03			
2003-04			
2004-05			
2005-06			
2006-07			
2007-08			

Table 3: Sugarcane received from shareholders and non-shareholders within jurisdiction (MT):

Year	Sugarcane received		Sugarcane received within jurisdiction
	From shareholders	From non-shareholders	
2001 -02			
2002-03			
2003-04			
2004-05			
2005-06			
2006-07			
2007-08			

Table 4: Crushing efficiency of the factory

Year	Expected crushing days in a season	Actual crushing days in a season	Crushing efficiency (%)
2001 -02			
2002-03			
2003-04			
2004-05			
2005-06			
2006-07			
2007-08			

Table 5: Capacity utilization of the sugar factory

Sr. No	Particulars	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	Sanctioned capacity (TCD)							
2	Installed capacity (TCD)							
3	Actual Crushing Days							
4	Cane crushed (M.T.)							
5	Cane crushed Per day (M.T)							
6	Utilization of Installed capacity (%)							
7	Sugarcane recovery (%)							

Table 6: Growth in the area under promising varieties in the area of operation of the factory

Variety	Percentage of total area					
	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Co-86032						
Co.C-671						
Co.M-434						
Co.M-9805						
Co.M-265						

Table 7 Yearwise expenditure on machinery repair and maintenance and manufacturing allied expenses.

Year	Machinery repair and maintenance	Manufacturing and allied expenses	Total
2001 -02			
2002-03			
2003-04			
2004-05			
2005-06			
2006-07			
2007-08			

Table 8: Total number of shareholders

Years	Producing member	Co-operative society member	Government Member	Total members
2001 -02				
2002-03				
2003-04				
2004-05				
2005-06				
2006-07				
2007-08				

Table 9: Total share capital of the factory (in lakh)

Sr. No.	Season	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1.	Authorized share capital							
2.	Total paid-up share capital							
	i. Grower member							
	ii. Co-operatives							
	iii. State Govt.							
	iv. Share amount							

Table 10: Actual expenditure made on sugar production

Sr. no.	No. of bags	2001-02		2002-03		2003-04	
		Expenditure	Rs/bag	Expenditure	Rs/bag	Expenditure	Rs/bag
1	Sugarcane H&T charges						
2	Sugarcane Purchase Price						
3	Manufacturing and related expenses						
4	Excise duty expenses						
5	Salaries and wages expenses						
6	Depreciation						
7	Administrative expenses						
8	Other expenses						
	Total expenditure						

Table 10 continued

Sr. no.	No. of bags	2004-05		2005-06		2006-07		2007-08	
		Expend -ture	Rs/bag	Expendi -ture	Rs/bag	Expendi -ture	Rs/bag	Expendi -ture	Rs/bag
1	Sugarcane H&T charges								
2	Sugarcane Purchase Price								
3	Manufacturi ng and related expenses								
4	Excise duty expenses								
5	Salaries and wages expenses								
6	Depreciation								
7	Administrati ve expenses								
8	Other expenses								
	Total expenditure								

Table 11: Income statement of the factory

Sr. No.	Income head	2001-02		2002-03		2003-04	
		Income	Rs./ Bag	Income	Rs./ bag	Income	Rs./ bag
1	Sugar sale						
2.	Byproduct						
3.	Other heads						
Total Income							

Sr. No.	Income head	2005-06		2006-07		2007-08	
		Income	Rs./ Bag	Income	Rs./ bag	Income	Rs./ Bag
1	Sugar sale						
2.	Byproduct						
3.	Other heads						
Total Income							

Table 12: Net profit or loss of the sugar factory

(Rs. in lakh)

Year	Total Income	Income per bag (Rs.)	Total Expenditure	Expenditure per bag (Rs.)	Profit or loss	Profit or Loss per bag (Rs.
2001-02						
2002-03						
2003-04						
2004-05						
2005-06						
2006-07						
2007-08						

Table 13 Financial results of the sugar factory

Sr. No.	Item	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	Gross income							
2	Gross expenditure							
3	Profit before depreciation and interest							
4	Interest on term loan							
5	depreciation							
6	Net profit							
7	Cash profit							

Table 14 Inventory of store product

Sr. No.	Particulars	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	Value of sugar produced								
2	Value of sugar in inventory								
3	Sugar percentage in inventory								
4	Value of the byproducts produced.								
5	Value of the byproducts in inventory								
6	Byproduct percentage in inventory								

Table 15: Inventory of different store and spares of the sugar factory:

Sr. No.	Particulars	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
1	General store							
2	Electrical spare store							
3	Civil/Building store							
4	Oil and lubricant store							
5	Workshop store							
6	Manufacturing store							
7	Vehicle store							
8	Machinery store							
9	Hardware store							
10	Iron and steel store							
11	Fuel store							
12	Laboratory chemical							
13	Refractory material							
14	Pipe and pipe fittings							
15	Paint and warmish store							
16	Agriculture store							
17	Packing store material							
18	Petrol pump substore							
19	Civil substore							
20	Civil tools							
	Total							

Table 16: Total expenditure made on store

Sr. No.	Years	Total expenditure on stores	Total crushing of the season	Rs./MT	Total bagging of the season	Rs./bag
1	2001 -02					
2	2002-03					
3	2003-04					
4	2004-05					
5	2005-06					
6	2006-07					
7	2007-08					

Table 17: Break-even analysis

Year	Sugar to be produced for break-even (lakh quintal)	Sugar actually produced by the factory (lakh quintal)	Sugar to be crushed for break-even (lakh metric tonnes)	Sugar actually crushed (lakh metric tonnes)
2001 -02				
2002-03				
2003-04				
2004-05				
2005-06				
2006-07				
2007-08				

8. VITA

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of
MASTER OF SCIENCE (AGRICULTURE)
in
Agri. Business Management
2009

Title of Thesis	:	**"PERFORMANCE ANALYSIS AND MANAGEMENT OF BHIMASHANKAR CO-OPERATIVE SUGAR FACTORY LTD. IN PUNE DISTRICT".**
Major Field	:	Agri. Business Management

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