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An Assessment of the Current Status and Challenges of Cooperative Sugar Mills in Haryana: A Geographical Study

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Abstract— *Haryana, a north-western state in India, is renowned for its prosperity. Haryana lacks the natural energy resources and economic minerals necessary to establish large-scale industries. Its fertile land is considered best for growing crops. Although the production of sugarcane crops in Haryana is not particularly high, the state still ranks among the leading states in the country in sugar production. The cooperative sugar mill sector in Haryana, India, plays a significant role in the state's agricultural economy. This abstract provides an overview of the current status of cooperative sugar mills in Haryana, highlighting their multifaceted challenges. One of the most important challenges faced by cooperative sugar mills in Haryana is the issue of surplus production capacity. Over the past few years, numerous new mills have been established without a corresponding increase in sugarcane cultivation, leading to underutilization of capacity and financial stress. Surplus capacity has led to increased competition among mills for sugarcane procurement, leading to disputes and unrest among farmers. The secondary data in this article have been collected from various departments and reports published over time.*

Keywords— ***Cooperative, Cultivation, Sugarcane, Sugar Mills, Challenges, Production.***

I. INTRODUCTION

The sugar sector holds a substantial position among India's organised industries. Following cotton textiles, it is the second-largest agro-based industry (Economic Survey, 2020–21). In India, the sugar industry is a vital sector that impacts the rural livelihoods of approximately 50 million farmers who cultivate sugarcane, as well as the 5-lakh people who work directly in sugar mills. The sugar industry has played a significant role in developing social infrastructure, mobilising resources, creating jobs and revenue, and creating employment, particularly in rural regions (Pandey, 2007). This industry, structured as cooperative societies owned and operated by farmers, plays a pivotal role in processing sugarcane into sugar and its by-products.

Moreover, in comparison to other main sugar-producing states in India, such as Uttar Pradesh, Maharashtra, and Karnataka, Haryana's contribution to the nation's sugar production was somewhat small. Typically, Haryana contributed less to India's overall sugar production. The State of Haryana produces less sugar than other states due to a variety of factors, including outdated infrastructure and technology, ineffective administration, haphazard government policies, and a greater reliance on natural resources.

Like in many other parts of India, Haryana's sugar industry also has a long history. It developed as an indispensable component of the state's agrarian industry, utilising the rich soil of Haryana to cultivate sugarcane and process it into sugar and its derivatives. These sugar mills

were frequently built as cooperative societies as part of an endeavour by farmers to maximise the financial benefits of sugarcane. Cooperative Sugar Mills in Haryana were established under the Cooperative Movement, an initiative of the Government of India, which has made a significant contribution to the development of mills in the state and elevated them to a new level.

However, the current article aims to assess the current state of the sugar industry in Haryana, considering its importance for socioeconomic development, particularly in rural India. The article also attempts to identify the major challenges facing Haryana's sugar mills.

II. CONCEPTUAL AND THEORETICAL FRAMEWORK

The conceptual and theoretical framework of this study is based on the understanding of cooperative agro-based industries as socio-economic institutions that integrate agricultural production with industrial processing through collective ownership and democratic management. In the Indian context, cooperatives have been promoted as instruments of rural development, farmer empowerment, and inclusive growth, particularly in regions dominated by small and marginal farmers (Birchall, 2004; Government of India, 2012). Cooperative sugar mills, therefore, are analysed not merely as industrial units but as development-oriented organisations influencing agricultural stability and regional economic structures.

i. Concept of Cooperative Agro-Based Industries

Cooperative agro-based industries are enterprises that process agricultural raw materials and are owned and managed by primary producers, primarily farmers, in accordance with the principles of cooperatives. Their fundamental objective is to maximise member welfare rather than profit, distinguishing them from private-sector agro-industries (Krishnaswami, 2001). In India, cooperative sugar mills represent one of the most prominent forms of agro-based cooperatives, linking sugarcane cultivation with industrial sugar production.

Conceptually, cooperative sugar mills operate through vertical integration, where farmers supply sugarcane and simultaneously act as stakeholders in the industrial process. This integration ensures assured procurement, reduces market uncertainties, and provides farmers with a degree of price stability (Baviskar, 1987). Such cooperatives also facilitate value addition at the local level, helping to retain economic surplus within rural regions instead of transferring it to urban-based industrial centres.

However, theoretical literature also highlights limitations of the cooperative agro-industrial model. Issues such as weak financial management, political interference, delayed payments, and technological stagnation can undermine operational efficiency (Shah & Gandhi, 2015). In states like Haryana, where cooperative sugar mills coexist with private mills, these challenges raise questions about the sustainability and competitiveness of the cooperative model under liberalised market conditions.

ii. Role of Cooperatives in Rural and Regional Development

From a regional development perspective, cooperatives are viewed as mechanisms for decentralised industrialisation and balanced spatial development. By establishing agro-based industries near raw material sources, cooperatives promote rural employment generation, stimulate ancillary economic activities, and strengthen local economies (Todaro & Smith, 2015). Cooperative sugar mills contribute to rural livelihoods by providing direct employment in processing units and indirect employment through farming, transportation, and input supply chains.

In agrarian states such as Haryana, cooperative sugar mills play a stabilising role in the rural economy by ensuring the timely procurement of sugarcane and supporting farm incomes. They encourage the adoption of improved agricultural practices through institutional support, extension services, and access to credit (Government of India, 2018). This contributes to enhanced agricultural productivity and reduced income volatility among farmers.

Theoretically, cooperatives align with participatory development and inclusive growth frameworks, as they promote collective decision-making and strengthen social capital at the community level (Sen, 1999). Nevertheless, the extent to which cooperatives contribute to regional development depends on the quality of governance, managerial efficiency, and policy support. Weak institutional capacity and fiscal stress can limit their developmental impact, leading to uneven regional outcomes.

III. OBJECTIVES

i. To assess the current status of Cooperative Sugar Mills of Haryana.
ii. To identify and evaluate the major challenges faced by Cooperative Sugar Mills in the Study area.

IV. DATABASE AND METHODOLOGY

This study is based on secondary data gathered from the National Federation of Cooperative Sugar Factories Ltd., the Cooperative Sugar Federation of Haryana, the Indian Sugar Mills Association, various departments of the Central and State Governments of Haryana, the International Sugar Organisation, and other relevant sources. Many different types of line and bar graphs have been created using Microsoft Excel 2019. The study's findings are analysed, and a reasonable conclusion is drawn about the current status and challenges facing Haryana's Cooperative Sugar Mills.

V. RESULTS AND DISCUSSIONS

i. Sugar Industry: At the National Level: -

After Brazil, India is the second-largest producer of sugar worldwide. According to statistics, the European Union produces the third-largest amount of sugar, at 18 million tons (International Sugar Organisation, 2023). Brazil contributed 35.35 million metric tonnes to global sugar production in 2020–2021, followed by India with 309 Lakh tonnes in 2020-21 (Department of Food and Public Distribution). Early in the 1930s, India had 29 sugar mills with an annual production of 100,000 tons of sugar; however, in 2011–12, there were more than 500 active mills, and a total of 26,200,000 tonnes of sugar were produced (ISMA, 2012).

The sugar sector was included in the Five-Year Plans, which were first introduced in 1951 as part of the Structural Industrial Development Policy. The Essential Commodities Act of 1955 applies to sugar because it is a highly politicised item in India. With the implementation of the Additional Duties of Excise Act by the Nehru government in 1957, it was also added to the list of scheduled commodities, making it such that only the Central Government and not the state governments could impose taxes on them. Additionally, the National Federation of Cooperative Sugar Factories Ltd. (NFCSF) was established on December 2, 1960, to promote the growth and development of cooperative sugar mills. The NFCSF's primary duties include advancing and defending the interests of its members, providing educational and training opportunities for them, encouraging research and development, and sponsoring conferences and seminars to address issues faced by cooperative sugar factories.

When this Federation was founded, only 30 cooperative sugar industries were generating 14.9% of the nation's sugar. The capacity of the current cooperative sugar factories was increased, new cooperative sugar factories were established, and both the output of sugarcane per hectare and the sugar recovery percentage of cane were improved under the supervision of NFCSF. The result of all these efforts was greater sugar production.

As of July 31, 2017, there are 732 sugar mills established in India, 327 of which are under cooperatives, 362 of which are under the private sector, and 43 of which are under the public sector (Department of Food and Public Distribution, 2023). However, there are significantly fewer working sugar mills than the number of installed sugar mills. Table no. 1 shows the area in India used for sugarcane farming, the total number of sugar mills in use, and the amount of sugar produced there.

Table No. 1: Number of Operational Industries and Sugar Production in India

Particulars	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Factories in Operation	526	493	525	532	461	506
Sugar Production	251	202	322	332	274	310
The area under Sugarcane cultivation	5284	4945	5042	5502	4841	5288

Source: ISMA, & Department of Food and Public Distribution, 2023

*Production in Lac Tons

*Area in 000' Ha.

Table No. 1 shows significant volatility in India's overall sugar production since the fiscal year 2015–16. Even the total number of operational sugar mills does not remain constant throughout time. From 526 in the 2015–16 sugar season to 493 in 2016–17, the overall number of sugar factories in operation increased to 525 in 2017–18. In India, there were a total of 532 operating sugar factories for the 2018–19 sugar season; this number dropped to 461 for the next season, 2019–20. Following that, the number of sugar factories increased once again, reaching 506 in the 2020–21 sugar season.

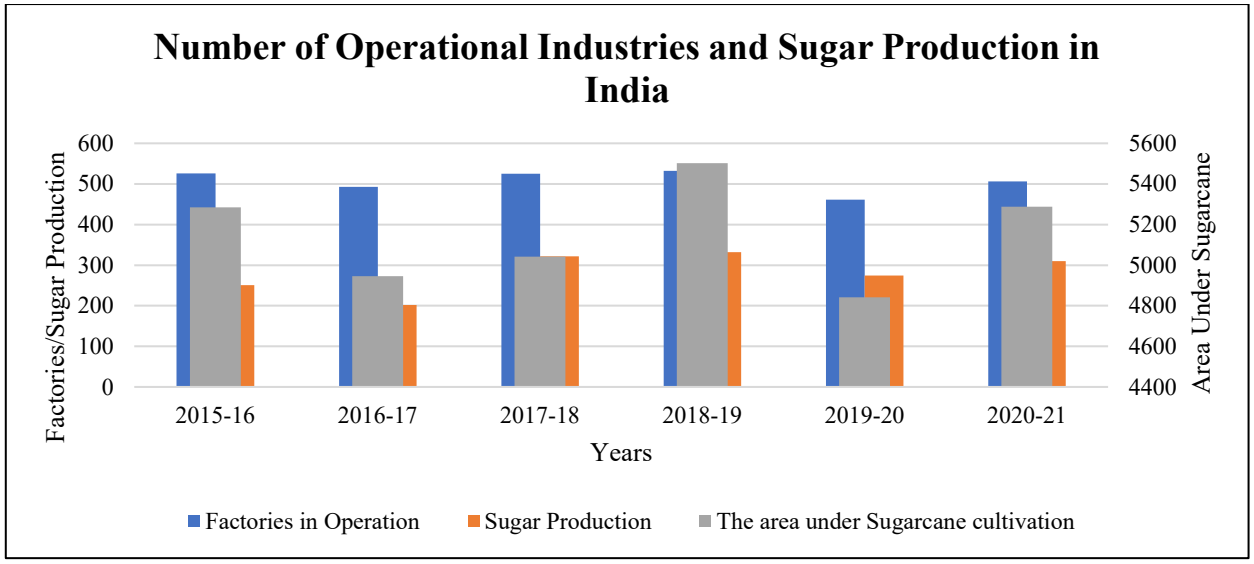

Fig 1: Number of Operational Industries and Sugar Production in India

Source: Table No. 1

In addition, Table No. 1 illustrates that, from 2015–16 to 2016–17, sugar output exhibited a declining trend; however, from 2016–17 to 2018–19, it followed a growing trend. According to the latest data from ISMA, sugar production for the 2020-21 sugar season has been around 310 lakh tonnes, which is significantly higher than the 264 lakh tonnes produced during the previous sugar season, 2019-20, due to an adequate monsoon and technological upgradation. With a sugarcane cultivated area of 5,502 thousand hectares, the maximum production of sugar, 332 lakh tonnes, was attained in 2018–19. Conversely, the year 2016–17 saw the lowest sugar production. In this year, there were 4,945 thousand hectares of area under sugarcane cultivation (ISMA, 2023).

VI. SUGAR INDUSTRY: CURRENT STATUS IN HARYANA

Cooperative and private sugar mills are the two primary types of sugar mills found in the state of Haryana. The cooperative's members run the cooperative sugar mills, while private sugar mills are entirely owned and operated by private proprietors. When it comes to becoming members of cooperative sugar mills, any person growing sugarcane, cooperative agricultural service societies, central cooperative banks, state governments, and other classes of people, organisations, or groups of people, as notified by the government, are eligible to become members of Cooperative Sugar Mills.

A vote of the mill members chooses the directors of cooperative sugar mills. The Haryana State Federation of Cooperative Sugar Mills Ltd. was established in 1966 for the management of Sugar Mills with the objectives of enhancing the performance of existing mills and establishing new Cooperative Mills in the State of Haryana. By providing technical information and other assistance in the selection, acquisition, installation, and maintenance of plants, machinery, and other types of equipment, it facilitates and organises the operation of such mills in the State of Haryana. The total number of sugar mills affiliated with the Sugar Federation is listed in Table 2.

Table 2: List of cooperative sugar mills in Haryana

Sr. No.	Name of Sugar Mill	District	Type of Mills
1.	Panipat Coop. Sugar Mills Ltd.	Panipat	Cooperative
2.	The Haryana Coop. Sugar Mills Ltd.	Rohtak	Cooperative
3.	Karnal Coop. Sugar Mills Ltd.	Karnal	Cooperative
4.	Sonipat Coop. Sugar Mills Ltd.	Sonipat	Cooperative
5.	Shahabad Coop. Sugar Mills Ltd.	Kurukshetra	Cooperative
6.	Jind Coop. Sugar Mills Ltd.	Jind	Cooperative
7.	Palwal Coop. Sugar Mills Ltd.	Palwal	Cooperative

8.	Meham Coop. Sugar Mills Ltd.	Rohtak	Cooperative
9.	Kaithal Coop. Sugar Mills Ltd.	Kaithal	Cooperative
10.	Gohana Coop. Sugar Mills Ltd.	Sonipat	Cooperative

Source: Registrar Cooperative Societies, 2024

Table No. 2 shows that 10 sugar mills fall under the Cooperative Federation, and one mill, located in Karnal, is run by HAFED. Earlier, there were 10 cooperative sugar mills in Haryana, excluding HAFED, but two cooperative sugar mills were closed by the government. One of which was the Bhuna Cooperative Sugar Mill Limited, Bhuna, and the other was the Chaudhary Devi Lal Cooperative Sugar Mill Limited, Sirsa. The two closed cooperative sugar mills had a profoundly negative impact on Haryana's sugar sector; they faced numerous challenges and problems, prompting the government to take a significant step in closing these mills.

VII. ORGANISATIONAL STRUCTURE OF THE COOPERATIVE SUGAR MILLS

A four-tier personnel system controls the production work in every cooperative sugar mill in Haryana. At the first level, there is an HCS or IAS officer who serves as the chairman of the concerned sugar mill, holding the apex position within the mill. At the second level, there is a Managing Director who oversees all employees. Following this, at the third level, are employees who work under the Managing Director, including the Office Superintendent, Labour Welfare Officer, Cane Manager, Chief Engineer, Chief Chemist, and Chief Accounts Officer, among others. At the fourth and final level are class three employees, including Clerks, Head Clerks, Stenographers, and Surveyors, among others. Fig. No. 2 shows the organisational structure of the sugar mills (The Haryana State Federation of Cooperative Sugar Mills Ltd, 2021).

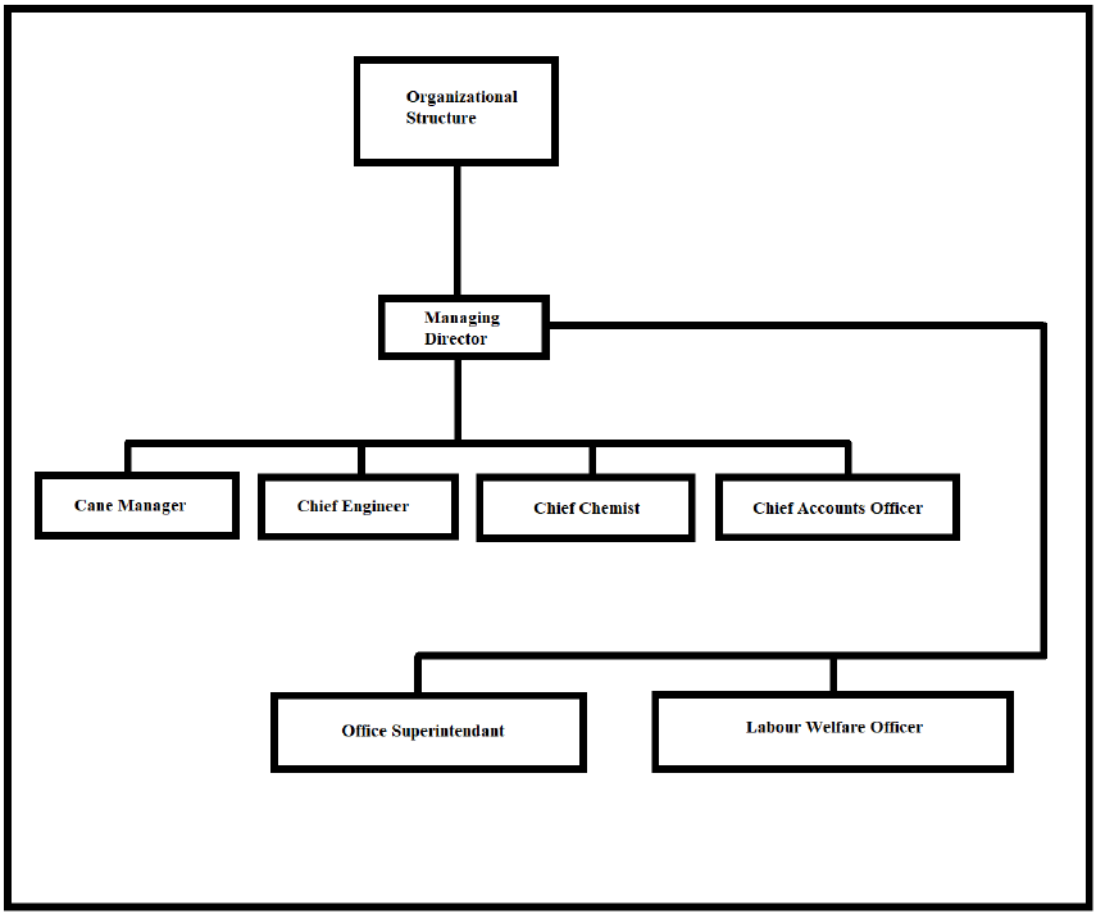

Fig.2: - Organisational Structure of the Sugar Mills

Source: Haryana State Federation of Cooperative Sugar Mills Ltd, 2024

In the cooperative sugar mills of Haryana, there are three different Labour categories: permanent, seasonal, and daily wage. Seasonal workers do not receive their full pay during the off-season, while permanent employees are paid throughout the entire year. The seasonal workers are further categorised into skilled, semi-skilled, and unskilled groups. At the same time, the Daily wagers work on the principle of payment for daily Labour.

However, the cost of producing sugar is already very high for sugar mills in the State of Haryana. The farmers want a price increase for their sugarcane, but the mills are unable to pay even the current rate, making the issue highly complicated and odd at the same time.

In addition to this, Recent years have seen a noticeable increase in the sugar industry's manufacturing of sugar, the area used for sugarcane cultivation, and state-advised prices (SAP) for sugarcane. The aforementioned components of the Haryana sugar industry are shown in Table 3.

Table.3: Components of Sugar Mills in Haryana

Sr. No.	Year	Sugar Production	Area Under Sugarcane
1.	2000-01	4,65,060	143.0
2.	2010-11	5,17,336	84.5
3.	2017-18	8,17,442	114.9
4.	2018-19	7,08,885	108.7
5.	2019-20	5,87,127	96.3

Source: Statistical Abstract of Haryana (2020-21)

*Production in Million Tons

*Area in Thousand Ha.

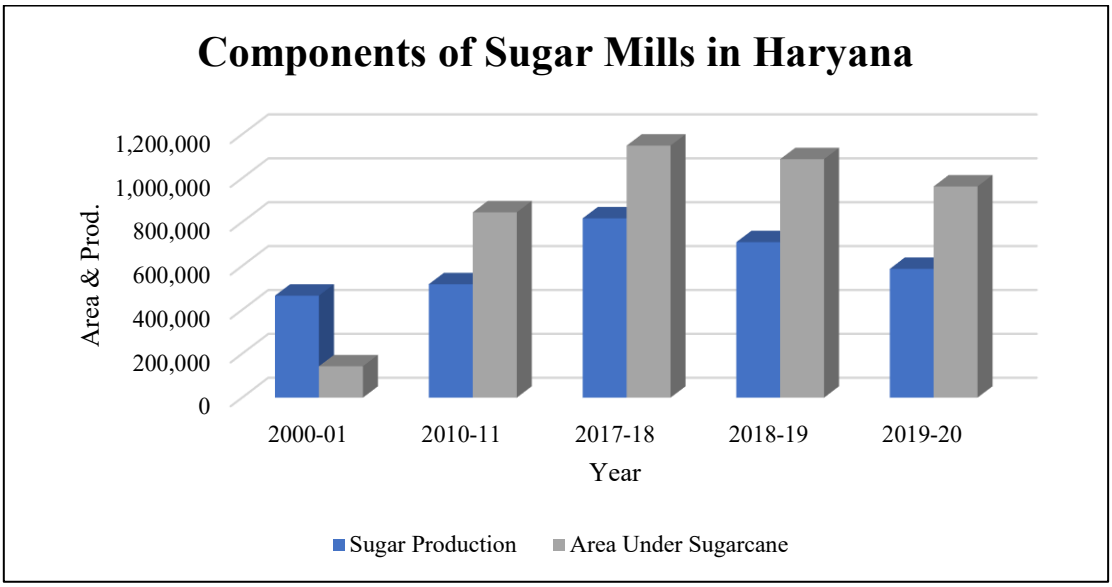

Fig. 3: Components of Sugar Mills in Haryana

Source: Table No. 3

Table 3 illustrates that, in the year 2000-01, sugar production in Haryana was the lowest, at 4,65,060 million tonnes. During this period, the area under sugarcane was the highest, at 143.0 thousand hectares. The reason for this was the lack of technology for sugar production in the state's sugar mills. After the 2000-01 season, there was a slight increase in sugar production in the 2010-11 sugar season; however, the area under sugarcane showed a decline, as farmers shifted to growing other cash crops in place of sugarcane. Moreover, according to Table No. 3, the highest production of sugar was recorded in the sugar season 2017-18, at 8,17,442 million tonnes, and the area under sugarcane in this season was 108.7 million hectares, which was the highest from 2010-11 to 2019-20. Following this, there has been a continuous decline in sugar production, as well as a decrease in areas under sugarcane, in 2018-19 and 2019-20.

According to the current status of sugar mills, it is evident that during the 2019-20 sugar season, there was a slight decrease in sugar production and the area under sugarcane compared to the previous season.

VIII. CURRENT CHALLENGES FACED BY COOPERATIVE SUGAR MILLS IN HARYANA

The Cooperative Sugar Industry of Haryana regularly faces various challenges; some of the major ones are listed below.

i. Challenges of Legislature: -

The functioning of cooperative sugar mills in Haryana is closely shaped by the legislative framework governing cooperative institutions. This framework defines the roles of the state, management, and member farmers, and influences decision-making, accountability, and institutional autonomy. Over time, the evolving legal environment has had a significant bearing on how these mills adapt to economic changes, administrative requirements, and sectoral reforms. The interaction between cooperative principles and statutory provisions has determined the scope for participatory governance and operational flexibility. An examination of legislative aspects is therefore essential to understand the broader institutional context within which cooperative sugar mills in Haryana operate.

a. Mechanism for Monthly Release of Sugar: -

On the one hand, the monthly release system ensures a smooth and continuous supply of sugar throughout the year, but on the other hand, it places a burden on the sugar mills. The Government of India has recently improved this system. Now that the Department of Food and Public Distribution will not control the delivery of sugar, sugar mills will have to decide for themselves when and how much to supply in the open market. Mills will now have to alter their production in response to changes in demand for sugar in the open market.

b. Seasonal Proclamation: -

Seasonality is a feature of the sugar industry. In particular, the State Government declares the beginning of the season for the cooperative mills. Typically, the season begins in October and lasts through March. Additionally, it is sometimes declared late. Dealing with these time-bound modifications presents a difficulty for the mills.

c. State-Advised Prices (SAP): -

Haryana state is the only state in which the state-advised price is the highest compared to all the states. In the year 2020-21, the state-advised price in the state was Rs. 350 per quintal. However, despite having the highest SAP in the entire country, sugar production in Haryana has decreased compared to previous years. The reason for the low production is that farmers are not being paid on time, and as a result, they are switching to cash crops instead of sugarcane.

d. Pressure of Political Parties: -

The political parties, particularly those associated with the cooperative mills, have traditionally held a strong influence over the sugar mills in Haryana. From time to time, various governments have increased the prices of sugarcane in the state without considering the impact on farmers and mills. Not only does it affect the mills, but it has also proven detrimental to farmers due to the increase in SAP Mills, which are burdened, and farmers do not receive fair prices for their crops.

ii. Technical and Infrastructural Challenges: -

The technical and infrastructural dimensions of cooperative sugar mills in Haryana significantly influence their overall performance and efficiency. The level of mechanisation, condition of processing units, and adequacy of supporting infrastructure influence crushing capacity, recovery rates, and operational continuity. Technological adaptation within these mills has evolved unevenly, shaped by investment patterns and access to modern equipment. Similarly, the quality of physical infrastructure, including machinery, storage facilities, power supply, and transportation linkages, affects both production processes and coordination with cane growers. Understanding these aspects provides insight into how technological and infrastructural factors shape the functioning of cooperative sugar mills in Haryana.

a. Electricity: -

The main issue at the sugar mills run by the Haryana cooperative has been electricity. The state government permits cooperative sugar mills to build their power plants with the assistance of private parties. However, these desperately needed plants have not been built in the majority of mills yet. Therefore, obtaining a steady supply of power remains a significant difficulty for sugar mills, particularly for cooperative sugar mills.

b. Lack of Modernisation: -

The sugar industries, particularly the cooperative ones, are experiencing significant difficulties due to a lack of mechanical upgrades. The Haryana Cooperative sugar mills, which are now in operation, need to be reorganised and modernised, according to Dawar (1990). According to Vakaria et al. (1990), cooperative sugar mills could play a significant role in bridging the gap between scientists and farmers by promoting technological development. They should be concerned with more than just sugar production

and financial aspects. Additionally, the technical advice of experts remains largely unimplemented.

c. Labour: -

The sugar industry does not appropriately pay its employees. Compared to other production elements, Labour in the sugar industry did not receive the productivity it was entitled to. Due to its seasonal nature, sugar mills employ three types of workers: permanent, seasonal, and daily wage workers. Benefits provided to regular/permanent employees are not fairly distributed to temporary employees or daily wage earners. This raises serious concerns about the availability of temporary workers during the season of most significant demand and the payment of full compensation to permanent employees during the slow season.

d. multiple stakeholders: -

The manufacturing process of sugar involves numerous individuals. Farmers, mill representatives, mill owners, employees, state and federal governments, customers, and numerous intermediaries are among the various stakeholders. The sugar industry relies on intermediaries to ensure uninterrupted operations; however, these intermediaries exploit the market's sugar shortage by charging for it through the Public Distribution System (PDS) rather than under direct government control (Patel et al., 1986). For all parties involved, this creates a vicious cycle that makes the process of producing and distributing sugar very onerous.

e. High Production Costs: -

The cost of producing sugar is relatively high in the State of Haryana. Electricity prices and outdated technologies are the leading causes of the high prices. The cooperative sugar mills lack their own power generation facilities and are unable to build them with the assistance of private parties.

iii. Natural Challenges: -

The performance of cooperative sugar mills in Haryana is closely linked to natural conditions that influence the availability and quality of sugarcane. Variations in climatic patterns, seasonal cycles, and environmental factors shape agricultural output and determine the stability of raw material supply to mills. The dependence of cane cultivation on natural systems creates a strong connection between farming conditions and industrial operations. Changes in temperature, rainfall, and growing periods affect harvesting schedules and processing efficiency. As a result, the functioning of cooperative sugar mills remains closely aligned with the broader natural environment in which sugarcane cultivation occurs across Haryana.

a. Rainfall: -

The main component in the manufacturing of sugar, sugarcane, depends heavily on rainfall. Although numerous additional agricultural assistance programs are available in Haryana, the state's agriculture still depends on the monsoon. Additionally, the sugar industry has been impacted by the inconsistent rainfall.

b. Sugarcane Production: -

Sugarcane cultivation is crucial for the production of sugar. However, sugarcane production is primarily dependent on rainfall, and the sugarcane crop requires substantial amounts of rainfall. The state receives insufficient rainfall for the sugarcane crop, and its irrigation infrastructure is also inadequate. There are also inadequate facilities, which prevent sufficient irrigation; hence, an inadequate irrigation system is a significant challenge.

c. Raw Material: -

Sugarcane is the primary input (raw material) that Haryana uses to produce sugar. The primary reason alternative inputs are not readily available for sugar manufacturing is that the state's climate makes it difficult to grow other potential raw materials, such as sugar beets. For the Cooperative sugar mills of the state, there is often a shortage of sugarcane available (Kumar et al., 2009).

IX. CONCLUSION

In conclusion, the cooperative sugar mills in Haryana play a vital role in the state's agricultural landscape, offering economic opportunities to farmers and contributing to the growth of the sugar industry. However, they currently face a myriad of challenges that warrant attention and proactive solutions. The fluctuating sugar prices, uncertainties in sugarcane supply, and stringent government regulations continue to pose significant hurdles for the cooperative sugar mills. Financial constraints, competitive pressures, and the need for modernisation exacerbate these challenges. Labour issues, environmental concerns, and climate change impact further add to the complexities of their operations. In navigating these challenges, cooperative sugar mills in Haryana can not only enhance their competitiveness but also ensure fair returns to farmers and contribute to the region's economic development. It is imperative for stakeholders, including the government, cooperative societies, and industry experts, to collaborate closely to find innovative solutions that address the current status and challenges faced by these mills. By doing so, they can help sustain and revitalise this vital sector, ensuring its continued contribution to the state's agricultural and economic prosperity.

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