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THE SUGAR INDUSTRY AND ITS ROLE IN INDIA'S ECONOMY

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ABSTRACT

India is a rapidly growing nation in the world, in terms of industrialization and service sector. In India, there are a lot of large-scale industries exist. I.e. iron and steel industries, cement industries, paper industries, sugar industries, cotton industries, etc. Sugar is one of the most produced and a traded commodity in the world and India is the largest consumer of sugar in the world. The sugar industry is the most important industries in the country that impact the livelihood of about approximately 5 crore formers and their family members and approximately 5 lakh workers directly employed with the sugar mills. There are more than 700 installed sugar factories in the country with a crushing capacity of about 340 lakh metric tonnes of sugar and an annual turnover of about Rs 80,000 crore. These numbers show the important role the sugar industry plays in India's economy. As the population increases the demand for goods and services also increases and most people like tea and coffee, that's why sugar demand also increases. The major objectives of the studies are to know the production process, to know the sugarcane cultivation in different states in India, and to know the sugar production in different states in India. The study is based on secondary data, this paper focused on the role of sugar industries in economic development in India.

KEYWORDS: Sugarcane, sugar industries, production, sugar, economic development.

INTRODUCTION

Sugarcane is grown in close proximity to the sugar plants, which process the crop. Rural locations and tahsil or district centers are common places for these industrial facilities to be established. Because of their central placement in rural regions, these processing plants are seen as ideal catalysts for industrialization and transformation in rural communities. With the help of the government, agro-based sugar plants spread throughout states like Maharashtra. Because of the domino effect they had on one another, these enterprises became the nerve centers of rural expansion as industrialization spread. Improved sugarcane yield, more access to necessary agricultural supplies, and expanded irrigation infrastructure were all priorities for the sugar co-op as they sought to expand their business.

Globally, sugarcane is cultivated across 126 million hectares, yielding a total of roughly 1850 million tonnes. Sugar beets and sugarcane both provide one-fourth of the world's sugar supply. A whopping 177 million metric tonnes of sugar is harvested each year from sugarcane by over 115 different nations. In terms of sugar production, Brazil and India are at the top. The sugar industry in India is vital to the country's economic growth; the majority of the country's sugar producers grow sugarcane, the primary ingredient in sugar. Refined sugar may be made from either sugarcane or beetroot, two distinct basic materials. When it comes to sugar production, India ranks second globally. The sugar sector employs 2.86 lakh people and requires a total investment of Rs. 80,000 crores. Furthermore, 2.50 crore sugarcane farmers also get the rewards of this sector. Nearly 22% of the world's sugar is produced by India. With 4.5 crore formers cultivating sugarcane throughout the nation, it is the second biggest agro-based sector in India, directly and indirectly employing approximately 3.25 lakh people.

As part of their efforts to develop the surrounding area, these cooperatives-built schools, hospitals, and other public services, which prompted the expansion of ancillary units like paper mills and distilleries, which created more jobs and sped up industrialization in the countryside. As a result of sugar co-ops' dedication to community development, other agricultural processing facilities, including fruit processing units, spinning mills, and dairy co-ops, flourished. This type of agro-based industrialization aided agricultural development and the much-needed transformation of rural areas. Eventually, word got out to the farmers, and they, too, reaped the rewards and advanced. Cooperative sugar plants in the Solapur district have transformed into "Growth Centers" for rural development, and this trend is particularly pronounced in western Maharashtra.

Russia, Brazil, and Cuba are the top three global sugar producers, with India following closely after. When it comes to India's structured industries, a company involved in sugar right up there. The country's most important agro-based industries, sugar has helped the country's rural communities by providing much-needed resources, jobs, and revenue as well as social infrastructure. The sugar business has really helped to speed up the industrialization of rural areas. The current sugar production capacity is 180 million metric tonnes per year, and 553 sugar factories have been registered, and a total of 50,000 crores has been invested in them. (ISMA Report, 2004). A whopping Rs. 25,000 crores are the yearly revenue of the sector. Yearly, excise duty and purchase tax together bring in a value of 2,500,000,000,000 rupees., and cess by the federal and state governments. Sugarcane production employs over 4.5 million core farmers and provides direct employment to over 5 lakh rural residents. The sugar industry has changed rural India's socioeconomic landscape by empowering local entrepreneurs to start businesses processing fruits and vegetables, raising poultry, and milking cows. It has also improved access to healthcare, education, and finance.

LITERATURE REVIEW

Kumar, Vijay & Malik, Dharm & Athwal, Sumit. (2024). When it comes to sugarcane farming in India, intercultural enterprises are by far the biggest employer. Cutting accounted for 26.66 percent of the overall labour use in manual harvesting in the research region, followed by detopping at 21.70 percent, bundle manufacturing at 19.65 percent, detrashing at 18.24 percent, and loading at 13.74 percent. The study area's manual harvesting process needed 91.58 man-days per hectare. Overall, the regions of Karnal (96.63 man-days per hectare), Yamuna Nagar (92.38), and Rohtak (85.75) had the greatest documented labour utilization. In Haryana, the average cost of transporting sugarcane by different methods was around ₹24.77 per quintal. However, this cost varied across different locations, with Karnal, Yamuna Nagar, and Rohtak recording ₹24.94, 21.64, and 27.99 prices, respectively. Initiatives such as subsidizing food provisions at sugar mills (65.00 percent coverage), providing incentives for the purchase of agro-chemicals (100.00 percent coverage), and supporting extension services to disseminate production and protection technologies in a timely manner were identified as forms of support and incentives offered by sugar mills to farmers. Improved transportation and logistics between sugar mills and fields may increase farmers' revenue from sugarcane output, while mechanized harvesting technology can significantly cut labour costs and alleviate manpower shortages.

Upreti, Priyanka & Singh, Alka. (2017). The purpose of this research was to determine the factors impacting sugarcane yield in Maharashtra and Uttar Pradesh, the two most important sugar-producing states in India, and examine trends in sugarcane area, yield, productivity, expenses, returns, and profitability. While the extension of cultivable land has undoubtedly boosted sugarcane output, productivity has failed to keep pace. The cost of growing sugarcane also went up, with Maharashtra having a greater cost than Uttar Pradesh owing to the much higher inputs used. Profitability has been on the rise, with a stronger trend in Uttar Pradesh than in Maharashtra, since the value of production has grown faster than the cost of cultivation. Efficient management of these inputs may undoubtedly increase sugarcane output in India, as the research indicated shown that sugarcane output is positively and considerably affected by factors such as human work, machinery, fertilizers, insecticides, and plot size.

Solomon, Sushil & Swapna, M. (2022). India is one of the South Asian countries that play a major role in the international sugar trade. Indian sugarcane and sugar production dates back to the dawn of time, and the country's sector has grown and developed to become a top producer of the sugar substitute on a global scale. A more varied, bio-based, fruitful, long-term, and profitable sugarcane sector is emerging, thanks in large part to the novel technical interventions that have improved sugarcane production, management, and quality. This independent sector has overcome several obstacles, such as those that emerged as a result of the COVID-19 pandemic, by establishing the correct balance of links and cooperation. In addition to helping its stakeholders in the long run, the industry carries out its Corporate Social Responsibilities. Because of this, the sugar business in India is now in line with that have been laid forth in the 2030 Agenda for Sustainable Development.

Sharma, N. & Saxena, Suvigye & Dubey, Sunil & Choudhary, Karan & Sehgal, S. & Ray, Shibendu. (2019). One of India's most valuable exports is sugarcane, a plant family of the genus Saccharum. After Brazil, the majority of the world's sugarcane is grown in India and it also happens to have the most area under cultivation of any country. When it comes to sugarcane production in India, Uttar Pradesh and Maharashtra are at the top. The FASAL project issues two tiers of nationwide and regional estimates of farmland and crop production. In 2018, the FASAL Project called New Delhi home to the Mahalanobis National Crop Forecast Centre conduct this research. In six of India's most important sugarcane-producing states, researchers tracked and analysed acreage, yield, and output estimates at the state and district levels over five years using a variety of methods. We compared the MNCFC sugarcane area yield and output estimates broken down by state and district with the corresponding year's DES data. Root Mean Square Error (RMSE) (in percentage terms) and the correlation coefficient (R) were the two statistical metrics computed. There was a calculated correlation coefficient (R) of 0.94 for area, 0.95 for production, and 0.60 for yield when the findings district level analysis yielded root-mean-squared errors (%) of 23.4%, 30%, and 18.35%, respectively, when compared to the DES data. The findings showed that RS-based techniques are useful for estimating yield, output, and acreage at the state level. When comparing FASAL sugarcane acreage and output with DES estimations vs. Yield estimates, the national level numbers show a strong association.

Murali, P. & Raghupathy, Balakrishnan. (2012). The planting, watering, and harvesting processes are the most labour-intensive cultural procedures in sugarcane production. Irrigation and timely harvesting were significantly impacted in recent times by a lack of labourers and excessive wages. As a result, the sugarcane acreage in Tamil Nadu decreased from 3.91 lakh hectares in 2006–2007 to 3.14 lakh hectares in 2009–2010. The reliance on manpower was reduced and farm operations were completed on time with the introduction of modern sugarcane technology and labor-saving technologies on a big scale. Mechanical processes demonstrated their superiority over manual ones. It allowed for more effective use of resources and lower manufacturing costs, leading to higher productivity. Just to give you an idea, the furrow technique of watering requires around 320 man-hours, while drip irrigation requires only 30. In comparison to an automated system that uses 12 man-hours per hectare and costs 55,000 rupees (Rs 550/tonne), harvesting 100 t/ha (Rs 32,500/t) manually requires 1,000 man-hours (Rs 325/t). Modern sugarcane machinery, such as weeding and planting equipment and imported harvesters, is now readily accessible in the nation and will inevitably be used. The benefits gained from using them outweigh the high expense of acquisition. Drip irrigation and mechanized harvesters are crucial in addressing the severe lack of labourers for agricultural tasks like harvesting and operating machinery. Additionally, sugarcane harvesters and sugar manufacturers should institute a bespoke recruiting system whereby one US dollar is equivalent to 54 Indian rupees.

SUGAR INDUSTRY

Rural regions of India, particularly Maharashtra, have benefited greatly from the sugar industry's contributions to the country's economy and society. This sector ranks just behind the textile industry as the country's most important agro-based industry. Located in prime sugarcane producing regions, the sugar

plants have transformed their surrounding communities into thriving economic hubs. In rural regions, the sugar plants have contributed to the decentralization of industry. Additionally, they have had a significant impact on the growth of rural economies via agriculture. Because of these sugar mills and the many by-products, they create, even small-scale farmers have become industrialists in a roundabout way. Public elementary, secondary, and tertiary institutions that use the English language as their medium of instruction owe a great deal to the sugar industry. Hospitals, dairy farms, grocery shops, theatres, banks, libraries, entertainment venues, oil refineries, and hyper markets have all sprung up in once rural regions as a result of their efforts.

Similarly, these sugarcane manufacturers have supplied irrigation facilities to vast swaths of land and installed a variety of lift irrigation systems, as well as small, medium, and big water tanks. Similarly, they have contributed to the building of roadways inside their operational zones. Businesses and dealers were able to grow as a result of these factories. Additionally, these sugar industries have substantially reduced rural unemployment. The sugar plants have been instrumental in the rural regions' large-scale growth in this manner. The aforementioned accomplishments of the cooperative sugar plants highlight their significance to the rural economy.

Sugarcane, sugar beets, or any other crop containing sugar may be used to manufacture sugar. When it comes to sugar, however, sugarcane is king in India. This sector of the Indian economy is now second only to the cotton textile industry in terms of size. India is the world leader in sugarcane production and it ranks second in sugar production overall, behind only Cuba.

THE CO-OPERATIVE MOVEMENT

The Rochdale Co-operative Society was founded in 1844 and began as a consumer cooperative. The term Raiffeisen became synonymous with the movement in Germany. To cut out the middlemen and the moneylender, Raiffeisen tried out several kinds of cooperative organisation among the peasants in 1848. Essentially, the Raiffeisen societies functioned as autonomous groups of people who borrowed money. In 1904, with the passage of the Co-operative Societies Act, the cooperative movement was born in India. The first step was to form primary credit co-ops, whose major goal was to provide small farmers with loans so that they could escape the exploitation they faced at the hands of the local Savkar. Within the global population, India is ranked second. Democracy in India, a nation with many different languages and faiths, was instituted by the late Pandit Jawaharlal Nehru, who was also the first prime minister of India, the man responsible for shaping contemporary India, and the man who founded the cooperative movement.

Initiated and bestowed to us by our first prime minister, Pandit Jawaharlal Nehru, our economic system's defining characteristics include a socialist social framework, collective growth, a five-year plan, financial planning, and democratic administration. His policies prioritized the establishment of a cooperative federal state, the holistic upliftment of marginalised and indigenous communities, the promotion of equal justice, the giving due consideration to under-represented groups, and the centralization of the cooperative movement in our economic structure. Weaker parts of our nation are strengthened as a result of the movement's success. The expansion of the movement remained inadequate up to independence in 1947.

IMPORTANCE OF SUGAR INDUSTRY IN INDIAN ECONOMY

The price differential between India's sugarcane harvest and production costs compared to other countries throughout the world is one of the primary variables influencing sugar export competitiveness. The difference between the sugar types sold in foreign markets and those exported from India is another factor. Growing sugarcane requires a lot of water. In most cases, 1 kilograms of sugar requires 1,500 to 2,000 kilograms of water. Sugarcane and rice use up most of the country's irrigated land, leaving less water for other crops. The increasing demand for water in areas like Maharashtra due to sugarcane farming has

prompted calls for more sustainable and effective water management practices in crop rotation. This is of utmost importance in regions where the use of groundwater has reached an extreme and over-extracted state, or when irrigation accounts for the exclusive use of more than half of the surface water. The issues encountered by sugarcane producers and farmers have historically prompted the formation of many committees. Subjects addressed in the committees' broad recommendations included:

a) firstly, the distribution networks and sugar pricing;

b) the establishment of brand-new manufacturing facilities;

c) revisions to other statutes having an impact on the sugar sector;

d) the sugar industry's output went up;

The state's reluctance to abolish sugarcane reserves, minimum standards, etc., has been on full display since 2012. To encourage ecologically friendly gasoline (via increased usage of ethanol) and decrease energy imports, the government initiated a massive Ethanol Blended Petrol (EBP) initiative in 2003. Supporting sustainable ethanol is one way the EBP program puts money into the sugarcane industry. The result is that sugarcane farmers are able to be paid on schedule with less debt. A wider variety of feedstocks may be used to make ethanol, according to the 2018 National Biofuels Policy. By 2029–2030, the strategy hopes to have raised the proportion to 20%.

SUGAR INDUSTRYIMPACT ON THE INDIAN ECONOMY

The sugar industry is primarily an agricultural sector that contributes significantly to the economic and social development of rural communities and the surrounding area. Not only does it play a significant role in rural economies, but it also helps shape national economies. The sugar sector is second only to the cotton textile industry in terms of significance to the nation. It directly and indirectly employs around 5 lakhs of people. The industrial structure of India has seen several changes since July 1991, when economic reforms were introduced. Several changes were implemented in the early 1990s, including easing licensing requirements, lowering tariff rates, increasing the limit of foreign equity participation, decontrolling prices, and rationalizing customs and excise duties. Faster economic development was one of the primary goals of these policy changes, which aimed to modernize and streamline Indian industry and the economy as a whole so that it could better compete on a global scale.

Over 2.57% of India's total arable land is devoted to sugarcane cultivation, making it the country's most significant cash crop. About 25% of the world's sugarcane is grown in India, making it the second-largest producer in the world, after Brazil. According to Solomon (2016), around 7.5% of the rural population was involved in sugarcane growing, which accounted for 10% of the agricultural GDP in 2010-11. Providing jobs and economic growth for the nation, India's sugar sector has grown to become the country's second-largest agro-based industry, behind only textiles. Generalized assistance from the sugar business has helped six million farmers and their families (Verma, 2015).

The abundance of byproducts made from sugarcane, including molasses, bagasses, press mud, khandsari, jaggery, and sugar, as well as bioethanol and other bio-based products, make it an attractive crop for the future. There are two main categories of agroclimate in India that are used for growing sugarcane: tropical and subtropical. The northern states of Uttarakhand, Haryana, Bihar, and Uttar Pradesh make up the sub-tropical region. They account for 47% of the country's sugarcane output and 55% of the overall land under sugarcane.

Maharashtra, Karnataka, Tamil Nadu, and Andhra Pradesh are the southernmost states that make up the tropical area. In spite of only accounting for 42% of the country's sugarcane land, the tropical region produces 51% of the nation's sugarcane due to its longer crop length, favourable meteorological conditions, and greater productivity and better sugar recovery (GOI, 2016).

CONCLUSION

The Indian domestic sugar market is one of the largest markets in the world. And India has the 2nd largest population country in the world therefore, India has first place in sugar consumption. In the sugar industry to increase profitability we should reduce the cost of cultivation and improve the productivity per unit. It is possible through new research innovations, technological interventions, and mechanization. From the sugarcane, we produce Bagasse, from the use of Bagasse we can produce power generation and renewable energy, and other products from sugarcane are molasses, Distillery alcohol, and ethanol. In India, the Sugar industry is playing an important role in economic development, and employment generation, in rural India. In India, most the private sugar mills are providing education facilities, health facilities, and other facilities which are needed for the development of rural people. But sugar industry is facing a lot of problems in the compression of other sugar producer countries. So there is a need to solve the problems of the sugar industry from sugarcane to sugar sales.

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