Production and Marketing Issues and Challenges of Sugarcane in India: A Case Study Mandya and Mysore District, Karnataka

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ABSTRACT

The article attempts to analyze the state-wise area and production of sugarcane in India. Specifically, it examines the production process of sugarcane in Karnataka, focusing on key factors such as the cost of cultivation, crop duration, and price dependency. The study analyzed the production process of sugarcane in Karnataka with reference to factors such as cost of cultivation, crop duration, and price dependency. It also examined the marketing structure of sugarcane, highlighting the key roles played by sugar mills, jaggery units, and local markets in the distribution and sale of the produce. Furthermore, the article emphasized important price parameters, including the Fair and Remunerative Price (FRP), State Advised Price (SAP), and the issue of delayed payments to farmers. In addition, the study addressed multiple challenges faced by the sector—specifically production-related, marketing-related, industrial, and broader policy challenges affecting the sugarcane industry in India.

Keywords: Fair and Remunerative Price, State Advised Price, Sugarcane, production, challenges

INTRODUCTION

Sugarcane is one of the most important commercial crops in India, contributing significantly to the rural economy, employment, and industrial development. India is one of the second-largest producers of sugarcane in the world after Brazil. Karnataka, along with Uttar Pradesh and Maharashtra, is one of the leading sugarcane-growing states, supporting several sugar industries and jaggery-making units. However, despite its economic importance, sugarcane production and marketing face multiple challenges that impact both farmers and the industry. Karnataka has favourable agro-climatic conditions for sugarcane cultivation, particularly in districts such as Belagavi, Mandya, Mysore, Bagalkot, Bidar, and Haveri. The state contributes around 10–12% of India's total sugarcane production. Sugarcane cultivation requires intensive labour, water, and capital investment, making it a high-risk but high-reward crop.

Table:1 State wise Area of Sugarcane in country during 2017-18to2022-23 (Lakh ha)

S.No	States/UT	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23*	Average (2017-18 to 2021-22)	%to total	Rank
1	Uttar Pradesh	22.34	22.24	22.08	21.80	21.77	27.36	22.05	45.12	1st
2	Maharashtra	9.02	11.63	8.22	11.43	12.62	13.59	10.58	21.66	2nd
3	Karnataka	3.70	4.71	4.29	4.43	6.37	6.94	4.70	9.62	3rd
4	Bihar	2.34	2.26	2.24	2.19	2.11	2.09	2.23	4.56	4th
5	Gujarat	1.82	1.55	1.61	2.15	2.23	1.92	1.87	3.83	5th
6	TamilNadu	1.72	1.66	1.31	1.25	1.48	1.61	1.48	3.04	6th
7	MadhyaPradesh	0.98	1.08	1.25	1.10	0.93	0.92	1.07	2.19	7th
8	Haryana	1.14	1.09	0.96	0.99	1.08	1.08	1.05	2.15	8th
9	Punjab	0.96	0.95	0.91	0.89	0.87	0.90	0.92	1.87	9th
10	Uttarakhand	0.90	0.91	0.92	0.84	0.44	0.47	0.80	1.64	10th
11	AndhraPradesh	0.99	1.02	0.86	0.55	0.47	0.40	0.78	1.59	11th

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12	Telangana	0.35	0.40	0.26	0.20	0.28	0.33	0.30	0.61	12th
13	West Bengal	0.19	0.16	0.19	0.19	0.19	0.18	0.18	0.38	13th
14	Others	0.92	0.95	0.93	0.56	0.91	1.04	0.85	1.75	
	AllIndia	**47.37**	**50.61**	**46.03**	**48.57**	**51.75**	**58.83**	**48.87**	**100.00**	

Source- E&S, DAC, New Delhi, * 3rdAdv. Est.-2022-23

Table:1 Uttar Pradesh maintained its dominance, occupying the first rank with an average of 22.05 million hectares, accounting for 45.12% of the total sugarcane area in the country. This shows the state's strong and consistent position as the largest sugarcane producer. Maharashtra stood in second place with an average of 10.58 million hectares, contributing 21.66% to the national area. The data reflects fluctuations, with higher cultivation during 2018–19 and 2021–22 due to favourable rainfall and irrigation. Karnataka ranked third, averaging 4.70 million hectares and contributing 9.62% of the total. Its area showed an increasing trend, peaking in 2021–22 and 2022–23. Bihar occupied the fourth position with an average of 2.23 million hectares (4.56%), followed by Gujarat (3.83%), Tamil Nadu (3.04%), and Madhya Pradesh (2.19%). These states collectively add to the diversification of sugarcane cultivation beyond the top three. Northern states like Haryana (2.15%), Punjab (1.87%), and Uttarakhand (1.64%) also maintained a significant share despite relatively smaller landholdings, showing the importance of sugarcane in irrigated regions. Southern states such as Andhra Pradesh (1.59%) and Telangana (0.61%) have witnessed a decline in areas over the years, mainly due to water shortages and crop diversification. West Bengal, with just 0.38%, had the lowest share among the listed states. The category Other contributed about 1.75%, covering smaller sugarcane-growing states. At the national level, the average sugarcane area was 48.87 million hectares, with variations between 46.03 million hectares (2019–20) and 58.83 million hectares (2022–23), reflecting the impact of rainfall patterns, irrigation availability, and cropping decisions. Finally, Uttar Pradesh, Maharashtra, and Karnataka together account for more than 75% of India's total sugarcane area. The remaining states share around 25%, with smaller contributions from Bihar, Gujarat, Tamil Nadu, and others. Area fluctuations over the years are linked to monsoon variations, irrigation facilities, and market conditions.

Table:2 State wise Production of Sugarcane in country during2017-18to2022-23 (Production in million tonnes)

S.No	**States/UT**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23***	**Average (2017-18 to 2021-22)**	**%to total**	**Rank**
1	Uttar Pradesh	177.03	179.71	179.54	177.67	179.17	225.22	178.62	44.78	1st
2	Maharashtra	82.98	89.77	69.31	101.60	116.08	123.97	91.95	23.05	2nd
3	Karnataka	31.14	42.41	38.18	42.09	61.15	62.46	42.99	10.78	3rd
4	TamilNadu	17.15	17.14	14.12	12.80	16.17	16.92	15.48	3.88	4th
5	Bihar	13.83	20.12	13.58	10.71	12.03	12.06	14.05	3.52	5th
6	Gujarat	12.07	11.33	11.57	15.85	17.46	14.69	13.66	3.42	6th
7	Haryana	9.63	8.51	7.73	8.53	8.82	8.86	8.64	2.17	7th
8	Punjab	8.02	7.77	7.30	7.49	7.13	7.64	7.54	1.89	8th
9	AndhraPradesh	7.80	8.09	6.72	4.12	3.65	3.12	6.08	1.52	9th
10	Uttarakhand	6.27	6.33	6.94	6.96	3.52	3.76	6.00	1.51	10th
11	MadhyaPradesh	5.43	5.28	7.43	5.88	5.38	6.45	5.88	1.47	11th
12	Telangana	2.60	3.18	2.01	1.36	2.87	2.64	2.40	0.60	12th
13	West Bengal	1.13	1.34	1.53	1.56	1.59	1.48	1.43	0.36	13th
14	Others	4.82	4.45	4.53	2.64	4.42	4.97	4.17	1.05	
	AllIndia	**379.90**	**405.42**	**370.50**	**399.26**	**439.43**	**494.22**	**398.90**	**100.00**	

Source- E&S, DAC,New Delhi,* 3rdAdv. Est.-2022-23

Table2 : Uttar Pradesh retained the first rank with an average production of 178.62 million tonnes, contributing 44.78% of India's total sugarcane production. Production remained steady around 177–179 million tonnes until 2021–22, then peaked sharply at 225.22 million tonnes in 2022–23. This underlines Uttar Pradesh's role as the backbone of India's sugarcane sector. Maharashtra ranked second, Maharashtra recorded an average of 91.95

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million tonnes, contributing 23.05% to national production. The state witnessed fluctuations: lower production in 2019–20 (69.31 million tonnes) due to drought but a significant rise in 2021–22 (116.08 million tonnes) and 2022–23 (123.97 million tonnes) thanks to good monsoon and irrigation. Karnataka stood third with an average of 42.99 million tonnes (10.78%). A remarkable growth trend is visible: from 31.14 million tonnes (2017–18) to 62.46 million tonnes (2022–23), reflecting improvements in irrigation and cane productivity. Tamil Nadu Ranked fourth, Tamil Nadu produced an average of 15.48 million tonnes (3.88%). The state's production has been relatively stable, though slightly lower in 2019–20 and 2020–21 due to water shortages. Bihar Bihar ranked fifth with an average of 14.05 million tonnes (3.52%). It experienced high production in 2018–19 (20.12 million tonnes) but a decline in later years. Gujarat At sixth rank, Gujarat averaged 13.66 million tonnes (3.42%), showing growth especially in 2020–21 (15.85 million tonnes) and 2021–22 (17.46 million tonnes). Haryana, Punjab, and Uttarakhand. These northern states play a significant but smaller role. Haryana (8.64 mt, 2.17%), Punjab (7.54 mt, 1.89%), and Uttarakhand (6.00 mt, 1.51%) together contribute around 5.6% of national production. Andhra Pradesh, Madhya Pradesh, and Telangana Andhra Pradesh averaged 6.08 mt (1.52%), but production fell sharply after 2019 due to water stress. Madhya Pradesh stood at 5.88 mt (1.47%), showing moderate but steady growth. Telangana recorded 2.40 mt (0.60%), indicating limited cane area. West Bengal and Others West Bengal had the lowest share with 1.43 mt (0.36%). The "others" category contributed 4.17 mt (1.05%), including smaller producing states. India's average sugarcane production was 398.90 million tonnes, with Uttar Pradesh, Maharashtra, and Karnataka together contributing nearly 79% of the total output. Production peaked in 2022–23 (494.22 million tonnes), reflecting favorable weather and expansion in major states. Finally, the top 3 states (UP, Maharashtra, and Karnataka) dominate sugarcane production with nearly 80% share. Southern states like Tamil Nadu, Andhra Pradesh, and Telangana are facing stagnation or decline due to water issues. Northern states like Haryana, Punjab, and Uttarakhand continue steady contributions, though on a smaller scale. The overall national trend shows growth with fluctuations, mainly influenced by rainfall, irrigation facilities, and government pricing policies.

Table:3 State wise Yield of Sugarcane in country during 2017-18to2022-23 (Tonnes/ha)

S.No	States/UT	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23*	Average (2017-18 to 2021-22)	Rank
1	TamilNadu	99.81	103.00	107.62	102.73	109.24	104.78	104.48	1st
2	Karnataka	84.08	90.00	89.00	95.00	96.00	90.00	90.82	2nd
3	Maharashtra	92.00	77.20	84.28	88.90	92.00	91.20	86.88	3rd
4	Punjab	83.58	81.82	80.24	83.82	82.15	84.69	82.32	4th
5	Haryana	84.50	78.24	80.27	86.18	81.92	82.23	82.22	5th
6	West Bengal	75.00	84.49	79.66	83.00	83.83	80.00	81.20	6th
7	Uttar Pradesh	79.25	80.81	81.31	81.50	82.30	82.31	81.03	7th
8	Telangana	74.41	79.58	77.42	67.90	102.31	79.85	80.32	8th
9	AndhraPradesh	78.68	79.36	78.19	74.88	77.56	78.04	77.73	9th
10	Uttarakhand	69.68	69.55	75.41	82.90	80.00	80.00	75.51	10th
11	Gujarat	66.33	73.17	71.89	73.89	78.31	76.50	72.68	11th
12	Bihar	59.14	89.01	60.65	48.92	56.95	57.46	62.93	12th
13	MadhyaPradesh	55.41	48.90	59.47	53.45	57.84	70.05	55.01	13th
14	Others	52.35	46.75	48.71	47.20	48.52	47.78	48.70	
	AllIndia	**79.66**	**80.11**	**80.49**	**82.20**	**84.91**	**84.01**	**81.48**	

Source- E&S, DAC,New Delhi,* 3rdAdv. Est.-2022-23

Tamil Nadu consistently ranked 1st, with the highest average yield of 104.48 t/ha during 2017–18 to 2021–22. Productivity remained above 100 t/ha across all years, peaking at 109.24 t/ha in 2021–22. This reflects better irrigation facilities, adoption of high-yielding varieties, and efficient cultivation practices. Karnataka recorded an average yield of 90.82 t/ha, standing at 2nd position. Productivity improved steadily, ranging from 84.08 t/ha in 2017–18 to 96.00 t/ha in 2021–22. The use of modern farming practices and good irrigation support contributed to this growth. Maharashtra stood 3rd with an average yield of 86.88 t/ha. Yields fluctuated between 77.20 t/ha (2018–19) and 92.00 t/ha (2017–18 & 2021–22). Despite area fluctuations, Maharashtra maintains

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high productivity levels. Punjab averaged 82.32 t/ha, while Haryana was close with 82.22 t/ha. These states benefit from intensive irrigation, mechanization, and high farmer awareness, ensuring stable yields.West Bengal showed surprising efficiency with 81.20 t/ha, higher than the national average. However, its total area under sugarcane is very small, limiting its overall contribution. India's largest sugarcane producer, Uttar Pradesh, recorded 81.03 t/ha, slightly above the all-India average. While UP dominates in area and total output, its per hectare yield is lower than Tamil Nadu and Karnataka, showing potential for improvement through better agronomy.Telangana: Yield averaged 80.32 t/ha, with a sudden spike in 2021–22 (102.31 t/ha) due to favorable conditions. Andhra Pradesh: Yield averaged 77.73 t/ha, with declining trends after 2018. Uttarakhand: Yield averaged 75.51 t/ha, improving in 2020–21 (82.90 t/ha). Gujarat: 72.68 t/ha (11th rank). Bihar: 62.93 t/ha (12th rank), showing sharp fluctuation—very high in 2018–19 (89.01 t/ha) but very low in 2020–21 (48.92 t/ha). Madhya Pradesh: Lowest at 55.01 t/ha (13th rank), indicating challenges in irrigation and crop management. Others Category. Other states combined recorded 48.70 t/ha, far below the national average, reflecting less focus on sugarcane or poor agro-climatic suitability. India as a whole. The national average yield was 81.48 t/ha during 2017–18 to 2021–22. Productivity improved gradually, rising from 79.66 t/ha in 2017–18 to 84.91 t/ha in 2021–22. This suggests steady technological adoption, but India's yield still lags behind global leaders like Brazil (often above 110–120 t/ha). Finally, Tamil Nadu, Karnataka, and Maharashtra are the most efficient sugarcane-producing states (high yields). Uttar Pradesh dominates in total production but has only moderate yield. Bihar and Madhya Pradesh show lower productivity, pointing to irrigation and input constraints. The national trend is positive, but India still needs to focus on improving per hectare yields through technology, water management, and better crop varieties.

Production process in Karnataka

Sugarcane farming, though profitable in favourable conditions, is fraught with several challenges that affect farmers' income and sustainability:

1. High Input Costs: Cultivation of sugarcane requires significant investment in irrigation, fertilizers, pesticides, and labour. Rising prices of agricultural inputs place a heavy financial burden on farmers, often pushing them into debt.
2. Dependence on Irrigation: Sugarcane is a water-intensive crop. In states like Karnataka and Maharashtra, production areas heavily rely on canal irrigation or bore wells. During drought years, farmers face crop losses and reduced productivity due to water shortages.
3. Long Duration Crop: Unlike cereals or pulses, sugarcane takes 12 to 18 months to mature. This long duration ties up land, water, and financial resources, leaving farmers with limited flexibility to shift to other crops during the season.
4. Price Dependency: Farmers' earnings are largely determined by government-fixed Fair and Remunerative Price (FRP) or the rates set by sugar mills. Delays in payment and disputes over pricing often result in financial stress for farmers, reducing the attractiveness of sugarcane cultivation.

Marketing of Sugarcane in Karnataka

Sugarcane has limited direct marketing options because it is a bulky, heavy, and highly perishable crop. Farmers cannot store it for long after harvest, and transporting it over long distances is costly. As a result, they depend mainly on nearby buyers. The main marketing channels are:

1. Sugar Mills: These are the dominant buyers of sugarcane. Farmers usually supply cane under government-regulated agreements, where prices are fixed (like FRP or SAP in India). This system reduces farmers' freedom to sell elsewhere but ensures a ready market.
2. Jaggery Units: Traditional small-scale units that crush cane to make jaggery (gur). They buy directly from farmers, usually at local levels, offering some flexibility in selling. Prices may not always match those of sugar mills, but farmers sometimes prefer them for quicker cash payments.
3. Local Markets: Sugarcane's bulkiness and quick deterioration limit its role in open markets. Very little cane is sold directly to consumers in raw form (like chewing cane or juice shops).Thus, local markets play only a minor role in sugarcane marketing.

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Pricing Mechanism

1. Fair and Remunerative Price (FRP): This is the minimum price fixed by the Central Government for sugarcane. Mills are legally bound to pay farmers at least this price. It is decided based on factors like production cost, recovery rate (sugar content in cane), and reasonable profit margin for farmers.
2. State Advised Price (SAP): Some states, especially major cane-growing ones like Uttar Pradesh, Punjab, Haryana, fix their own price called State Advised Price. State Advised Price is usually higher than Fair and Remunerative Price, considering local conditions and farmer pressure groups. In states like Karnataka and Maharashtra, Fair and Remunerative Price is generally followed, though with some adjustments.
3. Delayed Payments (DP):A major problem in cane marketing is that farmers rarely receive payments on time. Mills often delay payments due to financial stress, overstocking of sugar, or disputes over prices. Since cane is a cash crop requiring high investment, such delays directly affect farmers' livelihoods and cash flow.

Issues and Challenges

1. Production-Related Challenges

Water scarcity: Sugarcane is a water-intensive crop, but states like Karnataka face frequent droughts and declining groundwater, making irrigation difficult.
High cost of cultivation: Rising prices of fertilizers, electricity, and labor increase the production cost, reducing farmers' profitability.
Soil degradation: Continuous monocropping of sugarcane leads to nutrient depletion, loss of soil fertility, and declining yields over time.
Climatic uncertainties: Unpredictable rainfall, dry spells, and extreme weather events disrupt the crop cycle and reduce productivity.

2. Marketing-Related Challenges

Delayed payments: Sugar mills often delay payments due to financial constraints, pushing farmers into debt and affecting their livelihoods.
Fluctuating sugar prices: Since farmers' income is indirectly tied to market-linked sugar prices, volatility in the sugar market impacts them.
Lack of alternatives: Sugarcane is bulky and perishable, leaving farmers with limited bargaining power and dependence on mills or jaggery units.
Policy conflicts: A mismatch between government-fixed FRP and the actual financial capacity of mills often leads to disputes and payment delays.

3. Industrial Challenges

Financial distress of mills: Many mills face losses due to oversupply, restrictions on exports, and fluctuations in global sugar prices.
Overcapacity: In some regions, the number of sugar mills is higher than the available supply of cane, leading to underutilization.
By-product utilization issues: By-products like bagasse, molasses, and ethanol have potential for energy and industrial use, but this is not fully exploited.

4. Broader Challenges in India

Regional imbalances: Uttar Pradesh and Maharashtra dominate sugarcane production, while southern states face severe water stress.
Government interventions: Frequent policy shifts in export-import duties, cane pricing, and ethanol blending create uncertainty for both farmers and mills.
Sustainability concerns: Being a water-guzzling crop, sugarcane raises long-term environmental concerns, especially in drought-prone areas.

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REVIEW OF LITERATURE

Subrahmanyam et al. (2003) stated that the sugarcane sector in Andhra Pradesh witnessed a notable improvement in both productivity and yield during the post-reform period when compared to the pre-reform period. This indicates that policy and institutional reforms had a positive impact on the overall performance and efficiency of sugarcane cultivation in the state.

Murali and Prathap (2017): stated the technical efficiency of sugarcane farms across three different agro-climatic regions of Tamil Nadu, one of India's leading states in sugarcane productivity. Their study revealed that the average technical efficiency of sugarcane production was 88%, 80%, and 78% in the Western, Cauvery Delta, and North-Eastern zones, respectively, with a pooled efficiency of 82%. The findings suggest that in the Cauvery Delta and North-Eastern zones, sugarcane yield could potentially be increased by 20% and 23%, respectively, through the adoption of improved crop management practices and efficient use of available resources.

Research Gap

The review of literature indicates that existing research on the production and marketing issues and challenges of sugarcane in India, particularly through case studies in Karnataka, is still at a nascent stage. Very limited work has been carried out to provide a comprehensive understanding of these challenges. Hence, further research is required in this field to develop practical solutions and policy recommendations.

Objectives of the Study

The primary objective of this article is to analyse the production and marketing issues and challenges of sugarcane in Mandya and Mysore district, Karnataka India.

Hypotheses of the Study

Based on the objective Hypotheses have been drawn analyse production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts Karnataka, India

H0 (Null Hypothesis): There is no significant relationship in analysing the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India.

H1(Alternative Hypothesis): There is significant relationship in analysing the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India.

Statemetn of the Problem

The study aims to understand and analyse the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts of Karnataka, India. Specifically, the objectives are:

1. To identify the key challenges faced by sugarcane farmers in production and marketing.
2. To analyse the efficiency of the sugarcane supply chain in the study region.
3. To explore potential strategies for improving marketing practices and enhancing farmers' income.

Research Questions

1. What are the major marketing issues and challenges associated with sugarcane in India?
2. What are the key problems faced in the production and marketing of sugarcane in India?
3. What strategies can be adopted to overcome the marketing issues and challenges of sugarcane in India?

Scope of the Study

The present study focuses on analyzing the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts of Karnataka, India. The geographical scope of the research is restricted to these

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two districts, which are among the prominent sugarcane-growing regions in the state. The study specifically considers the following aspects: Production-related challenges—such as water scarcity, high cost of cultivation, soil degradation, and climatic uncertainties. Marketing-Related Challenges—including delayed payments, fluctuating sugar prices, lack of alternatives, and policy conflicts. Industrial Challenges – covering financial distress of sugar mills, overcapacity, and underutilization of by-products. Broader challenges in India—such as regional imbalances, frequent government interventions, and sustainability concerns.

RESEARCH METHODOLOGY

The research work has been carried out on the basis of primary and secondary information. Efforts have been made to collect data regarding analyse the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India.

Primary Data: The primary data is collected through a structured questionnaire that has been designed and circulated among the prospective respondents. The respondents were selected using a simple random sampling method; 128 consumers were interviewed. The respondents have been distinguished based on their educational standards, age group, profession, etc. The primary data is also collected through interaction and oral discussions with the farmers.

Secondary Data: The secondary data collected from various published reports of the Department of Economics and Statistics,
Sample Size: The study is carried out in two districts of Karnataka State, namely Mysure and mandya districts. The sample size is 128.
Statistical Tools: For the analysis and interpretation of primary and secondary data, a range of statistical techniques, like factor analysis, are used

Data Analysis and Interpretation

The primary objective of this article is to analyse the production and marketing issues and challenges of sugarcane in Mandya and Mysore district, Karnataka. Based on the objective Hypotheses have been drawn analyse issues and challenges of sugarcane

H0 (Null Hypothesis): There is no significant relationship in analysing the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India.

H1(Alternative Hypothesis): There is significant relationship in analysing the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India.

Table 4: Variable of the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India.

Parameter	Initial	Percentage
Production process in Karnataka		
1. High Input Costs	1.000	**.962**
2. Dependence on Irrigation	1.000	**.725**
3. Long Duration Crop	1.000	**.950**
4. Price Dependency	1.000	**.960**
Marketing of Sugarcane in Karnataka		
1. Sugar Mills	1.000	**.620**
2. Jaggery Units	1.000	**.412**
3. Local Markets	1.000	**.436**
Pricing Mechanism		
1. Fair and Remunerative Price	1.000	**.635**
2. State Advised Price	1.000	**.910**
3. Delayed Payments	1.000	**.915**

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Issues and Challenges		
1. Production-Related Challenges		
Water scarcity	1.000	**.720**
High cost of cultivation	1.000	**.819**
Soil degradation:	1.000	**.625**
Climatic uncertainties	1.000	**.733**
2. Marketing-Related Challenges		
Delayed payments	1.000	**.916**
Fluctuating sugar prices	1.000	**.917**
Lack of alternatives	1.000	**.520**
Policy conflicts	1.000	**.660**
3. Industrial Challenges		
Financial distress of mills	1.000	**.740**
Overcapacity:	1.000	**.630**
By-product utilization issues	1.000	**.110**
4. Broader Challenges in India		
Regional imbalances:	1.000	**.510**
Government interventions:	1.000	**.622**
Sustainability concerns:	1.000	**.420**

The Kaiser Meyer Olkin (KMO) Test

The Kaiser Meyer-Olkin (KMO) test is a measure of how suited the data is for factor analysis. The test measures sampling adequacy for each variable in the model; the value between 0 and 1 is a rule of thumb for interpreting the result; the KMO value between 0.5 and 0.6 indicates the sampling is adequate in our case table.

Table 5 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.554
Approx. Chi-Square	12336.4
Bartlett's Test of Sphericity df Sig.	0470 .000

Source: field data run

The factor analysis results in support of all listed dimensions of high adequacy and describe the phenomena of Variable of the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India with a coefficient of Kaiser-Meyer-Olkin sampling adequate. The factors analysis result in support of all listed variables are highly adequate and describe the phenomena of significant effect of There is significant relationship in analysing the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India with KMO sampling adequacy (KMO=0.554 Bartlett's Test of Sphericity = 0.470 and P= 000). Therefore, it is evident that the alternative hypothesis is accepted and the null hypothesis is rejected. There is significant relationship in analysing the production and marketing issues and challenges of sugarcane in the Mandya and Mysore districts, Karnataka, India.

CONCLUSION

Sugarcane production and marketing in Karnataka present both significant opportunities and persistent challenges. While the crop provides income security to thousands of farmers and serves as a backbone for the sugar industry, issues such as water scarcity, delayed payments, and price fluctuations continue to threaten its long-term sustainability. To ensure the viability of sugarcane cultivation and marketing in Karnataka and across India, there is a pressing need for a balanced policy framework supported by technological innovation and farmer-centric reforms. Moreover, the adoption of efficient irrigation techniques, strengthening of cooperative sugar mills, and the implementation of improved soil and crop management practices are essential to enhance productivity, profitability, and environmental resilience in the sugarcane sector.

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