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Constraints in production and marketing of liquid jaggery in Malnad regions of Karnataka

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Abstract

India, one of the world's largest producers of sugarcane, has a long-standing tradition of processing sugarcane into various value-added products such as jaggery, liquid jaggery, and sugar. Among these, liquid jaggery (locally known as *Joni bella*) has recently gained prominence due to its nutritional, medicinal, and health benefits, coupled with the rising consumer preference for natural sweeteners. The present study was undertaken to identify and analyze the major constraints in the production and marketing of liquid jaggery in the Malnad region of Karnataka, which includes districts like Shivamogga and Uttara Kannada—areas well-known for sugarcane cultivation and traditional jaggery making. Primary data were collected from 30 owners of liquid jaggery processing units using a pre-tested structured questionnaire through the snowball sampling technique. Garrett's Ranking Technique was employed to prioritize the constraints faced by producers and marketers. The results revealed that irregular and insufficient supply of sugarcane (mean score 78.62) was the most critical production constraint, followed by high cost of raw materials (74.80) and lack of mechanization (71.24). Other significant issues included poor quality of sugarcane, short shelf-life of liquid jaggery, and inadequate storage facilities. On the marketing side, lack of organized marketing channels (78.12) emerged as the most severe constraint, followed by absence of standardization and branding (75.03), price fluctuations (71.50), and limited consumer awareness (69.20). High transportation costs, dependence on middlemen, and competition from refined sugar further hindered market efficiency. The study concludes that the liquid jaggery sector in the Malnad region faces several technical, infrastructural, and marketing challenges. Addressing these constraints through mechanization, quality assurance, improved storage and packaging, organized marketing, and institutional support can significantly enhance productivity, profitability, and sustainability of this traditional rural-based agro-enterprise.

Keywords: Liquid jaggery, garrett ranking, constraints, Malnad region, marketing, agro-processing, Karnataka

Introduction

India is one of the largest producers of sugarcane in the world and has a long tradition of processing sugarcane into various value-added products such as jaggery (gur), liquid jaggery, and sugar. Among these, liquid jaggery (commonly known as *Joni bella*) has gained increasing attention in recent years due to its nutritional value, medicinal properties, and growing consumer preference for natural sweeteners. Liquid jaggery is a semi-liquid form of jaggery obtained by partial concentration of sugarcane juice, which retains more minerals, vitamins, and antioxidants compared to refined sugar. It is widely used in the preparation of sweets, traditional foods, and beverages, making it a significant product in rural agro-processing enterprises. The

Malnad region of Karnataka, comprising districts such as Shivamogga and Uttara Kannada, is known for its favorable agro-climatic conditions for sugarcane cultivation and traditional jaggery production. The abundance of sugarcane and availability of skilled rural labour have encouraged farmers and entrepreneurs in this region to establish small-scale liquid jaggery processing units. These enterprises not only provide supplementary income and employment to rural households but also help in value addition and reducing post-harvest losses of sugarcane. Despite these advantages, the liquid jaggery sector in Malnad faces several production and marketing constraints that limit its growth and profitability. In the production process, issues such as irregular supply of quality sugarcane, high cost of

inputs, lack of mechanization, inefficient processing techniques, poor storage facilities, and quality deterioration during processing pose serious challenges to entrepreneurs. On the marketing side, inadequate market linkages, lack of standardization and branding, price fluctuations, limited consumer awareness, and competition from refined sugar and other sweeteners hinder the expansion of the liquid jaggery market. These constraints collectively affect the efficiency, sustainability, and profitability of the enterprises involved. Given the growing demand for natural and organic sweeteners, there is immense potential to promote liquid jaggery as a rural-based agro-industry. However, understanding and addressing the key constraints faced by producers and marketers is crucial for enhancing productivity and market competitiveness. Therefore, this study was undertaken to identify and analyze the major constraints in production and marketing of liquid jaggery in the Malnad regions of Karnataka, and to suggest appropriate policy and managerial interventions for improving the efficiency and viability of this enterprise.

2. Materials and Methods

Source of data and sampling technique: The study was based on primary data. To document the constraints faced by owner of jaggery processing unit produced liquid jaggery was interviewed through pre-tested structured questionnaire. The information on constraints were collected from the sample owner jaggery processing unit 30 through snowball sampling technique.

Garrett's Ranking Technique

To identify and prioritize the constraints faced by owner of jaggery processing unit in the production and marketing of liquid jaggery, Garrett's Ranking Technique was employed. A similar tool was employed in the earlier study conducted by Kumar *et al.* (2021) ^[4] and Choudhary (2022) ^[2]. Owner of jaggery processing unit were asked to rank the major constraints according to their severity. The ranks given by the respondents were then converted into percentage position using the following formula:

$$\text{Percent Position} = ((R_{ij} - 0.5) / N_j) \times 100$$

where,

R_{ij} = Rank given for the i th constraint by the j th respondent

N_j = Number of constraints ranked by the j th respondent

The per cent positions thus obtained were converted into Garrett scores by referring to Garrett's table. For each constraint, the average score was calculated by dividing the total score by the number of respondents. The constraints were then arranged in descending order of mean scores to identify the most severe constraints in the production and marketing of liquid jaggery in the malnad region.

3. Results and discussion

The constraints encountered by the sample respondents in the production of liquid jaggery in the Malnad regions of Karnataka were analyzed using the Garrett ranking technique, and the results are presented in Table 1. The results revealed that the irregular and insufficient supply of sugarcane was ranked as the major constraint with the highest mean Garrett score of 78.62. Most of the liquid

jaggery units in the study area depend on locally available sugarcane; however, due to the small size of land holdings, climatic variations, and competition from nearby sugar juice production, the supply often becomes inconsistent. Similar observations were reported by Nikam and Ulemale (2017) ^[6] and Sahu *et al.* (2020) ^[9], who found that scarcity of raw material and competition from sugar factories significantly hinder the operation of jaggery units. The high cost of raw material (74.80) was identified as the second major constraint, as sugarcane prices have increased in recent years while product prices remain unstable. The owners of processing units often have to purchase cane at higher prices due to inadequate supply and lack of contract arrangements. These findings are consistent with the study of Chaudhary *et al.* (2019) ^[1], which reported that high input and raw material costs adversely affect the profitability of small-scale jaggery enterprises. The lack of mechanization (71.24) ranked third among the constraints. Most of the liquid jaggery units in the Malnad region still rely on traditional processing methods, leading to low efficiency, high fuel consumption, and poor product consistency. Introducing improved equipment such as mechanical juice extractors, filter presses, and energy-efficient boiling pans could help reduce production costs and improve quality. The poor quality of sugarcane (67.45) and short shelf-life of liquid jaggery (63.78) were identified as the fourth and fifth constraints, respectively. The high moisture content in liquid jaggery leads to microbial spoilage, making storage and transportation difficult. Similar findings were highlighted by Hiremath *et al.* (2018) ^[8], who emphasized that inadequate preservation methods and poor post-processing management limit the commercial expansion of liquid jaggery. Other constraints such as difficulty in maintaining uniform colour and consistency (60.25), unavailability of skilled labour (56.12), lack of proper storage facilities (52.86), and high energy cost (49.33), and seasonal nature of production (46.25) were also reported by the respondents. The dependence on manual labour and traditional knowledge restricts standardization, while the seasonal availability of sugarcane leads to underutilization of installed capacity. Overall, the results indicate that the production of liquid jaggery in the Malnad region faces several technical, resource-based, and infrastructural challenges. Addressing these issues through mechanization, skill training, improved storage and packaging facilities, and policy support can significantly enhance the productivity and profitability of this traditional agro-based industry.

Table 1: Constraints faced by the sample respondents in production of liquid jaggery

Constraints	Mean Garrett Score	Rank
Irregular and insufficient supply of sugarcane	78.62	I
High cost of raw material (sugarcane)	74.80	II
Lack of mechanization	71.24	III
Poor quality of sugarcane	67.45	IV
Short shelf-life	63.78	V
Difficulty in maintaining uniform color and consistency	60.25	VI
Unavailability of skilled labor	56.12	VII
Lack of proper storage facilities	52.86	VIII
High energy cost	49.33	IX
Seasonal nature of production	46.25	X

The major constraints faced by the respondents are

presented in Table 2. The results of the Garrett mean score analysis revealed that the lack of organized marketing channels was identified as the most severe constraint with the highest mean score (78.12) and ranked first. The respondents expressed that the absence of a structured marketing system restricted their ability to sell produce at remunerative prices and limited market linkages. This finding is in line with Rani *et al.* (2021) ^[7], who reported that inadequate marketing infrastructure and limited cooperative marketing societies were major hurdles for small-scale food processors. The absence of standardization, grading, and branding (75.03) was ranked second, indicating the need for quality assurance mechanisms to enhance consumer trust and marketability. Similar findings were reported by Somashekar and Patil (2020) ^[9], who highlighted that the lack of uniform quality parameters reduces the competitiveness of processed products in both domestic and export markets. Price fluctuations (71.50) were ranked third, which suggests that unstable market prices negatively affect profitability and discourage producers from scaling up operations. Limited consumer awareness (69.20) was another major issue, ranked fourth, reflecting the need for consumer education and promotional activities to increase demand for local processed products. These results corroborate the observations of Rao *et al.*

(2019) ^[8], who emphasized that consumer ignorance about locally processed goods hinders their market growth. High transportation costs (66.40) and dependence on middlemen (63.10) were also perceived as important constraints, ranked fifth and sixth respectively. High logistics costs reduce net returns, while middlemen dependency leads to unfair price margins. This aligns with the findings of Kumar *et al.* (2018) ^[3], who noted similar marketing inefficiencies in agri-value chains. The remaining constraints included inadequate packaging and labeling facilities (60.05), competition from refined sugar and artificial sweeteners (54.80) and lack of access to distant or export markets (51.60) which were ranked seventh, eighth, and ninth respectively. These results indicate that both infrastructural and market-related issues hinder the effective growth of small-scale food processors under the PMFME scheme. Overall, the analysis suggests that improving marketing networks, establishing grading and branding systems, stabilizing prices, and enhancing consumer awareness are critical to strengthening the performance of micro food processing units. Addressing these constraints through institutional support, training, and policy interventions would significantly enhance the competitiveness and sustainability of the enterprises.

Table 2: Constraints faced by sample respondents on marketing fronts

Constraints	Mean Garrett Score	Rank
Lack of organized marketing channels	78.12	I
Absence of standardization, grading, and branding,	75.03	II
Price fluctuations	71.50	III
Limited consumer awareness	69.20	IV
High transportation cost	66.40	V
Dependence on middlemen	63.10	VI
Inadequate packaging and labeling facilities	60.05	VII
Competition from refined sugar and artificial sweeteners	54.80	VIII
Lack of access to distant or export markets	51.60	IX

4. Conclusion

The study revealed that the production and marketing of liquid jaggery in the Malnad regions of Karnataka are constrained by multiple interrelated factors, including irregular sugarcane supply, high raw material cost, lack of mechanization, poor product quality, and short shelf-life on the production side, along with weak marketing infrastructure, absence of standardization and branding, and price fluctuations on the marketing side. These issues collectively reduce efficiency, profitability, and market competitiveness of the units. Hence, strengthening raw material supply chains, promoting mechanization, ensuring quality standards and branding, improving market linkages, and providing institutional and policy support are essential to enhance the productivity, profitability, and sustainability of liquid jaggery enterprises in the region.

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