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Research Article

SWOT analysis of jaggery processing units in Karnataka

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SUMMARY : More than 50 per cent of the sugarcane produced in Karnataka is processed into sugar but, in recent years the sugar industry is facing complex problems such as high stocks, financial crunch etc. This has resulted in delayed and low payments to the farmers. In such a situation, diversion of sugarcane to jaggery making is an alternative option. Against this background, the study was undertaken in Belgaum district of Karnataka, with an objective of analyzing strengths, weaknesses, opportunities and threats in jaggery processing. Data collected from 40 sugarcane producers cum processors in Gokak Taluk. The major strengths in jaggery production are large employment potential, utilisation of family labour and quicker payments whereas, requirement of high capital, irregular electricity supply and labour scarcity are the major weaknesses. Increasing demand for jaggery, improvements in production technologies, increasing area under sugarcane are the major opportunities whereas, loss of man power to other industries, competition from sugar industry and lack of marketing facilities are the major threats.

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BACKGROUND AND OBJECTIVES

Sugarcane crop occupies over 41.46 lakh hectares in the country with a production of 2811.7 lakh tonnes, of which 60 pre cent is concentrated in the northern part of the country. In Karnataka, sugarcane is being cultivated over an area of about 3.04 lakh hectares, with a production of about 182.67 lakh tonnes and stands third in India regarding area coverage next only to Uttar Pradesh and Maharashtra. Sugarcane in India is processed into sugar, gur and khandasari. Jaggery has more nutritional and medicinal value when compared to sugar. For example, sugar contains only sucrose (99.70%), where as jaggery has sucrose (51.00%), protein (0.25%), glucose (21.20%) and minerals (3.40%) in addition to traces of fats (0.02 to 0.03%), calcium (0.39%), vitamin A, vitamin B, phosphate (0.025%) and provides 383 K cal/100g jaggery (Shrilakshmi, 2003).

The per capita consumption of sucrose in India is much lower (15 kg), compared to that in developed countries (50 kg). But, excessive sucrose consumption leads to a variety of problems such as dental curies and coronary thrombosis. To over-come these problems, many of these countries are seriously looking for alternative sweeteners from sugarcane crop. India has one of such healthy sweetener, jaggery and contributes more than 70 per cent to the production of the world. It is being exported to many countries like, Bangladesh, Great Britain, Canada, Chili, Egypt, Fizzy, Iran, Iraq, Kuwait, Malaysia, Nepal and USA (Navadkar *et al.*, 2004).

Being a health friendly sweetener, quality jaggery and its value added products such as jaggery chocolate and confectionaries made of various combinations of cereals, it is possible to significantly increase export of jaggery in solid powder and liquid forms.

Jaggery industry has been considered as one of the small scale and cottage industries in India. As much as 40-45 per cent of sugarcane crop has been processed annually in to jaggery or khandasari (Kachru, 2001). The production of jaggery ranges between five million tonnes and

seven million tonnes. It is estimated that two thirds of the sweetening requirement in rural areas is met by jaggery. The jaggery industry in the country has thus, been continued to be an industry of great importance and relevance.

A look into the present position of sugar and jaggery industries in Karnataka and reason for farmers losing their interest on sugarcane production as well as strengths and weaknesses of the jaggery industry would help the policy makers to take appropriate policy decisions regarding the sugar/jaggery industry in the state. Hence, the current study is undertaken in Karnataka with specific objective of analysing strengths, weaknesses, opportunities and threats in jaggery production.

RESOURCES AND METHODS

Belgaum district ranks first in the cultivation of sugarcane. As many as 400 jaggery processing units are located in the district. Hence, Belgaum district was purposively selected for further investigation. A total of 40 sugarcane producers-cum-processors in Gokak Taluk were randomly interviewed for eliciting the required information on SWOT analysis of jaggery processing units. The data pertained to the crop year 2006-07, the required secondary data were also collected**.**

The SWOT analysis is a valuable step in situational analysis. Assessing firm's strengths, weaknesses, market opportunities, and threats through a SWOT analysis is a very simple process that can offer powerful insight into the potential and critical issues affecting the business. The role of SWOT analysis is to take the information from the environmental analysis and separate it into internal issues (strengths and weaknesses) and external issues (opportunities and threats). Once this is completed, SWOT analysis determines if the information indicates something that will assist the firm in accomplishing its objectives (a strength or opportunity), or if it indicates an obstacle that must be overcome or minimized to achieve desired results (weakness or threat)

OBSERVATIONS AND ANALYSIS

The result of SWOT analysis jaggery production in the study area is presented in this section under following headings.

Strength:

The major strengths in the jaggery production in study area are given in Table 1, and the study reveals that, sufficiency of raw material is an important strength of jaggery production because, sugarcane is one of the most important commercial crops in the study area, and up to 50 per cent of sugarcane produced is available for jaggery making.

Family labour can be effectively utilized in the production of jaggery. Each processing unit provided employment to 12 persons per day, it was interesting to note that the processors capable of supplementing labour requirement through family labour for crushing work preferred jaggery processing. It is evident from the study that, 75 per cent of the processors had a large family size of four to ten.

Table 1: Strengths in jaggery processing

Sr. No.	Particulars	No. of respondents	% to total respondents
1.	Availability of sufficient raw material	40	100
2.	Utilisation of family labour	40	100
3.	Quicker payments	32	80
4.	Large employment potential	28	70
5.	Higher profits	22	55
6.	Suitability of verities	18	45
7.	Requirement of less technical labour	15	38
8.	It can be stored	15	38
9.	Traditional knowledge	10	25

Quicker repayment than sugar factories is also acting as strength of jaggery industry. The payment in sugar factories takes long time and farmers sometimes cannot wait till the payment is made. Hence, they find it easy to supply the sugarcane to the jaggery production.

Jaggery processing units have been considered as small scale and village industry. These units have ample potentiality to generate employment in the rural areas. The average crushing period noticed in study area was 140 days a year. Each processing unit provided 12 man days employment per day. Thus, each processing unit was found to generate 1,680 man days employment annually. From these results it could be said that, the processing units generate adequate employment in the rural areas at a very low cost. Hence, jaggery production sector has vast potential to improve the socio economic status of the farmers and strengthen the rural economy.

The study revealed that the jaggery processing was economically viable at the existing price structures. Availability of suitable varieties for jaggery production, (Co 62175, Co 7804, Co 8371 and Co 86032), suitability of the varieties in the area, high productivity, and ability to withstand the water stress during the dry spell encourage farmers to go for jaggey production. Another important advantage is jaggery can be stored for realization of better price. Other strengths as expressed by the respondents are availability of traditional knowledge of jaggery processing with the local people and Requirement of less technical labour.

Weakness:

The major weaknesses in the jaggery processing are given in Table 2 and results show that the requirement of high working capital for jaggery processing is the major weakness because, the average investment required for establishing jaggery processing unit with a capacity of one tonne per day was Rs.2,68,347, most of the small farmers do not have sufficient capital to invest on crushers, pans, etc. and working capital like raw material, labour and other variable costs.

Table 2 : Weaknesses in jaggery processing

Sr. No.	Particulars	No. of respondents	% to total respondents
1.	High working capital	40	100
2.	Irregular electricity supply	40	100
3.	Labour scarcity	40	100
4.	Lack of efficient equipments	32	80
5.	Excessive use of chemicals	22	55
6.	Lack of storage facilities	22	55
7.	Lack of information	12	30

The most important problem that was faced by the processors in jaggery production was that of electricity. Most of the jaggery processing units were electrically operated. The power supply in the study area was not only inadequate but highly erratic. As a result, the processing units did not work continuously. Hence, there is a need to ensure the availability of power.

Non-availability of hired labour was also one of the weaknesses as viewed by majority of the processors. Sugarcane is cultivated extensively in the study area and hence, the available labour force was engaged in cane harvesting in peak season.

The crushers that are being presently used are old, unsafe and highly inefficient to crush more quantity of cane and have less extraction efficiency. Hence, there is a need for modernization of existing crushers for effective juice extraction. The furnaces and boiling pans that are presently used have many disadvantages. The type of furnace for jaggery making plays an important role in deciding the efficiency and quickness of juice boiling besides other factors. Hence, it is very much essential to improve combustion and heat utilization efficiency of existing furnaces. More than 50 per cent of the quality of jaggery depends on the above factors. Fuel use efficiency in traditional methods is very poor. In some cases farmers are using old vehicle tires and tubes as fuel source which emit toxic gases which are directly absorbed in the process of jaggery making that ultimately affect the quality of jaggery. Similar results were reported by Shivaramu *et al.* (2002) in their study on jaggery units in Cauvery Command Area of Karnataka.

Farmers in the study area are preparing jaggery by using several chemicals (clarificants) like sodium hydrosulphite, sulphoxylate, sodium bicarbonate, sodium carbonate, super phosphate, phosphoric acid, alum and lime at higher concentrations and dose. Sodium hydrosulphite and sodium carbonate (washing soda) are liberally used to get attractive colour without knowing the deleterious effects on human health. Hence, extensive research has to be carried out on the use of clarificants of plant origin and safe chemical clarificants. Similar opinions were expressed by Usha *et al.* (2004) in their study on jaggery processing in Cauvery Command Area of Karnataka.

Many of the farmers are preparing jaggery by age-old methods under highly unhygienic conditions and it is considered that the whole process is scientifically inefficient to produce quality jaggery. Hence, they are incurring losses in quality and quantity of jaggery production. Apart from this lack of information and lack of storage facilities are the major weaknesses in jaggery processing in the study area.

Opportunities:

Opportunities in jaggery processing in the study area are given in Table 3 and results reveal that increasing demand for jaggery in the domestic market and improvements in the production technologies are the major opportunitis for jaggery processing.

Table 3 : Opportunities in jaggery processing

Sr. No.	Particulars	No. of respondents	% to total respondents
1.	Increasing demand for jaggery	38	95
2.	Improvements in production technologies	32	80
3.	Increasing area under sugarcane	32	80
4.	New varieties of sugarcane for jaggery production	26	65
5.	Demand for organically produced jaggery	18	45
6.	Mechanization of processing	15	38
7.	Development of value added products	15	38
8.	Demand in international markets	8	20

Increasing area under sugarcane due to expansion of area under irrigation can be regarded as an opportunity for the growth of jaggery industry. New varieties have also been developed suitable for jaggery production. Similar results were obtained by Pawar and Dongare (2001) in their study on jaggery processing in India.

In the era of organic products, the demand for organically produced jaggery is increasing. Being a healthy sweetener, quality jaggery and its value added products such as jaggery chocolate and confectionaries made of various combinations

of cereals, it is possible to significantly increase export of jaggery in solid powder and liquid forms. India contributes more than 70 per cent to the jaggery production of the world. It is being exported to many countries like, Bangladesh, Great Britain, Canada, Chili, Egypt, Fiji, Iran, Iraq, Kuwait, Malaysia, Nepal and USA.

Threats:

Table 4 gives the major threats in jaggery processing in the study area as expressed by the respondents and study revels that fluctuation in the jaggery price and competition from sugar factories is high which may hinder the growth of jaggery production. It could be recalled here that four sugar mills are operating in the study area which have significant influence on the farmers' choice of jaggery production. Credit constraint was the major problem in producing jaggery. Lack of timely and adequate credit from credit institutions led farmers to go for loans from commission agents. This results in pre-harvest contracts and exploitation of the farmers. Jaggery making as cottage industry, being operated at decentralized level in unorganized rural sectors needs institutional support for quality jaggery production, handling, storage, management and higher returns at low cost.

Table 4: Threats in jaggery processing

Sr. No.	Particulars	No. of respondents	% to total respondents
1.	Price fluctuation	40	100
2.	Competition from sugar industry	38	95
3.	Lack of marketing facilities	35	88
4.	Loss of man power to other industries	32	80
5.	Lack of credit facilities	32	80
6.	Pre harvest contracts	28	70
7.	High commission charges	26	65
9.	Lack of research	15	38
10.	Lack of institutional support	12	30

The commission agents were found to charge two to three per cent commission when the produce was disposed through channel-I (Producer →Commission agent → Wholesaler → Retailer→Consumer). This charge was still higher when the jaggery was sold by the processors in the neighboring state of Maharashtra. Perhaps this was the reason why channel-II (Producer → Wholesaler → Retailer→ Consumer) was more popular in the study area. Owing to lack of storage facility, the processors were found to dispose of their produce immediately after processing.

Loss of trained manpower to other industries and other professions is posing a serious threat to the jaggery industry. Due to better working conditions prevailing in other industries, shortage of man power may be experienced. Rapid developments in contemporary and requirements of the industry may lead to fast obsolescence of the jaggery industry.

There is no specific research centre working exclusively on jaggery production in Karnataka to solve the problems faced by the farmers in Karnataka.

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