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Constraints faced by mango and banana food processing industries in Tamil Nadu

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Abstract

Food processing sector is the transformation of raw agricultural products into food, or one form of food into other forms. Food processing comprises many forms of processing foods starting from grinding grain to make raw flour to home cooking to complex industrial methods of food processing and it is used to make convenience foods. The Indian Food and Beverage Industry is evolving as a high-profit sector and contributes about 3% of India's GDP with value of two-third of total retail market in India. The projected revenue in the food and beverage business segment is estimated to show a CAGR growth rate of 14.2 percent from the year 2020 to 2024. A total of 160 key informants were selected from each start up food processing industry in two districts namely Trichy and Krishnagiri district and all the two districts, the Key Informants was asked collectively to list the constraints faced by the food processing industry through participatory method. The RBQ value for the availability of raw material connection between production and processing is 84.67 which implies that lack of inferior quality production with RBQ value of 75.33. The difficulty in dispatching and follow up the production constraint with RBQ value of 72.67, procedural delay was ranked first among the financial constraint with RBQ of 76.67 and the challenges in identifying the specific market for the produce was ranked first among the marketing constraint with RBQ value of 77.33. These are the major constraints among the respondents. The implementation of green business practices - from production to packaging and supply chain management - is a critical solution to addressing current food industry issues. The Policy would seek to create a favorable environment for agripreneurs to establish Food Processing sectors through fiscal initiatives/interventions such as rationalization of tax structures on fresh foods, processed foods, and machinery used in the production of processed foods. Also, to encourage the establishment of agro-processing facilities close to agricultural production and sorting facilities to reduce waste and improve product quality and shelf life.

Keywords: Financial, food processing, raw material, labour, marketing

Introduction

Food processing sector is the transformation of raw agricultural products into food, or one form of food into other forms. Food processing comprises many forms of processing foods starting from grinding grain to make raw flour to home cooking to complex industrial methods of food processing and it is used to make convenience foods. The Indian Food and Beverage Industry is evolving as a high-profit sector and contributes about 3% of India's GDP with value of two-third of total retail market in India. The projected revenue in the food and beverage business segment is estimated to show a CAGR growth rate of 14.2 percent from the year 2020 to 2024 (Sharma, J., Tyagi, M., Panchal, D., Bhardwaj, A., 2021)^[8].

During the last five years ending 2019-20, The Food Processing Industries sector has grown at an annual rate of around 11.18 percent on average. As per the Annual Survey of Industries (ASI) 2018-19, food processing was ranked 1st in total persons engaged in the manufacturing sector. An increasing global population will have a greater demand for

food in 2030 (Sharma, J., Tyagi, M., Panchal, D., Bhardwaj, A., 2021)^[8]. At the same time, greater differentiation will be required due to an aging population and individualization. Innovation is needed to meet this demand. Good behavior in the form of sustainability is also an important aspect for food. The Food Safety and Standards Authority of India requires all food manufacturing businesses to obtain FSSAI registration. As a result, all spice or curry powder manufacturers must be FSSAI registered as a small food manufacturer.

The scheme uses the One District One Product (ODOP) approach to reap the benefits of scale in terms of input procurement, common services, and product marketing. The scheme's ODOP will provide a framework for supply chain development and support infrastructure orientation. In one district, there may be more than one cluster of ODOP products. A cluster of ODOP products in a State may consist of more than one adjacent district. The states would identify the food product for a district, keeping in mind the scheme's emphasis on perishables. The State Government would

conduct a baseline study. The ODOP product could be a perishable agricultural product, a cereal-based product, or a food product that is widely produced in a district and its associated sectors. Mango, potato, litchi, tomato, tapioca, papad, pickle, millet-based products, fisheries, poultry, meat, and animal feed are examples of such products. Besides, certain other traditional and innovative products including waste to wealth products could be supported under the Scheme. For example, honey, minor forest products in tribal areas, traditional Indian herbal edible items like turmeric, amla, haldi, etc. Support for agricultural products would be for their processing along with efforts to reduce wastage, proper assaying, and storage and marketing. India has made a strong name for itself in the global startup community. India ranks amongst the top five countries in the world in terms of number of startups founded (Aggarwal, S. and Srivastava, M.K., 2016)^[2]. It is estimated that India houses around 4200 start-ups, creating more than 85,000 employment opportunities. Numerous Government initiatives and incentives apart from private investment ecosystems development are also playing a vital role in boosting the Startup community in the sector (Sharma, J., Tyagi, M., Bhardwaj, A., 2022)^[6]. For nurturing innovations in the country, the Startup India Action Plan was launched in January, 2016 by the Government of India under the flagship Invest India initiative of DIPP.

Through this initiative, the government hopes to empower startups to grow through innovation and design, as well as to accelerate the spread of the startup movement on a large scale. Food processing, as a sector, is uniquely situated at the crossroads of agriculture, manufacturing, and services, and thus has the potential to become a significant growth engine for the Indian economy. What is remarkable is that many of the innovations that may spark this growth come from enterprising young and innovative Startups rather than large corporates or organized players in the food value chain. As a result, there is a strong case to be made for appropriately nurturing Startup innovations through a scalable enterprise model of the organized sector, via institutionalized collaborative mechanisms, which has the potential to drastically transform the Indian food processing economy and associated ecosystem.

Review of past studies

Zia (2016)^[7] concluded in his study that the food processing sector is a key industry in India. India is the second largest producer of food products in the world. The growth in food processing industry will bring overall development within the economy. By India's policy to "Make in India" gates of growth and development opens up for the food processing industry. In this paper various prospects leading to the development path of the food processing sector are been identified. Parwez (2013)^[4] entitled in his paper "Food supply chain management in Indian agriculture" that the problems faced by Indian agriculture for food security in terms of inadequate infrastructure and a severely inadequate supply chain in information technology content. Because of a lack of efficient infrastructure and a food processing industry, approximately 30-30% of all foods produced in India are wasted. This paper discusses several important aspects of the agriculture supply chain, including transformation of agriculture through various supply chain

interventions and the role of ICTs in supply chain management. The paper concludes that an efficient supply chain is critical for agricultural development and is a current issue.

Murthy, T.M.S., and Yogesh, M.S. (2014)^[3] entitled in their article "An overview of Food Processing Industry in India – Challenges and Opportunities" indicated that India holds the second largest arable land in the world. India has all 15 major climates in the world, with 20 Agro-Climatic regions. In addition, the country has 46 of the world's 60 soil types. India is the world's leading producer of pulses, milk, tea, cashew and mangoes, buffalo meat, and thus the world's second largest producer of tea, wheat, sugarcane, and rice. Demand for processed foods has risen in tandem with income growth, rapid urbanization, a young population, and a spike in the proportion of nuclear families. The food processing industry is one of India's most important, ranking fifth in terms of production growth, consumption, and export.

Materials and Methods

The study was undertaken in three purposively selected districts of Tamil Nadu viz. Trichy and Krishnagiri. Considering the Banana and Mango food processing industries in the two districts, 80 food processing industries were selected from each district making the total sample size 160 food processing industries. A total of 160 key informants were selected from each Banana and Mango food processing industry in two district of Trichy and Krishnagiri and all the two districts, the key informants was asked collectively to list the constraints faced by the Banana and Mango food processing industry through participatory method. The most common constraints were jotted down. After that, a participatory discussion was held where all the 160 Industries in each district were present who again collectively listed the constraints in their respective district. A final list of the constraints was prepared by comparing the list prepared by the Key Informants as well as the respondents separately. Later on both the Key Informants and Respondents were asked to rank the constraints individually. These were compiled together and the Rank Based Quotient (RBQ) technique was used to quantify the data collected by the Preferential Ranking Technique. The following formula given by Sabarathnam (1988)^[5].

$$R.B.Q = \frac{\sum fi (n+1-i) \times 100}{N \times n}$$

Where in,

Fi = Number of respondents reporting a particular problem under ith rank

N = Number of Respondents

i = Number of rank

n = Number of constraints identified

After calculating the RBQ values for Key Informants and Respondents separately the ranks of all the constraints were accessed. Finally, Spearman's Rank Correlation Co-efficient were calculated between the ranks of constraints assigned by KI and respondents in all two districts.

Statistical analysis

The 80 key informants in Trichy district were asked to rank all the five categories of constraints in order to assign 1st to 5th rank in each category i.e. Raw material, constraints, Production constraints, Financial constraints, Labour constraints and marketing constraints, as per their perception. The ranks so assigned were plotted in a table against each constraint and the RBQ values were worked out. Similarly, all the 160 food processing industries were also asked to rank the constraints and the RBQ values were calculated. Based on these RBQ values, ranks were finally assigned to each of the constraint separately calculated between the ranks of constraints assigned by the

respondents to assess their association. The entire process was repeated in Trichy and Krishnagiri district. The mean RBQ values were calculated to assess the preferential ranking of each constraint as depicted in Trichy district. Similarly, the mean RBQ values were calculated Krishnagiri districts.

Findings and Discussion

The constraints faced by the food processing industries were assessed by five types viz., Rawmaterial, Production, Labour, Finanacial and marketing. The results of RBQ value and ranks are given in the table 1.

Table 1: Constraints - RBQ Value, Ranking

I	Raw Material Constraints	RBQ Value	Rank
1	High Cost	84.67	I
2	Inferior Quality	75.33	II
3	In appropriate Supply in Quantity	70.00	III
4	Perishability	62.67	IV
5	Un availability of Raw Material	60.00	V
II	Production Constraints		
1	Lot Sizing	76.67	I
2	Difficulty in Dispatching and Follow Up	72.67	II
3	Frequent Break Down of Machinery	72.00	III
4	Inclination for Overproduction	70.67	IV
5	Irregular Power Supply	69.33	V
III	Labour Constraints		
1	High Labour Payment	76.67	I
2	Frequent Friction with Labour Unions	67.33	II
3	Absence of Adequate Training	59.33	III
4	High Labour Turnover	57.33	IV
5	Lack of Skilled Human Resources	55.33	V
IV	Financial Constraints		
1	Procedural Delay	78.67	I
2	Stringent Terms and Conditions	74.67	II
3	Insufficient Repayment Period	70.67	III
4	Difficulty in Providing Security	65.33	IV
5	High Rate of Interest	63.33	V
V	Marketing Constraints		
1	Increasing Competition	77.33	I
2	Limited Local Market Size/Market Share	75.33	II
3	Heavy Product and Brand Development Costs	71.33	III
4	Frequent Changes in Consumer Taste and Preference	70.67	IV
5	Inferior Quality of Raw Materials	69.33	V

I. Raw material Constraints

The RBQ value for the insufficient connection between high cost and inferior quality is 84.67 and ranked first among the raw material constraint which implies that lack of raw materials, followed by inferior quality with RBQ value of 75.33 and ranked second, In appropriate Supply in Quantity

is 70.00 and ranked third to affect the quality parameters and Un availability of Raw Material was fourth constraint with RBQ of 62.67, lack of raw material which hindrance the market intelligence for the food processing industries. The fifth constraints Perishability was ranked last among the raw material constraint with RBQ of 60.00.

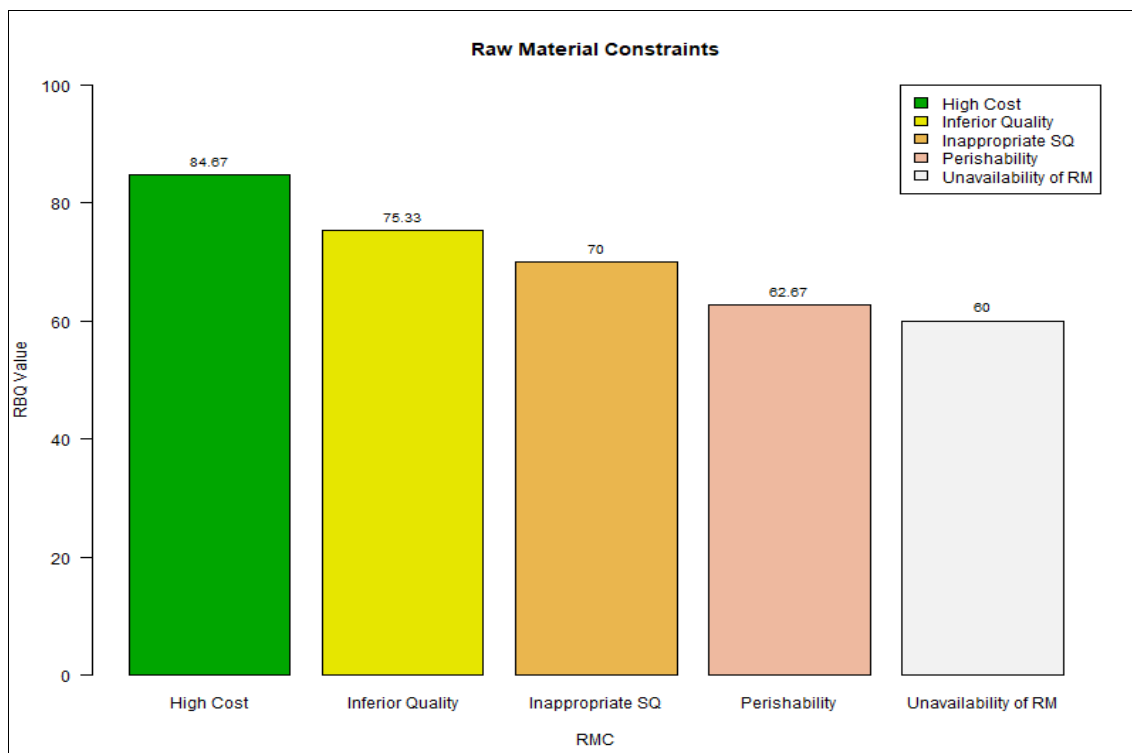


Fig 1: Raw material constraints

II. Production Constraints

The production constraint was measured with five statements, the lot sizing was the major constraint with RBQ of 76.67 and ranked first among the production constraint. The Difficulty in Dispatching and Follow up was second among the production constraint with RBQ value of 72.67.

The Frequent Break down of Machinery process with RBQ value of 72.00 followed by Inclination for Overproduction with RBQ of 70.67 and Irregular Power Supply was ranked last among the production constraint with RBQ of 69.33. The results shows that complexity and production process in the food processing industries.

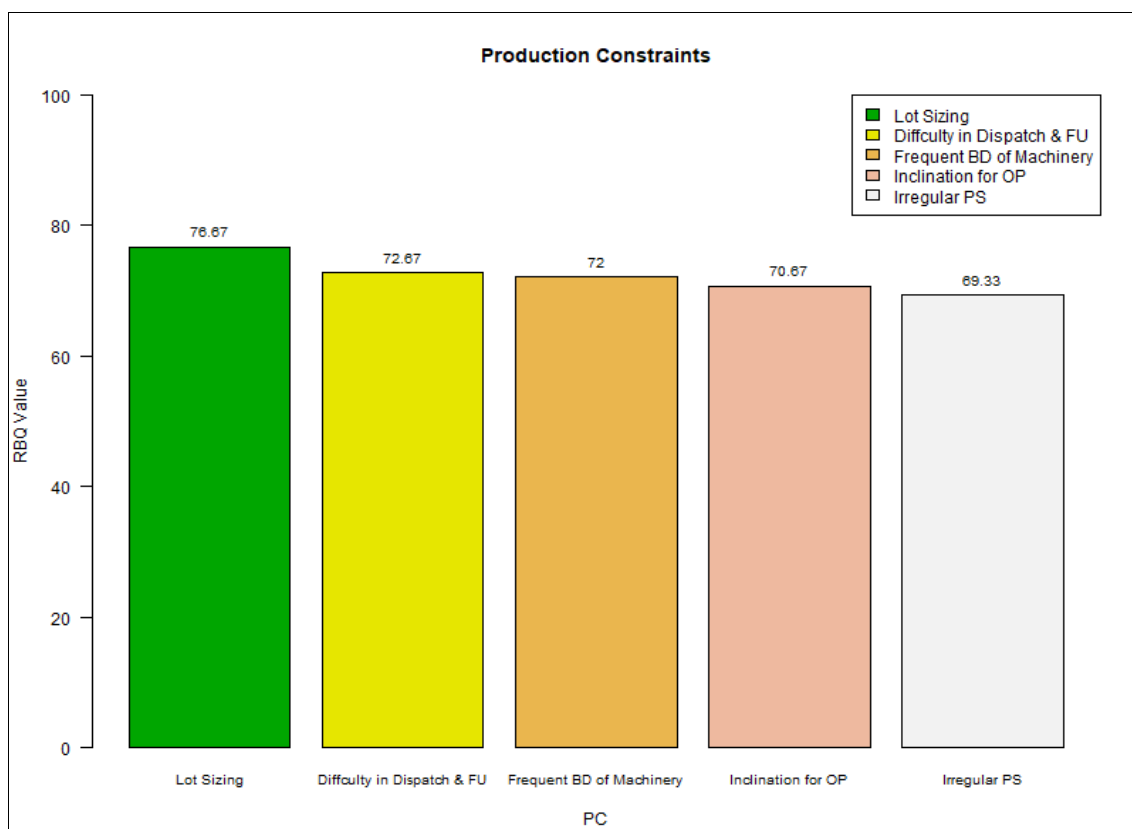


Fig 2: Production constraints

III. Labour constraints

Among the labour constraints, high labour payment of food processing industries was ranked first among the financial constraint with RBQ of 76.67, followed by frequent friction with labour unions with RBQ of 59.33 and absence of

adequate training was ranked third among the financial constraint with RBQ of 67.33 and the High labour turnover for labour constraints with RBQ value of 59.33 and Lack of skilled human resources with RBQ of 57.33.

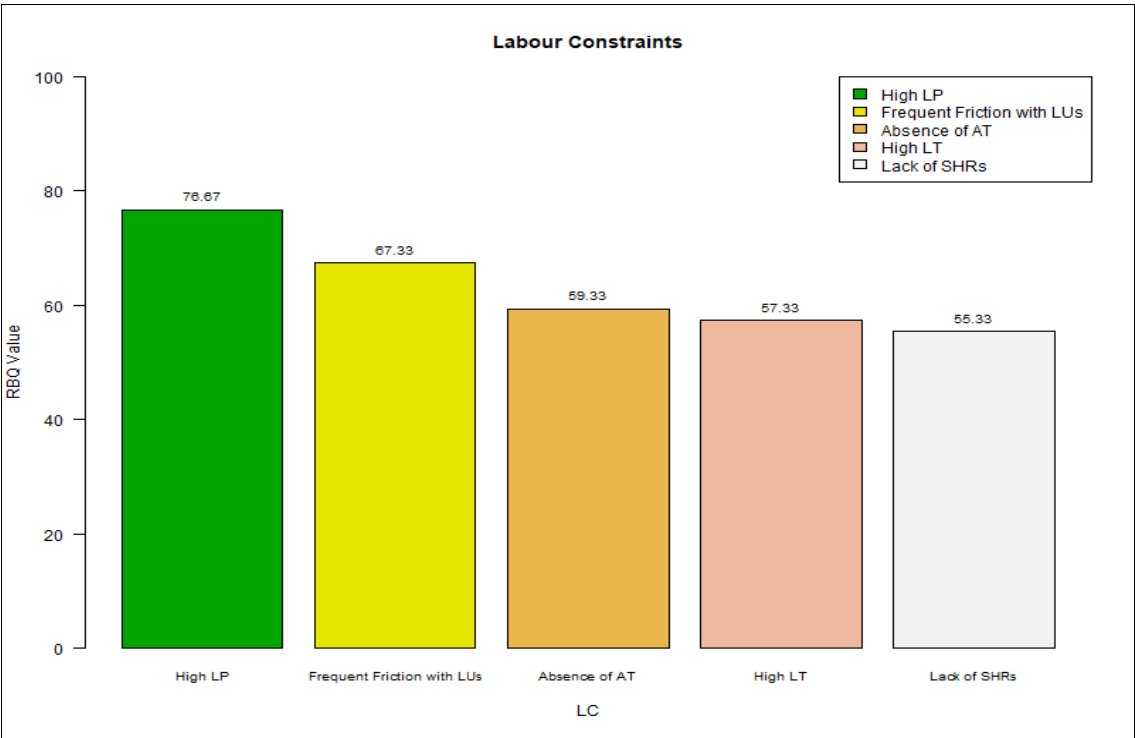


Fig 3: Labour constraints

IV. Financial constraints

Delay in absorption of new technologies was ranked first among technology constraint with RBQ value of 78.67 followed by stringent terms and conditions with RBQ value

of 74.67. The Insufficient payment period with RBQ value of 70.67 and difficulty in providing security with RBQ of 65.33, followed by High Rate of Interest with RBQ value of 63.33.

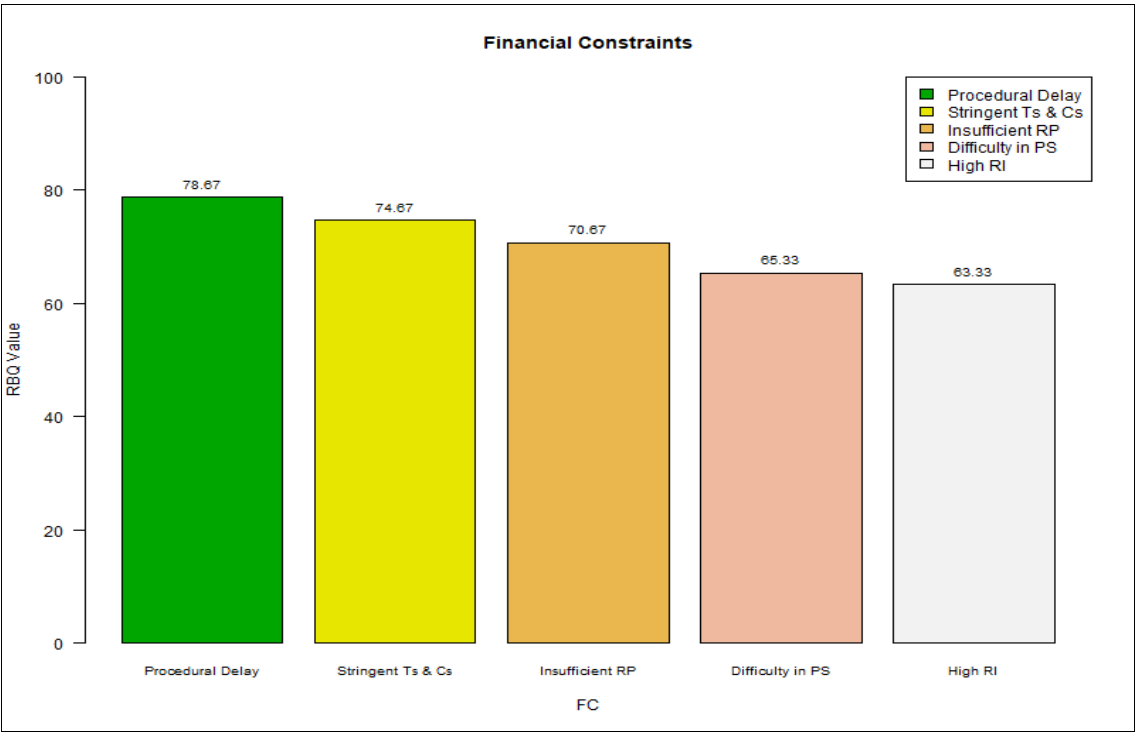


Fig 4: Financial constraints

V. Marketing constraints

In the marketing constraint, Increasing Competition was ranked first among the marketing constraint with RBQ value of 77.33, followed by limited local market Size/market share with RBQ value of 75.33 and heavy product and brand development costs ranked third among the marketing

constraints with RBQ value of 71.33. Frequent changes in consumer Taste and Preference was fourth constraint among marketing with RBQ value of 70.67, Inferior quality of raw materials with RBQ value of 69.33. The result shows that, the respondents are not easily accessible to the market and lacks in the market intelligence.

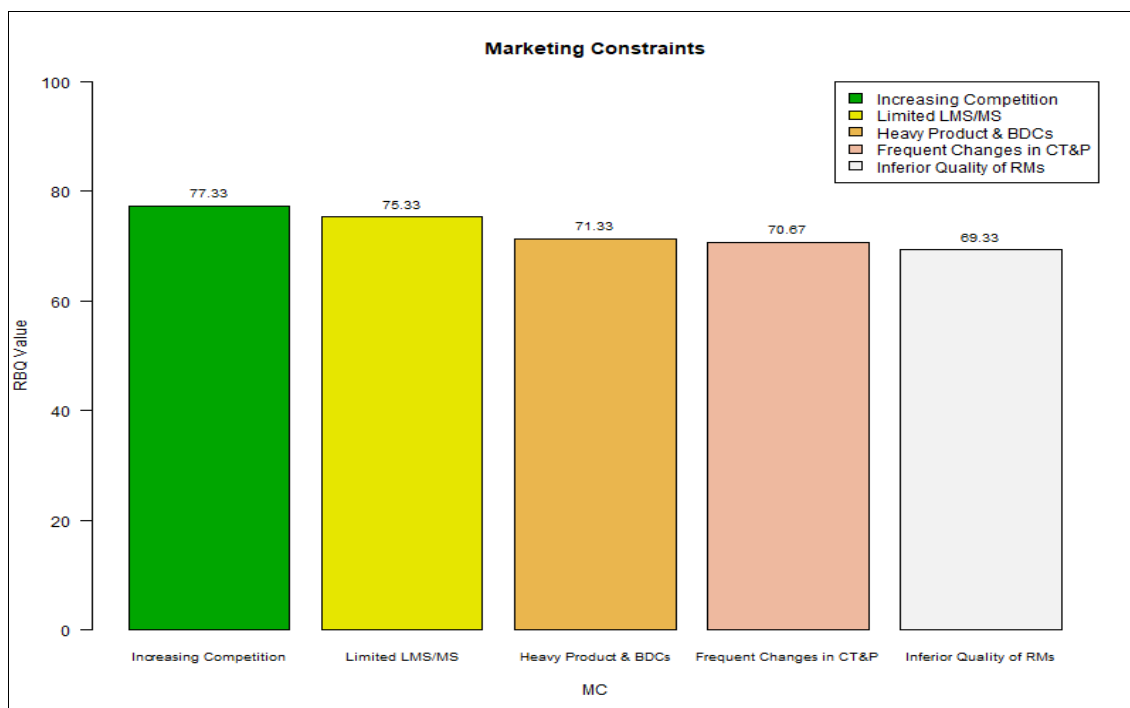


Fig 5: Marketing constraints

Conclusion

The key challenges faced by the food processing sector are gaps in supply chain infrastructure, which means that availability of raw materials of primary processing facilities and the insufficient connection between production and financial and high cost of raw material was the major constraints. The RBQ value for the availability of raw material connection between production and processing is 84.67 which implies that lack of inferior quality production with RBQ value of 75.33. The difficulty in dispatching and follow up the production constraint with RBQ value of 72.67, procedural delay was ranked first among the financial constraint with RBQ of 76.67 and the challenges in identifying the specific market for the produce was ranked first among the marketing constraint with RBQ value of 77.33. These are the major constraints among the respondents. The implementation of green business practices - from production to packaging supply is a critical solution to addressing current food industry issues. To create a favorable environment for Food Processing sectors through fiscal initiatives/interventions to encourage the establishment of processing facilities close to crop production and to improve product quality and shelf life.

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