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MARKETING CONSTRAINTS AMONG MANGO GROWERS: A CASE STUDY OF JUNAGADH AND GIR-SOMNATH DISTRICTS, GUJARAT, INDIA

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ABSTRACT

Mango cultivation plays a crucial role in the agrarian economy of Gujarat, particularly in the Junagadh and Gir-Somnath districts of the state. Despite its commercial significance, mango growers in these regions face several challenges in efficiently marketing their produce. This study aims to identify and analyze the key marketing constraints encountered by mango farmers across eight villages in Junagadh and twelve villages in Gir-Somnath, with a total sample of 100 respondents. Primary data were collected through a structured questionnaire and analyzed using factor analysis, a statistical technique used to reduce and categorize interrelated constraints into core dimensions. The findings reveal that issues such as inadequate storage and transport facilities, price volatility, dependency on middlemen and lack of market information significantly affect the marketing efficiency of mango growers. The extracted factors offer valuable insights for policymakers and agricultural marketing agencies to develop targeted interventions aimed at strengthening the mango value chain and ensuring better price realization for farmers. This study concludes with suggestions for infrastructural improvements, cooperative development and enhanced awareness programs to mitigate these constraints.
***Keywords*:** Mango growers, Marketing constraints, Factor analysis, Junagadh, Gir-Somnath, Agricultural marketing, Value chain, Farmer challenges, Gujarat.

Introduction

Mango, revered as the "King of Fruits," holds a place of pride in India because of its exquisite taste, rich nutritional value, and diverse uses. Mangoes are consumed both as a dessert and as a snack between meals, and they are widely processed into a variety of value-added products, such as juices, pulps, squashes, nectars, jams and pickles. India is the world's largest producer and consumer of mangoes, contributing significantly to the global mango industry. In 2003, India accounted for 41 percent of global mango production, earning it international recognition as the "land of mangoes." India currently produces approximately 12 million tonnes of mangoes annually and is home to nearly 50 commercially cultivated varieties.

Mango domestication is believed to have occurred independently across different regions of the Indian subcontinent and Southeast Asia. In India, mango cultivation dates back to approximately 4000 BCE. The fruit and mango tree have been deeply embedded in Indian religious, cultural and social traditions. The Portuguese, who arrived on the western coast of India in the 15th century, are credited with introducing vegetative propagation techniques that significantly influenced mango cultivation practices. During the reign of Emperor Akbar, systematic selective breeding led to the development of important mango varieties, such as Alphonso, Dashehari, and Kesar, many of

which have since been propagated through vegetative means for centuries.

Among these, the Kesar mango, particularly the "Gir Kesar," holds a special distinction. Kesar mangoes are cultivated in the Saurashtra region of Gujarat, specifically in the Junagadh and Gir-Somnath districts, spanning approximately 20,000 hectares and yielding an estimated annual production of over 200,000 tonnes. The "Gir Kesar" mango, cultivated in the vicinity of the Gir Forest National Park, is celebrated for its distinctive aroma, rich saffron-colored pulp and superior taste. Cultivation begins post-monsoon in October, and the fruit typically arrives in the markets by April. Recognized as one of the most premium and expensive mango varieties, Gir Kesar has also earned the prestigious Geographical Indication (GI) tag, affirming its regional uniqueness and market value.

Despite its prominence, mango growers in this region face multiple challenges, particularly in efficiently and profitably marketing their produce. This study investigates the marketing constraints experienced by mango cultivators in the Junagadh and Gir-Somnath districts, with the aim of identifying key issues and proposing viable solutions to strengthen the mango value chain in Gujarat.

Materials and Methods

Location and Study Area

The Junagadh and Gir Somnath districts were selected purposively. These districts were selected because of their significant share in the cultivation of mangoes and the selling of Excel Crop Care products in Gujarat. The present study was conducted in 2017.

The geographical locations of Junagadh and Gir Somnath districts were 20.44º to 21.40º North (latitude) and 69.40º to 71.05º East (longitude). The maximum temperature of these districts is 42ºC and the minimum temperature is 10 °C. There are six main rivers which flow through the district which are Ojhat, Uben, Hiran, Raval, Madhuvanti and Machhundri. The average rainfall in the Junagadh and Gir Somnath districts is 787 mm. The Junagadh and Gir Somnath districts are located in Western Gujarat and are surrounded by the Arabian Sea to its South.

Table 1 : Details of Junagadh and Gir Somnath Districts.

Sr. No.	Particular	Details
1	Taluka	15
2	Gram Panchayat	820
3	Villages	1030
4	Population	2448427
5	Area	8871.06 S/km
6	Rural residents	1731101
7	Average Rain Fall	787mm

Sampling Technique

A three-stage sampling technique was adopted. In the first stage, two districts, Junagadh and Gir Somnath, were selected. In the second stage, three talukas, namely Talala, Una, and Gir Gadhada from Gir Somnath district and Vanthali and Mendarda from Junagadh district were selected purposively. In the third stage of sampling, 20 farmers from each taluka were selected for the study purpose. Hence, 100 farmers were selected for the study from the study area.

Table 2: Basic information of survey area and size of sample

	Junagadh	Gir-Somnath	Total
Taluka	Two	Three	-
Village	Eight	Twelve	-
Farmers	40	60	100

Nature and Sources of Data

Two types of data were collected for the study: primary and secondary. Primary data were collected through personal interviews with farmers using well-structured questionnaires. Other information required for the study regarding the company and its products was collected directly from the company.

Secondary data and other relevant information for the study were gathered from agricultural departments, Internet, and companies.

Statistical Analysis

Simple tabular analysis, percentages, and graphical methods were used to interpret the analyses.

Factor analysis (Anandaraj *et al.,* 2011)

The individual statements of a study on the factors that influence the marketing of mangoes will be examined using factor analysis based on 00 individual statements, and the reliability of the samples collected will be tested for the internal consistency of the grouping of the items. The KMO measure of sampling adequacy is an index used to examine the appropriateness of factor analysis. High values between 0.5 and 1.0 indicate that factor analysis is appropriate. Values below 0.5 imply that factor analysis may not be appropriate for the data. Bartlett's Test of Sphericity will be used to examine the hypothesis that the variables are uncorrelated. It is based on the chi-square transformation of the determinant of the correlation matrix. A large value of the test statistic favors the rejection of the null hypothesis. This indicates that factor analysis is appropriate. To study the marketing problems of the mango growers of Junagadh and Gir-Somnath district, mathematically, factor analysis is somewhat similar to multiple regression analysis. Each variable was expressed as a linear combination of the underlying factors. The amount of variance, variable shares with all the other variables included in the analysis, is referred to as communality. The co-variation among the variables is described in terms of a small number of common factors, plus a unique factor for each variable. These factors were not observed. If the variables are standardized, the factor model may be represented as

$X_i = A_{i1} F_1 + A_{i2} F_2 + A_{i3} F_3 + \ldots\ldots\ldots + A_{im} F_{im} + V_i U_i$

Where,

X_i = i^{th} Standardized Variable

A_{ij} = Standardized Multiple Regression Coefficient of variable i on Common Factor j

F = Common Factor

V_i = Standardized Regression Coefficient of variable i on Unique Factor i

U_i = The Unique Factor for variable

M = Number of Common Factor

To find out the marketing problem faced by mango farmers, the data will be collected on 29 factors Marketing is not difficult, It is easy to get packing material, The local market is sufficient for selling the mangoes, Better or competitive price for mangoes are available, Prices of mangoes keep fluctuating in every season, It is easy to sell soon after the harvest, Information from the Gov. about financial assistance is essential, Mode of transport is the most important factor for marketing, Transport cost is higher than the expected cost, Insufficient transport facilities exist in the marketing of mangoes, There is a need for more information about the marketing, Lack of information about the marketing strategies misguides, Commission charges collected by intermediaries are too high, Price differences among various markets high, There is a lack of Gov. assistance in marketing, Difficult to get finance from organized sector is a complex procedure, Advance money obtained from middlemen is not used properly, Interest is too high for borrowed capital, During the rainy season, more storage facilities are available, Information from Gov. about the channels of marketing is essential, It is easy to sell after ripening, Profit is high it leads to cultivation in more areas, More labour is available for the marketing of mangoes, It is difficult to sell in peak season, Middleman assistance is very essential for mango marketing, Getting finance from the organized sector is a complex procedure, Selling through middlemen leads to malpractices in mango marketing and Borrowed capital is the main source of assistance for mango marketing The unique factors are uncorrelated with each other and with the common factor. The common factors can be expressed as a linear combination of the observed variables.

$$F_i = W_{i1} X_1 + W_{i2} X_2 + W_{i3} X_3 + \ldots\ldots\ldots + W_{ik} X_k$$

Where,

F_i = Estimate of i^{th} factor

W_I = Weight or Factor score coefficient

K = Number of variables.

Results and Discussion

Rotated factor matrix for marketing problems of mango growers (factor analysis)

Marketing of mangoes differs from place to place among Indian Farmers, in Junagadh and Gir Somnath districts, farmers selling their mangoes to local traders, commission agents and juice factories and through oral contracts between sellers and buyers. The price-fixing method of mangoes is based on the market situation and demand for mangoes in Junagadh and Gir Somnath districts and the majority of the mangoes are consumed by the mango industry as mango pulp.

The Rotated Factor Matrix for the variables related to marketing problems among the overall sample respondents is presented in Table 3. It exhibits the rotated factor loadings for the 28 statements (factors) of the mango marketing problems. It is clear from the table that all 28 statements have been extracted into six factors, namely F1, F2, F3, F4, F5 and F6. The factors with identified new names that influence marketing problems are discussed in the following paragraph.

Factor I: Infrastructure Facilities: This factor explained 16.38 per cent of the variance of all the factors. This factor is inclusive of number of variables, namely, need for more information, insufficient transport facilities is the most important factor for marketing, transportation cost is higher than the expected cost, these factors have higher positive loadings. Hence, the above said seven factors with high loading on Factor I are characterized as "Infrastructure Facilities ". It can be concluded that the factor' need more information and infrastructure facilities, is most important factor

Factor II Accessibility: The significant loading statements under the third factor are. These are important factors with higher positive loadings on Factor III. Therefore, all three variables with high loadings on Factor II are characterized as "Accessibility." The Eigen value for the above Factor II is 2.375 and the percentage variance is 10.797

Factor III Marketing and financial: the significant loading statements under the fifth factor are that commission charges collected by the intermediaries are too high and price differences among the various markets are high, which are the factors with higher positive loading on Factor III. Therefore, all the variables were characterized as "Marketing and financial". The Eigen value for Factor III is 2.274, and the percentage variance is 8.122. It can be concluded that recognition of higher charges is the fifth most important factor for the marketing problems of mango growers.

Factor IV government Aid: The statements such as during the rainy season. More storage facilities are available, and information from the government about the channels of marketing is essential, which are the factors with higher positive loading on Factor IV. Therefore, all variables were characterized as "Government Aid." The Eigen value for Factor IV is 2.274, and the percentage variance is 8.122. It is to be concluded that recognition in higher charges fifth important factor for marketing problem of mango growers.

Factor V: Borrowed Capital & Higher charges: The second factor consists of variables such as borrowed capital being a main source of assistance for mango marketing and high interest for borrowed capital, which are the factors with higher positive loadings on Factor II. Therefore, all the factors with high loadings on Factor V are characterized as "Borrowed Capital & Higher charges ". The Eigen value for Factor V was 3.83, and the percentage variance was 13.68. It can be concluded that borrowed capital is the second variable.

Factor VI More Assistance: The significant loading statements under the fifth factor are that commission charges collected by the intermediaries are too high and price differences among the various markets are high, which are the factors with higher positive loading on Factor V. Therefore, all variables were characterized as "More Assistance." The Eigen value for the above Factor VI is 2.274, and the percentage variance is 8.122. It is to be concluded that recognition in higher charges fifth important factor for marketing problem of mango growers.

Table 3 : Rotated Component Matrix

Variables	Components					
	1	2	3	4	5	6
Information from Gov.	0.946	0.043	0.139	0.078	0.056	0.105
Need more information	0.932	0.066	0.108	0.068	0.039	0.133
Transportation high	0.927	0.091	0.163	0.072	0.03	0.068
Insufficient transport facilities	0.91	0.029	0.134	0.106	0.031	0.135
Easy to sell after harvest	0.63	0.06	0.281	0.2	0.037	0.21
More	0.63	0.06	0.281	0.2	0.037	0.21
Marketing not difficult	0.049	0.981	0.008	0.069	0.068	0.007
It easy to get packing.	0.049	0.981	0.008	0.069	0.068	0.007
Local market is sufficient	0.049	0.981	0.008	0.069	0.068	0.007
Profit is high to lead cultivate	0.063	0.041	0.973	0.012	0.012	0.063
Price keep fluctuating	0.063	0.041	0.973	0.012	0.012	0.063
Misguides strategies	0.063	0.041	0.973	0.012	0.012	0.063
Easy to sell after ripening	0.044	0.114	0.347	0.191	0.224	0.173
Difficult to sell in peak season	0.238	0.262	0.297	0.279	0.091	0.18
Mode of transport	0.039	0.011	0.23	0.185	0.138	0.079
During rainy season more storage.	0.04	0.038	0.08	0.921	0.081	0.114
Information about marketing channels	0.04	0.038	0.08	0.921	0.081	0.114
Price differences	0.02	0.061	0.047	0.875	0.133	0.058

Lack of Gov. assistance	0.057	0.06	0.073	0.462	0.123	0.065
Finance from org sector is complex procedure	0.005	0.026	-0.077	0.284	0.282	0.128
Commission charges high	0.035	0.082	0.023	0.119	0.922	0.126
Borrowed capital is main source	0.035	0.082	0.023	0.119	.	0.126
Middleman assistance	0.054	0.612	0.07	0.103	0.635	0.087
Interest high to borrowed capital	0.139	0.098	0.159	0.052	0.333	0.214
Difficult to get finance	0.152	0.13	0.004	0.299	0.303	0.21
lack better varieties	0.059	0.009	0.05	0.063	0.081	0.923
Selling through middleman	0.036	0.016	0.006	0.071	0.073	0.914
Money not used properly	0.03	0.054	0.072	0.116	0.163	0.18
Eigen Values	4.589	3.832	3.499	3.065	2.274	1.823
% of variance	16.388	13.685	12.495	10.945	8.122	6.512
Cumulative variance	16.388	30.073	42.569	53.513	61.635	68.147

Extraction Method: Principal Component Analysis

Factors for marketing problems of mangoes

The variables with the loadings for marketing problems of mangoes are provided in Table 4. It is clear from table that the Accessibility with a factor loading of 0.981 followed by Marketing and financial with a factor loading of 0.973, Information from Government about financial assistance is essential with a factor loading of 0.946 under There is lack of information about the better varieties of mangoes. With a factor loading of 0.923 under More Assistance, Commission charges collected by the intermediaries are too high with a factor loading of 0.922, and during the rainy season, more storage facilities are available. With factor loading of 0.921 under Government Aid, were the variables with the highest factor loadings under the factor F1, F2, F3, F4, F5 and F6. Therefore, these are the identified five variables which influence the empowerment of rural women as expressed by the respondents selected for the present study.

Table 4 : Variables with the loadings for marketing problems of mango

Factors	Extracted factors	Selected Statement (Variable)	Factor Loadings
F1	Infrastructure Facilities	Information from the Government about financial assistance is essential	0.946
F2	Accessibility	Marketing is not difficult.	0.981
F3	Marketing and finance	Profit is high to lead cultivate.	0.973
F4	Government Aid	During rainy season more storage.	0.921
F5	Borrowed Capital	Commission charges collected by the intermediaries are too high.	0.922
F6	More Assistance	There is a lack of information about the better varieties of mangoes.	0.923

Conclusion

Through factor analysis of 28 identified statements regarding marketing challenges, six key factors were extracted:

1. Infrastructure Facilities
2. Accessibility
3. Marketing and Financial Constraints
4. Government Aid
5. Borrowed Capital
6. Need for Additional Assistance

These six factors collectively explained 67.45% of the total variance, indicating that multiple interlinked issues severely affect the marketing efficiency and financial sustainability of mango farming. Further challenges include price volatility, lack of storage infrastructure and dependence on outdated cultivation methods, shortage of labour and the dominance of middlemen in the value chain. Dissatisfaction with agrochemical pricing, limited awareness of product effectiveness and poor packaging were also reported. Despite these issues, mango cultivation continues to hold significant potential due to its cultural importance, economic value, and employment-generating capacity.

Suggestions

Based on the above findings, the following actionable suggestions are proposed:

For Farmers and Institutions

- **Capacity Building:** Implement regular awareness programs, demonstrations and training sessions to educate farmers on modern cultivation methods, pest control and post-harvest handling.

- **Integrated Farming:** Encourage supplementary activities like dairying alongside mango cultivation to enhance income stability and reduce cost burdens.
- **Community Engagement:** Promote participation in farmer cooperatives or self-help groups to foster knowledge sharing, collective marketing and better negotiation power.

For Government and Policy Makers

- **Storage Facilities:** Develop cold storage and warehousing infrastructure in mango-growing clusters to reduce post-harvest losses.
- **Price Stabilization Mechanism:** Introduce a minimum support price or price forecasting system based on real-time market dynamics to protect farmers from exploitative pricing.
- **Disease & Pest Management:** Organize field campaigns to spread awareness about common mango diseases and appropriate pesticide usage, possibly through Krishi Vigyan Kendras (KVKs).

For Agro-Chemical Companies

- **Product Demonstration:** Conduct field trials and method/result demonstrations on farmers' plots to gain their trust and demonstrate product effectiveness.
- **Marketing and Branding:** Strengthen grassroots engagement through awareness camps at village fairs and agricultural exhibitions and provide free samples for new products.
- **Better Communication:** Use local media channels (radio, WhatsApp groups, vernacular print) to communicate product features, availability and benefits effectively.
- **Attractive Packaging and Availability:** Improve product packaging to make it more user-friendly and visually appealing and ensure timely availability at village-level retailers.
- **Pricing Strategy:** Reconsider pricing models to make inputs more affordable without compromising on quality.
- **Frequent Field Visits:** Sales and technical executives should increase field visits and engage directly with farmers and retailers to understand ground-level challenges.

By implementing these multi-pronged strategies, the sustainability and profitability of mango cultivation in the Junagadh and Gir-Somnath districts can be significantly enhanced, leading to improved livelihoods for the farming community.

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