

# **A Study Of The Marketing Problems Of Mango Growers (Using Factor Analysis) In Madurai District, Tamil Nadu**

**\* Dr. P. Anandaraj**

**\*\* Dr. V. Chinniah**

## **INTRODUCTION**

India is a country of peasants, and agriculture provides sustenance to more than two-thirds of the Indian population. Agriculture is the backbone of the Indian economy, and no planning for economic growth can be fruitful without the development of the agricultural sector. This sector in India assumes special importance in the context of the population explosion, and it is required that agricultural planning should be so devised that agricultural productivity should keep pace with the growing population.

Efficient agricultural management to ensure better and still better productivity may make a valuable contribution to the balanced growth of the Indian economy. It occupies a central position in the Indian economy. It contributes 29.4 per cent of the GDP, employing 64 per cent of the work force of the country. The Indian agriculture is characterized by poor yields, stagnant diversification, imperfect market conditions and traditional production practices. There are a number of sub-fields in the agricultural sector like the sericulture, the floriculture, and the horticulture. Among those fields, horticulture has played a dominant role in the agricultural output throughout India.

Mango is the national fruit and king among the fruits in India. In the production of horticultural crops in India, production of mango is about 60 per cent. Mango is one of the highly loved fruits in the country. It contains various nutrients namely  $\beta$  carotene, carbohydrates, Vitamin 'C', fibre and energy. It is one of the cheapest fruits in India, which can be eaten even by the poorest of the poor. The mango growers are facing many problems every single day. There is no well-organized marketing system and co-operation among the growers. The commission agents and the middlemen are exploiting the illiterate farmers by fixing the prices much below the cost of production. Generally, mango prices are fixed by the middlemen, not by the growers, with the result that they have lost their shares in the mango business. Mango cultivation is seasonal and therefore, during the off-season, the growers are compelled to search for alternative employment.

The study area, namely Madurai district is very famous for mango cultivation. Especially, the blocks around the Madurai district are contributing the maximum quantity of mangoes to the Madurai Market. Madurai district is world famous for a farmer oriented festival namely *Jallikkattu*, in which young men face death or injury trying to tame a ferocious bull. Also, the city is called the temple city of Tamil Nadu. Previously, the entire production of mangoes was sent to the Madurai market, which involved high amount of work cost. But at present, the mango growers themselves organize a local mango market at the production place itself. Though mango cultivation is not a profitable, many people are engaged in its cultivation due to the non-availability of alternative occupation. Since large numbers of farmers are involving themselves in this field in Madurai District, it is very much essential to study the marketing conditions of the mango growers in Madurai district, Tamil Nadu for the purpose of analyzing their problems. Hence, the present study was undertaken by the researchers.

## **MARKETING PROBLEMS OF MANGO CULTIVATION**

Cultivation of fruits contributes to the health, happiness and prosperity of people. The standard of living of the people can be judged by the production and consumption of fruits per capita.<sup>1</sup> Mango, the world's most luscious fruit, has

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\* *Research Associate*, Department of Management Studies, Madurai Kamaraj University, Madurai - 625021, Tamil Nadu.

E-mail : ok\_anandaraj@yahoo.co.in

\*\* *Professor*, Department of Management Studies, School of Business Studies, Madurai Kamaraj University, Madurai - 625021, Tamil Nadu. E-mail : vciiyaa@yahoo.co.in

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<sup>1</sup> J.S.Bal, *Fruit Growing*, Kalayani Publishers, Ludhiana, 1997, pp.8-9.

been recognized as the “*king of fruits*” long back.<sup>2</sup> Mangoes (*mangifera indica*) are perennial trees grown in India in the states of Tamil Nadu, Karnataka, Andhra Pradesh, West Bengal, Assam, Gujarat, Maharashtra, Madhya Pradesh, Uttar Pradesh and parts of Bihar.<sup>3</sup>

The area and production of fruits in general and mango, in particular, has increased many folds during the last fifteen years. This has also brought in many problems with regard to the marketing of the fruits. The various marketing facilities necessary for economic disposal of the produce have, however, not been able to keep pace with the fast expanding fruit industry. The main characteristics of fruits like seasonality in production, bulkiness and perishable nature render the task of marketing of fruits more difficult and delicate. In the absence of any planned marketing programmes for these fruits, the producers are often deprived of good returns, and at the same time, the consumers suffer by not getting fruits at a reasonable price.

The returns from mango cultivation depend, along with several other factors, on the quality of fruit, which in turn is determined by the time of picking, care taken in grading and packing, time taken in transportation and the like. The packing material has also become a problem with the increase in the production of mango in the district. Keeping all these factors in mind, the major marketing problems of the mango growers are discussed in details in this paper.

## **FOCUS OF THE STUDY**

Madurai district is one of the important districts in Tamil Nadu and agriculture forms the backbone of the district economy. It is one of the major mango producing districts of Tamil Nadu. Mango is an important commercial crop, which plays a vital role in the agricultural economy of Madurai District. Besides, mango is grown under irrigated and unirrigated conditions. Several thousands of people get employment directly as well as indirectly. In Madurai district, Mango is the most popular fruit. It is liked equally by both the rich and the poor. The district has the sixth place in mango cultivation in Tamil Nadu. In this district, a large number of farmers are engaged in mango cultivation. Presently, in Madurai district, mango is cultivated in various blocks like Madurai Alanganallur, Vadippatti, Melur, Kottampatti, Sedapatti, Madurai West and Thirumangalm. Hence, the researchers have selected the entire district for the study. The study is mainly conducted on behalf of the mango growers. It does not include other persons who are directly or indirectly connected with mango cultivation.

## **OBJECTIVE OF THE STUDY**

The objective of the study is to find out and analyze the marketing problems of the mango growers in Madurai District, Tamil Nadu.

## **METHODOLOGY AND DATA COLLECTION**

The present study is based on both the primary and the secondary data. The primary data were collected from mango growers of Madurai District, with the help of an interview schedule. The secondary data were collected from the various journals, books and the like.

## **SAMPLING DESIGN**

For the present study, the researchers adopted the multi-stage random sampling with Madurai district as the universe, the taluk as the stratum, the village as the primary unit of sampling and the mango growers as the ultimate unit.

Madurai district consists of 7 taluks namely - Vadippatti, Melur, Madurai South, Madurai North, Usilampatti, Peraiyur and Thirumangalam. There are thirteen revenue blocks. Each taluk consists of two revenue blocks except Madurai South. There are two blocks in Melur (Melur and Kottampatti), two in Vadippatti, (Vadippatti and Alangaallure), two in Madurai North (Madurai East and Madurai West), two in Usilampatti (Usilampatti and Chellampatti), two in Peraiyur (T.Kallupatti and Sedapatti), two in Thirumangalm (Thirumangalam and Kalligudi) and one block in Madurai South namely, Thirupparamkundram.

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<sup>2</sup> Room Singh and R.R. Sharma, Eldon: A Future Mango for Export, *Journal of Indian Horticulture*, April-June 2002, p.26.

<sup>3</sup> K. Anand Singh and E. Srinivas, Control of Leaf Webber in Mango, *Kisan World*, October, 2000, p.46.

On enquiry with the office of the Assistant Director of Horticulture of Madurai, it was understood that there are around 2500 growers actively engaged in mango cultivation in the district. Out of the 2500 growers that constitute the total population, 12 per cent numbering 300 respondents was considered as an ideal sample size. Melur taluk covers 35 per cent of the area, Vadippatti 25 per cent, Madurai North 14 per cent, Madurai South and Usilampatti taluks individually cover 8 per cent of the mango cultivating area. Peraiyur and Thirumangalam taluks each separately cover five per cent of the mango cultivating area. Twelve villages were selected from Melur at random, Eight from Vadippatti, Four from Madurai North, two each from Madurai South and Usilampatti and one village each from Peraiyur and Thirumangalam taluks.

One hundred and five growers were selected at random from all the 12 villages from Melur taluk, 75 growers from the villages of Vadippatti, 42 growers from Madurai North, 24 growers were selected each from Madurai South and Usilampatti and 15 each from two villages of Peraiyur and Thirumangalam. Table 1 explains the sample selection of the study area.

<b>Table 1: Sample Framework In Madurai District</b>			
<b>Sl. No</b>	<b>Taluk</b>	<b>Block</b>	<b>Sample Size of growers</b>
1	Melur	Melur Kottampatti	105
2	Vadippatti	Vadippatti Alanganallure	75
3	Madurai North	Madurai East Madurai West	42
4	Madurai South	Thiruparankundram	24
5	Usilampatti	Usilampatti Chellampatti	24
6	Peraiyur	T. Kallupatti Sedapatti	15
7	Thirumangalam	Thirumangalam Kalligudi	15
<b>Total sample</b>			<b>300</b>

It is clear from Table 1 that out of the total 300 respondents identified in the study, 150 are small growers, and the remaining 150 are the large growers. The growers having up to 5 acres of cultivating land were grouped as small size growers, and the growers having more than 5 acres of cultivating land were grouped as large growers.

## FRAMEWORK OF THE ANALYSIS

In order to study the marketing problems of the mango growers of Madurai District, the researchers have used the factor analysis for studying the data.

Mathematically, factor analysis is somewhat similar to the multiple regression analysis. Each variable is 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 are not over observed. If the variables are standardized, the factor model may be represented as:

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

Where,

- $X_i$  =  $i^{\text{th}}$  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  $i$   
 $m$  = Number of Common Factors

The unique factors are uncorrelated with each other and with the common factors. The common factors themselves can be expressed as linear combinations of the observed variables.

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

Where,

$F_i$  = Estimate of  $i^{\text{th}}$  factor

$W_i$  = Weight or Factor Score Coefficient

$K$  = Number of Variables.

It is possible to select weights or factor score coefficients so that the first factor explains the largest portion of the total variance. Then, a second set of weight can be selected, so that the second factor accounts for most of the residual variance, subject to being uncorrelated with the first factor. This same principle could be applied to selecting additional

Table 2 : Rotated Factor Matrix for Marketing Problems of Mangoes							
SNo.	Variable	F1	F2	F3	F4	F5	F6
1.	Marketing is not difficult.	<b>.7210</b>	.1636	.0449	.0541	.0428	-.1407
2.	It is easy to get packing material.	<b>.6815</b>	.1387	-.1006	.0749	.2109	-.0926
3.	The local market is sufficient for selling the mangoes.	<b>.6750</b>	-.0513	.1056	.2122	.0082	-.1590
4.	Better or competitive prices for mangoes are available.	<b>.6547</b>	-.0016	.2279	-.0138	.2060	.0797
5.	Prices of mangoes keep fluctuating in every season.	<b>.6087</b>	.0352	.2741	.0193	.1104	-.0646
6.	It is easy to sell soon after the harvest.	<b>.5635</b>	.0744	.1639	.1449	-.0563	.1350
7.	It is easy to sell after ripening.	<b>.5246</b>	.4042	.3100	.0115	.0175	.0286
8.	Profit is high, it leads to cultivation in more areas.	<b>.5049</b>	.1798	.0693	.2618	.4052	-.1378
9.	Information from the Government about financial assistance is essential.	.3254	<b>.7169</b>	.0960	-.0713	.0706	-.0377
10.	More labour is available for the marketing of mangoes.	.0621	<b>.6348</b>	.0944	.1802	-.1963	.0080
11.	Mode of transport is the most important factor for marketing.	-.1085	<b>.6003</b>	.0531	-.0055	.1568	.1628
12.	Transport cost is higher than the expected cost.	.2370	<b>.5414</b>	.1689	.1302	.3604	.1494
13.	Insufficient transport facilities exist in the marketing of mangoes.	-.0544	<b>.5067</b>	.3806	.3028	-.1808	-.2755
14.	There is a need for more information about the marketing of mangoes.	.0971	<b>.4357</b>	.2391	.20265	.0646	.0206
15.	Lack of information about the marketing strategies misguides the farmers.	.1966	<b>.4150</b>	.2939	.2884	-.0527	.1461
16.	Commission charges collected by intermediaries are too high.	.2209	.2955	<b>.6921</b>	-.0932	-.0583	.0651
17.	Price differences among various markets are high.	.1235	.0722	<b>.6144</b>	-.0007	-.0423	.0367
18.	There is a lack of Government assistance in mango marketing.	.0427	.1632	<b>.5777</b>	.2473	.0094	-.1040
19.	It is difficult to sell in peak season.	.1402	.0084	<b>.5735</b>	.1535	.2178	.2053
20.	There is a lack of information about better varieties of mangoes.	.35971	-.1315	.1142	<b>.6217</b>	-.1522	.0311
21.	Middlemen assistance is very essential for mango marketing.	-.0229	.3648	.0608	<b>.6203</b>	.1403	-.0797
22.	Difficult to get finance from organized sector than from unorganized sector.	-.0836	.0803	.0543	<b>.6137</b>	.0139	.5207
23.	Getting finance from the organized sector is a complex procedure.	.2216	.1446	.2307	<b>.4967</b>	.3714	-.0540
24.	Advance money obtained from middlemen is not used properly.	-.0593	.3784	-.2726	<b>.4280</b>	-.3982	.2807
25.	Selling through middlemen leads to malpractices in mango marketing.	.3433	.0063	.3878	<b>.4043</b>	-.0251	-.3120
26.	Borrowed capital is the main source of assistance for mango marketing.	.0801	-.0500	-.1270	.0268	<b>.6175</b>	.0430
27.	Interest is too high for borrowed capital.	.3331	.3997	.1675	-.0823	<b>.5755</b>	.0330
28.	During the rainy season, more storage facilities are available.	-.2225	-.0001	.0417	.0212	-.0720	<b>.5627</b>
29.	Information from Government about the channels of marketing is essential.	.2911	.2274	.1515	-.0297	.2171	<b>.4506</b>
	Eigen Value	5.9788	2.6896	1.9715	1.5752	1.4507	1.4126
	Percentage Variance	20.60	9.30	6.80	5.40	5.00	4.90
	Cumulative % Variance	20.60	29.90	36.70	42.10	47.10	52.00
Note: F = Factor							

weights for the additional factors. Thus, the factors can be estimated so that the scores of their factors, unlike the value of the original variables, are not correlated. Furthermore, the first factor accounts for the highest variance in the data, the second factor the second highest, and so on.

## ROTATED FACTOR MATRIX FOR MARKETING PROBLEMS OF MANGO GROWERS (FACTOR ANALYSIS)

The Rotated Factor Matrix for the variables relating to the marketing problems among the overall sample respondents are given in Table 2.

Table 2 exhibits the rotated factor loadings for the 29 statements (factors) of the marketing problems of mango. It is clear from Table 2 that all the 29 statements have been extracted into six factors namely  $F_1$ ,  $F_2$ ,  $F_3$ ,  $F_4$ ,  $F_5$  and  $F_6$ . The factors with identified new names which influence marketing problems are discussed in the following paragraph.

✿ **Factor I ( $F_1$ )** : Among the marketing problems of mango growers, '*marketing is not difficult*', '*it is easy to get packing material*', '*local market is sufficient for selling the mangoes*', '*better or competitive prices for mangoes are available*', '*prices of mangoes keep fluctuating in every season*', '*it is easy to sell soon after the harvest*', '*it is easy to sell after ripening*' and '*profit is high, so it leads to cultivation in more areas*' are the factors with higher positive loadings on Factor I. The above said eight factors with high loadings on Factor I are characterized as **"Accessibility"**. Hence,  $F_1$  is termed as **Accessibility**. The eigen value for the above Factor I is 5.9788 and the percentage variance is 20.60. It can be concluded that the factor 'marketing of mangoes is not difficult' is considered as the first important factor.

✿ **Factor II ( $F_2$ )** : The second factor consists of factors such as '*Information from the Government about financial assistance is essential*', '*more labour is available for the marketing of mangoes*', '*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 mango*', '*there is a need for more information about the marketing of mango*', and '*lack of information about the marketing strategies misguides the farmers*'. These are the factors with higher positive loadings on Factor II. Therefore, all the seven factors with high loadings on Factor II are characterized as **"Infrastructure Facilities"**. Hence,  $F_2$  is termed as **Infrastructure Facilities**. The eigen value for the above Factor II is 2.6896, and the percentage variance is 9.30. It is to be concluded that the infrastructure facilities such as storage, transport, information about market and the like are needed more for the marketing of mango. It is the second important factor.

✿ **Factor III ( $F_3$ )** : The significant loading statements under third factor ( $F_3$ ) are '*commission charges collected by the intermediaries are too high*', '*price differences among the various markets are high*', '*there is lack of government assistance in mango marketing*', and '*it is difficult to sell in peak season*'. These are the important factors with higher positive loadings on Factor III. Therefore, all the four variables with high loadings on Factor III are characterized as **"Higher Charges"**. Hence,  $F_3$  is termed as **Higher Charges**. The eigen value for the above Factor III is 1.9715 and the percentage variance is 6.80. It is to be concluded from the above analysis, that the marketing of mangoes leads to higher payment of commission charges, price difference, and the like.

✿ **Factor IV ( $F_4$ )** : The statements '*there is a lack of information about better varieties of mango*', '*middlemen assistance is very essential for mango marketing*', '*it is difficult to get finance from the organized sector than the unorganized sector*', '*Getting finance from the organized sector is a complex procedure*', '*advance money obtained from middlemen is not properly used*', and '*selling through middlemen leads to malpractices in mango marketing*' are the factors with higher positive loadings on Factor IV. Therefore, all the six variables with high loadings on Factor IV are characterized as **"More Assistance"**. Hence,  $F_4$  is termed as **More Assistance**. The eigen value for the above Factor IV is 1.5752, and the percentage variance is 5.40. It is to be concluded that the marketing of mango needs more assistance regarding varieties, middlemen, finance and the like. It is the fourth important factor.

✿ **Factor V ( $F_5$ )** : It is understood that the statements, '*borrowed capital is a main source of assistance for mango marketing*' and '*interest is too high for borrowed capital*' are the factors with higher positive loadings on Factor V. Therefore, the above two variables with high loadings on Factor V are characterized as **"Borrowed Capital"**. Hence,  $F_5$  is termed as **Borrowed Capital**. The eigen value for the above Factor V is 1.4507, and the percentage variance is 5.00. It is to be concluded that the borrowed capital is the main source for mango marketing, and it is the fifth dominant factor.



Table 3: Variables with the Highest Factor Loadings for the Marketing Problems of Mangoes			
Factor	Name of newly Extracted Factor	Selected Statement (Variable)	Factor Loadings
F1	Accessibility	Marketing is not difficult .	0.7210
F2	Infrastructure Facilities	Information from the Government about financial assistance is essential.	0.7169
F3	Higher Charges	Commission charges collected by the intermediaries are too high.	0.6921
F4	More Assistance	There is lack of information about the better varieties of mangoes.	0.6217
F5	Borrowed Capital	Borrowed capital is the main source of assistance for mango marketing .	0.6175
F6	Government Aid	During the rainy season, more storage facilities are available.	0.5627

✿ **Factor VI (F<sub>6</sub>)** : The statements of marketing problems of mangoes - '*During the rainy season, more storage facilities are available*' and '*information from the Government about the channels of marketing is essential*' are the factors with higher positive loadings on Factor VI. Therefore, the above two factors with high loadings on Factor V are characterized as “**Government Aid**”. Hence, F6 is termed as **Government Aid**. The eigen value for the above Factor VI is 1.4126, and the percentage variance is 4.90. It is to be concluded from the above factor analysis, that the government assistance is very essential for financial assistance and channels of marketing. The variables with the highest loadings for the marketing problems of mangoes are provided in Table 3.

It is clear from Table 3 that the '*marketing is not difficult*' with a factor loading of 0.7210, '*information from the Government about financial assistance is essential*' with a factor loading of 0.7169, '*Commission charges collected by the intermediaries are too high*' with a factor loading of 0.6921, '*there is a lack of information about the better varieties of mangoes*' with a factor loading of 0.6217, '*borrowed capital is the main source of assistance for mango marketing*' with a factor loading of 0.6175 and '*during the rainy season, more storage facilities are available*' with a factor loading of 0.5627 are the variables with the highest factor loadings under the factors F<sub>1</sub>, F<sub>2</sub>, F<sub>3</sub>, F<sub>4</sub>, F<sub>5</sub> and F<sub>6</sub>. Therefore, these are the identified six variables which influence the marketing problems of mangoes as expressed by the respondents selected for the present study.

## SUGGESTIONS TO IMPROVE THE MARKETING OF MANGOES

The researchers offer appropriate suggestions for solving the marketing problems so as to improve the condition of mango growers.

- (i) The price of mangoes should be fixed after studying the actual situations prevailing in the market. It is also felt that the price of the mangoes should never go below the level of the cost of production.
- (ii) It is necessary to establish cold storage facility at the headquarters in Madurai, since it is interconnected with sufficient transport and marketing facilities, and the mango growers can effectively utilize the services of cold storage.
- (iii) The transport facility in the state should be increased on a large scale to facilitate efficient marketing of mangoes on one hand and reduce losses due to spoilage of the crops, on the other hand.
- (iv) There is an urgent need to set up efficient market information network, so that farmers can get timely and adequate market related information, which will help them to get better prices for the mango.
- (v) The Government of Tamil Nadu should purchase the mangoes from the farmers directly or quote the standard price for mangoes according to the market condition. Otherwise, a system should be developed where the farmers can sell the produce directly to the consumers at retail outlets, without the involvement of middlemen.
- (vi) It is suggested that both the government, and the private agencies should establish more number of processing units in the study area for the benefit of the individual mango cultivators, as well as for the betterment of the country.
- (vii) The Government of Tamil Nadu should establish a separate regulated market during the mango season for the benefit of the mango growers.
- (viii) It is suggested that the banking companies must adopt flexible lending policies to suit the needs of the mango growers.

## CONCLUSION

The researchers analyzed, at close quarters, the harrowing experience of some of the mango cultivators in Madurai district. The highly volatile price pattern, lack of storage facilities, non-availability of agricultural labourers at times, the primitive methods of mango cultivation and the stranglehold of the middlemen are some of the crippling roadblocks faced by the mango entrepreneurs desirous of a steady progress. Mango has remained the topmost fruit in India ever since ancient days. It is a delicious and luscious table fruit for the Indians. To meet the ever-growing demand of the mangoes, a large area of the Indian soil should be used for mango cultivation. The mango cultivation provides employment opportunities to many people, and also helps the mango growers for improving their economic status. In this context, the present study is highly unique in nature and the findings of the study would prove to be quite helpful to many people, including the government departments, for further research as well as for formulating their future plans for various policies.

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