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To study the marketing of mango in Chapra District of Bihar

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Abstract

The present study was conducted during the agricultural year 2024-2025. Mango is one of the most important commercial fruit crops of Chhapra district, contributing significantly to farmers' income and the rural economy. The study was undertaken to analyze the socio-economic profile of mango growers, identify the existing marketing channels, estimate marketing cost, marketing margin, price spread and marketing efficiency of growers in mango marketing. A multi-stage random sampling technique was adopted for the selection of respondents. One block was selected purposively based on the concentration of mango growers, followed by the random selection of ten mango-growing villages. A total of 100 mango growers were selected randomly and categorized into marginal, small, medium, and large farmers. Primary data were collected through a survey method using a structured and pre-tested schedule, while secondary data were obtained from official records and published sources. The results revealed the presence of multiple marketing channels, involving producers, pre-harvest contractors, commission agents, wholesalers, and retailers. The analysis showed that marketing cost and margins increased with the length of the marketing channel, resulting in a lower producer's share in the consumer's rupee. The study revealed that a majority of the respondents were marginal farmers (75%), followed by small farmers (13%), medium farmers (8%), and large farmers (4%). This indicates that mango cultivation in the study area is largely dominated by small and marginal farmers. The analysis of marketing efficiency revealed that Marketing efficiency of Channel I (conventional method) was 20.21, Marketing efficiency of Channel II was 3.18 and that of Channel III was 6.36. The study suggests measures such as strengthening market infrastructure, promoting direct marketing, improving price information systems, and encouraging farmer producer organizations (FPOs) to enhance marketing efficiency and farmers' income. The findings of the study are expected to be useful for mango growers, policymakers, extension agencies, and researchers in formulating strategies for improving mango marketing in the study area.

Keywords: Formulating strategies, Conventional, Marketing efficiency, Commercial fruit and Consumer's rupee

Introduction

India is the second largest producer of fruits after China, with a production of 44.04 million tonnes of fruits from an area of 3.72 million hectares. A large variety of fruits are grown in India, of which mango, banana, citrus, guava, grape, pineapple and apple are the major ones. Mango productivity depends on the synergistic effect of many variables, beyond the control of the farmer. Mango production depends on the rain, seasons and soil conditions, crop variety, water level, irrigation and manure use. In addition to the pesticide, fertilizers, disease control, cultivation time and harvest, farmers knowledge in farming vigorously contributes to mango cultivation. Mango is the major horticultural crop and has acquired special importance in all countries of the world. Its refined taste and its diverse qualities, places it as the King of all fruits in the world. Mango is believed as the most popular and fashionable fruit

among different segment of people. This is the reason behind the people's fondness for mangoes. Mango cultivations plays main role in creating employment and food stuff to the populace. The fruits such as apple, mango, banana, citrus, and guava are the essential fruits cultivated in India. These five fruits cover three - fourth of total fruit production in India. The major mango cultivating states are Dindigul, Dharmapuri, Krishnagiri, Salem, theni, Thiruvallur and Vellore. Mango cultivation occupies 22% of land utilized for different fruit cultivation. In India, several fruits are cultivated nearly 3.35 million hectares and mangoes alone are cultivated nearly in 2.4 million hectares. The varieties of mango cultivated are Bangalore in 30,000 hectares, Alphonso in 4000 hectares, Sendhura in 2000 hectares, Banganapalli in 1000 hectares. The major export varieties are Bangalora, Badami, Banganapalli, Kesar, Alphonso and Dashehari. India, being largest producer of

mangoes, export considerable quantities to several countries after meeting its domestic demand. Mangoes are mainly used to make cool and sweet drinks, which supports mango production.

The present study focuses on Chapra District (officially known as Saran district), which is one of the agriculturally important districts of Bihar. Agriculture is the main source of livelihood for a large proportion of the population in the district, and horticultural crops, particularly mango, play a vital role in enhancing farmers' income and employment opportunities.

Chapra district is well known for mango cultivation due to its favorable agro-climatic conditions, such as suitable temperature, adequate rainfall, fertile alluvial soil, and availability of irrigation facilities. Mango orchards are widely spread across several blocks of the district, and mango is grown both as a commercial crop and a traditional fruit crop. Popular mango varieties cultivated in the district include Langra, Dashehari, Amrapali, and Malda, which have good demand in local as well as outside markets.

Despite having significant production potential, the marketing of mango in Chapra district faces several challenges. Mango being a highly perishable commodity, requires efficient handling, storage, transportation, and timely disposal. In this context, a systematic study on the marketing of mango in Chapra district of Bihar becomes essential to understand the existing marketing structure, cost and margin distribution, price spread, and constraints faced by mango growers. The findings of such a study are expected to provide valuable insights for policy formulation, extension services, and marketing interventions aimed at improving marketing efficiency and enhancing farmers' income in the district.

Table 1: Top 10 Mango Producing Countries in the World

Rank	Country	Value (In tons)
1	India	1,87,79,000
2	China	47,71,038
3	Thailand	34,32,129
4	Mexico	21,97,313
5	Indonesia	21,84,399
6	Pakistan	16,06,091
7	Brazil	14,17,149
8	Egypt	12,77,008
9	Bangladesh	11,61,685
10	Nigeria	9,17,617

Objectives of the study

1. To analyze the marketable surplus and disposal pattern existing in the study area.
2. To identify and evaluate the marketing channels, marketing cost, marketing margin, and marketing efficiency of producers and consumer.

Research Methodology

The present study was conducted in Chapra District (officially known as Saran district). The district was purposively selected because mango is produced at a commercial level and plays an important role in the livelihood of farmers. Favourable agro-climatic conditions, fertile alluvial soil, and traditional mango orchards make Chapra district suitable for conducting a detailed study on

mango marketing. Popularly cultivated varieties of mango in Chhapra district are Langra, Dashehari, and Malda. The district has active local markets and involvement of intermediaries such as commission agents, wholesalers, and retailers, making it suitable for studying mango marketing and supply chain efficiency.

Chapra district consists of twenty development blocks. Among these, Sadar Block (Chapra Sadar) was selected **purposively** due to high concentration of mango orchards, a large number of mango growers and active participation of farmers in mango marketing. The block also has good connectivity to local markets and mandis, making it an important center for mango trade. Farmers in this block actively participate in different marketing channels, which provides a suitable base for analyzing marketing costs, price spread, and producer's share in the consumer's rupee.

Out of the total mango-growing villages in Sadar Block, twelve villages were selected randomly for the present study. From each village, 10 mango growers were selected, making a total sample size of 120 respondents. The selected farmers were interviewed to collect detailed information regarding mango production, marketing channels, marketing costs, price spread, producer's share in consumer's rupee, and marketing efficiency.

A list of all the mango growers was obtained from village panchayat in all selected villages. 10 percent respondents were selected randomly for study on the basis of land holding capacity.

Respondents	Land Holdings
Marginal Farmers	Less than 1 hectare
Small Farmer	1- 2 hectares
Small Farmer	2- 4 hectares
Medium Farmer	4- 10 hectares
Large Farmer	More than 10 hectares

For the present study, primary and secondary markets were selected purposively based on their importance in mango marketing. The markets selected were Chapra Primary Market and Revelganj Market

These markets play a significant role in the sale and distribution of mangoes and involve key market intermediaries such as commission agents, wholesalers, retailers, and pre-harvest contractors. A list of market functionaries operating in the selected markets was prepared with the help of market officials. From the total market functionaries, 1 per cent were selected randomly for the study to collect information related to marketing cost, margin, and price spread. For the study both Primary and Secondary data was collected from different source.

Primary data were collected from selected mango growers and market functionaries using the survey method. A well-structured and pre-tested questionnaire and schedule was used to collect information related to:

- Socio-economic characteristics of mango growers
- Marketing channels of mango
- Marketing cost and marketing margin
- Price spread and marketing efficiency
- Constraints faced in mango marketing

Personal interviews were conducted to ensure accuracy of the data. A reconnaissance survey was also carried out to obtain preliminary information regarding mango varieties, marketing practices, and feedback from growers and intermediaries.

Secondary data were collected to supplement the primary data from the following sources:

- District Agriculture Office, Chapra
- Block Office records
- Department of Agriculture, Bihar
- Published journals, reports, and research studies

Analytical Tools

1 Chi-square: Chi-square formula is a statistical formula to compare two or more statistical datasets. It is used for data that consist of variables distributed across various categories and is denoted by X^2 .

For calculating Chi-square, the formula is:

$$X^2 = \sum (O_i - E_i)^2 / E_i$$

where,

O_i = observed value (actual value) and

E_i = expected value

Marketing Margin: A marketing margin is similar to a profit margin in that it shows the relationship between the amount a company pays for a product and the amount its customers pay. However, while marketing margin is the difference between cost to the seller and the cost to the

consumer, profit margin is the percentage of the final sale price that comes as profit for the seller.

Absolute Margin = $pRi - (ppi + Cmi)$ and

Percentage Margin = $pRi - (ppi + Cmi) / pRi * 100$

Where,

pRi = Total value of goods (purchase price),

Cmi = Cost incurred in Marketing

Marketing Cost

$C = CF + CM1 + CM2 + CM3 + \dots + CMN$

Where,

C = Total Marketing Cost,

CF = Cost Paid by Producer,

CM1 = Cost incurred by 1st Middle Man

$$\text{Marketing Efficiency} = \frac{\text{Consumer Price}}{\text{Total Marketing Cost}}$$

$$\text{Price Spread} = \frac{(\text{Consumer Price} - \text{Net Price of Producer}) \times 100}{\text{Consumer Price}}$$

Results and Discussion

In the present study, data analysis shows the following results:

Table 2: Distribution of farmers on the basis of land holdings (hectare)

S. No	Types of Farmers	Frequency	Percentage
1.	Marginal Farmers(Less than 1 hectare)	75	75%
2.	Small Farmers (1 - 4 hectare)	13	13%
3.	Medium Farmers (4- 10 hectare)	08	08%
4.	Large Farmers (More than 10 hectare)	04	04%
	Total	100	100%

Table 2: Reveals about the distribution of respondents on the basis of land holdings, in the study area in which 75% respondents were marginal farmers, 13% were small

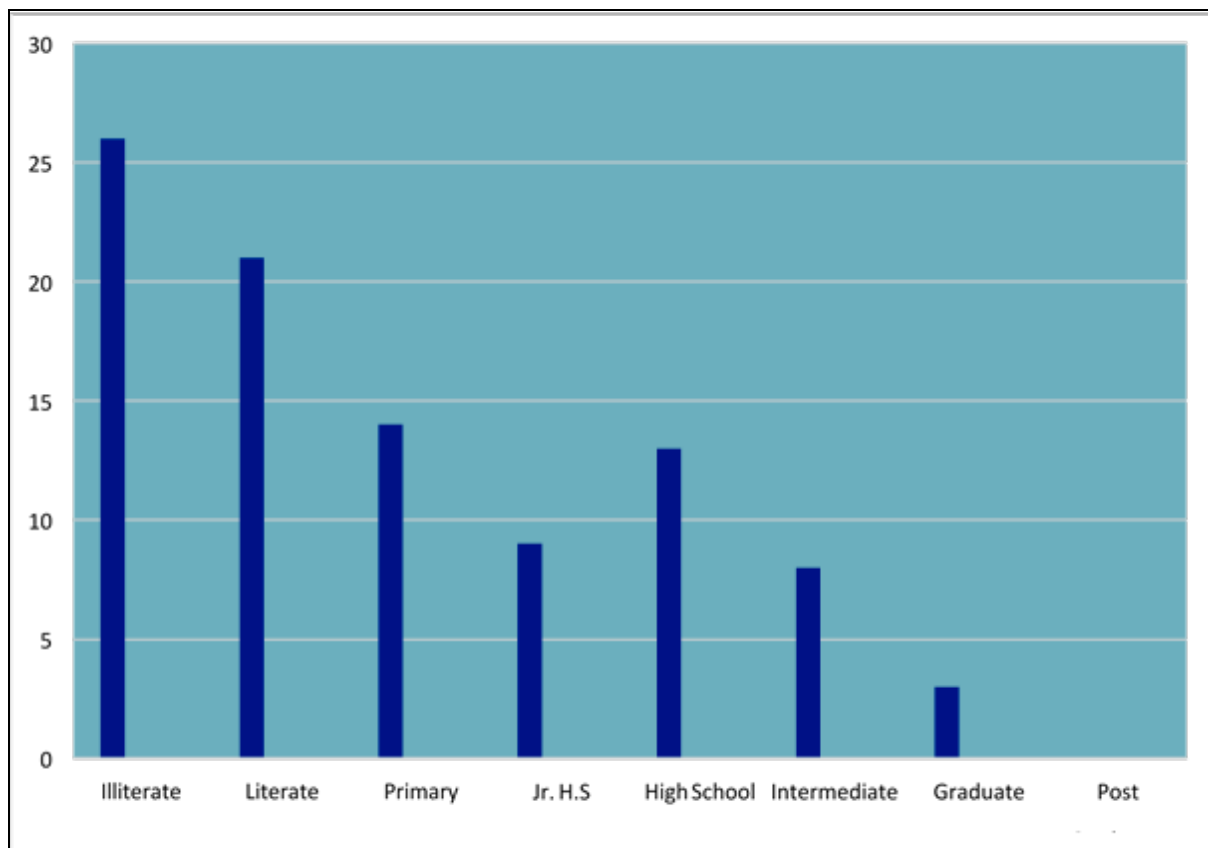
farmers, 08 % were medium farmers and 04% were large farmers.

Table 3: Distribution of Respondents on the basis of Education.

Sl. No	Category	Farmers Type				Total	Percentage
		Marginal	Small	Medium	Large		
1.	Illiterate	26	00	00	00	26	26%
2.	Literate	19	02	00	00	21	21%
3.	Primary	14	04	02	00	20	20%
4.	Jr. High School	05	01	02	01	09	09%
5.	High School	07	02	03	01	13	13%
6.	Intermediate	03	04	00	01	08	08%
7.	Graduate	01	00	01	01	03	03%
8.	Post Graduate	00	00	00	00	00	0%
	Total	75	13	08	04	100	100%

Table 3: reveals about the literacy of farmers in the study area in which 03% respondents had done Graduate, 08% respondents completed Intermediate, followed by 13% High

School, 09% Jr. High School, 20% Primary level and 21% Growers are Literate and 26% are Illiterate.



Altogether, three marketing channels were identified in the study area. The various marketing channels, their corresponding marketing cost, marketing margin, price spread, producer's share in consumer's rupee and marketing

efficiency are discussed as under.

Channel 1



Table 4: Price spread of Mango in Channel 1

Sl. No.	Particulars	Price/ Qtls
1.	Net price received by producer	3400
2.	Cost incurred by the producer	
a.	Packaging cost	20
b.	Packaging material cost	12
c.	Miscellaneous charges	145
3.	Total marketing cost	177
4.	Sale price of producer/Purchase price of consumer	3577
5.	Price Spread	177
6.	Producer Share in Consumer Rupee	95.24
7.	Marketing efficiency	20.21

Channel II



Table 5: Price Spread of Mango in Channel II

Sl. No.	Particulars	Price/Qtls
1.	Net price received by producer	2400
2.	Cost incurred by the producer	
a.	Packaging Cost	20
b.	Packing material cost	21
c.	Transportation cost	27
d.	Loading and unloading cost	50
e.	Miscellaneous charges	60
3.	Marketing cost	178
4.	Sale price of producer/Purchase price of commission agent	2578
5.	Cost incurred by the commission agent	
a.	Loading, Unloading and repacking cost	55
b.	Spoilage and Losses	42
6.	Marketing cost	97
7.	Margin of commission agent	155
8.	Sale price of commission agent/Purchase price of wholesaler	2830
9.	Cost incurred by the wholesaler	
a.	Loading, unloading and repacking charges	73
b.	Grading and sorting charges	62
c.	Spoilage and Losses	53
10.	Marketing Cost	188
11.	Margin of wholesaler	192
12.	Sale price of wholesaler/purchase price of retailer	3210
13.	Cost incurred by the Retailer	
a.	Loading and unloading charges	37
b.	Carriage up to shop	45
c.	Miscellaneous charges	30
d.	Spoilage and losses	40
14.	Marketing cost	152
15.	Margin of retailer	143
16.	Sale price of retailer/ purchase price of consumer	3505
17.	Total Marketing Cost	1105
18.	Net Margin	490
19.	Price Spread	1105
20.	Producer Share in Consumer Rupee	68.47
21.	Marketing Efficiency	3.18

Channel III**Table 6:** Price Spread of Mango in Channel III

Sl. No.	Particulars	Price/ Qtls
1.	Net price received by producer	4500
2.	Cost incurred by the producer	
a.	Packing cost	20
b.	Packing material cost	21
c.	Transportation cost	27
d.	Loading and unloading charges	50
e.	Miscellaneous charges	60
3.	Marketing cost	178
4.	Sale price of producer/Purchase price of commission agent	4678
5.	Cost incurred by the commission agent	
a.	Loading, unloading and repacking cost	55
b.	Spoilage and losses	42
6.	Marketing cost	97
7.	Margin of commission agent	175
8.	Sale price of commission agent/purchase price of retailer	4950
9.	Cost incurred by the Retailer	
a.	Loading and unloading charges	37

b.	Carriage up to shop	45
c.	Grading and sorting charges	75
d.	Miscellaneous charges	30
e.	Spoilage and losses	66
10.	Marketing cost	253
11.	Margin of retailer	137
12.	Sale price of retailer/ Purchase price consumer	5340
13.	Total Marketing Cost	840
14.	Net Margin	312
15.	Price Spread	840
16.	Producer Share in Consumer Rupee	84.27
17.	Marketing Efficiency	6.36

Table 4, 5 and 6 reveal the total marketing cost, marketing margin, price spread, producer share in consumer rupee and marketing efficiency of different marketing channels. In marketing channel I, price spread is Rs. 177, Producer's share in consumer's rupee is Rs. 95.24 and marketing efficiency is 20.21. In which marketing efficiency of channel I by conventional method is 20.21, In marketing channel II, total marketing cost is Rs. 1105, net margin is

Rs. 490, price spread is Rs. 1105, producer's share in consumer's rupee is 68.47 and marketing efficiency is 3.18. In marketing channel III, net margin is Rs. 312, price spread is Rs. 840, producer's share in consumer's rupee is Rs. 84.27 and Marketing efficiency is 6.36. The total marketing price was high in channel II in comparison with other channels. The maximum net price received by the farmers is high in channel III.

Table 7: Marketing Efficiency of Mango in Different Marketing Channels

Particulars	Units	Channel 1	Channel 2	Channel 3
Consumer purchase price	Per Quintal	3577	3505	5340
Total marketing price		177	1105	840
Total net margin of intermediaries		-	490	312
Net price received market intermediaries		3400	2400	4500
Marketing efficiency		20.21%	3.18%	6.36%

Table 7 reveals about the marketing efficiency of different marketing channels, in which marketing efficiency of channel I by conventional method is 20.21, marketing efficiency of channel II is 3.18 and marketing efficiency of channel III is 6.36. The total marketing price was high in channel II in comparison of other channels. The maximum net price received by the farmers is high in channel III i.e. Rs. 4500.

Summary and Conclusion

The study revealed that a majority of the respondents were marginal farmers (75%), followed by small farmers (13%), medium farmers (8%), and large farmers (4%). This indicates that mango cultivation in the study area is largely dominated by small and marginal farmers.

The literacy status revealed that 26 per cent of the growers were illiterate, while 21 per cent were literate without formal education. About 20 per cent had primary education, 9 per cent had junior high school education, 13 per cent had completed high school, 8 per cent had intermediate education, and only 3 per cent were graduates. This shows a relatively low level of higher education among mango growers.

The analysis of marketing efficiency revealed that Marketing efficiency of Channel I (conventional method) was 20.21, Marketing efficiency of Channel II was 3.18 and that of Channel III was 6.36.

The total marketing price was found to be highest in Channel II, whereas the maximum net price received by farmers was observed in Channel III, indicating better returns to farmers through this channel.

It can be concluded from the present study entitled that

mango cultivation and marketing play an important role in the agricultural economy of the district. The study revealed that about 40 per cent of the sample farmers belonged to medium and large farmer categories, indicating that a considerable proportion of growers are in a position to adopt improved production and marketing practices. This is a positive indication for the development of the horticulture and input sectors in the study area.

The study further revealed that price fluctuations in mango are very high during the year, which significantly affects the profitability of mango growers. Due to these fluctuations, traders and intermediaries tend to gain more, while farmers receive a lower share of the consumer's rupee. The role of traders is dominant in mango marketing, resulting in reduced bargaining power for farmers and limiting their ability to realize remunerative prices for their produce.

The absence of value addition activities such as cleaning, grading, proper packaging, and branding in Channel I has adversely affected the quality perception of mangoes and reduced farmers' income. Poor post-harvest handling practices related to taste preservation, colour maintenance, cleaning, grading, and packaging have also discouraged processors during open auction processes, leading to lower prices.

Although farmers showed a clear preference for Marketing Channel II due to better price realization, inadequate post-harvest infrastructure and handling practices have limited their ability to fully benefit from this channel.

Suggestion for the Marketing of Mango

Organic cultivation was strongly recommended as it can significantly increase income per hectare. As there is

growing domestic and international demand for organic mangoes. The adoption of new high-yielding and pest-resistant mango varieties can play a vital role in increasing productivity and reducing losses. Access to technical guidance, quality inputs, institutional credit, transportation facilities, and timely market information is crucial. Interaction between mango growers and the Department of Horticulture should be strengthened, and growers should be encouraged to seek expert advice regularly.

References

1. Patil HN, Kumar P, Muralidharan MA. Marketing margins and price spread in the marketing of Alphonso mangoes in Ratnagiri District, Maharashtra. *Indian Journal of Marketing*. 1988;14(4):21-24.
2. Bhardwaj RL, Meena RR, Mukherjee S. Role of plant growth regulators in mango (*Psidium guajava* L.): a review. *Agric Rev*. 2005;26(4):281-287.
3. Singh BB, Yadav RN, Jha N. A study on production and marketing of mango in Nepal. *Indian Journal of Agricultural Marketing*. 1998;12(1-2):16-21.
4. Mitra SK, Bose TK. Mango. In: Bose TK, Mitra SK, editors. *Fruits: tropical and sub-tropical*. Vol. 1. Kolkata: Naya Udyog; 2001. p. 609-653.
5. Bhavave AV. An analytical study of mango marketing by the growers from the Ratnagiri District. *An International Multidisciplinary Journal*. 2026;3(4):1-7.
6. Gopalkrishnan S. Marketing system of mangoes in India. *World Applied Sciences Journal*. 2013;21(7):1000-1007.
7. Raju S. *Fruit marketing in India*. Vol. 17. New Delhi: Daya Publishing House; 2002. p. 212.
8. Dharmesh SD, Chaudhary KL, Choudhary M. Relationship between marketing behaviour and personal profile of mango growers. *Gujarat Journal of Extension Education*. 2025;39(1):171-173.
9. Dharasanda DS, Choudhary M, Chaudhary KL. Marketing behaviour of Kesar mango among the mango growers. *Gujarat Journal of Extension Education*. 2024;38(1):18-22. doi:10.56572/gjoe.2024.38.1.0004.
10. Kavadi SD, Pandya RD. A scale to measure marketing behavior of farmers. *Gujarat Journal of Extension Education*. 2024;38(2):1-6. doi:10.56572/gjoe.2024.38.2.0001.
11. Padaliya DN, Jadav NB, Padaliya DA. An analysis of socio-personal characteristics of mango growers. *Gujarat Journal of Extension Education*. 2023;35.