Impact of Marketing Losses on Efficiency in Transacting Banana in Scarce Rainfall Zone of Andhra Pradesh, India

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Abstract

Introduction: To analyze the impact of marketing losses on efficiency in transacting banana in Kurnool district of SRZ in Andhra Pradesh and to assess the opinions of the farmers on the constraints in transacting banana.

Research back ground, Materials and Methods: The study relies exclusively on primary information obtained from the banana farmers of Kurnool District. Purposive sampling procedure was followed for the selection of the study area. Top two mandals in the district and top two villages in each mandal are selected in accordance with the area under cultivation of banana. Probability proportion to size was followed regarding the selection of sample farmers and accordingly 60 marginal, 37 small and 23 other farmers were selected and thereby, the total sample size was 120.

Result and Discussion: Three marketing channels were identified in the marketing of banana in Kurnool district viz., Producer $\rightarrow$ Local-exporter $\rightarrow$ Wholesaler $\rightarrow$ Retailer $\rightarrow$ Consumer (Channel-I), Producer $\rightarrow$ Wholesaler $\rightarrow$ Cart-vendor $\rightarrow$ Consumer (Channel-II) and Producer $\rightarrow$ Juice-holder $\rightarrow$ Consumer (Channel-III). With the inclusion of marketing losses in the price spread analysis of banana in all the three channels, the marketing costs of all the intermediaries were increased and thereby, the farmer's share in consumer's rupee and Net Marketing Margins of the agencies are on the decline. So, without inclusion of marketing losses, the farmer's share in consumer's rupee and Net Marketing Margins of all the agencies are overvalued. The higher the marketing losses, the more is the negative impact on farmer's net selling price, net marketing margins of the intermediaries and marketing efficiency. The sample farmers are facing major problems in marketing of banana like frequent price fluctuations, unorganized marketing and lack of transportation facilities on priority basis.

Suggestions: It is suggested to educate the farmers regarding the optimum maturity index for harvest, use of mechanical harvesters, proper placement of fruits during storage and ripening, better packaging and cushioning technologies to absorb shocks during transportation, strengthening of storage facilities and transport facilities, encourage co-operative marketing etc., to promote marketing efficiency of banana in the study area.

1 Introduction

Banana (Musa paradisiaca L.) is the fourth largest fruit crop cultivated in the world. It is grown in more than 130 countries across the world with an area of 5.14 million ha producing 105.32 million tonnes of banana in the year 2011-12 (www.fao.org). India is the largest producer of banana in the world producing 29.72 million tonnes from an area of 0.803 million ha with a productivity of 35.7 MT ha-1 and accounted for 15.48 and 27.01 per cent of the world's area and production respectively (www.nhb.gov.in). India succeeds China and Philippines in the world in the production of banana and it accounts

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for nearly 32 per cent of the total fruits production in the country (www.nhb.gov.in). The leading banana growing states in India includes Tamil Nadu, Maharashtra, Gujarat, Andhra Pradesh, Karnataka, Madhya Pradesh, Bihar, West Bengal, Assam and Odisha. Tamil Nadu leads other States both in terms of area and production followed by Maharashtra, Gujarat, and Andhra Pradesh. In Andhra Pradesh, the Scarce Rainfall Zone (SRZ) accounts for significant production of banana in the State of Andhra Pradesh in 20517 hectares with an annual production of 7.18 lakh tonnes in the year 2012-13 (National Horticultural Board, 2012-13).

Bananas are harvested at various stages of its maturity depending upon distance to market and the purpose for which it is cultivated, such as culinary, table purpose, etc. Most commonly the fruit is harvested when the ridges on the surface of the skin changed from angular to round i.e., after attainment of the three-fourths full stage (Kotecha and Desai, 1995). Harvested bananas in SRZ of Andhra Pradesh are then either stored for ripening or sold as raw/fresh fruit. None of the farmers go for the processing of bananas because, operations for banana processing are very tedious, time consuming and expensive. During the market glut, the prices crash down and the farmers suffer heavy losses due to the distress sale. Due to poor transportation and storage facilities, a sizeable quantity of this fruit is wasted due to its perishable nature. The total estimated loss during post harvest handling of banana in Assam was about 22 per cent (Anonymous, 2005), whereas, the same was about 19 to 21 per cent in Tamil Nadu (Gajanana et al, 2002) and about 18 to 29 per cent in Karnataka (Sreenivasa Murthy et al, 2002). The informal discussions held with the scientific community in Horticultural Research Station at Mahanandi revealed that, in the SRZ of Andhra Pradesh, the farmers were not found to sort the harvested banana in the field. However, some of the bananas were discarded at the field which was considered as loss at the field level. The average loss at field level in the SRZ of Andhra Pradesh was estimated as 4.74 per cent. The major losses were damage and dropping of fruits during harvesting, handling, loading of bunches, refusal of twin fingers, immature fruits, spoilage as well as pre-harvest ripening of fruit, which made the banana fruits unsuitable for long distance transportation and gave the undesired quality attributes like colour, flavour and taste. Generally, farmers sold the bananas when there was good demand in the market so as to get higher economic returns, i.e., during early season or during the scarcity of banana in the market. Therefore, the farmers harvested banana at early stage

without considering full and even maturity in the bunch. So, immature fruits mainly contributed to increase in the losses at the field level. Further, during the market glut, the harvesting of banana had to be delayed by the farmers which increased the spoilage and pre-harvest ripening of fruit. The losses at traders level included the losses occurred during transportation, unloading and handling as well as during ripening of banana.

The ripening practices for banana in SRZ of Andhra Pradesh varied from area to area and accordingly the ripening losses. In the Kurnool district of SRZ, bananas were not sold on number basis, but sold on size of the bunch basis (weight basis). Therefore, the agents (traders) engaged in banana ripening pay their attention towards checking the reduction of weight loss during ripening. The principal causes for ripening losses in banana included water loss, detachment of fingers from bunch, peel splitting during ripening, uneven ripening, disease infection and others. All these losses interacted depending upon the external conditions of banana, i.e., temperature and relative humidity. Processing and product development through value addition is the best alternative to reduce the market losses or post-harvest losses. To improve the marketing system for banana, it is essential to create awareness among the farmers, farm workers and managers, traders and exporters about the impact of marketing losses on efficiency of transacting banana and accordingly, the present study was taken up in the Kurnool district of SRZ of Andhra Pradesh with the following specific objectives:

· To analyse the impact of marketing losses of banana on farmer's net selling price, marketing margins, price spread and marketing efficiency.
· To collect and assess the opinions of the farmers on the constraints of marketing of banana and offer suggestions to overcome the same.

2 Research back ground, Materials and Methods

· *Components of Research Design*: This study relies exclusively on primary information obtained from the banana farmers from the selected study area. The research design of the present study included: Selection of study area, Selection of sample farmers and Collection of data.
· *Selection of Study Area*: Purposive sampling procedure was followed for the selection of the study area. Accordingly, Kurnool district of SRZ was selected for the present study, as the researcher hails from the same district and well-versed with the local language

of farmers. All the mandals in Kurnool district along with their banana cultivated area are listed out in descending order and top two mandals viz., Mahanandi and Nandyal were selected. From each mandal, all the banana growing villages are arranged in descending order of the acreage under banana and top two villages were selected. The selected villages were Bukkapuram and Thimmapuram from Mahanandi mandal, Kothapalle and Nandyal Rural villages from Nandyal mandal.

- *Selection of sample Farmers*: From the village administrative officers of the village concerned, the list of farmers cultivating banana is obtained and are stratified into Marginal (<1 ha), Small (1-2 ha) and Other farmers (>2 ha) on the basis of their size of operational holding. From each of the selected villages, farmers in each size stratum were selected based on probability proportional to size (Table 1). Thus, 60 marginal, 37 small and 23 other farmers were selected and thereby, the total sample size was 120.

Table 1 Sample size of the selected farmers

S. No.	Village	Marginal (<1 ha)	Small (1-2 ha)	Other (>2 ha)	Total
1	Bukkapuram	14	10	6	30
2	Thimmapuram	15	10	5	30
3	Kothapalle	14	9	7	30
4	Nandyal Rural	17	8	5	30
	Total	60	37	23	120

For eliciting the information pertaining to the marketing aspects of banana in Kurnool district, the following marketing agencies (Table 2.2) have been selected by employing simple random sampling technique.

Table 2 Sample size pertaining to market intermediaries of banana

Marketing Channel	Local exporter	Whole saler	Retailer	Cart vendors	Juice holders	Consumers
Channel I	35	35	20			30
Channel II		30		25		30
Channel III					20	30

- *Collection of Data*: A detailed schedule was used during the field survey (2016-17) to collect the data pertaining to marketing aspects of banana through personal interview. The objectives of the study were clearly explained to the farmers personally and their co-operation was ensured. Even though the respondents did not maintain adequate farm records and accounts, they were able to furnish the particulars in view of their long association with farming. However, to minimize recall bias cross check and re-check carried out.

2.1. Computation of Price spread in transacting banana:

2.1.1. Price spread without considering marketing losses in transacting banana:

Price spread refers to the difference between the price paid by the consumer or Consumer Purchase Price and the net price received by the farmer or Farmer's Net Selling Price for an equivalent quantity of commodity transacted throughout the marketing channel. The following formulae are employed to study price spread and other relevant parameters of marketing efficiency:

Price spread = Consumer's Purchase Price − Farmer's Net Selling Price   (or)
= Gross Marketing Margins of all market intermediaries + Marketing cost incurred by the farmer

Total Marketing cost = Marketing costs of farmer + $\sum$ Marketing costs$_i$

where, Marketing costs$_i$ = Marketing costs in curred by 'n' intermediaries

where, $i = 1, 2, 3 \cdots \cdots \cdots \cdots ..n$

Gross Marketing Margin$_i$ = SP$_i$ − PP$_i$

where, SP$_i$ = Selling Price of ith intermediary and PP$_i$ = Purchase Price of ith intermediary

Net Marketing Margin$_i$ = Gross Marketing Margin$_i$ − Marketing costs$_i$

Marketing costs$_i$ = Marketing costs in curred by i^{th} intermediary

2.1.2. Price spread considering marketing losses in transacting banana:

In the above methodology, quantity and quality losses of produce were not taken into account during its downward movement in the marketing channels. This approach tends to overstate the Farmer's Net Selling Price, Gross Marketing Margins and Net Marketing Margins of the intermediaries. However, marketing losses of banana during transactions between the agencies is inevitable considering its perishability and bulkiness on one hand and unscientific marketing facilities on the other. So, it is appropriate to consider marketing losses of banana in studying the price spread, as it enables the researcher

to compute the marketing efficiency on realistic note. This is because, marketing losses of banana and marketing efficiency are inversely related. Further, by considering these marketing losses, Net Marketing Margins of intermediaries decrease substantially, but marketing costs at each agency will increase thereby, Farmer's Net Selling Price will decrease. So, it is essential to modify the above formulae as shown below:

Total Marketing costs
= {Marketing costs of farmer + (ML$_f$*Farmer'sSP)} + {MC$_a$+(ML$_a$ *SP$_a$)}+{MC$_b$+(ML$_b$*SP$_b$)}+{MC$_c$+(ML$_c$ *SP$_c$)}+·········· + {MC$_n$+(ML$_n$*SP$_n$)}

where, ML$_f$, ML$_a$, ML$_b$, ML$_c$····..ML$_n$ = Marketing losses incurred by farmer 'f'; and 'a', 'b', 'c'··· 'n' market intermediaries respectively; MC$_a$, MC$_b$, MC$_c$ ··· MC$_n$ = Marketing costs incurred by 'a', 'b', 'c' ··· 'n' market intermediaries respectively; SP$_a$, SP$_b$, SP$_c$,······SP$_n$, = Selling Price of 'a', 'b', 'c' ··· 'n' market intermediaries respectively

Gross Marketing Margin$_i$ = SP$_i$−PP$_i$ + (ML$_i$*SP$_i$)

Net Marketing Margin$_i$ = Gross Marketing Margin$_i$ -Marketing costs$_i$ + (ML$_i$ × SP$_i$)

2.2. Computation of Marketing Efficiency Index (MEI):

2.2.1. Without considering marketing losses:

Acharya's approach:

$$MME = \frac{\text{Farmer's Net Selling Price}}{\{(\sum \text{Marketing costs})+(\sum \text{Gross Marketing Margins})\}}$$

where, MME = Modified Measure of Marketing Efficiency

2.2.2. Considering marketing losses down the marketing channel:

Acharya's Modified Index (MEI) was employed to assess MEI considering marketing losses in transacting banana.

$$MEI = \frac{\text{Farmer's Net Selling Price}}{\{(\sum \text{Net Marketing Margins})+ (\text{Marketing costs including losses})\}} \text{ (or)}$$

$$MEI = \frac{\text{Farmer's Net Selling Price}}{\{(\sum \text{Gross Marketing Margins})+(\text{Marketing costs incurred by farmer including losses})\}}$$

2.3. Prioritization of marketing problems of banana:

Garrett's ranking technique was employed to prioritize or rank the problems posed by the farmers in marketing of banana. Garrett's formula for converting ranks into per cent is given by,

Per cent position = 100*(R$_{ij}$−0.5)/N$_j$

Where,

R$_{ij}$ = rank given for ith factor (constraint) by jth individual

N$_j$ = number of factors (constraints) ranked by jth individual

Limitations of the study: This investigation suffers from the following limitations:
· Constraints on time and resources of the researcher forced to select only two mandals, four villages and 120 farmers for the study. Hence, results of the study cannot be generalized for larger areas and they can be largely applicable to those areas, where similar agro-economic conditions prevail.
· The personal interview method of data collection requires the respondents to recall data or information from their memories about marketing aspects of banana. Hence, the findings may be subjected to memory lapses of the respondents.

3 Results and Discussion:

An attempt has been made in the ensuing pages to present and discuss the results pertaining to the marketing channels, marketing costs, marketing margins, marketing losses and price spread in the marketing of banana.

3.1 Marketing channels:

The following three important channels were identified in the marketing of banana in Kurnool district:

Channel- Ⅰ : Producer → Local-exporter → Wholesaler → Retailer → Consumer

Channel- Ⅱ : Producer → Wholesaler → Cart-vendor → Consumer

Channel-Ⅲ: Producer → Juice-holder → Consumer

Among the three marketing channels, the most commonly followed marketing channel for transacting banana was Channel- Ⅰ. This is evident from the Table 3, as 48.33 per cent of farmers sold their produce through this channel. The proportion of marginal and small farmers who used this channel for transacting banana was 83.33 and 21.62 per cents respectively. Channel Ⅱ was followed by 35

per cent of the total selected farmers. The proportion of marginal, small and other farmers following this channel was 16.67, 37.84 and 78.26 per cents respectively. Channel Ⅲ was followed by only 16.67 per cent of the total selected farmers and the proportion of small and other farmers following this channel was 40.54 and 21.74 per cents respectively.

Table 3 Marketing channels followed by different sized farms in marketing of banana

S.No	Size groups	Channel Ⅰ	Channel Ⅱ	Channel Ⅲ	Total
1	Marginal (< 1ha)	50 (83.33)	10 (16.67)	0 (0.00)	60 (100)
2	Small (1-2 ha)	8 (21.62)	14 (37.84)	15 (40.54)	37 (100)
3	Others (>2 ha)	0 (0.00)	18 (78.26)	5 (21.74)	23 (100)
4	Total	58 (48.33)	42 (35.00)	20 (16.67)	120 (100)

Note: Figures in parentheses indicate percentages to the respective column totals.

3.2. Marketing costs incurred in transacting banana without considering marketing losses:

Channel- Ⅰ: It is clear from the Table 4 that, the local exporter on an average incurred a total of Rs 68.62 in marketing of one bunch of banana (150 fingers). Among the marketing costs incurred by the local exporter, commission and transportation are the major costs accounting for 50.32 and 28.76 per cents respectively. The other cost components are loading, unloading, market fee, cess charges and miscellaneous costs accounting for 8.91, 3.71, 1.51, 5.03 and 1.76 per cents respectively in total marketing cost incurred by the local exporter. The wholesaler purchased the produce from the local exporter through a commission agent and incurred an amount of Rs. 19.64 towards marketing costs. The major cost component of wholesaler is storage cost of Rs. 9.59 which accounted for 48.83 per cent of the total cost incurred by the wholesaler. Other costs such as loading, unloading, transportation and miscellaneous accounted for 14.56, 5.30, 25.86 and 5.45 per cents respectively. For the retailer, the marketing costs incurred were transportation (Rs. 5.17) and miscellaneous costs (Rs. 1.06) accounting for 82.99 and 17.01 per cents respectively of total marketing costs.

Channel- Ⅱ: The total marketing costs incurred by the farmer was Rs. 50.17 (Table 4). Among these marketing costs, commission charge was the major cost incurred by the farmer accounting for 63.30 per cent of total marketing costs incurred. Other costs include loading, transportation and unloading accounting for 12.12, 19.73 and 4.85 per cent respectively. The wholesaler purchased banana from the farmer through commission agent and incurred an amount of Rs. 18.14 per bunch of banana. The major item of cost incurred by the wholesaler was transportation accounting for 27.51 per cent of total marketing cost. Storage charges succeeded with 22.99 per cent and the other costs are loading, unloading, market fee and cess charges in the proportion of 18.25, 6.01, 6.06 and 19.18 per cents respectively. Regarding cart vendor, the major item of marketing costs were newspaper charges (56.93 per cent) followed by thread charges (26.52%), kerosene charges (11.21%) and miscellaneous charges (5.34%) of total marketing costs.

Channel Ⅲ: A close perusal of Table 4 reveals that, the total marketing costs borne by the juice holder amounted to Rs. 801.62 per bunch of banana. The major items in the costs are sugar, milk, and ice charges accounting for 39.55, 39.01 and 15.64 per cents respectively. Other costs include loading, transportation, unloading and miscellaneous charges accounting for 1.24, 3.81, 0.48 and 0.27 per cents respectively.
It can be inferred that, the marketing costs incurred by the juice holder is highest than all other intermediaries across all the channels because, the juice holder is making value addition to the produce. He incurred more costs on milk, sugar and ice to make value addition to the raw produce.

Table 4 Marketing costs incurred per bunch of banana without considering marketing losses (n = 120)

Items	Channel I Rs/bunch (150 fingers)	Channel II Rs/bunch (150 fingers)	Channel III Rs/bunch (84 fingers)
marketing costs incurred by the farmer			
Loading	-	6.08 (12.12)	-
Transportation	-	9.90 (19.73)	-
Unloading	-	2.43 (4.85)	-
Commission (10 % on Farmer's Selling Price)	-	31.76 (63.30)	-
Total marketing costs incurred by the farmer	-	50.17 (100)	-

Items	Channel I Rs/bunch (150 fingers)	Channel II Rs/bunch (150 fingers)	Channel III Rs/bunch (84 fingers)
Marketing costs incurred by the Local Exporter			
Loading	6.12 (8.91)	-	-
Transportation	19.73 (28.76)	-	-
Unloading	2.54 (3.71)	-	-
Commission (10% on Local Exporters selling price)	34.53 (50.32)	-	-
Market fee	1.04 (1.51)	-	-
Cess (1% on Local Exporters Selling Price)	3.45 (5.03)	-	-
Miscellaneous	1.21 (1.76)	-	-
Total marketing costs incurred by the Local Exporter	68.62 (100)	-	-
Marketing costs incurred by the wholesaler			
Loading	2.86 (14.56)	3.31 (18.25)	-
Transportation	5.08 (25.86)	4.99 (27.51)	-
Unloading	1.04 (5.30)	1.09 (6.01)	-
Market fee	-	1.10 (6.06)	-
Cess (1% on Wholesalers Selling Price)	-	3.48 (19.18)	-
Storage	9.59 (48.83)	4.1 (22.99)	-
Miscellaneous	1.07 (5.45)	-	-
Total marketing costs incurred by the Wholesaler	19.64 (100)	18.14 (100)	-
Marketing costs incurred by the Retailer / Cart vendor / Juice holder			
Loading	-	-	9.98 (1.24)
Transportation	5.17 (82.99)	-	30.57 (3.81)
Unloading	-	-	3.88 (0.48)
Milk	-	-	312.70 (39.01)
Sugar	-	-	317.03 (39.55)
Ice	-	-	125.40 (15.64)
Newspapers	-	10.56 (56.93)	-
Thread	-	4.92 (26.52)	-

Items	Channel I Rs/bunch (150 fingers)	Channel II Rs/bunch (150 fingers)	Channel III Rs/bunch (84 fingers)
Kerosene	-	2.08 (11.21)	-
Miscellaneous	1.06 (17.01)	0.99 (5.34)	2.06 (0.27)
Total marketing costs incurred by the Retailer / Cart vendor / Juice holder	6.23 (100)	18.55 (100)	801.62 (100)

Note: Figures in parentheses indicate percentages to the respective column totals.

3.3. Price Spread in Banana marketing without considering marketing losses

Channel- I: The details of Table 6 revealed that, the farmer's share in consumer's rupee was 60.14 per cent. In this channel, the farmer did not incur any marketing costs because, local exporter purchases the standing crop just before harvesting of produce. The local exporter incurred marketing costs of Rs. 68.62 per bunch (150 fingers) of banana and received a Net Marketing Margin of Rs. 20.95 per bunch of banana from the wholesaler. The marketing costs, Gross Marketing Margin and Net Marketing Margin of the wholesaler were Rs. 19.64 Rs. 52.29 and Rs. 32.65 respectively per bunch of banana and the corresponding values for retailer were Rs. 6.23, Rs. 27.60 and Rs. 21.37. The Net Marketing Margins of the local exporter, wholesaler and retailer accounted for 4.93, 7.68 and 5.03 per cents of the consumer's rupee respectively.

Channel- II: The farmer realized a net selling price of Rs. 267.33 per bunch (150 fingers) of banana accounting for 64.73 per cent of the price paid by the consumer (Table 6). The marketing cost incurred by the farmer was Rs. 50.17. After deducting all expenses, the wholesaler earned a Net Marketing Margin of Rs. 11.88 which accounted for 2.87 per cent of consumer's rupee. The cart vendor purchased banana at a price of Rs. 347.77 per bunch and sold to the consumer for a price of Rs. 413.00. In this process, he made a Net Marketing Margin of Rs. 46.93 accounting for 11.36 per cent of the consumer's rupee.

Channel- III: The farmer's share in consumer's rupee was 18.52 per cent (Table 6). In this channel, the farmer did not incur any marketing costs because, the juice holder purchases the standing crop just before harvesting of produce. The juice holder incurred marketing cost of Rs. 801.62 per bunch of banana and received a Net

Marketing Margin of Rs. 551.82 per bunch (84 fingers) of banana, which accounted for 33.22 per cent of consumer's rupee.

From the forgoing analysis, it can be inferred that (Table 6), the farmer was getting the highest share of Consumer's Purchase Price in Channel-Ⅱ (64.73%) over Channel-I (60.14%) and Channel Ⅲ (18.52%). Price spread is more in Channel-Ⅲ (Rs. 1353.44) than Channel-I (Rs. 169.45) and Channel-Ⅱ (Rs.145.67) indicating Channel-Ⅱ was more efficient than Channel-I and Channel-Ⅲ. It can also be seen that, the index of marketing efficiency by Acharya's method was higher in channel-Ⅱ i.e., 1.83 indicating that channel-Ⅱ was more efficient than channel-I and channel Ⅲ. The inefficiency in channel-I was due to more number of market intermediaries and the inefficiency in channel Ⅲ was due to higher marketing costs and margins involved in the marketing of banana.

3.4. Marketing costs and price spread in transacting banana considering marketing losses:

It is evident from the Tables 5 and 6, with the inclusion of marketing losses in the price spread analysis of banana in all the three Channels, the marketing costs of all the intermediaries were increased and there by their Farmer's Share in Consumer's Rupee and Net Marketing Margins are on the decline. This infers that, without inclusion of marketing losses the Farmer's Share in Consumer's Rupee and Net Marketing Margins of all the intermediaries are overvalued. So, the inclusion of marketing losses in the price spread analysis reveals the true picture about marketing efficiency of banana in Kurnool district.

Table 5 Marketing costs incurred per bunch of banana considering marketing losses (n = 120)

Items	Channel I Rs/bunch (150 fingers)	Channel Ⅱ Rs/bunch (150 fingers)	Channel Ⅲ Rs/bunch (84 fingers)
Marketing costs incurred by the farmer			
Loading	-	6.08 (9.46)	-
Transportation	-	9.90 (15.39)	-
Unloading	-	2.43 (3.78)	-
Commission (10% on Farmer's Selling Price)	-	32.79 (50.99)	-
Losses at farmer's level (4% on Farmer's Selling Price)	-	13.10 (20.38)	-
Total marketing costs incurred by the farmer	-	64.31 (100)	-

Items	Channel I Rs/bunch (150 fingers)	Channel Ⅱ Rs/bunch (150 fingers)	Channel Ⅲ Rs/bunch (84 fingers)
Marketing costs incurred by the Local Exporter			
Loading	6.12 (7.27)	-	-
Transportation	19.73 (23.47)	-	-
Unloading	2.54 (3.02)	-	-
Commission (10% on Local Exporters Selling Price)	35.61 (42.37)	-	-
Market fee	1.04 (1.23)	-	-
Cess (1% on Local Exporters Selling Price)	3.56 (4.24)	-	-
Miscellaneous	1.21 (1.43)	-	-
Losses at the Local Exporters level (4% of Local Exporters Selling Price)	14.26 (16.96)	-	-
Total marketing costs incurred by the Local Exporter	84.07 (100)	-	-
Marketing costs incurred by the wholesaler			
Loading	2.86 (8.99)	3.31 (12.98)	-
Transportation	5.08 (15.97)	4.99 (19.55)	-
Unloading	1.04 (3.28)	1.09 (4.28)	-
Market fee	-	1.10 (4.31)	-
Cess (1% on Wholesalers Selling Price)	-	3.62 (14.19)	-
Storage	9.59 (30.14)	4.17 (16.32)	-
Miscellaneous	1.07 (3.36)	-	-
Losses at the Wholesaler's level (2% of wholesaler's Selling Price)	12.17 (38.26)	7.25 (28.37)	-
Total marketing costs incurred by the Wholesaler	31.81 (100)	25.53 (100)	-
Marketing costs incurred by the Retailer / cart vendor / Juice holder			
Loading	-	-	9.98 (1.10)
Transportation	5.17 (19.70)	-	30.57 (3.37)
Unloading	-	-	3.88 (0.43)
Milk	-	-	312.70 (34.51)
Sugar	-	-	317.03 (34.99)

Items	Channel I Rs/bunch (150 fingers)	Channel II Rs/bunch (150 fingers)	Channel III Rs/bunch (84 fingers)
Ice	-	-	125.40 (13.84)
Newspapers	-	10.56 (26.37)	-
Thread	-	4.92 (12.28)	-
Kerosene	-	2.08 (5.19)	-
Miscellaneous	1.06 (4.04)	0.99 (2.47)	2.06 (0.23)
Losses at the Retailer level (3% on Retailers Selling Price)/ Cart vendor (5% on cart vendor Selling Price)/ Juice holder level (6% on juice holder Selling Price)	20.02 (76.26)	21.50 (53.68)	104.56 (11.54)
Total marketing costs incurred by the Retailer / Cart vendor / Juice holder	26.25 (100)	40.05 (100)	906.18 (100)

Note: Figures in parentheses indicate percentages to the respective marketing costs.

3.5. Impact of Marketing Loss on Farmer's Net Selling Price, Margins, Price spread and Efficiency:

3.5.1. Farmer's Net Selling Price:

It can be seen from Table 6 that, the net price received by the farmers per bunch of banana was Rs. 267.33 in channel II when the marketing losses are not considered, but considering the marketing losses at farmer's level, the net price received by the farmer was slightly decreased to Rs. 263.52. But, in case of channel I and channel III, there is no change in Farmer's Net Selling Price because, in these two channels farmer did not incurred any marketing cost as the standing crop was directly purchased by the local exporter in channel I and by the juice holder in channel III just before harvesting the crop.

3.5.2. Margins of market intermediaries and price spread:

It is noticed from the Table 6, in channel-I, the Net Marketing Margin of local exporter was Rs. 20.95 (4.93% of consumer's rupee) before considering losses, but the same was declined to Rs. 16.36 (3.68% of consumer's rupee), when marketing losses are considered. Same trend was observed in case of wholesaler and retailer, when the marketing losses were not considered the net marketing margins accounted for 7.68 and 5.03 per cent of consumer's rupee, but the same were decreased to 4.96

and 1.93 per cents respectively, when marketing losses are considered. Similarly, in channel-II and channel −III, the Net Marketing Margins of wholesaler and cart vendor (channel II) and juice holder (channel-III), were decreased when marketing losses were considered in computing price spread of banana. This shows that, the Net Marketing Margins of all the intermediaries will decrease when marketing losses were taken into consideration. Price spread increased in all the three channels when marketing losses are considered in transacting banana.

3.5.3. Market efficiency:

Regarding market efficiency indices, they are higher across the marketing channels considering without marketing losses when compared to considering marketing losses in transacting the produce. As considering marketing losses gives true in analyzing the marketing efficiency, the MEI computed by Acharya's modified MEI shows that, Channel-II is more efficient in transacting banana in Kurnool district (Table 6). Though value addition of banana yields significant Net Marketing Margin to the juice holder, the same benefit was not realized at the farmer's level, as he sells raw produce to the juice holder. Thus, considering the highest Net Marketing Margin of the juice holder and marketing losses at that intermediary level, the MEI recorded the lowest value.

Table 6 Comparison of price spread and margins of intermediaries before and after considering marketing losses (n = 120)

Items	Without considering marketing losses			Considering marketing losses		
	Channel I Rs / bunch	Channel II Rs / bunch	Channel III Rs / bunch	Channel I Rs / bunch	Channel II Rs / bunch	Channel III Rs / bunch
Farmer's Net Selling Price	255.71 (60.14)	267.33 (64.73)	307.57 (18.52)	255.71 (57.48)	263.52 (61.05)	307.57 (17.65)
Total Marketing costsincurred by the farmer		50.17 (12.15)			64.31 (14.90)	
Farmer's Selling Price / Local Exporter's Purchase Price / Wholesaler's Purchase Price / Juice holders Purchase Price	255.71 (60.14)	317.50 (76.88)	307.57 (18.52)	255.71 (57.48)	327.83 (75.94)	307.57 (17.65)
Total Marketing costsincurred by the Local Exporter	68.62 (16.14)	-		84.07 (18.90)	-	
Gross Marketing Margin of Local Exporter	89.57 (21.07)	-		100.43 (22.58)	-	
Net Marketing Margin of Local Exporter	20.95 (4.93)	-		16.36 (3.68)	-	
Local Exporter's Selling Price / Wholesaler's Purchase Price / Juice holder's Purchase Price	345.29 (81.21)	317.50 (76.88)	307.57 (18.52)	356.14 (80.06)	327.83 (75.94)	307.57 (17.65)
Total Marketing costsincurred by the Wholesaler	19.64 (4.62)	18.14 (4.39)		31.81 (7.15)	25.53 (5.91)	
Gross Marketing Margin of Wholesaler	52.29 (12.30)	30.02 (7.27)		53.86 (12.30)	34.50 (7.99)	
Net Marketing Margin of Wholesaler	32.65 (7.68)	11.88 (2.87)		22.05 (4.96)	8.97 (2.08)	
Wholesaler Selling Price / Retailer Purchase Price / Cart vendor Purchase Price / Juice holder Purchase Price	397.57 (93.51)	347.77 (84.21)	307.57 (18.52)	410.00 (92.17)	362.33 (83.94)	307.57 (17.65)
Total Marketing costsincurred by the Retailer / Cart vendor / Juice holder	6.23 (1.47)	18.55 (4.49)	801.62 (48.26)	26.25 (5.90)	40.05 (9.28)	906.18 (51.99)
Gross Marketing Margin of Retailer / Cart vendor / juice holder	27.60 (6.49)	65.48 (15.85)	1353.44 (81.48)	34.83 (7.83)	69.34 (16.06)	1435.10 (82.35)
Net Marketing Margin of Retailer / Cart vendor / juice holder	21.37 (5.03)	46.93 (11.36)	551.82 (33.22)	8.58 (1.93)	29.29 (6.78)	528.92 (30.35)
Retailer's Selling Price / Cart vendors Selling Price / Juice holders Selling Price or Consumer Purchase Price	425.17 (100.00)	413.00 (100.00)	1661.00 (100.00)	444.83 (100.00)	431.67 (100.00)	1742.67 (100.00)
Price spread or Total Gross Marketing Margins of all the agencies +Marketing costsincurred by the farmer	169.46	145.67	1353.43	189.12	168.15	1435.10
Acharya's method (MME) - (without considering marketing losses)	1.50	1.83	0.23	-	-	-
Acharya's Modified MEI (considering marketing losses)	-	-	-	1.35	1.57	0.21

Note: Figures in parentheses indicate percentages to the respective consumer's purchase price.

3.6. Constraints in marketing of banana:

The sample farmers were asked to elicit the problems faced by them during marketing of banana in the Kurnool district. The sample farmers in the study area faced several problems like unorganized marketing, lack of transportation facilities, lack of market information and market news, frequent price fluctuations, distressed sales, high marketing margins, lack of scientific storage facilities and no prompt payment of sales proceeds for the banana farmers (Table 7). They prioritized frequent price fluctuations as the major marketing problem of banana with mean score of 68.56 followed by unorganized marketing (66.98) and lack of transportation facilities (61.76).

Table 7 Garrett's ranking of prioritization of problems pertaining to marketing of banana (n = 120)

S.No	Particulars	Total score	Mean score	Rank
1	Frequent price fluctuations	8228	68.56	I
2	Unorganized marketing	8037	66.98	II
3	Lack of transportation facilities	7411	61.76	III
4	Lack of market information and market news	7259	60.49	IV
5	High marketing margins	6119	50.99	V
6	No prompt payment of sales proceeds	5916	49.30	VI
7	Lack of scientific storage facilities	5754	47.95	VII
8	Distressed sales	5353	44.60	VIII

Conclusions:

In Kurnool district of Andhra Pradesh, the conventional practice of marketing was selling banana to the local exporter (Channel I) followed by selling to local wholesaler (Channel II) and to juice holder (Channel III). The price spread analysis indicated that, the farmer's share in consumer's rupee was 60.14, 64.73 and 18.52 per cent in Channel-I, Channel-II and Channel-III respectively when marketing losses were not considered. But, when the marketing losses are considered, the same was 57.48, 61.05 and 17.65 per cents respectively in the same order. The higher the marketing losses, the more is the negative impact on farmer's net selling price, net marketing margins of the intermediaries and marketing efficiency. The marketing efficiency indices computed through Acharya's method of MME (without considering marketing losses) and Acharya's Modified MEI (considering marketing losses) indicated that, Channel-II is more efficient than channel-I and Channel-III. The

sample farmers are also facing major problems in marketing of banana and they listed frequent price fluctuations, unorganized marketing and lack of transportation facilities on priority basis.

Suggestions:
The following are the suggestions to be considered to improve marketing scenario of banana in Kurnool district of Andhra Pradesh:
· Majority of post harvest losses in banana can be attributed to improper packing and diseases at various stages of marketing and therefore, efforts should be made for proper pre-harvest and post-harvest management of diseases.
· Efforts should be made to educate the farmers regarding the optimum maturity index for harvest. Use of mechanical harvesters (instead of present hand harvesting) and proper placement of fruits during storage and ripening would help to reduce the losses.
· Distant marketing of bananas also increased the post-harvest losses mostly in the form of injury to fruits. Efforts should also be made to evolve better packaging and cushioning technologies to absorb shocks during transportation.
· The banana market was found to be efficient, but not significantly higher due to higher marketing costs and intermediaries' margin. This is also resulting in wider price spread. Therefore, efforts should be made to reduce the marketing charges by making suitable arrangements like collective transportation and marketing of produce.
· In view of severe price fluctuations of banana, storage facilities must be strengthened, so as to stabilize the prices and the returns of the farmers through increasing the shelf life of the fruit.
· Due to unorganised marketing of banana, the farmer's share in consumer's rupee was low across all the three marketing channels. Hence, banana may be included in the list of notified commodities and to be brought under the purview of Agriculture Produce Market Committee Act.
· Strengthening of transport facilities is of immediate concern, so as to move the produce from remote villages to the assembling or marketing centres. Lack of approach roads connecting remote villages to the main road is the major impediment in transporting the produce. In view of this, loading station(s) must be established to assemble the produce from remote villages and transport the same to distant markets.
· The prospects of value addition of banana can be realized by the farmer, only when these processing facilities

are available to him at nominal costs. So, it is high time on the part of the Government to educate the farmers about the importance of value addition and provide processing facilities to them at nominal cost, so as to increase their farmer's share in consumer's rupee.

- The Department of Horticulture should make necessary arrangements for the display of marketing news and information so that, the farmers can plan the sale of their produce at the market, where they get higher price. The Department of Horticulture in consultation with the State Government of Andhra Pradesh should make arrangements to transact banana in Rythu Bazars, as banana is consumed as a regular diet by the households.

Besides above, it is high time for the farmers to strengthen scientific storage facilities and pledge loan finance to banana producers, so as to overcome distress sales of produce through regulating the marketing functions like transportation, storage and encouraging co-operative marketing of banana, the marketing costs and margins of market intermediaries can be effectively checked. Further, by collective marketing of banana produce on co-operative lines also makes the payment of sale proceeds to the farmers promptly.

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