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# **An Economic Analysis of Different Marketing Channels of Pineapple in Tseminyu District of Nagaland**

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## **Authors' contributions:**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

This study aims to examine the Marketing channels utilized in pineapple farming, Along with their associated costs, focusing on the producers share in consumer rupees and marketing efficiency. The research analyses different marketing channels involving wholesalers, retailers, and pre-harvest contractors. The findings of the study reveals that in channel 1, the marketing cost incurred by the retailer amounts to be 45.20% while in channel 2 it was about 36.47%. Additionally in channel 2 the producer incurs a marketing cost of 13.27% due to the need to transport the produce to the village trader. The study further compares the Marketing efficiency between two channels, with channel 1 showing higher efficiency (171.43%) compared to channel 2 (155.56%). This discrepancy can be attributed to higher marketing cost (Rs.1233.75) and marketing margin (Rs.3266.25) per 100 fruits in case of channel 2, which ultimately reduces the producer's share in

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consumer rupees. These results provide valuable insights into the distribution of profits and costs among different farmers in pineapple farming, contributing to a better understanding of the overall performance of marketing channels.

**Keywords:** *Marketing cost; producer share; consumer rupees; marketing efficiency; marketing channels.*

## 1. INTRODUCTION

Pineapple (*Ananas comosus*) is an herbaceous perennial crop belonging to the family Bromeliaceae and is one of the most important commercially grown tropical fruit in the world. Among tropical fruits, pineapple (*Ananas comosus*) is the second most important fruit in the world. According to Elliott [1], nowadays, pineapple is the second healthiest fruit on the planet after grapefruit and it has a lot of health benefits such as: a high content of nutrients, antioxidants that can fight diseases, enzymes that ease digestion, reduces the risk of cancer, boosts immunity and suppresses inflammation, eases symptoms of arthritis and helps the recover after surgeries or heavy exercises [2-6].

The cultivation of pineapple originated in Brazil and gradually spread to other tropical regions of the world [7,8]. Pineapple mainly contains considerable calcium, carbohydrates, sugars, potassium, fibre, and vitamin A, C and carotene and is low in fat and cholesterol. In addition, a large number of high value-added products can be produced [8-12]. If sauces, mixed jams, etc., provide profitable prices for farming communities in a sustainable way, it will also create employment opportunities for the unemployed rural population. Pineapple is known as the queen of the fruits due to its excellent taste and flavour [13]. Fresh pineapples are rich in bromelain and used for tenderizing meat which has demonstrated significantly in anti-inflammatory effects, reducing swelling in inflammatory conditions such as acute sinusitis, sore throat, arthritis and gout and speeding recovery from injuries and surgery [14-16]. The decanter waste of pineapple could be utilised for the preparation of cookies and other food products with improved functional and nutraceutical properties. Pineapple grows well in acidic loams, sandy loams, and clay soils and are neutral to slightly acidic soils, with a pH between 4.5 and 6.5. Indian pineapple in the form of canned slices, titbits, juice, and jam are exported to Nepal, UK, Spain, and UAE [17-20]. During the year 2002-03, India produced 1.17 million tonnes of pineapples from about 79846

hectare of land. Some of the major pineapple producing states in India are Assam, West Bengal, Manipur, Nagaland, Arunachal Pradesh, Karnataka, Kerala, Meghalaya and Bihar [21].

According to National Horticultural Board, Ministry of Agriculture, Government of India, Pineapple fruit crop in India is contributing nearly 10% of the world pineapple production [22].

The north-east region of India produces about 49% of the total pineapple of the country. While pineapple is one of the most important leading fruits cultivated in 11 districts of Nagaland, out of that Dimapur district is in the highest area as well as productivity, i.e., yield 11870 kg/ha, more than 70% of pineapple fruit is cultivated under rain fed condition and nearly 60% pineapple area is having high productivity (more than 32% of the total production comes from high productivity groups) [23]. In various districts of Nagaland pineapples are grown very well, the fruit is of high quality having TSS of about 12-15°brix, and a large size weighing about 1.5 to 2.5 kg having an attractive colour and taste. The most common varieties of pineapple grown in Nagaland are Kew, Giant Kew and Mauritius.

## 2. RESEARCH METHODOLOGY

### 2.1 Selection of Study Area

The main objective of the study was to examine the production and marketing aspects of pineapple and attempts to describe the various facets of pineapple farming in the study area, Tseminyu district of Nagaland was selected for the present study as it has significant contribution and area towards the production of pineapple.

#### 2.1.1 Selection of districts

The state comprises of 17 districts among these districts, Tseminyu district was selected for the study of pineapple for present study.

#### 2.1.2 Selection of block

There are only 1 block in the district. so Tseminyu block was selected purposively for this

study because of its climatic conditions and production of pineapple and moreover it was easily accessible for the researcher to visit the block. Based on pineapple cultivation for the study the size of the land holding farmers were classified into different groups.

### 2.1.3 Selection of villages

A complete list of all the villages was prepared with the help of Block Development Officer. The list was arranged in an ascending order of the total villages 5% was selected randomly.

### 2.2 Selection of Sample Respondents

A comprehensive records of all individuals who cultivate pineapple was obtained from KVK. Subsequently, the individuals were sorted in ascending order based on their pineapple cultivation practices and then categorised into different groups based on their cultivation.

## 3. ANALYSIS OF DATA

### 3.1 Marketing Costs

The total cost, incurred on marketing by the pineapple growers and various intermediaries involved in the sale and purchase of the commodity till the commodity reaches to the ultimate consumer will be calculated as:

$$TC_m = C + \sum_{ni=1} MC_i$$

Where,

$TC_m$  = Total cost of pineapple marketing,  
 $C_g$  = Cost paid by the grower in the marketing of his produce  
 $MC_i$  = Marketing costs incurred by  $i^{th}$  middleman.

### 3.2 Marketing Margin

Marketing Margin of middleman calculated as the difference between the total payments (marketing cost + purchase price) and receipts (sale price) of the middlemen and calculated as follows.

$$A_{mi} = P_{Ri} - (P_{pi} + C_{mi})$$

Where,

$A_{mi}$  = Absolute margin of middlemen  
 $P_{Ri}$  = Total value of receipts per unit (sale price)  
 $P_{pi}$  = Purchase value of goods per unit  
 $C_{mi}$  = Cost incurred on marketing per unit  
 $GMM$  (Rs) = Consumer s price – Producers

### 3.3 Marketing Efficiency

Acharya's Formula [24] will be used for estimating the marketing efficiency which is given as:

$$\text{Marketing Efficiency} = FP / (MC + MM)$$

Where,

$FP$  = Price received by the farmer  
 $MC$  = Total Marketing Cost  
 $MM$  = Net Market Margins.

### 3.4 Producer's Share in Consumer's Rupee

It is the ratio of price received by the farmer to the retail price. It will be calculated by using the formula:

$$PS = \frac{PF}{RP} \times 100$$

Where,

$PS$  = Producer's share in consumer's rupee  
 $PF$  = Farmer's price (i.e. price received by the farmer/ producer per unit of output)  
 $RP$  = Retail price (consumer's price) per unit of output  
 $MM$  = Total marketing margins

## 4. RESULTS AND DISCUSSION

Marketing channel followed by farmers in the study area.

1. Producer → pre-harvest contractor → wholesaler → Retailer → Consumer
2. Producer → Village trader/Wholesaler → Retailer → Consumer

**Table 1. Marketing channel employed by pineapple farmers**

Sl. No.	Marketing Channel	Number (60)	Percent
1.	Contractor	28	46.67
2.	Middlemen	32	53.34

The marketing channel majorly employed was middlemen. 53.34% of farmers used middlemen for marketing their produce. The unavailability of markets in the vicinity often forces farmers to depend on middlemen for marketing their produce. 46.67% of farmers sold their produce directly to the contractor. Contractor and middlemen are responsible for harvesting, picking, grading and transportation of the fruits. This saved the cost of these processes from producers' side.

Net price received by the producer was noted to be same in both the marketing channels as shown in Tables 2 and 3. This was dependent on the price of the fruit in the particular sale season. In channel 2 though the farmer received a higher gross remuneration i.e Rs. 2663.75 per 100 fruits (Table 3), extra costs in harvesting, transportation and loading and unloading incurred to farmer thereby reducing the income to a net return of Rs. 2500 per 100 fruits. Owing to different intermediaries the final purchase price of consumer changed. In channel 1 the consumer purchase price was Rs. 60 per fruit (Table 2) whereas it changed to Rs. 70 per fruit

(Table 3) in second channel. The tables revealed that retailer has the highest margin. The pre-harvest contractor had a margin of 6.92% (table 2) and a village trader was able to earn a margin of 6.95%. In channel 1 the pre-harvest contractor handed over the produce to the wholesaler through a commission agent. It is clearly shown in the tables that highest charge was paid in the form of transportation cost. In channel 1 the charge for harvesting, loading and unloading was borne by pre-harvest contractor. It saved the producer from pay extra out of pocket cost and also assured a sale at the end of the season. Labour cost in case of loading and unloading was marginal in all the stages of marketing. The huge difference in purchase price of consumer and sale price of producer was due to excess margin of retailer.

Marketing cost incurred by retailer is highest in both the channels as depicted in Table 4. The marketing cost incurred by retailer amounts to 45.20% in channel 1 whereas it was about 36.47% in channel 2. In channel 2 marketing cost incurred to producer also (13.27%) as producer has to transport the produce to the village trader.

**Table 2. Price spread through channel 1**

**Channel 1: Producer Z Pre-harvest contractor Z Wholesaler Z Retailer Z Consumer**

Sl. No.	Particulars	(Rs. / 100 fruit)	Percent age
1.	Producer's sale price/pre-harvest contractor's purchase price	2500	41.67
2.	Marketing cost incurred by pre-harvest contractor	185	3.08
	(a) Transportation charges	125	2.08
	(b) Harvesting, loading and unloading	50	0.83
	(c) Commission to commission agent	10	0.17
3.	Pre-harvest contractor's margin	415	6.92
4.	Pre-harvest contractor's sale price/purchase price of wholesaler	3100	51.67
5.	Marketing cost incurred by wholesaler	300	5.00
	(a) Transportation charges	200	3.33
	(b) Loading and unloading charges	20	0.33
	(c) Miscellaneous	80	1.33
6.	Wholesaler's margin	600	10.00
7.	Sale price of wholesaler/purchase price of retailer	4000	66.67
8.	Marketing cost incurred by retailer	400	6.67
	(a) Transportation charges	180	3.00
	(b) Loading and unloading	20	0.33
	(c) Miscellaneous	200	3.33
9.	Retailer's margin	1600	26.67
10.	Retailer's sale price/Consumer's purchase price	6000	100.00

**Table 3. Price spread through channel 2**

**Channel 2: Producer Z Village trader Z Wholesaler Z Retailer Z Consumer**

Sl. No.	Particulars	(Rs./100 fruit)	Percentage
1.	Net price received by farmers	2500	35.71
2.	Marketing cost incurred by producer	163.75	2.34
	(a) Harvesting	50	0.71
	(b) Loading and unloading charges	50	0.71
	(c) Transportation	63.75	0.91
3.	Producer's sale price/village trader's purchase price	2663.75	38.05
4.	Marketing cost incurred by village trader	350	5.00
	(a) Transportation charges	300	4.29
	(b) Loading and unloading charges	50	0.71
5.	Village trader's margin	486.25	6.95
6.	Village trader's sale price/purchase price of wholesaler	3500	50.00
7.	Marketing cost incurred by wholesaler	270	3.86
	(a) Transportation charges	200	2.86
	(b) Loading and unloading charges	20	0.29
	(c) Miscellaneous	50	0.71
8.	Wholesaler's margin	830	11.86
9.	Sale price of wholesaler/purchase price of retailer	4600	65.71
10.	Marketing cost incurred by retailer	450	6.43
	(a) Transportation charges	180	2.57
	(b) Loading and unloading charges	20	0.29
	(c) Miscellaneous	250	3.57
11.	Retailer's margin	1950	27.86
12.	Retailer's sale price/Consumer's purchase price	7000	100.00

**Table 4. Marketing cost borne by different marketing agencies**

Sl. No.	Particulars	Rs/100 fruit	
		Channel I Amount	Channel II Amount
1.	Marketing cost incurred by producer	-	163.75 (13.27%)
2.	Marketing cost incurred by pre-harvest contractor/village trader	185 (20.90%)	350 (28.37%)
3.	Marketing cost incurred by wholesaler	300 (33.90%)	270 (21.88%)
4.	Marketing cost incurred by retailer	400 (45.20%)	450 (36.47%)
Total cost incurred		885 (100%)	1233.75 (100%)

**Table 5. Marketing margin (Rs. / 100 units of fruits)**

**Channel: 1 Producer Z Pre-harvest contractor Z Wholesaler Z Retailer Z Consumer**

Sl. No.	Particulars	Absolute margin	Net margin	Percent margin	Mark-up
1.	Pre-harvest contractors margin	600 (17.14%)	415 (15.87%)	19.35	24.00
2.	Wholesalers margin	900 (25.71%)	600 (22.94%)	22.50	29.03
3.	Retailers margin	2000 (57.14%)	1600 (61.19%)	33.33	50.00
Total marketing margin		3500 (100%)	2615 (100%)	75.19	103.03

**Table 6. Marketing margin (Rs. / 100 units of fruits)****Channel: 2 Producer Z Village trader Z Wholesaler Z Retailer Z Consumer**

Sl. No.	Particulars	Absolute margin	Net margin	Percent margin	Mark- up
1.	Village traders margin	836.25 (19.29%)	486.25 (14.88%)	23.89	31.39
2.	Wholesalers margin	1100 (25.37%)	830 (25.41%)	23.91	31.43
3.	Retailers margin	2400 (55.35%)	1950 (59.70%)	34.29	52.17
Total marketing margin		4336.25 (100%)	3266.25 (100%)	82.09	115.00

The total net margin when calculated was more in case of channel 2 (Rs.3266.25 per 100 fruits) as shown in Table 6. Retailer's margin was also higher in second channel amounting Rs.1950 per 100 fruits which was 59.70% of the total net margin. In channel 1 retailer was able to earn a net margin of Rs.1600 per 100 fruits (61.19%) as shown in Table 5. It can be deducted from the tables that though the amount of margin for retailer in channel 1 was lower but it was bale to earn a higher percentage of net margin when compared to retailer in channel 2.

From Table 7 it can be concluded that producer's share in consumer's rupees is higher in case of

channel 1 which is 41.67% whereas it was 35.71% in case of channel II

The difference can clearly be seen due to higher total marketing margin in case of channel 2 which is Rs.3266.25. The purchase price of consumer is also increased in case of channel 2 amounting Rs.7000 per 100 fruits.

Marketing efficiency for channel 1 (171.43%) is higher when compared to channel 2 (155.56%) as shown in Table 8. It can be attributed to higher marketing cost (Rs.1233.75) and marketing margin (Rs.3266.25) per 100 fruits in case of channel 2 which ultimately reduced the producer's share in consumer's rupees.

**Table 7. Producer's share in consumer's rupee**

Sl. No.	Particulars	Rs./100 fruits	
		Channel I Amount	Channel II Amount
1.	Price received by producer	2500	2500
2.	Total marketing cost	885	1233.75
3.	Total marketing margin	2615	3266.25
4.	Price paid by consumer	6000	7000
5.	Producer's share in consumer's rupee	41.67%	35.71%

**Table 8. Marketing efficiency of various channels**

Sl. No.	Particulars	Rs./100 fruits	
		Channel I Amount	Channel II Amount
1.	Consumer's purchase price	6000	7000
2.	Total marketing cost	885	1233.75
3.	Total marketing margin	2615	3266.25
4.	Marketing efficiency (%)	171.43	155.56

## 5. CONCLUSION

The study of marketing of Pineapple in Tseminyu District, Nagaland. revealed some interesting findings. In the marketing of Pineapple channel I is more efficient as compared to channel 2. Channel 1 that is Producer Z Pre-harvest contractor Z Wholesaler Z Retailer Z Consumer is found to be more efficient when compared to the other channel that is Producer Z Village trader Z Wholesaler Z Retailer Z Consumer. The producer's share in consumer's rupees was also higher in case of channel 1 as shown in Table 5.5.5. Retailers earned a higher margin in channel 2. The total marketing cost incurred was Rs.885 and Rs.1233.75 in case of channel 1 and channel 2 respectively. Marketing efficiency was observed in percentage of 171.43% and 155.56% in channel I and II. It can be concluded that, increase in number of intermediaries in the channel increase the marketing expenses.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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