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Price Spread and Marketing Efficiency Analysis of Kaji Nemu (Assam Lemon) under different Marketing Channels

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ABSTRACT

This paper examines the price spread and marketing efficiency of *Kaji Nemu*(Assam lemon) under different marketing channels. The need for the present study was felt after considering the tremendous marketing possibility of Kaji Nemu in domestic and foreign markets post GI tag and announcement of State fruit of Assam. The empirical evidences were collected from Baksa district of Assam which had exported more than 600 kilograms Kaji Nemu to London in 2022. The price spread analysis of Kaji Nemu reveals that the producers retain proportion of consumer rupee at 74.97 when the product was sold directly to consumer without intermediaries. The marketing efficiency indicates that efficiency declines as the number of intermediaries increases; the more market functionaries involved, the lower the marketing efficiency. The findings of the study have implications in understanding and analysing different marketing channels in terms of price spread evaluation and marketing efficiency analysis in Assam lemon and similar fruits.

Keywords: *Kaji Nemu (Assam lemon), Price spread, Marketing Channels, Marketing Efficiency, GI Tag*

1. INTRODUCTION

Of late, academicians, researchers, and policymakers have taken keen interest in the Assam lemon, also known as "*Kaji Nemu*," following its registration under the Geographical Indication of Goods (Registration and Protection) Act 1999 and its GI Tag in 2019. Comprehending the economic prospects, the Assam government proclaimed *Kaji Nemu* as the State fruit in February 2024 (The Economic Times, February 13, 2024). The situation has entirely transformed by attracting the attention of both domestic and foreign markets. In July 2021, 1200 kilograms of *Kaji Nemu*from Chirang district were exported to the Wholesale International Market Spitalfields in London (Karelia, 2021) and on July 16 2022, 600 kg was reportedly shipped from Baksa district of Assam to London (Das, 2022). These were sold for about Rs. 35 per kilogram, which was a significant difference for the farmers who were selling them for Rs. 9 to Rs. 10 (The Print, 08 October 2022). As per the Statistical Handbook Assam 2023, 157320 M.T. *Kaji Nemu*was produced in 2021-22 by covering an area of 15899 hectares and it was estimated that Assam will produce around 160339 M.T. in an area of 16058 hectares in 2022-23. The main reason for growing the demand of *Kaji Nemu* in domestic as well as international market is that it contains key components like citric acid, malic acid, sucrose, reducing sugars, fats, essential oils, glycosides, pectins, anthocyanin, β-carotene, Vitamin C, Vitamin E, and Vitamin B6 which are extremely beneficial for health (Aiyappa, 1965; Mankad, 1994; Gogoi, 2019).

Given that Kaji Nemu is only found in Assam and some areas of northeastern India, state farmers ought to take advantage of this monopoly. Assam's Minister of Agriculture has correctly noted that Kaji Nemu has drawn attention from people all over the world since receiving the GI Tag, and demand for it has also grown (Asom Barta, 02 March, 2024). The income of the farmers also increased compared to before since a single lemon recurrentlypriced between Rs.10 to Rs.20 representing a

sharp surge in price than ever before. What was once a common household ingredient has now become a luxury item affordable only to the affluent (Krishakjagat, 20 March 2024, New Delhi). Indian Agricultural Research Council, states that *Kaji Nemu* was initially discovered in Byrnihat and is now commercially cultivated in various districts including Baksa, Kamrup, Chirang, Kokrajhar, Goalpara, Morigaon, Nagaon, and Tinsukia within the state (The Sentinel, 20 February, 2024).

Considering tremendous marketing possibility, the present paper intends to examine different marketing channels used in the distribution of *Kaji Nemu* in the State of Assam. As, in both domestic and foreign markets, marketing is essential to the promotion and sale of goods. The marketing efficiency can be measured by understanding the distribution channels and factors affecting price levels. The empirical evidence for the present study was collected from Baksa district of Assam since 600 kilograms of *Kaji Nemu* was exported to London in 2022 from this district (Das, 2022).

2. OBJECTIVES OF THE STUDY:

1. To identify different marketing channels used for marketing *Kaji Nemu* in the study area.
2. To calculate the marketing cost, price spread and marketing efficiency of Kaji Nemu.
3. To find out the most feasible and profitable channel of distribution fromfarmers' perspective.

3. METHODOLOGY OF THE STUDY:

The present study was conducted in Baksa district of Assam which is one of theprominent Citri culturesof the region.A multistage sampling technique was adopted for selecting the sample size. At first stage Baksa district was selected purposively since 600 Kilogrms *Kaji Nemu* were reportedly shipped from Baksa district of Assam to London on July 16, 2022 (Das, 2022). Thus, the district possesses remarkable prospects for growth and farmers must take advantage of this opportunity. In second stage, three community development blocks were selected namely Barama, Tamulpur and Goreswar. These three blocks were purposively selected because these blocks are characterized by high citrus cultivation in the study area. In third stage, six villages were selected from three development blocks representing equally. The selected villages were Aouhata, Kachubari,Gandhibari, Naokata, Borjhar and Balitara. These villages were selected purposively as are the main pockets in the sample district where Kaji Nemu produced abundantly. In final stage, 60 respondents representing evenly the sample villages were surveyed. The primary data was collected by using a pre-tested structured questionnaire and snowball sampling technique was used for identifying the respondents. Again in order to estimate the market efficiency, marketing margin of different intermediaries and price varieties within the marketing channel 10 pre harvest contractor, 10 wholesalers and 15 retailers were personally interviewed from the sample district.

4. CONCEPTUAL FRAMEWORK:

4.1 Marketing Cost: Marketing cost accompanies expenses for promoting and distributing goods driving them from the point of production to the point of consumption. Marketing cost can be computed as follows:

C= CF+Cm1+ Cm2 + ---------- + Cmn

Where,

C= Total marketing cost

CF=Cost incurred by the producer until sale(It includes cost of farming, transportation, labour cost and market taxes)

Cm1+ Cm2+---------- + Cmn = Represent the cost added by Middlemen involved in marketing chain. It includes transportation cost loading and unloading charges within the market chain and marketing margin of middleman.

4.2 Marketing Lost: 6% of marketing cost. Marketing lost or wastage mainly occurs due to climate, attack by insects, during packaging and transportations.

4.3 Marketing Margin: It is the difference between the total cost incurred by the middlemen in purchasing the product along with cost of marketing and selling price.

AMI= Ps-(Pp+Mci)

Where,

Ami=Absolute marketing margin

Ps= Selling price of the ith product

Pp=Purchase price ith market intermediaries

4.4 Modified Marketing Efficiency: Modified marketing efficiency was calculated by applying(Acharjye,2011)modified marketing efficiency formula.

MME=Pf/Mc+Mm+Ml

Where,

MME=Modified marketing efficiency

Mc=Marketing cost

Mm=Marketing margin

Ml=Marketing lost

4.5 Producer's Share on Consumer Rupee: The producer's share on consumer rupee wascomputed by applying Meena and Singh (2013) formula.

Ps=(Pf/Pc) ×100

Where,

Ps=Producers share on consumer rupee

Pf=Price of the product received by the farmers.

Pc=Price of the product paid by the consumers.

Price spread:

Psd = Pc-Pf

Where,

Psd=price spread

Pc=Price paid by the consumer

Pf=Net price received by the farmer/producer

5. RESULTS AND DISCUSSION

The marketing channel represents the pathway that a product follows from producer to final consumer. In the study area, most farmers engage in paddy (rice) cultivation, which is a primary crop in northeast India. Some farmers also cultivate lemons commercially, recognizing that horticulture crops can be more profitable than seasonal crops. However, the marketing of horticulture crops in Assam is disorganized and dominated by pre-harvest contractors, wholesalers, and retail traders.

In Baksa district, the main marketing channels for lemons are:-

Channel I : Kaji Nemu growers → Pre-harvest contractor/commission agent → Wholesalers → Retailers → Consumers

Channel II : Kaji nemu growers → Wholesalers → Retailers → Consumers

Channel III: Kaji nemugrowers → Retailers → Consumers

5.1 Channel I=Producer(100%) - Pre-Harvest Contractor(60%)– Wholesaler(60%) – Retailer(60%) –Consumer(60%):

Kaji nemu growers often rely on contractors or commission agents for several reasons:Lack of financial resources, transportation, and cold storage facilities.

- Limited knowledge about market information, news, prices, and demand. Reluctance to bear the risk of price fluctuations.
- Preference to avoid the challenges of marketing their product and obtaining fair returns.
- Growers typically prefer to stay in their local areas and are not inclined to engage with the broader market.

On the other hand When the growers takes the kaji lemons to the market, the retailer buys the Kaji lemons and sells them to the customers. The producer earns a high profit in this channel of distribution. The Kaji nemu growers earns a high rate of profit in this channel of distribution and manufacturers because there are no different intermediaries.In Channel I, which consists of Producer, Preharvest Contractor, Wholesaler, Retailer, and Consumer. It shows that 60% per cent of the marketed surplus. The marketing costs for wholesalers amounted to Rs. 60 per quintal, while retailers incurred Rs. 30 per quintal for Kaji nemu. This channel, characterized by multiple market intermediaries, resulted in the highest total marketing margin of Rs. 765 per quintal. Despite the elevated marketing margin, the producer's price for Kaji nemu was the lowest in this channel, at Rs. 1250 per quintal. Additionally, the marketing cost for delivering products to distant markets was higher compared to nearby markets.As a result, the producer's share of the consumer's rupee was the lowest across all channels, making up just 77.52 percent of the final price the consumer paid for the product. This indicates that most of the consumer's payment went

to various intermediaries in this marketing channel,leaving a smaller portion for the actual producer. Due to increased market supply, producers lost their bargaining power since the produce cannot be stored after harvest. Farmers' reluctance to sell their products directly encouraged the presence of middlemen, who now have significant control over the entire market. This finding align with the research conducted by Mahanta and Konwar (2014).Small growers face significant challenges in marketing their fruit at the retail level, lacking the capacity to bear the risks of marketing their produce in distant markets. Consequently, they are forced to sell their produce at the prices offered by traders, especially during times of market surplus. This situation disadvantages small growers, who have limited bargaining power and are vulnerable to market price fluctuations. Due to restricted resources and an inability to directly access retail markets, they rely on intermediaries, which can negatively impact their profit margins and overall economic outcomes. The marketing channel involving multiple intermediaries, who earn higher margins, was found to be the least efficient, with a score of only 1.28. This low efficiency indicates that the distribution of resources and profits within this channel is suboptimal, leading to inefficiencies and increased costs.Additionally, the observed price spread was the highest, reaching Rs. 969.49 per quintal for Kaji nemu.

5.2 Channel II-Producer(100%) – Wholesaler(25%) – Retailer(25%) – Consumer(25%):

In this distribution channel, the wholesaler directly visits farmers' fields to collect Kaji nemu from nearby villages. They then sell these products to retailers in local markets, who ultimately distribute them to consumers. This process accounts for 25% of the marketed surplus. The wholesaler incurs a total cost of Rs.85 per quintal for Kaji nemus. The wholesaler bought produce directly from local farmers and sold it to retailers in nearby markets. In this distribution channel, retailers incurred a marketing cost of Rs. 45 per quintal for Kaji nemu. The combined marketing margin earned by all intermediaries in this channel was Rs. 438.36 per quintal. Producers received 57.33% of the final price paid by consumers, which was relatively high. Channel II had the second highest marketing efficiency, with a value of 1.75, indicating a fairly efficient resource distribution. The price spread in this channel was Rs. 774.36 per quintal of Kaji nemu.

5.3 Channel III- Producer (100%) – Consumer(15%):

In this marketing channel, producers sold their products directly to consumers in nearby markets. During peak seasons, 15% of the marketed surplus was sold this way because production was high and market prices were low, prompting farmers to sell directly to earn more profit. According to Table 1,the marketing cost for Kaji nemu in Channel III was Rs. 75 per quintal. However, when selling to pre-harvest contractors or wholesalers, farmers did not incur marketing costs as these intermediaries collected the products from the fields.In Channel III, producers received 74.97% of the consumer's payment, indicating that most of the price paid by consumers for Kaji nemu went directly to the producers. This finding aligns with Yogi et al. (2021), who observed that direct sales in local markets led to a higher share of the consumer's rupee for producers, benefiting both producers and consumers as producers received the highest net price in Channel III and consumers paid the lowest price. The marketing efficiency of this channel was the highest at 2.99, with the lowest price spread of Rs. 484 due to the absence of market intermediaries, contrary to the results of Narzary and Kalita (2019) .The streamlined nature of this marketing channel, with fewer intermediaries, facilitated a direct connection between producers and consumers. This high share for producers demonstrates an efficient marketing system, allowing them to retain a substantial portion of the revenue from sales, promoting fairer income distribution for farmers.

5.4 Price spread and marketing margins:

The price spread for various market intermediaries of kaji lemon in different channels in Baksa district of Assam is detailed in Table 1. In this district, pre-harvest contractors were not directly involved in channels 2 and 3, and wholesalers were absent in Channel III. The growers in Baksa district received net prices of about Rs.1250/qtl, Rs.1350/qtl, and Rs.1450/qtl, which constituted approximately 77.52%, 57.33%, and 33.37% of the consumer price for channels I, II, and III, respectively. The pre-harvest contractor's selling price was Rs.1460 in Channel I, which is 8% of the purchase price. Wholesalers sold at Rs.1727/qtl and Rs.1635/qtl in channels 1 and 2, respectively. Retailers sold to consumers at Rs.2219.49/qtl, Rs.2124/qtl, and Rs.1934/qtl for channels 1, 2, and 3, respectively. The marketing costs for the pre-harvest contractor were Rs.90/qtl in Channel I , while wholesalers bore costs of Rs.60/qtl and Rs.85/qtl in channels 1 and 2, respectively. Retailers incurred marketing costs of Rs.30/qtl, Rs.45/qtl, and Rs.75/qtl for channels 1, 2, and 3, respectively. The marketing cost in the consumer rupee was highest in Channel I , followed by channels 2 and 3. The pre-harvest contractor's marketing margin was 8% of the wholesale price in Channel I. Wholesalers had a marketing margin of 13% of the retailer price in channels 1 and 2. Retailers had a margin of 26% of the consumer price across all channels.Producers' share of the consumer rupee was highest in Channel III (74.97%), followed by Channel II (63.54%) and both producers and consumers, as producers received the highest share (74.97%) of the Channel I (56.31%).

Table 1: Price Spread of Kaji Nemu Under Different Marketing Channels (Rs/qtl)

Market Players	Particulars Rs/Q+L	Channel (1) (RS)	Channel (2) (Rs)	Channel (3) (Rs)
Producer (Kaji nemu)	Net Price Received	1,250	1,350	1,450

Pre-Harvest contractors	Purchase price	1,250	-	-
	Marketing Cost	90	-	-
	Marketing Lost	12.60(14%)	-	-
	Marketing margin	108.20(8%)	-	-
Whole seller	Purchase price	1460.20	1350	-
	Marketing Cost	60	85	-
	Marketing Lost	8.40(14%)	12	-
	Marketing margin	198.71(13%)	188(13%)	-
Retailer	Purchase price	1727.30	1635	1450
	Marketing Cost	30	45	75
	Marketing Lost	4.20(14%)	6	10
	Marketing margin	458(26%)	438.36(26%)	399(26%)
Consumer	Purchase Price	2,219.49	2,124.36	1934
	Price Spread	969.49	774.36	484
	Producer Spare on Consumer in Rupee	56.31	63.54	74.97

Source: Primary data

This indicates that direct sales in the retail market provided the highest producer share. The retailer margin was highest in Channel I (Rs.458/qtl), followed by Channel II (Rs.438/qtl) and Channel III (Rs.399/qtl). Channel III was found to be the best for consumer rupee, and consumers purchased kaji nemu at the lowest price (Rs.1934/qtl).

5.5 Marketing efficiency in different channels:

Table 2 shows the efficiency of various marketing channels in the study area. The highest efficiency (2.99) was in Channel III such as pre-harvest contractors and wholesalers, the efficiency decreased to 1.28 in channel I and 1.75 in channel II. This indicates that marketing efficiency declines as the number of intermediaries increases; the more market functionaries involved, the lower the marketing efficiency. It was observed when farmers sold directly to consumers (channel III) the efficiency reached the highest level, in contrast, when the Kaji nemu was sold through intermediaries.

Table 2: Marketing Efficiency of Different Channels for Kaji Nemu

Particulars	Channel (1)	Channel (2)	Channel (3)
Net Price Received By Farmers (Rs/qtl)	1250	1350	1450
Cost Margin (Rs/qtl)	180	130	75
Marketing Margin (Rs/qtl)	765	626.36	399
Marketing Lost (Rs/qtl)	25	18	10
Marketing Efficiency	1.28	1.75	2.99

Source: Primary data

6. CONCLUSION AND POLICY IMPLICATIONS:

The price spread analysis of Kajinemu within Baska district reveals that the producers retain proportion of consumer rupee at 74.97 when the product was sold directly to consumer without intermediaries i.e., channel III. This indicates that most of the price paid by consumers for Kaji nemu went directly to the producers. The marketing efficiency indicates that efficiency declines as the number of intermediaries increases; the more market functionaries involved, the lower the marketing efficiency. It was observed when farmers directly sold to consumers (channel III) the efficiency are at the highest point, in contrast, when the Kaji nemu was sold through intermediaries. The findings of the study have immense implications in

understanding and analysing different marketing channels in terms of price spread evaluation and marketing efficiency analysis.

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