Price Spread Study of Chironji (Buchanania lanzan Sperg) - Assessing the Share of Primary Suppliers

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Abstract:

The price spread study of Chironji kernel in the state of Jharkhand brings out important features of marketing of the forest produce. There were five marketing channels. The primary suppliers selling through channels I and II received less than 15% of the share in the consumer's price while the share of retailers was nearly 49%. The primary suppliers having access to channels III and IV that enabled them to sell processed produce obtained a higher share of about 25%. The channel V, which was the most efficient resulted in highest share of 40% for the primary supplier as well as the least cost for the users. The number of market functionaries in this channel were the least and the primary suppliers sold the seeds directly to the processing unit located in their vicinity. At present most of the Chironji collected is sent to neighbouring states for processing. The promotion of primary processing as well as value addition of NTFPs in the state has immense scope for employment generation, poverty alleviation, and conservation of bio diversity.

Keywords: NTFPS, Chironji, Price Spread, Market channels, market efficiencies

Introduction:

Price spread studies of traded Non-Timber forest produce (NTFPs) such as Chironji are of much relevance for various reasons. NTFPs are a significant source of livelihood for the forest households and are an integral part of their cultural identity. They have been given increasingly more place in recent literature on forests in context to conservation of forest with people's participation. These studies can be used for policy formulations to improve the technical as well as allocative efficiency of the non wood produce collected from our forests.

Chironji (Buchanania lanzan Sperg) that belongs to the Anacardiaceous family 'is a forest sensitive tree species', (Troup, 1921). It is an NTPF which has robust demand and fetches good price in the national and international retail market**.** The leaves and roots of the tree are used by traditional

healers for curing several ailments. However, it is in demand mostly for the kernel contained in the seed of the fruit. "These kernels have almond like flavor, that can be eaten raw or in roasted form"…" Chironji is an active source of phenolics, natural antioxidants, fatty acids and minerals" (Rajput, 2018). Its users include industries such as pharmaceuticals, ayurvedic medicines, cosmetics and Chironji oil (GoJ, 2018).

The state of Jharkhand in India, with more than 28% of area under forest (FSI, 2019) has a tribal population of 26% (GoI, census 2011). Of this tribal population, more than 90% is rural population, belonging to various tribal groups dependent on forests. World Bank supported, JOHAR project report estimated that about one lakh Households (HHs) were engaged in collection of Chironji in the state and 85% of the HHs earned between Rs 1000 to Rs 10,000 per year from this source. However, the production of this unique forest produce is declining due to various factors. Accelerated deforestation, climate change, competitive harvesting and unprofessional attitude of primary suppliers have contributed to such a situation. Plantations of Chironji are not very successful. The demand and supply imbalance has lead to a rising trend in the market price which has resulted in nearly a 100% increase in the last ten years (JOHAR).

Literature survey:

Price spread studies show that processed or semi processed produce fetches higher share to the primary suppliers. According to Yadav et al (2008) the price spread of unseeded tamarind was larger than the price spread of seeded tamarind sold by the primary suppliers. The primary suppliers could get 32% to 36 % share in case of deseeded tamarind while for seeded tamarind it was smaller share of only14.4 % of the price paid by the consumer.

Shylanjan and Mythili (2007) analysed the price spread of NTFPs in a community in Kerala. They concluded that monopoly of a marketing federation was not a guarantee of fair returns to the primary suppliers. However, presence of multiple agencies in the market created more competition and higher share for them.

The price spread in case of NTFPs is expected to be large due to the underdeveloped nature of the market, large number of intermediaries, lack of infrastructure as well as absence of enabling institutions in the forest areas.

The present study was taken up to analyze the price spread of Chironji kernel with the following objectives -

- To find out the alternative channels in the marketing of Chironji in Jharkhand.
- To assess the marketing costs, margins, efficiencies and price spread in the different channels.
- To examine the share of different market functionaries in consumer's rupee.

- To suggest measures to improve marketing efficiency of the produce.

Methodology:

The study uses descriptive research design. The qualitative research is useful in establishing the broad pattern and interconnection of different stakeholders in the marketing of Chironji. In situ observations and focused group discussions were essential to understand the behaviours and attitudes of the market functionaries and identify the different market channels. The quantitative research was instrumental in finding the averages and the relative importance of different marketing channels. Surveys, structured interviews and questionnaires were the tools used.

The scope of the study extends from the primary suppliers to the users who may be industrial units (user 1) and consumers (user 2). The primary suppliers are the forest household who collect Chironji fruit and sell it mostly in semi processed form. In between the primary suppliers and the users, there are a number of market functionaries. They include commission agents, trader aggregators, wholesalers of kernel and seed, processors and retailers.

The selection of the study area was purposive based on data of production and market centers. Primary data was collected by field visits from Ranchi and Khunti districts of Jharkhand between months of May 2019 to February 2020. Also during the Covid -19 lockdown, telephonic interviews helped in gathering information on prices prevailing in markets of cities in Odisha, Delhi and Uttar Pradesh. Blocks and villages have been selected by purposive sampling, on the basis of forest area and availability of Chironji trees. The selection of Households (HHs) was random, selecting five to fifteen HHs from each village. A total of 67 HHs from10 villages were taken as sample along with 10 traders, 8 commission agents and 5 wholesalers.

The forest HHs sell either the Chironji seed or Chironji kernel. About 4.5 kg of seed is taken to be equivalent of 1kg kernel while calculating the price spread in various channels. In order to calculate the cost of collection and marketing for the HHs, the imputed cost of their labour is considered. The cost of labour is taken to be the rate as given under MANREGA which is Rs 171 per day per person. Villages within 0 to 3km from the forest were able to collect the fruits.

Price Spread (PS) and marketing efficiency are calculated by using formula given by Acharya and Agarwal (2001). PS is defined as the difference between the price paid by the consumer and the net price received by the primary producer for the equivalent quantity of the produce. It may be expressed as a percentage of consumer's price as

$$\text{Price Spread} = \frac{\text{(Consumer's Price - Primary Supplier's net Price)}}{\text{Consumer's Price}} \times 100$$

The marketing efficiency is measured by using the following formula -

$$ME = \frac{Net\ Price\ Recieved\ by\ collector}{MC + MM}$$

Where MC= Marketing cost and MM = Marketng Margin.

The price spread for 1kg of Chironji is taken as the difference between the retail price per kg of Chironji kernel and the price received by the farmer for the equivalent amount of Chironji seed or guthli. The difference between the wholesale price and the retail price is the retailer's receipt, inclusive of the marketing cost (MC) incurred by him. The retailer's receipts minus the cost incurred by him give his marketing margin (MM). Similarly, the MM and MC have been calculated for each of the market functionaries.

Marketing efficiency Index is also used to compare the efficiency of the channels. Marketing is said to be efficient, if the total marketing margin is reduced for a given marketing cost. In other words, among the marketing margins of the different channels, that with the lowest value would reveal a channel to be efficient. As in Solanke, (2013) Efficiency index= (I+MM)/MC   Where, I = MC,   MM = Marketing Margin MC = Marketing Cost

3. Results and Discussions:

The research finds five marketing channels. Figure 1 gives the details of the market functionaries involved in the different channel. In channels I, II and V the primary supplier is selling Chironji seed while in channels III and IV he sells Chironji Kernel. The wholesaler of Chironji seed is present in the channels I and II only as in the other three channels the primary suppliers either sell processed kernel (Channel III and IV) or sell directly to the processing unit (Channel V).

Figure 1- Market Channels for Chironji Seed/Kernel Collected from Ranchi and Khunti Districts
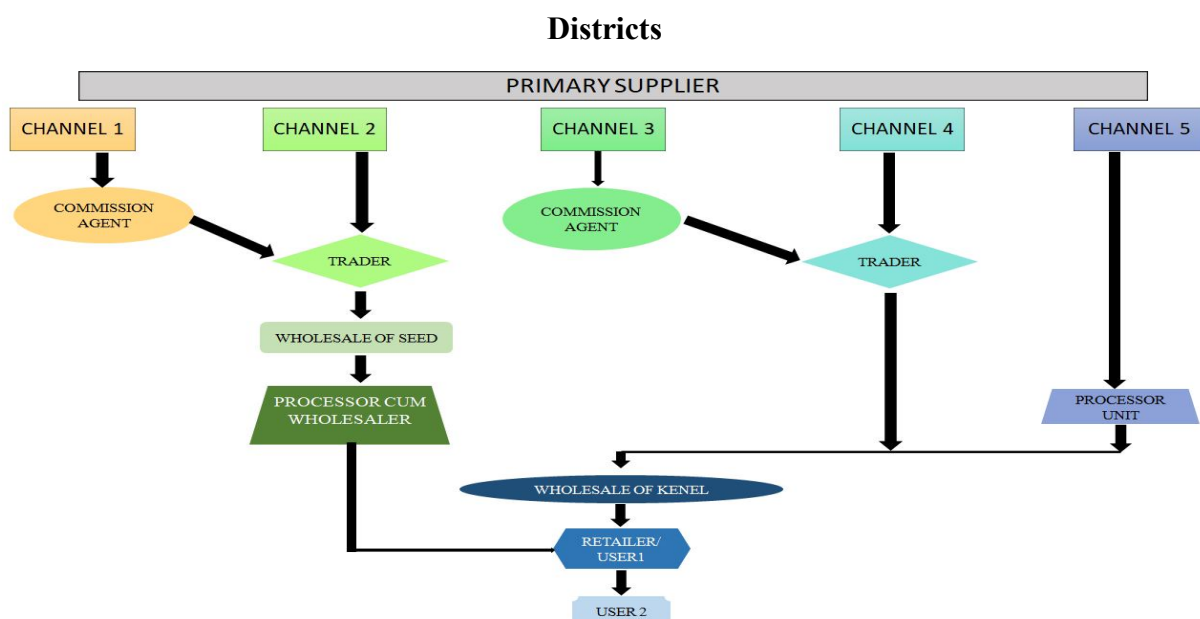
3.1 As shown in table 1, the primary supplier received gross price of Rs 360(25.7%) to Rs 600(60%) for per kg of Chironji kernel and the net price (gross price minus marketing cost) that he received varied from Rs 155 to Rs 395 across the five channels. In relative terms, his net share in consumer's price was the lowest at 11% in channel I and highest 39.5% in channel V. The Channel III and IV give net price of Rs. 345(24.65%) and Rs. 325 (23.22). Hence, from the primary suppliers' point of view, channel V gives the best results.

<div align="center">

Table 1 - Marketing Costs and Marketing Margins of Chironji in different channels

(Per Kg Chironji kernel or equivalent Chironji seed)

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Net Price received /Marketing costs / Marketing margins	Channels				
	I	II	III	IV	V
	Amount (in Rs.)(% of Consumer's Price)				
1. Primary Supplier					
i) Net price received	155 (11.08)	195 (13.94)	345 (24.65)	325 (23.22)	395 (39.5)
ii) Marketing cost	205 (14.65)	205 (14.64)	305 (21.79)	325 (23.22)	205 (20.5)
iii) Gross price received	360 (seed)	400 (seed)	650 (Kernel)	650 (kernel)	600 (seed)
2. Commission agent/ Collection agent					
i.) Marketing cost	10 (0.71)	-	5 (0.36)	-	-
ii.) Marketing margin	30 (2.14)	-	95 (6.79)	-	-
iii.) Price received or paid by the aggregator	400	-	750	-	-
3. Aggregator/ Trader					
i.) Marketing Cost	8 (0.57)	8 (0.57)	5 (0.36)	5 (0.36)	-
ii.) Marketing Margin	32 (2.29)	32 (2.28)	195 (13.93)	295 (21.07)	-
iii) Price received	440	440	950	950	-
4. Wholesaler of seed					
i.) Marketing Cost	47.50 (3.39)	47.50 (3.39)	-	-	-
ii.) Marketing Margin	87.50 (6.25)	87.50 (6.25)	-	-	-
iii) Price received or paid by the processor	575	575	-	-	-
5. Processor / Wholesaler of Kernel					
i.) Marketing Cost	35 (2.5)	35 (2.5)	47.50 (3.39)	47.50 (3.39)	140 (14)
ii.) Marketing Margin	140 (10)	140 (10)	102.50 (7.32)	100 (7.14)	60 (6)
iii) Price received or paid by User one / Retailer	750	750	1100	1097.50	800
6. Retailer					
i.) Marketing Cost	100 (7.14)	100 (7.14)	100 (7.14)	100 (7.14)	100 (10)

ii.) Marketing Margin	550 (39.28)	550 (39.28)	200 (14.28)	202.50 (14.46)	100 (10)
7. Price paid by User Two/Consumer	1400/- (100%)	1400/- (100%)	1400/- (100%)	1400 (100%)	1000 (100%)

<div align="right">Source : Primary Data</div>

3.2 After the primary supplier, the market functionaries that form the chain are Commission agents and / or the trader aggregators. They work with small margins and low cost. Since they do not store the produce but sell it quickly to the wholesaler, they do not have to bear the cost of storage or of locked up capital. The commission agents specially work on small margins as they are assured of fixed return by the traders who invest capital for purchase of the produce and their net share ranged from 2.14% to 6.79%. The net share of trader also varied from 2.29% to 21.07%.The share of trader aggregator increased when he bought directly from the primary supplier and when he traded in chironji kernel.

3.3 The wholesaler of seed performs an important function of storing the produce and invests huge capital in handling it, till it is sold to the processing units. Their gross share in consumer's price was nearly 10%. Except in channel V all other channels showed sale of Chironji by aggregators and wholesalers in Jharkhand to wholesalers/ processors of neighbouring states of Chhattisgarh, Bihar and West Bengal.

The demand for the produce is said to be higher in big cities like Delhi, Bombay and Kanpur during the festive seasons. Traders and processors come to the market from neighboring states to purchase Chironji seeds from the wholesalers. They play an important part in determining the price, and their expectation of demand and supply in the market and the inventory position has a lot of bearing on the price that comes to settle in the wholesale market. It may increase or even decrease the share of the wholesalers.

3.4 The share of retailers shows a lot of variation across the channels, highest being around 40% in the first two channels (accounting for sale by 80% of HHs) and as low as 10% in the fifth channel. Less than 10% of the HHs had access to sale through channel V, i.e. directly to a processing unit which could sell to wholesalers of the kernel.

Strikingly, only 6% of HHs were able to sell processed Chironji (using channels III and IV). The channel V is the only channel where intervention by government agency is seen. The Chironji is procured in the village by the processing unit run by a producers' cooperative society. The processed Chironji kernel is bought by JHAMCOFED (Jharkhand State Minor Forest Produce Co-operative Development and Marketing Federation Limited) at Rs 800/ kg and sells it at retail price between Rs 800 to 1000/kg. It also sells in the wholesale market at the state capital, Ranchi. The processing unit funded by it, pays higher than average market price for the purchase of Chironji from the primary suppliers.

3.5 The details of marketing margin (MM), marketing cost (MC), marketing efficiency and price spread of all five channels are shown in table 2. Being the most efficient channel V has the smallest price spread (Rs 605) and largest share for the primary supplier (39.5%).This channel also makes the retail price lower than all other channels. It has the lowest total marketing margin of Rs 160 only as compared to Rs 839.50 in case of channel I. The large number of intermediaries account for the high cost in the other channels.

MC varies between Rs. 400 to Rs. 500 per kg kernel for all the five channels which is 30% to 50% of consumers' price.

Table 2 - Price spread of Primary Suppliers and related values for Chironji (per kg)

Particular	Channels				
	I	II	III	IV	V
Net Price of PS	155	195	345	325	395
% of consumer Price	11.07	13.92	24.64	23.21	39.5
Marketing Margin	839.5	809.5	592.5	597.5	160
Marketing Cost	405.5	395.5	462.5	477.5	445
Marketing efficiency	0.124	0.161	0.321	0.302	0.652
Efficiency Index	3.07	3.04	2.28	2.25	1.35
Users price	1400	1400	1400	1400	1000
Price Spread	1245	1205	1055	1075	605
Price Spread as (%) of user price	88.93	86.08	75.36	76.79	60.5
% of Sample HH	21.9	62.5	3.0	3.2	9.4

The efficiency index brings out the relative efficiency of different channels. The lower the value of the index higher is the efficiency because it implies smaller relative marketing margins. The value of the index is more than three for the channels I and II , it is more than 2.2 for the channels III and IV; and at 1.35 it is the lowest for channel V.

The channel II , which was opted for by the majority of HHs, gave less than 14% of the consmers' price as net share to the primary supplier, had a very high marketing margin of over Rs 800 and a low marketing efficiency of 0.161.

The marketing chain suffers from several inefficiencies. The primary market is very unorganized with minimum value addition. The market is a combination of unorganized rural market and an organized sophisticated market of super markets, exports and online sale.   Producers' and

marketing societies are not very vibrant. Institutions like JHAMFCOFED, have been in the field of marketing since 1963 with the objective of providing reasonable prices to the forest HHs for their labour. However, it is not a very popular option among villagers who often find its price, the MSP fixed by the government (Rs 109 per kg of seed for the current year; GoI, MoTA, 2018) below market price. "It was once widely thought that governmental intervention could readily attenuate the most serious coordination failures.….But now there is sceptism." (Bowles, 2002, pp55)

Majority of the traders are non tribal while primary suppliers or collectors are tribal. The question often asked is-Why have the primary suppliers not been able to shift to the more profitable segment of the marketing chain? On adaptive behaviour Bowles(2002) comments " People acquire their behavioural responses in part by copying the behaviour of those who in similar situations, they perceive as successful by some standard or by acting to maximize one's gains given one's belief, about how others will act. But other influences are also at work."(pp 11). In the study, formal laws on forest rights, social conventions and beliefs as well as the asymmetry in resources and market information were found to be the other influences responsible for this situation.

Conclusions:

A comparison of different market channels reveals that the primary market is in need of major reforms. "A complementary configuration of market, state and community governance may be the best hope for mobilizing the heterogenous and versatile capacities and motives of people …" (Bowles, 2002, pp 501).Most fruitful intervention may be in setting up processing units in the region, then the number of market functionaries and the price spread can be reduced sufficiently. It may not be viable to have large processing units at one place. But small mobile processing units, called "factory on wheels", equipped with packing units can be useful in bringing professional processing to the door step of the primary suppliers and aggregators (adapted from a model suggested by Prof. Alok Ratnam Chaturvedi for empowering young girls of poor families through employment generation, personal communication,19th March, 2016). Such units owned privately by individuals or SHGs may be for the purpose of processing the produce. As mentioned by a progressive farmer in his interview, "the farmers have been selling NTFPs in unprocessed form for ages but now they must change." Jharkhand is mainly a factor driven economy at present. It is time to transform it into an efficiency driven one. The process of becoming innovation driven economy may then be self-propagating.

Acknowledgement:

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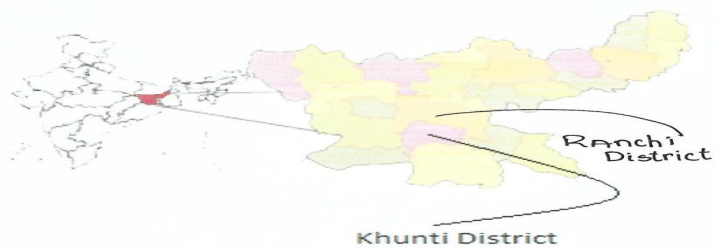
Source: Field Survey of the ICSSR IMPRESS Project

First Row- Left to Right Chironji- Seed and Kernel, Measuring bowl PAILA

Second Row- Left to Right -Worker at Big Trader's stall, Small Trader at Rural NTFPs Market