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Value Chain Analysis of Coconut in Orissa

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Abstract

Coconut crop forms an important constituent of food basket of the people of Orissa and meets the economic needs of people dependent on its marketing. The study conducted in five coastal districts of Orissa, namely, Puri, Cuttack, Khurda, Ganjam, and Jagatsinghpur has examined the market chains for coconut to find the flow of product from farmers through different intermediaries to the consumers. Prices and market margins have been computed at the different stages of the chain in order to reflect the value addition through various participants of the chain. Marketing channels have been found to be well established in the state, particularly in the coastal areas. No major value addition is done by the players at any level. The existence of functional channels explains that production and marketing system of coconut in the state can manage both increased supply and increased demand. The study has observed a high ratio of vendors v/s farmers and aggregators v/s vendors in the channel. In spite of this high ratio, both vendors and aggregators are able to earn profit and are continuing the business. It is suggested that coconut-based industries should be jointly promoted by state industry department, state agriculture department and Coconut Development Board.

Introduction

The coconut crop provides ample opportunities of income generation because of its multiple uses and consumption of its various products. Orissa is one of the major coconut-producing states of the country, where about 5 lakh hectares of land is under coconut cultivation with overall production of 427 million nuts. The state ranks 5th in coconut production in the country. However, the productivity of coconut in Orissa (8379 nuts/ha) is on the lower side when compared with the highest productivity in the country (Lakshadweep: 19630 nuts/ha). In Orissa, coconut forms an important constituent of food basket and meets the economic needs of people dependent on its business. Despite this importance, the coconut farmers are among the lower strata in the agricultural communities of the state. Besides the problem of low productivity and small farm size, coconut farmers face low and highly fluctuating prices due to their inability to have access to profitable markets for their produce. The low productivity and production of coconut in the state has been a matter of concern for the state and central agencies. Most of the produces of coconut of the Orissa are consumed without undergoing much value addition. Unavailability of coconut-based industries is a clear testimony to this fact. Considering the poor status of coconut production and coconut-growing farmers, the Government of Orissa has established a Coconut Development Board (CDB), which has been working on increasing the area under coconut cultivation and improving the status of coconut-growing farmers. The CDB aims to promote coconut crop and develop its value-added products in the state. But, lack of any detailed study on coconut market chain has constrained the CDB in making major interventions in the state. In order to have specific interventions for promotion of coconut crop in the state, the present study has undertaken an in-depth analysis of the coconut market chains in the state of Orissa.

According to Miller and Jones (2010), the concept of agricultural value chain includes the full range of activities and participants involved in moving agricultural products from input suppliers to farmers' fields, and

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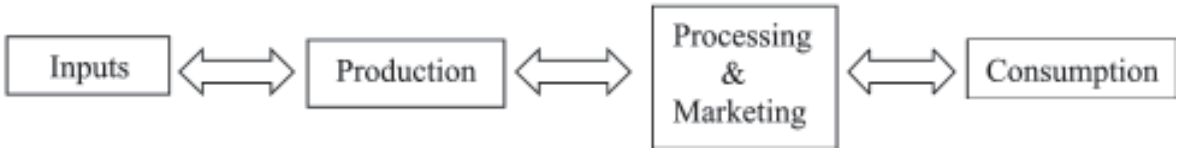

Figure 1. Production and consumption flow

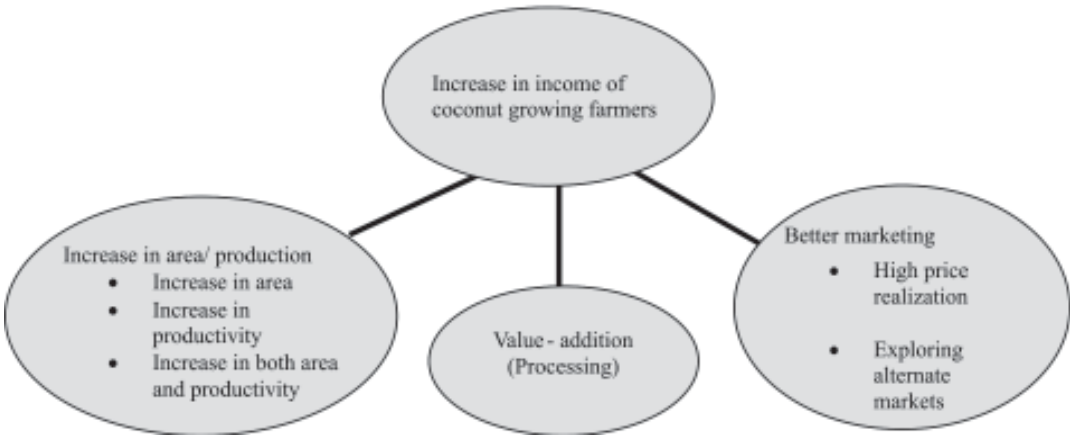

Figure 2. Alternative interventions to increase income of coconut-growing farmers

ultimately, to consumers. Each stakeholder in the chain has a link to the next in order to form a viable chain. By understanding the complete production to consumption system of coconut, as given in Figure 1, it is possible to determine how the marketing and value-addition activities take place and who shares how much benefit from such activities.

It has been argued that linking of farmers to the markets through efficient value chains would reduce the use of intermediaries in the chain, and strengthen the value-adding activities by better technology and inputs, upgraded infrastructure and processing and exports (Miller and Jones, 2010; Pabuayon *et al.*, 2009). This process can raise the income of farmers and will provide incentive for improving their management practices towards higher farm productivity. The income of the farmers can be enhanced by increasing production, value addition, and better marketing options. The marketing factors are marketable surplus, marketing channels, numbers of players at each level, profit margin of respective players, and value addition by different channel players (Figure 2).

Methodology

The study was conducted in five coastal districts of Orissa, namely, Puri, Cuttack, Khurda, Ganjam, and Jagatsinghpur. These districts have a major area under coconut production in the state. The data were collected between October 2009 and February 2010 following three methods, namely, survey, focused group discussions (FGDs) and case study. For the survey, based on the study framework, separate questionnaires were designed for all the channel players, viz. farmers, vendors, aggregators, processing industries, and the consumers. The questionnaires were pre-tested and modified based on the results of pre-testing. Questionnaire survey was mainly conducted to collect information about production and marketing related information from coconut farmers, traders and processing industries. Besides, focused group discussions with farmers and processing industries were also undertaken to get additional insights on the marketing scenario of the coconut in the area.

In each district, 100 farmers were randomly selected with the varying size of farmland under the cultivation of coconut. Scanty ex-ante information available about the population of vendors and aggregators did not allow drawing a random sample. Instead, in order to locate them for the purpose of getting the information, coconut farmers and local field officers of government departments were asked to identify them. However, it was ensured that we cover minimum number of vendors that deal with approximately 80 per cent of marketed coconut of the district market.

Table 1. Sample size under various categories of respondents

Category	Sample size (No.)
Farmers	300
Vendors	63
Aggregators	16
Processing industries	4
Consumers	194

All the major aggregators of each district, except for Puri, were purposively selected for the study. For the survey of processing industry, the list was gathered from the aggregators and large vendors who supplied raw materials (nuts) to the processing industries. For consumer survey, a total of 194 respondents were randomly selected from the city of Bhubaneswar. While sampling, it was taken care that it represented different categories of respondents on parameters like, occupation, age group, and income range. Table 1 represents the sample size of each category of respondents in selected districts of the state.

The market chains for tender coconut were drawn to indicate the flow of the product from the farmers through the different intermediaries to the consumers. Prices and market margins were computed at different stages of the chain.

Market Chains for Coconut

Market Channel Used by Farmers

The nuts harvested by the farmers were sold in different marketing outlets such as local area, local vendors, mandi, and commission agents. Apart from this, about 13 per cent of the total production of coconut was retained by the farmers for domestic use, and 87 per cent was marketed through different marketing channels.

The local vendors were found to be the most contacted and used channel by the farmers for selling their coconut. It is evident from Chart 1 that 76 per cent of the producers sold their coconuts to the local vendors at farm gate. About 35 per cent of the farmers sold their produce in the local area by self-marketing. Only 16 per cent farmers used regulated mandi for marketing their nuts. It is important to mention that since mandi is present only in the Puri district; farmers (16%) accessing this channel were from this district. Commission agents were not found functional in the Ganjam district and in rest of the districts, altogether 7 per cent farmers accessed this channel.

As is evident from Chart 1, the sale by farmers was maximum (> 90% nuts) in the channel involving vendors either at farm gate or in the mandi. The highest margin received by the farmers was Rs 4.95 per nut from the vendors in the mandi. However, it was worth noting that the quantity of nuts for the different channels was not based on the returns to the farmers. As evident from margin vs. quantity analysis from Chart 2, even though the margin received by the farmers in the vendors channel at farm gate was the least (Rs 3.55/ nut), they used this channel for majority (45.3%) of their marketable surplus. In the direct selling channel to the consumers, despite margin being much higher (Rs 4.75/nut), the quantity marketed was very less, 7.7 per cent of the marketed nuts. A similar trading pattern was seen for the commission agents' channel which was used for only 2 per cent of marketed nuts and gave a margin of Rs 4.15/nut to the farmers. These findings indicate the capacity of each channel and clearly, the two most profitable channels, had low capacity. The channel which had maximum capacity had the least margin. Analysis of different marketing channels accessed by the farmers indicated that the vendors in mandi were best suited to farmers for selling their nuts.

Market Channels Used by Vendors

The vendors procured nuts from the farmers and sold them further. On an average, the catchment area

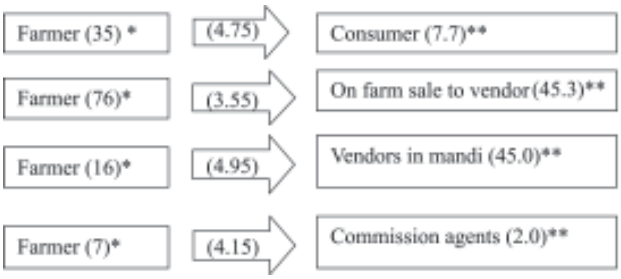

Chart 1. Marketing chains of farmers in Orissa

Notes:

* Figures within the parentheses indicate per cent of farmers using the marketing channel

** Figures within the parentheses indicate per cent of quantity of nut

Figures within the parentheses inside the arrow indicate margin of farmer in different marketing chains (Rs/nut)

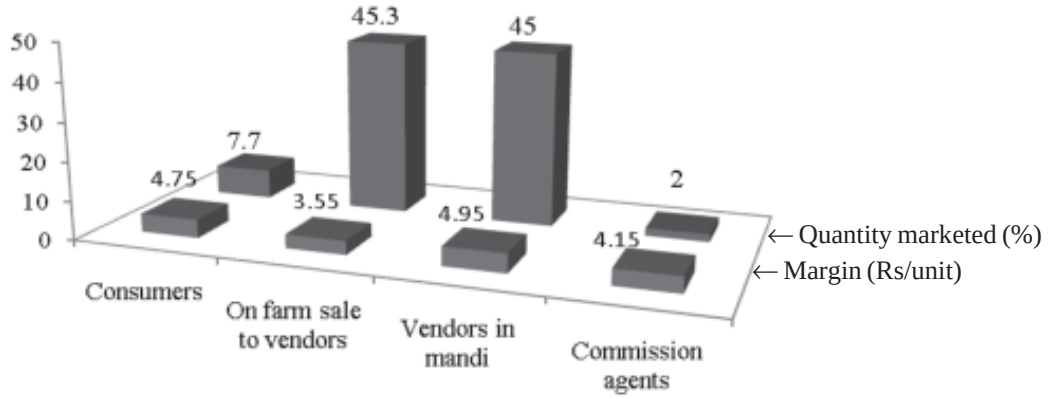

Chart 2. Chanel-wise quantity sold and margin for farmers

for a vendor was spread across 5 villages, and the average number of farmers they served was 144. Usually, they procured nuts at farmers' farm gate, aggregated at one place, and divided them into different lots, depending upon the size of nuts and sold them further. Although, they did not make any change in the form of the products, they did add value by aggregating the produce at one place and also making it available at a place far from the production sites.

Nearly half of the vendors sold their nuts to the aggregators or other large vendors (Chart 3). Sixty five per cent of vendors of Puri (19% of all the vendors) sold their products in the mandi. It is important to note that a considerable number of vendors (44%) sold their nuts near temples (for religious purposes), and through door-to-door or road-side marketing (41%) and in local haats (24%). It is also important to mention that through these channels, the vendors could reach the ultimate customers.

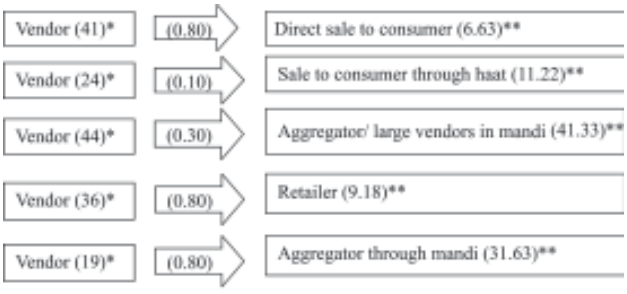

Chart 3: Market chains for vendors

Notes:

* Figures within the parentheses indicate per cent of vendors using the marketing channel

** Figures within the parentheses indicate per cent of quantity of nut

Figures within the parentheses inside the arrow indicate margin of vendors in different marketing chains (Rs/nut)

The maximum number (41.33%) of nuts procured by the vendors were sold to other large vendors, followed by in the mandi (31.63%). Even in mandi, the buyers were big vendors or the aggregators. It is obvious from these figures that more than 70 per cent of the total nuts are marketed and about 30 per cent are used at the consumers' level. It was found that a considerable number of vendors were involved in direct marketing of nuts to consumers but in terms of volume, they handled less than 30 per cent of produce. A small portion of their procurement (about 2.04%) was recorded as loss in the trade.

The highest profit margin of the vendors was Re 0.80/nut and it was obtained through three channels, viz., mandi, temples, and door-to-door selling. Although marketing expenses in door-to-door selling were double than those in selling in mandi and temples, the vendors could manage the profit at par with the other channels. The margin was very low when coconuts were sold to large vendors or aggregators, as in this business it was the quantity that mattered more. The lowest return was recorded at local haats (Re 0.10/nut). It was interesting to note that consumers were of similar strata in both the channels (door-to-door and haat), but in haat, vendors could sell a more quantity. Secondly, vendors lost their bargaining power in the haat where consumers had many options.

The vendors marketed about 72 per cent of their procured nuts to the aggregators/ large vendors at their place or in the mandi. On comparing the quantity sold on the margin in different channels, shown in Chart 4, it was found that even though equal margin was received in mandi, retailers' channel and consumers' channel, the quantity marketed was more in the mandi due to high availability of buyers, i.e. the aggregators.

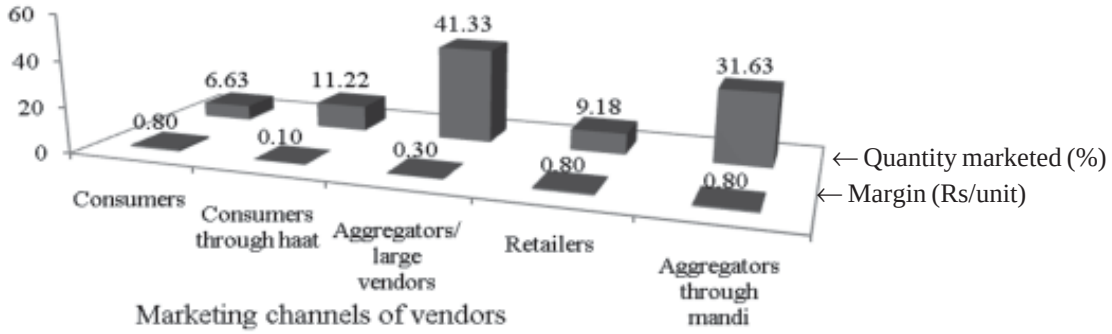

Chart 4. Chanel-wise quantity sold and margin earned by coconut vendors

In the consumers' channel, the vendors could sell at a lower margin in the haat compared to door-to-door selling because their transportation cost was much less and quantity sold was large. On the whole, it was found that the aggregators' channel gave assured returns to the vendors for certain period as it involved traders dealing with bulk quantity of nuts, whereas in the consumers' channel, the returns varied due to bargaining and the changing demand of the consumers.

Market Channels Used by Aggregators

The aggregators procured the nuts from three identified sources — farmers, vendors, and outside state. About 31 per cent of aggregators procured directly from the farmers and the volume procured by them was mere 5 per cent of the total procurement. Eighty-seven per cent of aggregators procured nuts from other states, and the quantity procured was only 25 per cent of the total procurement by the aggregators. Fifty per cent of the aggregators got their product from the vendors and total quantity procured was 70 per cent of the total procurement. In the Ganjam district, where local vendors sold their nuts in local haat, the aggregators depended largely on the import from other states to meet their market demand. It is important to mention that an aggregator used more than one channel to meet his requirement of coconut.

Only six per cent of the aggregators were supplying nuts to any processing industry (Chart 5). Almost all the aggregators (96%) sold nuts to different stockists / commission agents who in turn, sold these to various retailers. Half of the aggregators marketed the nuts outside the state. Most of such supplies were seasonal or festival-based. Aggregators based in Puri and Jagatsighpur had their linkages outside the state and they have been supplying nuts to them since many years.

The aggregators supplied less than one per cent of their total selling to any coconut-based industry. Export which was calculated to be 20 per cent of the total volume sold by the aggregators, was mainly to states like Chhattisgarh, Delhi, Bihar and Jharkhand. These exports were either for tender coconut water or ripe coconut for festivals and other religious purposes. Most of nuts (76%) were dispatched to different parts of the state for local consumption. About 3.5 per cent of the total quantity procured by the aggregators got wasted or not marketed.

Like farmers and vendors, for aggregators also the trade pattern in terms of quantity vs. margin in the channels shows an inverse relation. On comparing the export channels, it was found that although less quantity was traded in the channel of outside state, the return exceeded that from marketing within the state. Also, though the return in the retailers' channel was minimum at Rs 1.77/nut, about 76 per cent of the nuts were marketed through this channel. Only 0.45 per cent nuts were supplied to industry with high margin of Rs 3.57 per nut. One of the main reasons for this could be the

Chart 5. Market chains for aggregators

Notes:

* Figures within the parentheses indicate per cent of aggregators using the marketing channel

** Figures within the parentheses indicate per cent of quantity of nut

Figures within the parentheses inside the arrow indicate margin of aggregators in different makreing chains (Rs/nut)

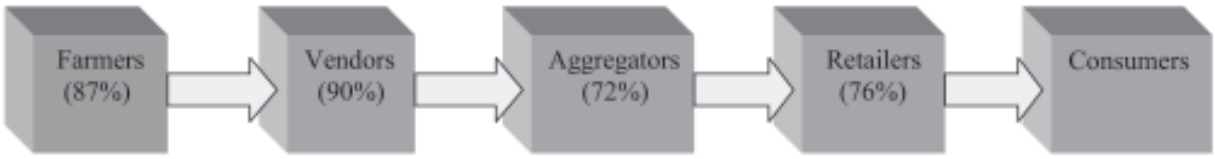

Figure 3. Most prominent channel for marketing of coconut in Orissa

absence of a good number of functional industries that could procure a substantial quantity of nuts. On the other hand, the retailers within the state market nuts to the consumers and thereby they regularly procure from the aggregators in the major coconut districts and market in different other districts of the state. In this way, the surplus produce from the coconut producing area reaches the non-traditional area of coconut in the state.

Most Prominent Channel of Coconut in Orissa

The most common marketing channel of coconut in Orissa is shown in Figure 3. Eighty-seven per cent of the total produce was being marketed by the farmers. Of the total marketable surplus, almost 90 per cent was reaching the vendors (from the farmers at their respective farm gates or from mandi). About 72 per cent of the total nuts sold by the vendors are bought by aggregators either directly from vendors or through mandi. Of the total nuts sold by the aggregators, 76 per cent of the nuts reach the retailers in various districts within the state.

It is interesting to note that although majority of the nuts reach the consumers through various channels, the state has to import nuts from the neighbouring states for its internal consumer demand.

Distribution of Product Value Share

The market shares of different market players are shown in Table 2. Depending upon the volume transacted in different chains, the weighted average buying and selling prices have been calculated for each of the market participants. The value addition in coconut takes place only through marketing activities carried out by the vendors and aggregators.

It appears from the analysis that farmers' share is quite high in coconut marketing; but this does not really translate into high farm income. Since the majority of farmers have small farm-size, low farm productivity for coconut, and therefore have low marketable surplus, their incomes from coconut production tend to remain low.

Marketing Channels and Potential

Marketing channels were found to be well established in the state, particularly in the coastal areas. There were five channels through which the coconut reached the customers. It was encouraging to see that farmers were able to use both of the options of selling their produce, i.e. farmers taking their products to mandi on their own and also vendors approaching farmers at their farm gates to collect the produce. Farmers had the option to select from the different channels to sell their produce. In some cases, where mandi was not available, farmers were taking their products directly to the aggregators and getting better price of their produce. In almost all the channels, the product flow was smooth and reached the ultimate users without much loss. The level of loss at each intermediary was not very high and no player in the transaction reported major losses. Also, the study indicated that at every level there was some margin for the players of that level, although all the intermediaries lamented that actual volume of transaction had reduced and also the quality of nuts available had come down. It was also found

Table 2. Product value shares of different market players per unit of coconut sold

Market participant	Selling price (Rs)	Buying price (Rs)	Marketing margin (Rs)	Share (%)
Farmer	4.30	-	-	59.47
Vendor	5.72	4.30	1.42	19.64
Aggregator	7.23	5.72	1.59	20.89
Consumer	-	7.23	-	100.00

that no major value addition (by changing the form of product) was done by the players at any level.

It is clear from the above discussions that there is a big potential of increasing marketing efficiency. The existence of functional channels explains that production and marketing system of coconut in the state of Orissa can manage both increased supply and increased demand. Marketing efficiency can further be increased by removing the channel players if they are not adding any value in the channel, which was found to be happening in some of the channels. Wherever the mandi was functional, it was used effectively by almost all the channel players. The study of channels also indicated that reach of few channel players also went outside the state and they were doing business by both procuring as well as selling the produce. This speaks well for the future of any coconut based industry in the state.

Analysis of the number of players at every level indicates that the number of vendors per 10 farmers was more and the number of aggregators per 10 vendors was also more than what should be, in this volume-based business of agricultural produce. The vendors agreed that their volume and catchment (number of farmers, and number of villages) have both shrunken. The coconut market can become more efficient by either increasing production or reducing the number of players at each level (at present level of production).

The study revealed that the farmers were able to make profit through all their marketing channels. Secondly, whatever quantity farmers produced, they were able to sell it with profit. On an average, farmers were getting the margin of more than Rs 4 per nut (land cost and personal labour cost were not included in calculating the cost of production). Most of the farmers who had planted coconut in their fields did not make any additional expenditure on annual basis, so even at a lower price, they did not make any loss. Also, since many channels were available to farmers throughout the year, they could select the most profitable channel for selling their produce.

Inspite of there being a high ratio of vendors v/s farmers and aggregators v/s vendors in the channel, both vendors and aggregators were able to earn profit. Although there were only few new entrants as vendors and aggregators, the continuation of older players in the business was the clear indicator of profitability in the business.

The study has shown that vendors use different channels to market nuts. These included self-selling to consumers, selling to large vendors, and selling to aggregators. Aggregators too had multiple options. Some aggregators were found importing coconut to meet the market demand from within or outside the state. It indicates that the entire demand of marketing channel in the state was not being met by internal production. Therefore, there is potential to increase production in the state. More that 50 per cent of aggregators kept track of the coconut markets in the neighbouring states. Though the preferred states were Andhra Pradesh and Tamil Nadu, other neighbouring states such as West Bengal, Jharkhand, and Chhattisgarh were also contacted by them. During festival seasons, distant states like Delhi, Uttar Pradesh, Bihar, Maharashtra, Madhya Pradesh, and Pondicherry are also contacted for trade. Almost all the aggregators responded positively on their intention to continue in business, and 87 per cent intended to expand their business, and desired to establish a processing plant.

Constraints and their Management

The major constraints identified in the study area along with their management are described below:

- It was found that coconut area was scattered over long distances and this has resulted in selling of coconut at the local level and high dependence on vendors. So we need to identify suitable marketing points where the farmers of a given area could come and sell the produce. This may be facilitated by the Orissa State Agriculture Marketing Board.
- Some farmers were adopting distress selling because of lack of confirmed marketing, fear of theft and requirement of instant money. The above suggestion if worked up and made functional will be able to take care of this constraint also.
- If farmers of a given area are contracted by large vendors and are assured of attractive return for their good quality matured nuts, then they will wait till the nuts are well matured and will also protect it from infestation of pests.
- Post-cyclone period has seen closure of many coconut-based industries, and some, which are functional, are not operating at their maximum capacity because of unavailability of raw materials and also because the poor demand of their product

in the market. There is not a single industry which directly uses fruit as a raw material. This has created a situation where demand from the industries has plummeted considerably. Farmers are not able to get the expected price for their produce. Margin for any of the channel players in the coconut market is not so high that they will demand more and more nuts in the channel.

Strategies and Implications

The CDB should undertake extensive campaign to increase awareness among the common consumers about the various products of coconut and product development should take care of customers' preferences. It is suggested that coconut-based industries should be jointly promoted by state industry department, state agriculture department and Coconut Development Board. Broadening the stakeholders base will help in undertaking concerted efforts by all the major institutional players for promoting agri-based industries. The future of tender nut water appears very bright in the urban markets of Orissa. It is necessary that local entrepreneurs in Orissa are encouraged by suitable incentives to sell the produce. A proper launch campaign will help in creating the demand in the market.

Acknowledgement

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