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Tracing costs and value in organic food products: A study of Medak's farm-to-market chain

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Abstract

The present study examines the organic food value chain in Medak district, Telangana, with a focus on cost structures, value addition, pricing, and price transmission across key stakeholders including farmers, KVK Medak, and Sakura Organics. A descriptive research design was employed, using averages, percentages, and ratios to interpret economic patterns along the value chain. The study adopted a multistage sampling approach, purposively selecting five mandals—Zaheerabad, Nyalkal, Kowdipally, Raikode, and Tekmal—and randomly selecting 100 organic farmers supplying produce to KVK Medak. Data were gathered through structured surveys, interviews, direct observations, and secondary sources such as institutional records and reports. The findings indicate that millet-based products are predominantly processor-driven due to intensive value addition, resulting in a smaller share for farmers. Groundnut oil exhibits a more balanced cost structure, with higher farmer contribution and the highest price transmission efficiency. Turmeric powder offers moderate profits, as farmers undertake part of the curing and drying processes but still rely on processing agencies for final value addition. Overall, the study highlights how different organic products distribute value differently among stakeholders, helping farmers understand their economic position, make informed marketing decisions, and improve profitability within the organic value chain.

Keywords: Organic value chain, farmer share, price transmission, value addition, post-harvest processing, profitability

Introduction

Organic farming is a method of cultivating crops that works with nature rather than against it. It avoids synthetic fertilizers, chemical pesticides, genetically modified organisms, and artificial additives, focusing instead on soil health, biodiversity, and ecological balance. By relying on natural processes such as crop rotation, composting, green manuring, and biological pest control, organic farming ensures sustainable productivity while maintaining the long-term fertility of the soil and the health of ecosystems.

Various international organizations define organic farming in similar ways. The International Federation of Organic Agriculture Movements (IFOAM) emphasizes minimizing synthetic inputs and enhancing natural soil processes. Codex Alimentarius describes it as a system that strengthens ecosystems using biological, mechanical, and cultural methods. The USDA highlights natural farming techniques to maintain fertility and control pests, while the FAO underscores the promotion of ecological balance and biodiversity through sustainable practices.

Organic food production follows two main paths. Small-scale farms often rely on informal certification and direct sales to local consumers who value fresh, locally grown produce. Large-scale producers, on the other hand, operate within certified systems to supply supermarkets and export markets. Certification builds consumer trust and ensures compliance with organic standards, though it primarily focuses on farming methods rather than broader ethical considerations such as labor conditions or animal welfare.

India has emerged as a global leader in organic agriculture, holding the second-largest area under organic cultivation and the highest number of organic producers worldwide. In 2024, India produced approximately 3.6 million metric tonnes of certified organic products, including cereals, millets, pulses, oilseeds, spices, fruits, vegetables, tea, coffee, and fiber crops. The total area under organic cultivation reached 7.3 million hectares, comprising 4.5 million hectares of farm area and 2.8 million hectares of wild area. Leading states include Maharashtra, Madhya Pradesh, Rajasthan, Karnataka, and Gujarat, with exports reaching countries such as the United States, the European Union, Canada, the United Kingdom, Japan, and Australia.

The Indian government has implemented several initiatives to promote organic farming. The National Programme for

Organic Production (NPOP), launched in 2001 and implemented by APEDA in 2004, standardized organic cultivation, processing, and certification, aligning Indian standards with international norms. The National Project on Organic Farming (NPOF) provided training, technical support, and infrastructure development. Subsequent programs, including the Rashtriya Krishi Vikas Yojana (RKVY), Paramparagat Krishi Vikas Yojana (PKVY), and the Mission Organic Value Chain Development for the North-Eastern Region (MOVCD-NER), have further strengthened organic practices, farmer clusters, certification systems, and market linkages. The Jaivik Kheti Portal, launched in 2020, enhanced traceability, transparency, and accessibility for farmers and buyers.

Globally, organic agriculture has seen remarkable growth. By 2022, the total area of organic farmland reached 96.4 million hectares, with Oceania leading at 53.2 million hectares, followed by Europe, Latin America, Asia, North America, and Africa. The number of organic farmers worldwide increased to approximately 4.5 million, and retail sales of organic products reached nearly €135 billion. Between 2000 and 2022, organic farmland expanded more than fivefold, with significant growth in Australia, India, and Greece. In Asia, India's organic area grew by 77.8% in 2022, reflecting strong domestic and export-oriented development.

In Asia, countries like China, Japan, Bangladesh, Indonesia, Mongolia, and Saudi Arabia have made significant strides in organic farming. China has introduced over 160 local policies, issued billions of organic labels, and expanded international trade. Japan has certified 3 million hectares and promoted school meal programs using organic foods. India is updating its NPOP standards with an online traceability system and a unified organic logo to improve transparency. Neighbouring countries are also implementing youth training programs, certification support, and sustainable farming initiatives to strengthen their organic sectors.

The growing demand for convenient and safe foods has increased the importance of value addition in organic products. Consumers seek foods that are natural, minimally processed, and nutritionally rich, but also ready-to-use. Value addition enhances product shelf life, flavor, safety, and market competitiveness, while ensuring that the natural characteristics and health benefits of organic foods are preserved.

Value chain analysis (VCA) plays a vital role in improving the efficiency and competitiveness of organic agribusinesses. It maps all activities involved in bringing a product from production to the consumer, from input sourcing and cultivation to processing, marketing, and distribution. VCA helps identify cost drivers, improve production efficiency, reduce bottlenecks, maintain quality, optimize resource use, and ensure transparency and traceability. These factors contribute to greater profitability and sustainability for farmers and agribusinesses alike.

Sakura Organics serves as an example of a modern, integrated organic agribusiness. The company sources organic produce from KVK Medak, processes it into products such as millet mixes, turmeric powder, and groundnut oil, and markets them under a certified organic brand. By avoiding chemical additives and maintaining strict quality standards, Sakura Organics ensures healthful products while supporting sustainable farming practices. Effective value chain management strengthens the organic ecosystem, benefits farmers, and connects consumers with high-quality, nutritious organic products.

This study focuses on understanding the organic food value chain, highlighting how value is created, distributed, and optimized across different stages. It aims to identify areas for improving efficiency, reducing unnecessary costs, maintaining quality, and ensuring sustainable growth for both farmers and agribusinesses. By analyzing the interactions between farmers, processors, and marketers, this research provides insights into enhancing profitability, transparency, and sustainability in the organic food sector.

Materials and Methods

The study was conducted in Medak district, Telangana, focusing on the organic food value chain involving farmers, KVK Medak, and Sakura Organics. A multistage sampling method selected 100 farmers from five mandals—Kowdipally, Tekmal, Raikode, Nyalkal, and Zaheerabad—and their respective villages, covering five products: jowar pongal mix, finger millet mix, foxtail millet mix, groundnut oil, and turmeric powder. Primary data were collected through surveys, interviews, and field observations, while secondary data came from institutional records and government reports. Data were analyzed using descriptive statistics to understand cost structures, pricing, and stakeholder perspectives. This approach provides a comprehensive evaluation of value creation, efficiency, and profitability across the organic value chain in the region.

Results and Discussion

1.1 Descriptive Statistics

The tabular analysis of cost and pricing across five selected organic products highlights the sequential flow of value addition from farmers to consumers. For the millet-based mixes—jowar pongal, foxtail millet, and finger millet—farmers incur production costs ranging between ₹25 and ₹35 per kg. Their selling prices to KVK Medak are slightly higher (₹32-₹49 per kg), providing them modest initial margins. At the KVK level, value addition activities such as transportation, grading, roasting, packaging, and overheads add ₹20-₹26 per kg, raising the total processing cost to ₹64-₹78 per kg. These products are then sold to Sakura Organics at a markup, ranging from ₹78 to ₹100 per kg. Sakura incurs an additional handling and distribution cost of approximately ₹10 per kg, making its total cost ₹88-₹110 per kg. The consumer prices, therefore, typically range between ₹100 and ₹125 per kg. This reflects a structured price transmission mechanism, where each stakeholder—farmer, processor (KVK), and marketer (Sakura)—captures a distinct share of the margin, with consumers ultimately paying nearly three to four times the farmers' initial production cost.

For groundnut oil and turmeric powder, the value chain demonstrates similar but slightly broader margins due to higher processing intensity. Farmers spend around ₹120 for 2.5 kg of groundnut (equivalent to ₹40 per kg) and ₹18 for 250 g of turmeric powder. Their selling prices to KVK nearly double these costs, at ₹228 and ₹30, respectively. At the KVK level, activities including grading, roasting,

packaging, and overheads bring total costs to ₹268 for groundnut oil and ₹70 for turmeric powder. These are then sold to Sakura Organics at ₹295 and ₹85, respectively. After accounting for Sakura's marketing and handling costs (₹12 for oil and ₹10 for turmeric), the total costs rise to ₹307 and ₹95, respectively. Final retail prices reach around ₹320 per litre for groundnut oil and ₹100 per 250 g for turmeric powder.

Table 1: Table Cost Component Tables (Per Product)

Component	Jowar Pongal Mix (₹/kg)	Foxtail Millet Mix (₹/kg)	Finger Millet Mix (₹/kg)	Groundnut Oil (₹/litre) or 2.5 kg groundnut	Turmeric Powder (₹/250)
Farmer Cost	₹25	₹26	₹35	₹120 (40rs per kg)	₹18
Selling price of farmer to (KVK)	₹33	₹32	₹49	₹228 (76rs per kg)	₹30
Transport (Farmer to KVK)	₹4	₹4	₹4	₹6	₹4
Grading sorting cleaning	₹5	₹6	₹7	₹6	₹6
Roasting, adding value	₹5	₹7	₹4	₹8	₹5
Packaging	₹6	₹5	₹6	₹8	₹8
Overheads (Machinery, HR, Utilities)	₹12	₹10	₹8	₹12	₹7
Total cost incurred by kvk	₹65	₹64	₹78	₹268	₹70
Selling price to sakura organics	₹78	₹80	₹100	₹295	₹85
Cost incurred by the sakura organics	₹10	₹10	₹10	₹12	₹10
Total cost by sakura organics	₹88	₹90	₹110	₹307	₹95
Consumer Price	₹100	₹100	₹125	₹320	₹100

Table 2: Profit percentage of each stakeholder

Product	Farmer Profit%	KVK Profit%	Sakura Profit%
Jowar Pongal Mix (1 Kg)	32.00%	35.38%	13.63%
Foxtail Millet Mix (1 Kg)	23.08%	25.00%	10.00%
Finger Millet Mix (1 Kg)	40.00%	28.20%	13.60%
Groundnut Oil (1 Litre)	90.00%	10.00%	4.23%
Turmeric Powder (250 g)	66.66%	21.42%	5.26%

Table 3: Price Transmissiomn Efficiency

Product	Farmers price	Consumers price	Price transmission Efficiency (%)
Jowar pongal mix (Kg)	₹33	₹100	33
Foxtail millet mix(Kg)	₹32	₹100	32
Finger millet mix(Kg)	₹49	₹125	39
Groundnut oil (litre)	₹228	₹320	71
Turmeric Powder (250gm)	₹30	₹100	30

Table 4: Value Distribution Across Products

Product	Farmer (%)	Processor (%)	Distributor (%)	Consumer Price (₹)
Jowar Pongal Mix(kg)	33.00%	45.00%	22.00%	₹100
Foxtail Millet Mix(kg)	32.00%	48.00%	20.00%	₹100
Finger Millet Mix (kg)	39.00%	41.00%	20.00%	₹125
Groundnut Oil (1 L)	71.00%	22.00%	7.00%	₹320
Turmeric Powder (250g)	30.00%	55.00%	15.00%	₹100

Key Observations

Farmer Profitability

Farmers earn the highest profits in Groundnut Oil (90%) and Turmeric Powder (66.66%), reflecting strong returns due to low production costs and farm-level value addition like curing and drying.

Millet mixes show moderate farmer profits between 23% to 40%, indicating reasonable margins**.**

KVK Medak Profitability

KVK earns moderate profits, highest in Turmeric Powder (21.42%) and Jowar Pongal Mix (35.38%), through processing activities like grading, roasting, and packaging.

Profit from groundnut oil processing is low (10%) due to high costs involved in oil extraction.

Sakura Organics Profitability

Sakura Organics has the lowest margins across products, ranging from 4.23% (groundnut oil) to about 13% (millet mixes).

This reflects high procurement costs and competitive retail pricing to maintain affordability.

Price Transmission Efficiency

Groundnut oil has the highest price transmission efficiency (71%), indicating farmers capture a large share of the final price.

Millet mixes and turmeric powder have lower efficiencies (30-39%), showing more value added during processing and retail stages.

Value Distribution

Processors (KVK) dominate value addition in millet mixes and turmeric powder, holding 41-55% of the consumer price.

Farmers retain the largest share in groundnut oil (71%) due

to the raw material's high contribution.
Retailers hold a smaller share (7-22%) across products.

Conclusion

The price of all organic products—Jowar Pongal Mix, Foxtail Millet Mix, Finger Millet Mix, Groundnut Oil, and Turmeric Powder—shows a substantial increase from the farmer's sale price to the final consumer price, reflecting the cumulative value addition and intermediary costs at each stage. Farmer prices range from ₹18 to ₹35 per kg/litre, while consumer prices rise sharply to between ₹100 and ₹320, representing roughly 3.5 to 4.5 times the initial cost. This escalation is due to transportation, cleaning, roasting, packaging, and overhead expenses incurred by KVK, along with further processing costs and margins added by Sakura Organics. Overall, the data highlights the critical role of each stakeholder in the value chain in enhancing product quality and market readiness, which justifies the price increase by the time the products reach consumers.

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