

Investigating the Supply Chain Dynamics of the Organic Food Retail Market in India – with Case Studies

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Abstract- This study examines the function and significance of the supply chain in the retail sale of organic foods in India. India's organic food market has expanded significantly in recent years as a result of growing consumer knowledge of the benefits of eating healthier food that is also environmentally friendly. However, the viability and sustainability of the organic food retail industry depend on the efficient management of the supply chain. This article explores several supply chain elements, such as purchasing, production, distribution, and retail, and highlights the difficulties and possibilities unique to each stage. It also covers and analyses the important players in the organic food supply chain, including how they contribute to the availability, price, and quality of organic food products in the Indian market.

Index Terms- Food Retail, Organic Foods, Organic Food Retail, Retail Market, Supply Chain Management.

I. INTRODUCTION

India's organic food market has grown significantly in recent years due to rising consumer knowledge of and desires for healthier and more environmentally friendly food options. Food that has been cultivated and prepared without the use of artificial chemicals, pesticides, genetically modified organisms (GMOs), or radiation is known as organic food. Focusing on organic farming methods strives to advance sustainable agriculture, biodiversity, and soil health. A wide variety of organic items, including fruits, vegetables, cereals, dairy products, spices, and packaged meals, are now available in India's organic food retail industry, which has grown significantly in recent years. An increasing middle-class population with more disposable cash, increased food safety worries, and increased health consciousness are a few reasons for this growth. The efficient management of the supply chain is necessary for the success and sustainability of the organic food retail sector in India. The transfer of organic products from farms to customers is facilitated by a network of interrelated processes known as the supply chain, which includes procurement, production, distribution, and retail.

This study intends to investigate the function and significance of the supply chain in the retail organic food sector in India. It looks at the opportunities and difficulties they present. The article also examines the major players in the organic food supply chain and how they contribute to assuring the accessibility, affordability, and quality of organic food items in the Indian market. Policymakers, business leaders, and researchers must comprehend the dynamics and complexities of the supply chain in the organic food retail sector to develop strategies and initiatives that improve productivity, sustainability, and customer satisfaction. The organic food sector in India can grow its market share, have a positive effect on farmers' livelihoods, and promote consumer and environmental well-being by solving the supply chain's obstacles and taking advantage of its potential.

II. LITERATURE REVIEW

Several well-known e-commerce companies, like Google, Amazon, eBay, ASOS, Netflix, and Facebook, have already embraced BDA and seen tremendous success. This study provides a helpful beginning point for the use of BDA in developing e-commerce research through its systematic review and classification of the essential BDA components. The study offers a method for incorporating every best practice involved in creating and defining BDA capabilities. The study also shows that once BDA and its scope are clearly defined, distinct big data characteristics and types are understood, and challenges are appropriately addressed, the BDA application will maximize business value by facilitating the widespread usage and prompt delivery of insights across organizations, Akter, S., & Wamba, S. F., 2016. The goal of this study was to examine the operational and commercial difficulties organic smallholders and OFSCs in developing nations experience while competing against conventional growers. We explored the production-inventory planning and pricing issues of numerous competing OFSCs in two alternate scenarios non-cooperative and cooperative using a two-stage game theory modelling approach, Asian, S., Hafezalkotob, A., & John, J. J., 2019. They concluded that the 69 projects offered a diverse range of possibilities and ideas from which they could select important examples that might be tailored to the unique features of the regional agri-food sector in the Alpujarra. They believe that a careful selection of the various approaches and tools suggested in the projects they analyzed will be very helpful for guiding the conversation and advancing the development of a plan tailored to the social and territorial reality of the area, a plan for which the recovery of local crop varieties serves as the starting point but which also must take into account a comprehensive strategy for their production, sale, and distribution, Boora, K. K., & Sharma, V., 2021. Supply chain participants must manage and maintain traceability-related data to demonstrate regulatory compliance to state authorities and more discerning clients. Customers have high expectations for food supply chains (FSC), with a focus on aspects of safety in particular. However, the creation of reliable tracing techniques is hampered by the

complexity and fragmentation of contemporary FSC networks. This article develops and evaluates a distributed trustless and secure architecture for FSC traceability. An example of a dairy company's food traceability case study was provided to help evaluate the viability of the suggested approach. The creation of a local private blockchain and fully functional smart contracts further demonstrated the model's applicability, Casino, F., et al, 2021. Environmental management practices are proven to not have any appreciable correlation with operational performance or produce competitiveness. Environmental management practices, on the other hand, promote competitiveness when they are jointly mediated by both environmental performance and operational performance. When only the direct relationship is taken into account, socially inclusive community practices show a strong negative association with the competition. However, when mediated by community-centred social performance, its indirect relationship with competition exhibits a strong positive association. It turns out that there is little correlation between socially inclusive practices and competitiveness overall, Das, D., 2018. Designed to comprehend supply chain management for perishable items, notably fresh produce, and investigate the different opportunities and problems that are constantly changing. Even though corporations' quick entry into the fruit and vegetable industries is beneficial to farmers because they are cutting out the middlemen and entering into direct agreements with growers, the adoption of best practices in supply chains, such as collaborative forecasting, data integration, increased IT use, demand-based production, and a pull system rather than a push system for fruit and vegetable production, poses a challenge. Conclusion: To achieve the goal of moving towards systematic supply chain & logistics management, which will result in agricultural growth and development in India, efforts must be made to capitalize on our strengths and remove constraints, Halder, P., & Pati, S., 2011.

III. OBJECTIVES OF THE INVESTIGATION

- To evaluate the role supply chain management plays in satisfying consumer needs, preserving product quality, and promoting the expansion of the organic food sector in India.
- To determine the difficulties and obstructions experienced by those involved in the supply chain for organic food.
- To investigate the possibilities and innovations in supply chain management that can improve the effectiveness and efficiency of the retail market for organic foods.
- To review effective supply chain models and case studies in the Indian and international retail market for organic food to draw forth best practices and lessons learnt.

IV. IMPORTANCE OF SUPPLY CHAIN MANAGEMENT

Increased Efficiency and Cost Savings:

Streamlining operations, decreasing waste, and cutting expenses are all made possible by effective supply chain management. It entails streamlining procedures including distribution, inventory control, production, and procurement to increase efficiency and cut costs. Supply chain management aids businesses in achieving operational excellence and competitive advantage by removing bottlenecks, cutting lead times, and improving collaboration among stakeholders.

Increased Customer Service and Satisfaction:

A key component of exceeding customer expectations and raising satisfaction is supply chain management. It guarantees that products are available at the appropriate times, in the appropriate amounts, and in the desired conditions. Organizations can reduce stock-outs, backorders, and delivery delays through effective demand forecasting, inventory management, and rapid order fulfillment. In turn, this improves customer service, encourages loyalty, and gives businesses a competitive edge.

Supply Chain Risk Mitigation:

In the dynamic and uncertain business climate of today, managing supply chain risks is crucial. Organizations can identify potential hazards through supply chain management, create backup plans, and put risk reduction techniques into action. It entails building backup plans, diversifying supplies, and keeping an eye on market conditions to be prepared for interruptions like natural catastrophes, supplier problems, or geopolitical events. Enhancing organizational resilience and reducing the effects of interruptions on the supply chain are two benefits of effective risk management.

Collaboration and coordination:

Suppliers, manufacturers, distributors, and retailers are just a few of the various stakeholders that are encouraged to work together and coordinate efforts in supply chain management. Sharing of information, team planning, and efficient communication are all made possible throughout the supply chain network. Collaboration leads to increased transparency, builds trust, and facilitates better decision-making. Organizations can gain reciprocal benefits and boost supply chain efficiency by setting goals that are in alignment, pooling resources, and working together to address problems.

Sustainability and Environmental Responsibility:

The promotion of sustainability and environmental responsibility depends heavily on supply chain management. It entails streamlining supply chain waste management practices, cutting carbon emissions, and improving transportation routes. Organizations may support environmental preservation and satisfy the rising customer demand for sustainable products by using eco-friendly practices including green logistics, sustainable packaging, and responsible sourcing. Supply chain management gives businesses the ability to track and enhance their environmental performance while also advancing their CSR goals.

Innovation and Competitive Advantage:

Supply chain management encourages innovation and gives businesses an edge over their competitors. Increasing supply chain efficiency entails embracing new technologies, investigating process improvements, and looking for creative solutions. Companies that consistently reinvent their supply chain procedures can reduce costs, raise product quality, and speed up the introduction of new goods to the market. Organizations can obtain a competitive edge and adjust to changing consumer wants and market trends by utilizing technology, data analytics, and market insights.

V. THREATS IN SUPPLY CHAIN

Limited Availability of Organic Produce:

One of the major obstacles in the supply chain for organic foods is the scarcity of organic produce. All farmers might not have easy access to the specialized knowledge, abilities, and resources needed for organic farming. As a result, there may be shortages and increased pricing if the supply of organic goods cannot keep up with the rising demand.

Issues with Quality Control and Certification:

It might be difficult to uphold consistent quality standards and guarantee the authenticity of organic products. The inspection, testing, and paperwork requirements of organic certification procedures can be time- and money-consuming for farms. Additionally, incidences of fraud, adulteration, or mislabeling can erode consumer confidence in organic goods. To solve these issues, it is critical to strengthen certification mechanisms, enhance traceability, and raise public understanding of organic standards.

Logistics and Infrastructure Restraints:

The supply chain for organic food faces considerable obstacles due to insufficient logistics and infrastructure. Post-harvest losses, shortened shelf lives, and deteriorated product quality can occur as a result of inadequate storage facilities, transportation networks, and cold chain infrastructure. To address these issues, infrastructure needs to be improved, especially in remote regions, and transportation and cold storage need to be funded.

Price Competitiveness and Affordability:

Organic food items frequently cost more than their conventional counterparts. The premium pricing is influenced by elements including increased production costs, constrained economies of scale, and certification charges. Making organic food affordable and available to a wider consumer base may be difficult as a result. This problem can be solved by putting in place methods to lower production costs, encouraging effective supply chain procedures, and offering financial incentives or subsidies.

Lack of Coordination and Supply Chain Fragmentation:

The Indian organic food supply chain frequently involves many intermediaries, which causes fragmentation. The inclusion of intermediaries, aggregators, and wholesalers may result in higher transaction costs, less transparency, and inefficient processes. The adoption of technology-driven supply chain solutions, fostering farmer-producer organizations, and fostering direct connections between farmers and merchants can increase coordination, lower costs, and boost efficiency.

Public Understanding and Education:

Despite growing public interest in and understanding organic food products, there is still a need for consumer education on the advantages, requirements for certification, and value of assisting the organic food supply chain. Consumers may not understand or have misconceptions regarding organic agricultural methods and certifications. This issue can be dealt with and a greater understanding of organic food can be fostered by increasing awareness through marketing campaigns, labelling initiatives, and consumer education programmes.

VI. OPPORTUNITIES AND INNOVATIONS

Farmer Collaborations and Contract Farming:

Fostering partnerships between organic food stores and farmers can assist increase the supply of organic produce. Contract farming agreements give farmers the support, education, and access to markets they need to produce organic products regularly. Cooperatives and farmer-producer organizations (FPOs) can be extremely important in fostering these partnerships and assuring fair prices for farmers.

Adoption of Technology and Digitization:

The retail supply chain for organic foods can undergo radical change by utilizing technology and digital platforms. By removing middlemen and increasing transparency, online marketplaces and e-commerce platforms connect farmers and customers directly. Farmers can get help with crop planning, pest management, and traceability through mobile applications and farm management systems. Blockchain technology enables secure and unchangeable records of the whole supply chain, which can increase transparency and trust.

Cold Chain Development and Storage Facilities:

The shelf life and quality of organic perishable items can be greatly improved by investing in cold storage facilities and strengthening the cold chain logistics network. Reduced post-harvest losses are achieved by using cold chain facilities to guarantee that organic produce keeps its freshness and nutritional value along the supply chain. Government incentives and public-private partnerships can promote the construction of cold storage facilities in key locations.

Last-Mile Connectivity and metropolitan-Rural Linkages:

Timely delivery and lower transportation costs depend on effective last-mile connectivity between manufacturing areas and metropolitan centers. The easy transportation of organic produce from fields to retail establishments can be facilitated by improving rural infrastructure, such as road connectivity. Local sourcing can be encouraged, and small-scale organic farmers can be supported, by strengthening the connections between urban and rural areas through programmes like farmers' markets, farm-to-table programmes, and direct sales.

Value-Added Processing and Product Innovation:

Promoting organic product value-added processing can open up new markets and increase profitability. To meet changing consumer demands, innovative organic food products such as ready-to-eat meals, snacks, functional foods, and beverages can be created. Collaboration among farmers, food manufacturers, and researchers can spur product innovation and broaden the selection of organic products available.

Sustainable Packaging and Trash Management:

In the retail supply chain for organic foods, promoting sustainable packaging methods and trash management techniques is essential. Utilizing eco-friendly packaging materials, encouraging recycling programmes, and reducing food waste can support organic farming practices and improve sustainability. Campaigns for consumer education and awareness can promote ethical consumption and waste minimization.

Global Market Expansion:

India has a lot of potential for organic food exports. Indian organic producers can access worldwide markets by strengthening international trade relationships, adhering to global organic standards, and enhancing supply chain traceability. Initiatives for export promotion, market information, and participation in international trade shows can make it easier to enter markets and increase exports of organic food.

VII. CASE STUDIES

The following list includes some specific examples of effective supply chain models.

First Case Study: Fast Fashion Supply Chain Model at Zara

The well-known fashion retailer Zara has developed a successful supply chain model that enables it to quickly get the newest trends into its stores. The following are the main components of Zara's supply chain model:

1. Agile and Demand-Driven Approach: By closely observing vogue trends and consumer preferences, Zara places a strong emphasis on responsiveness to client demands. With a demand-driven strategy, Zara can swiftly spot and capitalize on new fashion trends while lowering the likelihood of having too much inventory on hand or running out of stock.
2. Vertical Integration: From design and production to distribution and retail, Zara manages the majority of its supply chain operations internally. Zara has more control and flexibility over its operations because of vertical integration, which enables it to react to market demands more rapidly and shorten lead times.
3. Effective Production and Sourcing: Zara runs a network of manufacturing plants near its Spanish headquarters. Quick turnarounds and frequent production cycles are made possible by this proximity. Additionally, Zara keeps solid connections with a small number of suppliers, providing stable sourcing and constant quality.
4. Rapid reaction production: To test the market's demand, Zara uses a "quick response" production technique that entails making small batches of items. Zara modifies production in response to feedback, lowering the possibility of overproduction or excess inventory.
5. Just-in-Time (JIT) Inventory Management: By using a JIT strategy, Zara keeps its inventory levels comparatively low. This enables Zara to regularly supply its stores with new merchandise, keeping the inventory current and minimizing the need for exorbitant markdowns.

Second Case Study: E-commerce Supply Chain Model for Amazon

To address the demands of online retailing, Amazon, the world's largest e-commerce company, has created an innovative and effective supply chain strategy. Among the main components of Amazon's supply chain model are:

1. Advanced Warehouse and Fulfillment Network: To facilitate quick and economical order fulfillment, Amazon has built a wide network of fulfillment centers in strategic locations. To streamline order processing and speed up delivery times, these centers are outfitted with cutting-edge automation technology including robotics and conveyor systems.
2. Inventory management and forecasting: To predict customer demand precisely, Amazon makes use of advanced algorithms and data analytics. Amazon optimizes inventory levels and guarantees product availability by looking at user browsing habits, purchase histories, and market trends.
3. Multi-Channel Distribution: In addition to using its delivery fleet, collaborating with postal services, and forming alliances with logistical companies, Amazon uses a variety of distribution methods. Amazon can efficiently distribute goods across multiple locations and satisfy customer demands for quick deliveries because of this multi-channel strategy.
4. Vendor and Seller Integration: To improve the efficiency of the supply chain, Amazon collaborates closely with vendors and independent sellers. By utilizing Amazon's logistics network to store, package, and transport their goods through initiatives like Fulfillment by Amazon (FBA), retailers can increase efficiency and client happiness.
5. Customer-Centric Returns Management: Handling returns is handled in accordance with the supply chain model used by Amazon. The business makes returns easier by offering prepaid labels and hassle-free returns, improving consumer satisfaction and loyalty.
6. Constant Innovation: To improve the efficiency of its supply chain, Amazon regularly makes research and development investments. The supply chain is further optimized by innovations like drone deliveries, autonomous cars, and AI-powered demand forecasting, which boosts efficiency, customer happiness, and speed.

Amazon has created a strong and effective supply chain model by utilizing cutting-edge technologies, improving inventory management, and emphasizing customer-centricity. As a result, the business has been able to dominate the industry, increase the variety of products it offers, and draw in a sizable clientele. Amazon can provide customers with a large selection of products, competitive prices, and quick and dependable delivery because of its effective supply chain model. Additionally, it has made it easier for the corporation to enter new markets and industry sectors, like Amazon Prime, Amazon Fresh, and Amazon Web Services.

Additionally, the e-commerce sector has experienced innovation because of Amazon's supply chain approach. The business has consistently made infrastructure and technology investments in order to streamline operations, increase warehouse automation, and boost delivery capabilities. Robotics, AI-powered algorithms, and drone delivery have all contributed to further supply chain simplification and increased operational effectiveness. In terms of sustainability, Amazon has worked to lessen its influence on the environment through measures including packaging optimization, financial investments in renewable energy, and the adoption of eco-friendly delivery methods. The supply chain model enables effective route planning and consolidation, which lowers carbon emissions and supports environmentally friendly logistics methods.

The e-commerce sector as a whole has benefited from the success of Amazon's supply chain approach. To match the demands of customers for prompt and dependable delivery, other businesses have been motivated to improve their supply chains. Additionally, Amazon has established a standard for service excellence and operational excellence in the sector with its emphasis on customer-centricity and ongoing innovation. Overall, Amazon's successful adoption of an effective supply chain model has been a major factor in the company's success, allowing it to meet customer needs, spur growth, and keep a competitive edge in the global e-commerce industry.

VIII. CONCLUSION

In the retail market for organic foods in India, the supply chain is crucial. It includes all parties and procedures involved in the acquisition, cultivation, distribution, and delivery of organic food items. For the organic food market to expand and to be able to fulfill consumer demands, product quality must be guaranteed, expenses must be kept to a minimum, and the supply chain must be efficient and effective. The demand for healthier and more sustainable food options among consumers has significantly increased in recent years, driving growth in the Indian organic food retail sector. Farmers, certification agencies, merchants, distributors, governmental agencies, consumers, and non-governmental organizations (NGOs) all play critical roles in guaranteeing the accessibility and integrity of organic products.

However, the retail supply chain for organic food in India also confronts many difficulties, including disjointed supply chains, poor infrastructure, a lack of standardized certification procedures, and constrained market access. Collaboration between stakeholders and supportive government policies are necessary to overcome these obstacles. The supply chain offers additional chances for innovation and development. Blockchain, IoT, and data analytics technologies can improve efficiency, transparency, and traceability. Contract farming and farmer-producer organizations are two examples of cooperative projects involving farmers and merchants that can strengthen the supply chain and benefit all parties.

The development of organic agriculture policies, the development of infrastructure, the streamlining of certification procedures, the encouragement of research and development, consumer awareness and education, and support for international trade are all policy implications for the Indian organic food retail supply chain. The development and sustainability of India's organic food retail business will be aided by these policy changes. The Indian organic food retail supply chain may reach its full potential by resolving the issues, seizing the chances, and putting in place the necessary laws. A well-run supply chain will not only be advantageous to the parties concerned but will also encourage a healthier and more sustainable food ecosystem for consumers and support the expansion of India's organic food industry as a whole.

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