



# LITERATURE STUDY ON “IMPACT OF COVID-19 ON INDIAN AGRICULTURE AND FOOD SUPPLY CHAIN”

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## ABSTRACT

Covid 19 pandemic has negatively affected the global economy. It has resulted in numerous issues, including jeopardising livelihoods, restricting people's and commodities' movement, disrupting supply chains, increasing unemployment, diminishing demand, and reducing production capacity, all of which have a worldwide economic impact. This epidemic has not only harmed people's health and quality of life, but it has also disturbed different economic sectors. The agriculture industry is one of the most important sectors of the Indian economy in terms of food production and job creation. The Covid-19 crisis and the resulting lockdown have an impact on the entire process from the farm to the customer. In terms of labour mobility restrictions, closure of food-production firms, changes in consumer demand, and financial constraints on the food supply chain, the agriculture sector and food supply chain have faced numerous obstacles. The impact of lockdown on the agriculture and food supply chain is discussed in this article. This article discusses the primary difficulties that agriculture producers and food processing firms confront. The study concludes that agricultural production is sufficient to meet people's requirements, but the supply chain management is the key issue.

**Keywords:** food supply chain, covid-19, agriculture sector.

## 1. INTRODUCTION

Agriculture is the most important sector of Indian economy. It not only secures in terms of providing food, fodder and other raw materials to the industries but also serves as the primary source of livelihood for about 58% of India's population. The agriculture industry contributes more than 20% of the gross domestic product (GDP) in most emerging countries in South Asia (IMF, 2020). According to the Agricultural Census 2015-16, 86.2 percent of farmers in India are small and marginal farmers who confront obstacles both before and

after harvest. The Covid 19 outbreak has wreaked havoc on India's agricultural system, adding to the sector's challenges. It has had negative effects for agricultural producers in terms of both input sources and yields, which has impacted the food supply chain, food costs, food accessibility, and food security further. The covid-19 epidemic put a stop to the use of mechanisms designed for emergencies and affected legally binding food supply chain transfers. Simultaneously, shifts in supply-demand equalisation occurred, putting merchants and farmers in jeopardy (FAO, 2020b). The April harvest was heavily affected by a dearth of migrant labour in certain areas and a surplus of workers in others, resulting in a decrease in agricultural earnings in some towns and an increase in others. Insufficient product availability resulted in food shortages and skyrocketing costs, which disproportionately impacted urban people and the poor (Kumar et al., 2021). Food availability has been disturbed, and this has been a major challenge for all countries throughout the world. Higher retail prices, along with lower earnings, force an increasing number of households to limit the quantity and quality of their food consumption. The absence of agricultural and other migrant labour has impeded planting, harvesting, and post-harvest operations (Saha and Bhattacharya, 2020; Pothan et al., 2020). The food supply chain has been significantly impacted by all of these challenges. In the previous year, the fast spread of the covid-19 outbreak has produced enormous uncertainty and indefinable supply chain disruptions. The Indian food processing business, which accounts for over 32% of the country's entire food market, is one of the country's most important industries. The Indian industry faced numerous challenges in continuing operations due to a labour constraint and a lack of raw material. The Indian food business has had numerous challenges in continuing to operate. Global food costs have risen by 40% since January 2020, according to a World Bank report (2021).

Despite the fact that the global production outlook for major grains remains positive, rising prices reflect strong demand, weather risks, macroeconomic conditions, and covid-19-related supply disruptions. Globally, enough food is accessible, according to the OECD, but covid-19 is causing supply and demand to be disrupted in various ways. Food security is jeopardised when the food supply chain is disrupted. During the epidemic, the government launched a number of measures to address these issues. During the first lockdown, the central government concentrated on direct cash transfers and food security measures like rice, wheat, and pulse distribution, as well as delivering free cooking gas cylinders to millions of individuals in need. The state government has implemented severe regulations to prevent the virus from spreading.

The resulting lockdown had tremendous impact on the entire country's economic operations. All the economic activities were stuck due to policy implications. Business activities are depending on transportation and without transportation business activities also facing a halt in production and marketing. Businesses did not receive manpower and raw material during lockdown situation. Consumers also suffer for essential items and food items. The entire lockdown in India has produced unnecessary disruptions in the food supply chain, which has been exacerbated by a labour shortage (Abhishek et al., 2020). Preventive actions towards the end of the food supply chain are difficult since many individuals are concerned as we move closer to the end (Rizou et al., 2020). Many aspects of the agricultural value chain have still been disrupted, posing a threat to the long-term viability of enterprises and farm employees. The report is based on a review of previous research

on the subject. The study examined the difficulties faced by agricultural producers during the lockdown as a result of restrictions on persons and vehicles' movement. The challenges that the food processing industry is facing as a result of the covid-19 pandemic are also emphasized.

## 2. REVIEW OF LITERATURE

The impact of the covid-19 epidemic on the agriculture sector and food production is examined in this report. The northern Indian states of Punjab and Haryana are among India's agricultural powerhouses, despite the fact that migrant labour from east India is used to cultivate in these areas. The most important hurdle is a lack of manpower, because a lack of manpower immediately affects production (Biswas & Das, 2020). When India's state-wide lockdown was announced in March, the first reaction was a major migration of migrant labourers back to their rural hometowns to wait out the lockdown. The harvesting process, which generally begins in mid-April, was entirely disrupted, resulting in significant financial concerns. According to Grant Thornton, the June crop is one of those that has been particularly heavily damaged.

(Workie and colleagues, 2020) Pesticide and insecticide supplies were already in short supply in the countries initially hit, complicating efforts to safeguard crops. (Kumar et al., 2021) also discussed the varied effects of the covid-19 lockdown on Indian farming systems. The floriculture industry in India has been severely harmed as a result of the imposed lockdown, which coincided with the traditional marriage and religious festivals in which flowers are abundant (Workie et al., 2020). (Arumugam et al., 2020) emphasised the problem of a labour shortage caused by fear of viral transmission, which finally leads to the wastage of harvested commodities, primarily perishable fruits and vegetables, in the farmer's field.

Food arrivals in the wholesale market fell by 62% in the first weeks of the lockdown, while wholesale prices jumped by 8%. Volumes and prices had fully recovered by the time the shutdown occurred. (Lowe and colleagues, n.d.) Evidence that the association between covid-19 and food supply is attributable more to state-level lockdown policy variance than local food supply chain responses. Since January 2020, global food costs have climbed by 40%. Even while the worldwide production outlook for major grains remains positive, rising prices reflect robust demand, as well as weather risks, macroeconomic factors, and covid-19-related supply disruptions (world bank, 2021). They may close their sea ports and airports, as well as road transportation, due to the spread of covid 19. Import and exports activities also banned for some time. Due to transportation row material not supplied and manufacturing activities disrupted as well. the production level is already low due to unavailability of the raw materials because of the irregular transportation system (Biswas & Das, 2020). (Agrawal et al., 2020) also discussed about the various critical barriers that affects the supply chains in the India. In the early aftermath of the first Indian lockdown, (Kanika et al., 2020) found a 10% decline in online availability of various items (with little influence on retail prices). (Mulligan, 2021) measured the effects of covid-19 on agricultural factor markets, trade, and end demand by evaluating nations' exposure to a subset of these transmission pathways. COVID-19 will have the greatest impact on farmers by limiting effective demand from consumers via limits on the food supply chain's midstream and downstream, as well as by reducing consumers' real incomes during the crisis (Reardon et al., 2020).



The food and agriculture industries are also seeing the effects of covid-19. The restrictions put in place to stop the virus spreading are disrupting the supply of agri-food goods to markets and consumers, both inside and across borders, in many countries (OECD, 2020). With a drop in demand from restaurants, hotels, and caterers, the closing of outdoor markets, and an increase in demand from supermarkets, the demand structure has shifted dramatically. As a result, the first food supply shock was strongly linked to the early occurrence of covid-19. The impact of lockdown on the food supply chain and agri-business was examined by (Barman et al., 2021). Businesses should focus on facilities such as employee safety and health, as well as changes in working conditions, in order to facilitate the food supply chain. They proposed a PDS system to deal with the disturbance in the food supply chain. The public distribution system is a government-sponsored network of stores tasked with supplying basic food and non-food items to the poorest members of society at low costs. This will adversely impact the most vulnerable segments of the population (e.g., migrant labourers, small enterprises, daily wage employees, and street vendors), with fewer job options, lower incomes, and supply chain disruptions, all of which threaten to exacerbate food insecurity (Gettleman & Raj, 2020). (Memon et al., 2021) looked into the pandemic's influence on the food and beverage business in China and India, as well as the tactics and policies that dealt with it. They found that covid-19, which started from 2019 to 2020 and is still going, had an impact on a variety of indicators in the food and beverage industry in China and India, including business closures, revenue growth, total profit, gross value added, and export growth value.

### 3. METHODOLOGY

In present study systematic review of related articles and papers were carried to examine the impact of covid-19 on Indian agriculture sector and food supply chain. All the information obtained was mainly from articles published in newspapers and google scholar for research. The world health organization's (WHO) covid-19 dashboard, the world bank, the food and agricultural organisation (FAO), and the Organisation for Economic Co-operation and Development (OECD) all provided reports (OECD).

### 4. COVID-19 AND THE INDIAN AGRICULTURE SECTOR

In India, agriculture is the principal source of income for 58 percent of the people. 44 percent of the country's workforce is employed in this industry. Agriculture plays a vital role in the growth of various important industries in India, including cotton and jute textiles, sugar manufacture, edible oils, plantation (tea, coffee, rubber), and many Agro-based cottage enterprises that depends on agricultural raw materials. Most have accepted that the impact of covid-19 on agricultural production has not been affected much, but the supply of agricultural products is disrupted, so that the crops of the farmers has not been reached at right time and they did not get fare price of the products. The markets for perishables are likely to be affected more than those for cereals and prepared foods. Workers at packing and processing plants are at risk of contracting covid-19 because of the close working conditions (OECD, 2020).

#### 4.1 Agriculture Producers:

Farmers are an important part of India's food value chain. The lockdown resulted in a manpower and equipment scarcity; migratory workers in India typically migrate to rural areas during harvest, and smallholder farmers frequently rent harvesting equipment rather than purchase it (Deepa, 2020). Another cause of uncertainty is the availability and accessibility of seeds, fertilizer, and insecticides for the upcoming crop season. However, the covid-19-induced disruptions have lowered farm input production capacity and raised prices, making these resources inaccessible to the country's smallholder and marginal farmers. Another issue that faced by farmers is unavailability of transportation for his ready crops, it is reported that truck drivers are denied their duty due to two major problems, -all restaurants and road side Dhabas were closed during lockdown so they are unable to get food. Another is strict restrictions imposed by states government is border areas were sealed off. This is likely to have an impact on agricultural product demand, labour dislocation, and supply chain disruption. Here's a brief breakdown of the labour shortfall and agricultural input supply interruption.

- ❖ **Labor Shortage**- In order to avoid covid, there is a labour shortage. Many nations, particularly those with periods of peak seasonal labour demand or labour-intensive production, are experiencing labour shortages in agricultural industries due to restrictions on people's migration across borders and lockdowns (OECD, 2020). Demand of labourer is increase and supply of labour is reduced due to many reasons, for example migrant workers back to their homes and some labour denied to go farms due to fear of coronavirus. This disbalance of labour demand and supply leads to increase in wages rate.
- ❖ **Shortage of Intermediate Inputs**- The covid-19 epidemic may disrupt the availability of essential intermediate inputs for farmers. Fertiliser, insecticides, seeds, feeds, and electricity are examples of intermediate inputs. Closing borders or restricting transboundary seed movement might hamper seed supply chains and on-time seed delivery, with serious implications for agricultural, feed, and food output this season and beyond.

#### 4.2 DISRUPTIONS IN THE FOOD SUPPLY CHAIN

The covid-19 pandemic has an impact on the entire global supply chain. The supply chain in India has also been strained as a result of the lockdown restrictions, which have affected the supply chain across the country (Chaudhry, 2020). It will have an impact on all aspects of the food system, from primary supply to processing, commerce, national and international logistical systems, intermediate and final demand, and everything in between. It also has an impact on factor markets, such as labour and capital inputs. (Mulligan, 2021) Food organisations are facing issues in meeting market demand as well as income declines. Some businesses have temporarily gone into liquidation, demonstrating that many industries are inextricably linked on the planet (Shahidi & Fereidoon, 2020). In some regions and at certain times, disruptions and potential problems in marketing, logistics, and trade systems may limit access to food, resulting in hunger and malnutrition issues (FAO, 2020). Food is on the vital commodities list and therefore exempt from motion restrictions. However, in lots of locations, local police and authority are prohibiting the movement of trucks and carts wearing essential food items. As an end result, perishables are not accomplishing mandis, processing units and

households. Manufacturers, distributors, and customers are all losing money, as are manufacturers and buyers. As a result of the measures taken to prevent the spread of the covid-19, transportation and logistical services are being delayed and disrupted. Border closures, as well as additional processes and checks, have hampered the transfer of perishable commodities, causing congestion and delays. For example, social distance regulations have reduced the number of import and export inspectors at border crossings, which has increased the time it takes to customs clearance.

#### ❖ *Marketing Of Agri Products:*

Government restrictions on the marketing of agricultural products have also impacted the transportation sector. Cross-border mobility has been severely restricted, preventing the transportation of crops and, as a result, their sale. When you add in a shortage of machine repair mechanics and other support employees, you have a sector in trouble. Transport and logistics issues, as well as tighter customs regulations and a shortage of containers and shipping boats, are all affecting global exports. According to Grant Thornton, India's agricultural exports, worth roughly \$40 billion, are adversely impacted in this environment. Around half a million tonnes of Indian rice is completely stuck in supply chains, while perishable commodities are not being moved at all due to the risk of spoilage during transportation.

#### ❖ *The supply of perishable goods has also been disrupted:*

The most crucial task for government machinery during the lockdown time is making food grains, fruits and vegetables, and other basic products available to consumers, both in rural and urban locations. The smooth operation of the supply chain, with proper safety measures in place for everybody engaged, is critical (ICRISAT). Due to constraints, farmers were forced to destroy food essentials on the farm. The selling of dairy goods, fish, poultry, and other foods has been hampered by the lockdown, as uptake by organised industry participants has been hampered by a lack of workers and transportation concerns.

#### ❖ *Food-processing industry:*

The Corona virus pandemic has the potential to have an impact on the agricultural item shop network, which is a tangled system of manufacturer, transporter, distributor, retailer, and finally the customer (Arumugam et al., 2020). Because some states called their workers back to avoid the spread of coronavirus during the lockdown, the labour-intensive food-supply business was hampered. Transportation restrictions and quarantine measures are also expected to obstruct access to food industry inputs. Manufacturing products has become challenging due to a lack of personnel and a suitable supply of raw materials. Agriculture and industries are interrelated to each other. Agriculture serves as a major source of raw materials to many industries. Food-processing industries obtain raw materials from agriculture and produce processed products. For example, food grains, fruits and vegetables, sugarcane, herbs etc. During Covid-19, the Indian government imposed numerous restrictions, including as curfews and lockdowns, which had a negative impact on all economic activity. Agriculture inputs such as fertilisers, herbicides, plastics, and other equipment for farmers

are also produced by industries. The supply of these is also harmed as a result of logistical and supply chain failures. In rural places, Agro-based industries have also generated employment. Unemployment results from the closure of industrial activity, and decreasing product demand is the effect of unemployment. Markets gradually ran out of supplies due to logistical constraints, and prices for various commodities rose.

#### ❖ *Retailers and Consumers:*

The novel pandemic has changed the enterprise practices of retailers also and made them face many confrontations in doing business. All the retailers faced the shrinkage in their business volumes, the consumption pattern of the consumers has also changed. Retailers have to manage the supply chain disruptions, restriction in the footfall of the stores due to the social distancing, hygiene improvements as per the local governance, reduction in promotional campaigns so as to avoid over crowd. During the lockdown, this fixed cost must be balanced against the low income produced by retailers, which may result in business closure (Rajalakshmi K et al., 2020). Despite the fact that this Covid 19 has caused more clashes and threats to the retail industry, it has provided retailers with an opportunity to establish a new way of conducting business. Traditional businesses, for example, must find an online platform to offer their products without attracting customers to their physical storefronts. Because consumers play such an important part in the food supply chain, changes in consumer behaviour had a significant impact. Because the middle-class family of India has been economically impacted by the shutdown, retailers must focus on cheap premium products rather than high-end products. The food supply system is critical for human survival. Food security is at danger when the food chain is disrupted.

## 5. CONCLUSION

All economic activities and supply networks have been considerably impacted as a result of the lockdown imposed in the aftermath of Covid-19. India's agriculture sector is vital to the country's economy. It accounts for 19.9% of India's GDP (Economic Survey 2020-21) and employs 41.49 percent of the country's workers (Statista, 2020), however technology and innovation are still lacking in this industry. The current shortcomings in the agriculture industry necessitate structural reforms, technological adoption, and infrastructure investment. Investing in the food processing business will help the agriculture sector flourish. To response to the issues in the food supply chain, the infrastructure should be strengthened to make the food supply chain more flexible. During the epidemic, there was also a change in people's consumption habits. As a result, alternative mechanisms to respond to future pandemics are required.

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