



A Review Of Covid-19's Impact On Agriculture Economy

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ABSTRACT

The global economy has been severely disrupted by the growth and spread of the COVID-19 coronavirus outbreak, which has caused imbalances in all areas of society worldwide. Social distance, quarantine laws, and stringent travel restrictions have resulted in a significant decline in the labor force and employment losses in every industrial sector. The food and agriculture sectors were the most vulnerable and impacted. The government's decision to declare a national civil lockdown caused businesses all across the world to close, which had an effect on the flow of goods from farmers to consumers. Presenting workable solutions that may simultaneously boost the market and satisfy customers—even in the midst of a severe pandemic—is urgently needed. This study examines how COVID-19 has affected the agro-food system and its economics, highlighting important elements such as labor availability, food security, interconnectedness of the farming system, and resilience of the agricultural sector. A robust and independent society may be developed by potential innovations including technological adoption, risk detection and management, government action, and policy changes.

Keywords: Agriculture, COVID-19, Food security, Agricultural system resilience, Pandemic, Management.

I. INTRODUCTION

The global coronavirus (COVID-19) epidemic presented a serious risk to public health and had an impact on many areas of human existence. Food insecurity resulted from the virus's quick spread and impact on economies, which led to inefficiencies in the industrial and agricultural sectors. Numerous national and international institutions, such as the International Food Policy Research Institute (IFPRI) and the Food and Agricultural Organization (FAO), have long supported the economies of many different countries through agriculture. ... Significant changes occurred in the agriculture sector in the late 1900s, as Fig. 1 illustrates, moving from labor-intensive, bullock farming to mechanized and the use of larger tools in the twenty-first century. In addition to contemporary machinery, advancements in crop types, digital supply chain solutions, and the application of various agri-inputs were additional factors aimed at boosting productivity and yield. This gave rise to a revolution in the agro-food industry. Since the abrupt COVID-19 breakout, the agro-business has been expected to be the main driver of growth for managing international trade relations and balancing import-export.

The first indications of the virus appeared in December 2019 when a pneumonia outbreak occurred in China's Wuhan province. In January 2020, the World Health Organization (WHO) subsequently deemed the COVID-19 outbreak to be a public health emergency of global significance. Globally, the virus's constant spread has resulted in a 3.4% crude fatality rate. After starting in China, the COVID-19 pandemic gradually expanded to 190 other nations. India rose to prominence as one of the COVID-19 epicenters around September 2020. Because of the daily increase in instances, the National Institute of Epidemiology and Bloomberg report suggest that the nation may easily overtake the United States and Brazil. In this interconnected society, prevention has been shown to be a difficult road by the hidden cascading domino effect, but management is still possible, even in dire circumstances like the COVID-19 pandemic. The food and agriculture industries are

among the many expanding sectors that have suffered. The industry nevertheless faces issues from patrons and consumers regarding labor shortages, time to market, and priority purchasing of commodities [3].

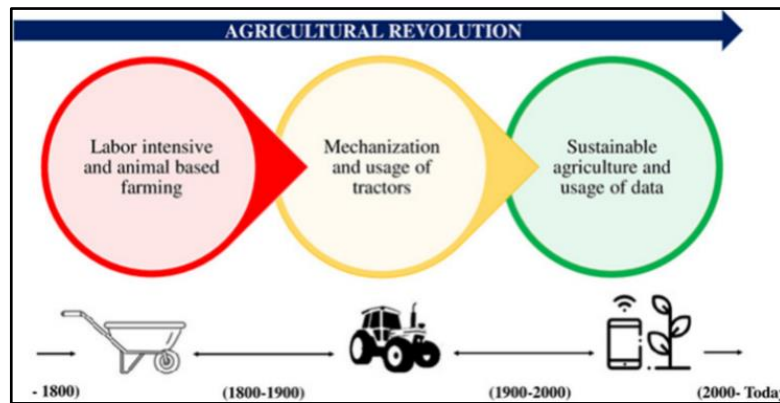


Fig. 1: Agricultural metamorphosis through the years [3]

However, the industry has faced significant challenges with trade, marketing, transportation, farm gate prices, and mounting debt. Furthermore, the protests against the countrywide lockdown made matters worse, leading to a shortage of labor, an unavailability of agricultural inputs, an imbalance in production and farm gate prices, and issues with marketing agricultural output [3]. This review discusses how the COVID-19 pandemic has affected the agro-food industry in terms of food security, agri-sector strengthening strategies, risk and identification management, and resilience of agricultural systems. The main effects of the epidemic on populated countries like India and smaller ones like Bangladesh have received particular attention [4].

II. COVID-19: THE IMPACT OF GLOBAL AGRICULTURE & THE POTENTIAL OF BANGLADESH POST-PANDEMIC

COVID-19 had unparalleled repercussions on the world at large and had a terrible effect on the worldwide agricultural sector.

The article explores how COVID-19 has affected agricultural around the world, focusing in particular on smaller, import-dependent countries like Bangladesh as the outbreak abated.[1]

The global pandemic significantly disrupted food production and trade. The limitation of food exports by major food-producing nations alarmed smaller import-dependent nations. This disturbance uncovered weak points in our globalized society. The need of strategic and well-coordinated behavior in handling these difficulties is emphasized in the paper. [1]

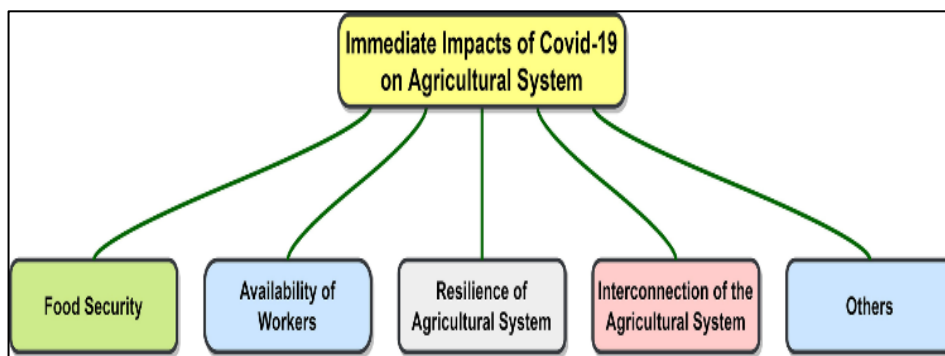


Fig. 2.1: Impact of Covid-19 on Agriculture system [1]

As illustrated in fig. 2.1, the five primary domains of the COVID-19 pandemic's significant effects on the world agricultural system are food security, labor availability, agricultural system adaptability, farming system connectivity, and additional ramifications [1].

Food security: Many people have experienced income losses as a result of the pandemic and have cut back on their food spending. For many, this has resulted in food instability. It is now more difficult for individuals to find food, particularly perishable items like fruits, vegetables, and milk, due to panic buying and broken supply chains. Lack of labor: Farm laborers now find it more difficult to go to their jobs due to remoteness and other travel restrictions. Due of this, labor has become scarce, especially for time-sensitive farming tasks like picking fruits and vegetables. Resilience of agricultural systems: Compared to large farms that rely on outside labor, smaller farms that employ family members have been more adaptable throughout the pandemic. This is due to the fact that small farms have found it simpler to adapt to the pandemic's impacts. Interconnection of farming systems: Foreign relations have been shattered by the pandemic, and trade in

agricultural products has been hindered. Transportation disruptions and export restrictions have had an impact on the global agro-marketing system.

The COVID-19 epidemic has impacted agricultural-related initiatives and activities as well. Competition for essential resources like water has increased due to increased attention on public health and sanitation. Agriculture-related research projects have also encountered difficulties.[1]

Many nations restricted their agricultural exports during the COVID-19 epidemic in order to maintain their food supplies. Nevertheless, this well-meaning move may have unforeseen consequences for countries that import food. For instance, it may increase food costs and exacerbate pre-existing problems with food instability.

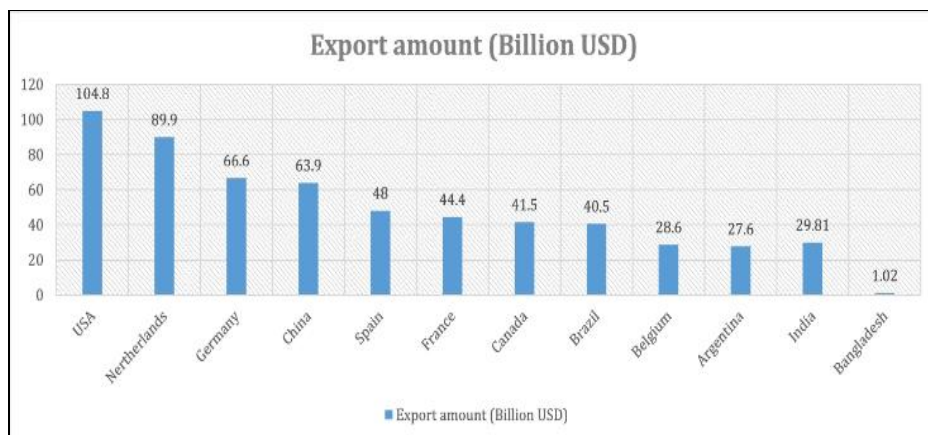


Fig. 2.2: contribution of agricultural and food product exports during 2020. [1]

In this case, the bar diagram shows that Bangladesh's share of the agricultural export market is quite small in relation to the other nations. However, a large amount of food—roughly 31%—is lost annually in Bangladesh as a result of problems with inadequate processing and transportation as well as a dearth of markets for exports.[1]

As of March 6, 2020, shipments of agricultural commodities were restricted from a number of nations, including Korea, Indonesia, India, and Russia, because of worries about their food security. [1] To maintain their food security, densely populated nations like China and India have limited their food imports. Bangladesh, a nation mostly dependent on agriculture, has to improve the quality of its food in order to compete in international markets, strengthen the entire farm-business sector, and spur economic growth.[1]

III. A PLAN TO IMPROVE THE AGRICULTURAL SECTOR AFTER COVID-19

Both Bangladesh and India's agricultural systems have been severely impacted by COVID-19, which has resulted in disruptions to production and distribution as well as financial losses.

As a result, the Bangladeshi government implemented policies that included financial assistance for farmers, rice harvesting funding distribution, and subsidies for agricultural equipment. Although the Indian government attempted to keep agrarian supply lines intact throughout the shutdown, factors like as migrant laborers' lack of labor and disruptions in raw material availability had a detrimental impact on yield.[2]

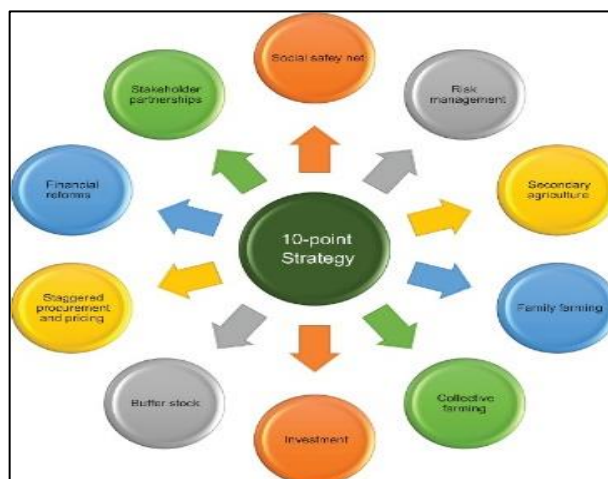


Fig. 2.3: A 10-point strategy to strengthen the agricultural sector post-pandemic. [2]

A ten-point plan is put forth to support the agriculture industry after the pandemic. In order to mitigate price and revenue risk, this strategy calls for social safety nets to handle job and income losses, improved crop insurance and financial stabilization as well as a move toward secondary agriculture to utilize crop residues and byproducts. It is advised to focus on family farms and collaborative agricultural models, boost research and development spending, and encourage sustainability and innovation.

In addition, phased procurement and price techniques, buffer stock setup, income-generating surfeit stock, and agricultural assistance for small and marginalized landowners are also part of the plan. It is suggested that improvements be initiated. Local and international players must work together to address the pandemic's vulnerabilities and disseminate information about it.

This all-encompassing plan seeks to create a resilient and sustainable agriculture industry for the future in addition to helping the industry recover from the immediate effects. [2]

III. SURVEY

The National Bank for Agricultural and Rural Development (NABARD) survey [5] provides specifics on the effects of the COVID-19 pandemic in India. The world's biggest problem since World War II was the COVID-19 epidemic. India acted swiftly, imposing a creative 21-day lockdown with the intention of using the time to properly organize and resource responses. Nevertheless, the lockdown had a price and a negative effect on every aspect of society. The Indian agriculture industry was severely shaken by the Covid-19 lockdown. The Indian economy greatly depends on the agricultural industry. It employs around half of the labor force and accounts for approximately one-sixth of India's public revenue.

1. Impact on Agriculture Production:

The assessment of the nationwide lockout due to COVID-19 on the overall product circumstances in the agriculture and confederated sectors revealed a decline in 47 out of the sample sections (Fig. 3.1). However, the overall product position in the sector has increased in 19 of the sections, and the product situations in the confederated sector and the husbandry sector have not changed in 34 of the sections. [5]

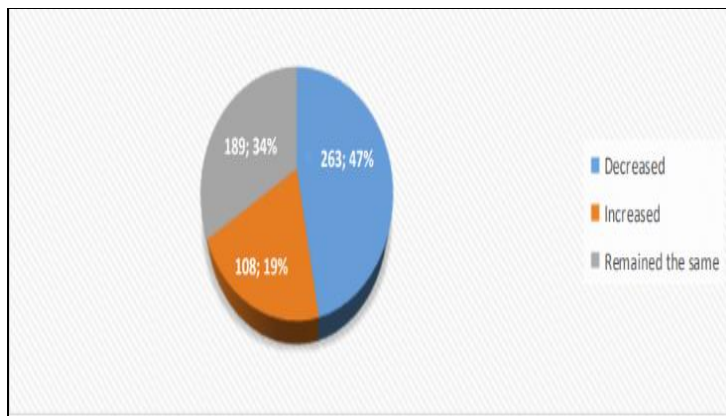


Fig.3.1 Number of districts showing change in overall agricultural production. [5]

2. Impact on Farm-gate Prices in Agriculture & Allied Sector:

Due to force chain disruptions in certain regions of the nation, a total of 54 sections reported a decrease in the overall prices of commodities in the confederated and husbandry sectors, while 23 sections saw an increase in prices. In 23 of the sections, the pricing stayed the same

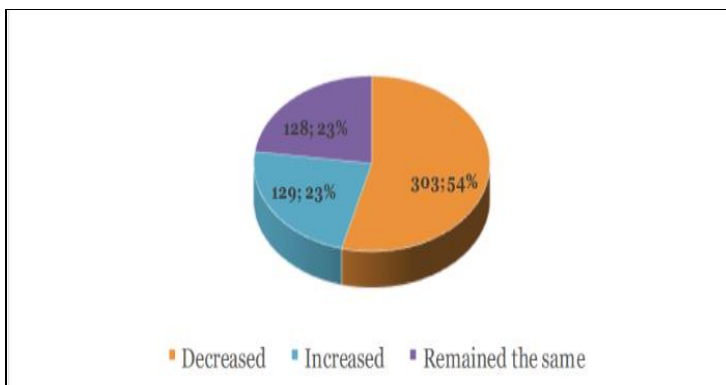


Fig.3.2 Number of districts showing change in overall prices of agricultural commodities. [5]

3. Impact of COVID-19 on availability of Agri-inputs:

Fig. 3.3 shows the total amount of change in the vacuity of the agricultural inputs in each order (each-India position). The vacuity of diseases had the biggest drop (11.2), followed by cow feed (10.8), fodder/cattle feed (10.8), and rental agrarian ministry (10.6). There was also a notable drop in the vacuity of seeds (9.1) and fungicides

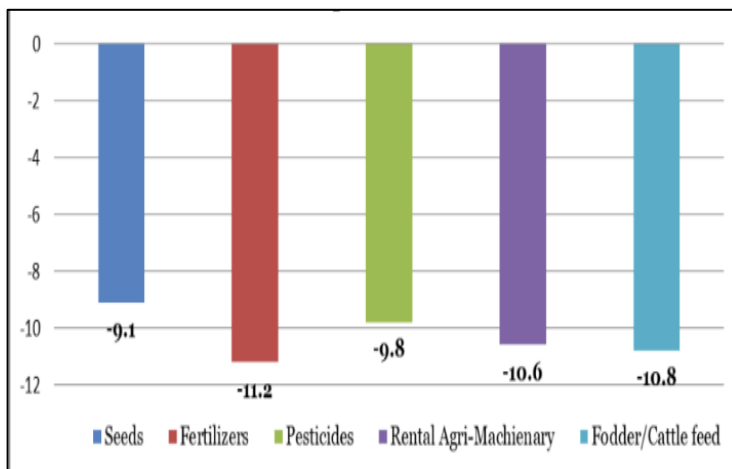


Fig.3.3 Magnitude of decrease in the availability of Agri-inputs [5]

4. Impact on Marketing of Agricultural Produce:

As illustrated in Fig. 3.10, the analysis of the entered replies revealed a strong negative impact on various areas of marketing of agricultural production. For example, of all the variables related to the selling of agricultural production that were recorded at the India position, the conduct of daily requests had a negative impact in about 87 sample parts, while government agency procurement had a negative impact in 44 sample sections.[5]

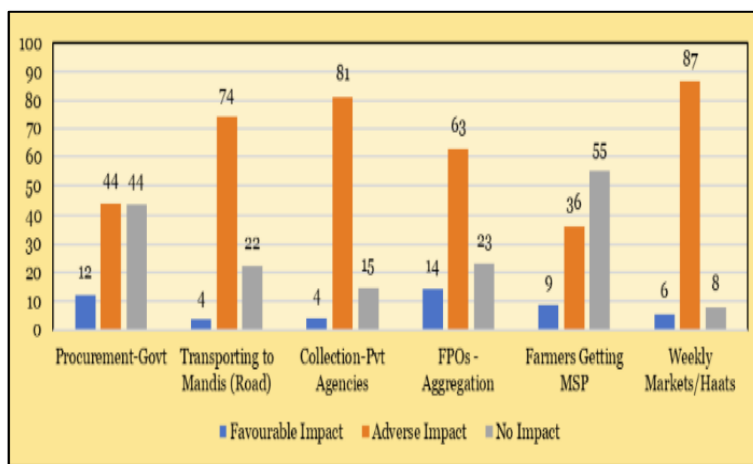


Fig.3.4 Impact of COVID-19 on Marketing of Agricultural Produce (Proportion of Districts) [5]

IV. CASE STUDY

Literature review - Agricultural economics –

Agricultural economics is the study of the distribution, allocation, and use of resources used in farming as well as the goods that are produced. A stable agricultural surplus is a major force behind scientific and commercial advancement, so agricultural economics is vital to the process of economic development. Average wages are generally lower in nations where agriculture provides a substantial source of income for the populace.

But it's crucial to remember that a nation's reliance on agriculture does not always equate to poverty; rather, it may be more appropriate to state that a large portion of the populace depends on agriculture for a living as a result of economic difficulties.[3]

A nation's relative importance of agriculture tends to decline as it develops economically. Ernst Engel's 19th-century research demonstrates this trend by showing that the percentage of revenue spent on food falls as

incomes rise. This pattern suggests that the fraction of resources needed to produce the necessary food is decreasing as cultures become wealthy. [3]

Let's now investigate the COVID-19 pandemic's effects on the agriculture industry and its aftermath. There have been downturns in the global economy since the pandemic began, especially in the agriculture sector. The impact has been substantial in India, where agriculture is regrettably a neglected and underdeveloped field. The industry saw a 2.5-point fall, accounting for 9% of the overall downturn in the economy.[3] The Indian agricultural system has been severely damaged by the COVID-19 outbreak. Even Nevertheless, recent quarterly GDP estimates following the COVID-19 pandemic show that Indian agriculture is resilient. The industry saw positive growth of 3.4% in the first quarter of the fiscal year 2020–2021 (April 2020–June 2020), making it the only industry with this level of resilience. It is important to remember that the growth in the most recent quarter was projected to be 5%.[3]

Case evaluation-

One important point that this case study emphasizes is how important it is to provide food security. The provision of adequate, nutrient-rich food that is both accessible and available to all populations is referred to as food security.

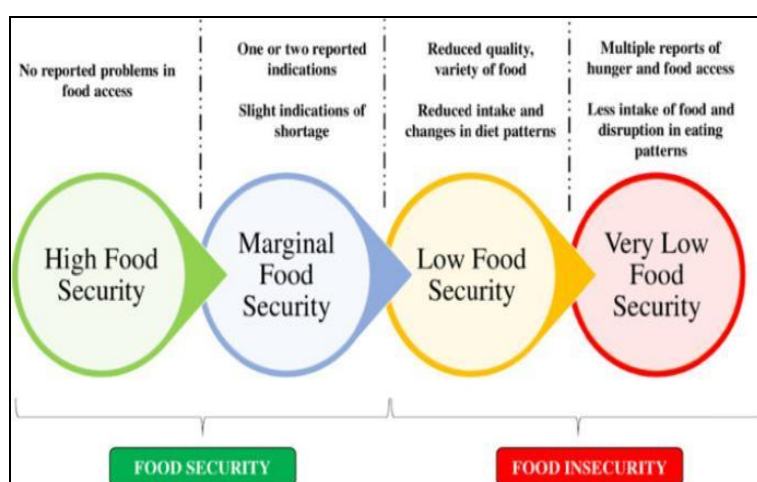


Fig.4 spectrum of Food Security

According to USDA (2019), Figure 4 depicts the range from food security to food insecurity. Improving food access is the main goal of putting food security measures into practice. To guarantee enough food for households below the poverty line, a metric scale for food security must be established. Food security has been significantly influenced over the last ten years by a number of variables, including population expansion, climate change, growing food prices, and environmental restrictions. [4]

Restrictions on international travel have made issues with agricultural product production, supply, and commerce on the world market even more difficult (Swinnen and McDermott, 2020). Furthermore, in an effort to counteract COVID-19, numerous nations implemented strict social protection laws (Swinnen and McDermott, 2020).[4]

Providing for the growing demand for food is another crucial element. Food consumption increased during the lockdown as a result of the rapid spread of the disease, which prompted panic buying and commodity hoarding. Owing to their extended shelf life, staple goods including rice, beans, and packaged foods saw a significant increase in demand. For instance, at the start of March, the amount of pasta, flour, rice, and canned goods consumed jumped by more than 150% (Mengoub, 2020). Following COVID-19, there was a sharp increase in the demand for food. There was a noticeable influence on the "food away from home" sector, which accounts for 10% of fruit intake, 32% of vegetables, 25% of dairy, and 31% of grains. Additionally, this industry accounts for 25–30% of all fresh fruit and vegetable sales.

A vital link in the food chain, the agriculture production sector was severely disrupted by the virus (Pu and Zhong, 2020). The most significant economic depression since World War Two resulted from the coronavirus's global expansion (Hanna et al., 2020; Xu et al., 2021). Notably, the epidemic drastically limited agricultural labor movement, which resulted in a personnel shortage and decreased efficiency of mass production. For example, timely crop sowing was problematic in China's grain-producing counties due to a lack of migrant workers (Pu and Zhong, 2020).[3][4]

Organizations like PETA, the Agriculture and Applied Economics Association, the Food and Agriculture Organization, the Indian Council of Research, the Department of Agricultural Economics at the University of the Free State in Bloemfontein, South Africa, Collins C. Okolie, Abiodun A. Ogundeji, government departments, and statistical abstracts are acknowledged and given research credits. The scarcity of migrant labor was impeding agricultural activities in northwest India (Dev, 2020).[3][4]

Executive summary –

Within this framework, our goal is to compile the preliminary data regarding the influence of COVID-19 on the Indian agriculture sector, including production, marketing, and consumption. We next go over a number of possible approaches to prosperity and recovery in the aftermath of the pandemic. According to survey results, manpower and logistical constraints brought forth by the epidemic have caused disruptions in manufacturing and marketing activities.

Furthermore, the adverse impact of income shock has hindered market accessibility and escalated food commodity costs, hence modifying consumption trends. All parties involved in the Indian agricultural system have experienced severe physical, social, economic, and psychological suffering as a result of the pandemic. Taking advantage of the crisis, the government has implemented several policies and long-overdue changes.

Methodology-

The study is based on both the primary as well as secondary data.

Impact Assessment:

1. **Data collection:** Gather details about the state of the agriculture industry in the designated area as of right now. This entails recording the kinds of crops grown, the animals raised, and the involvement of both large- and small-scale farmers. **Economic Analysis:** Consider factors including supply chain interruptions, changes in consumer behavior, and changes in market demand when assessing the economic effects of on the agriculture industry.
2. **Identification and Handling of Risks:** **Determine Weaknesses:** Determine the weak points in the supply chain for agriculture, including possible interruptions to the availability of inputs, labor scarcities, difficulties with transportation, and barriers to market access. **Strategies for Mitigating Risk:** Create plans to mitigate the risks that have been discovered, such as planting a variety of crops, investing in technology that allows for remote work, and investigating different avenues for marketing.
3. **Intervention in Policy and Governance:** Examine current agriculture strategies to determine their applicability and efficacy in light of the pandemic's effects. **Policy Adjustment:** Make changes to policies to better support farmers, make sure the supply chain runs smoothly, and provide more funding as required.
4. **Technology Acceptance:** **Digital Solutions:** Promote the use of digital technology in supply chain logistics, marketing, and farm management. **Training and Capacity Building:** Provide farmers with instruction on how to use technology and make digital tools more accessible to them.

V. OUTCOMES AND DISCUSSION

This study looks at the broad effects of COVID-19 on the world's husbandry industry, concentrating on Bangladesh and India. Providing invaluable insight for decision-makers, scholars, and translators, it tackles significant issues and suggests tactics for the agrarian revival following the pandemic. The conversation focuses on the value of technology and innovative approaches to deal with problems including labor shortages, shifting market dynamics, and food security. The study emphasizes the necessity for focused actions by highlighting the differential effects on various subsectors from a public standpoint. The epidemic has caused agriculture to abandon technology more quickly, with an emphasis on automation, robotization, and sustainability. Nonetheless, skepticism endures, undermining effective threat control tactics and collaborative efforts among interested parties to establish adaptable and flexible farming systems.

VI. CONCLUSION

The unidentified pandemic has caused significant problems for the global agro-food systems, including the environment, transportation, major producing areas, dietary shifts, and the supply chain as a whole. Movement restrictions, inventory fluctuations, and logistical difficulties brought on by social isolation and stringent quarantine regulations have made it extremely difficult to provide everyone with access to reasonably priced and wholesome food. As a result, there is a major intrusion into food systems and food security, with a greater impact on the most vulnerable population. Consequently, creating a robust food system would be one of the most important lessons discovered as a result of the contagion's spread.

The development of cutting-edge technologies in the sector, as discussed in this paper, might be very important in improving food supply methods. The key to achieving sustainability would be innovations such as the creation of new goods and services for threat assessment and management, as well as the introduction of new funding schemes to address issues in the agricultural sector. Therefore, we may draw the conclusion

that a more socio-technologically inventive ecosystem will benefit from an appreciation of the severity of the situation and effective action [4].

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