

COVID-19: A Disruption in Food Supply Chain

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ABSTRACT

In the history of the mankind, people have faced many events such as pandemic. These pandemics have affected society and world economy, negatively. Taking into consideration, the supply chain of food and other businesses, the COVID-19 pandemic has destructed the different phases of supply chain from production in the fields to the consumption at the end of consumers. This pandemic has risen substantial concerns about demand of the food products, production, processing and distribution of the same. Coronavirus outbreak has so far impacted the preferences of the consumers, availability of labor forces, sequence of processes involved in the food and agriculture industry, and monetary interactions involved in the food supply chain. Now, its mandatory for almost all working centers and food processing units to strictly follow norms of social distancing to protect their own workers and employees from getting infected from the pandemic. Still, the weaker sections of the society are highly vulnerable to the situations like pandemics with respect to monetary and hygiene related facilities. They are highly exposed to the critical situations due to unavailability of the financials and related facilities. Focusing on these effects of the pandemics, every nation should give foremost importance to building up the strategies and operating procedures to tackle this life-threatening situation to the mankind. Food supply chains need to be revamped their strategies to become more reliable and flexible as it is really necessary to provide hygienic food to the consumers in such scenarios. This paper is the work describing the effects of the COVID-19 on the food supply chain and its consumers. Ultimate goal of the paper is to come up with the suggestions and the actions to take to reduce the effects of this pandemic.

Keywords

COVID-19, pandemic, food, supply chain

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Introduction

The COVID-19 illness escalated quickly to almost all continents by the novel Covid SARS-nCoV-2, numerous nations around the globe have announced condition of wellbeing crisis. On 11 March 2020, the World Health Organization (WHO) announced the quickly outspreading illness as a pandemic and approached nations to design preliminary furthermore, reaction activities in accordance with the Global Strategic Preparedness also, Response Plan (WHO, Vasavada, 2020). COVID-19 is the fifth pandemic, following 1918 influenza virus (H1N1), 1957 influenza virus (H2N2), 1968 influenza virus (H3N2), and 2009 Pandemic flu (H1N1), that resulted in the human deaths of around 50 million, 1.5 million, 1 million, and 300 000, respectively (WHO, 2020a). Further, WHO said that this crisis will not only impact the health of the people, but will destruct each and every sector of acumen of the business (WHO, 2020c). The 'Essential readiness and reaction plan' by WHO incorporates the wellbeing estimates that all nations needed to get ready for and react to this pandemic. This arrangement covers what we have found out about the infection up until now and intends to change this data into key activity that can control all public and global accomplices while creating public and provincial operational plans. As per this arrangement, need steps and activities are laid out in eight fundamentals subjects (WHO, 2020a):

- Coordination, planning, and monitoring at the country level;
- Risk communication and community participation;

- Surveillance, quick response teams, and case investigation;
- Entry points;
- National laboratories;
- Prevention and control of infection;
- Situation management;
- Operational support and logistics

Above guidelines made the restrictions on the use of work places for most of the industries. The closure of work places, educational institutions, hotels, eateries, markets, etc. are some of the measures undertaken by WHO to reduce the spread of this pandemic. In this process, online meetings and work from home options are available for major industries unlike food and agriculture. Hence, people involved in the food industry need to keep the typical work routine as such options to safeguard oneself are not available to them (Nicola et al., 2020; FAO and WHO, 2020). The distinction in the food business from different enterprises is to create items that are fundamental for everyday life. Everyone realizes that on the off chance that one plant shuts, a specific number of individuals who works at these manufacturing plants have the possibility to starve, yet in the event that processors and merchants are tainted, all individuals are in danger (Staniforth, 2020). In these times, it is really important to keep the lives of people working in food industry safe and secure (FAO and WHO, 2020), as well as, the distribution chain of the food items alive to meet the demand of the market (De Sousa Jabbour et al., 2020). At this time of crisis, food security is associated with consumers' access to food rather than food availability (OECD, 2020b).

To sum up, four significant issues have been brought up in the food industry and the food store network during the COVID-19 episode. Right off the bat, individuals will in general have follow a sound eating routine for ensuring themselves and their invulnerable frameworks (Rodríguez-Pérez et al., 2020). Accordingly, the interest for the useful food sources which contain bioactive fixings expanded. Besides, sanitation has acquired regard for forestall the transmission of COVID-19 among makers, retailers, and buyers. Thirdly, food security concerns have emerged in view of individuals on lockdown limitations. Finally, food manageability issues have arisen in the period of pandemic (Galanakis, 2020).

In the light of ongoing difficulties in food production network, there is presently significant worry about the food supply chain. In this way, the reason for this article is to give data about the impacts of the COVID-19 flare-up in the food inventory network and to sum up the estimates taken to limit these impacts. Formal and casual sources were utilized to get data about the food inventory network during COVID-19 flare-up.

Literature Review:

1. Impact of COVID-19 on the Food Supply Chain:

COVID-19 pandemic is different than some of the highly spread diseases as bird flu, E-coli, etc., as these diseases has directly affected the production of the food products, being the carrier of the damaging viruses or bacteria. COVID-19 does not directly affect the production of the food products as it is not spread through agricultural products or livestock. To restrict the spread of the COVID-19, governments of many countries came up with the restriction of movements (land, water, and air transport) as well as migration of labours. In India, the transportation through trucks was contributing approximately 60% of the total transportation, before the outbreak of the pandemic. It got reduced to almost 30% after the huge outbreak of COVID-19 pandemic (FAO, 2020j; Bakalis et al., 2020). Due to this restriction on movements of the labours, most of the processes related to food industry were hugely impacted as in the developing and under developed countries, the labours are employed on the basis of contracts for planning, sorting, harvesting, processing, or transporting crops to markets. Hence, the unavailability of the labours has badly affected the food supply chain. Particularly, lack of work because of COVID-19 emergency caused extreme disturbances in certain areas like animals' creation, agriculture, planting, reaping, and crop handling which are moderately work escalated (Stephens et al., 2020). Nonetheless, deficiency of farmworkers was a significant issue a long time before the COVID-19 flare-up, as well (Richards and Rickard, 2020). Due to the short shelf life of food items, the disruption in the food supply chain have completely weakened their high value (Shahidi, 2020; FAO, 2020j, FAO, 2020k). This disruption in only one phase of the food supply chain has triggered the loss in the whole supply chain as all the phases of the food supply chain are interconnected. This has yielded a big loss in the output (FAO, 2020a).

It was accounted for that tea plants were being lost due to the calculated challenges in India (BBC, 2020a).

Accordingly, keeping up strategic effectiveness is a vital factor for the food business, particularly in worldwide emergency. The greatest issues in the food production network are getting crude materials from providers and guaranteeing the coherence of food stream from producers to end clients (Alonso et al., 2007). The issues are imperilling the capacity of agrarian organizations to proceed the same old thing, and may affects food quality, newness, and sanitation, and frustrate admittance to business sectors and moderateness (FAO, 2020k).

As a result of the limitations, purchasers can't go to eateries and they set up their suppers at home. In expansion, buyers would prefer not to go to business sectors and grocery stores because of getting the COVID-19 at the stores (FAO, 2020g). The inventory network influences not just makers, wholesalers, and customers, yet in addition food-handling plants that are work serious. Creation was diminished, suspended, or incidentally ended in numerous plants because of the specialists who were discovered to be Coronavirus positive and who were hesitant to go to work, thinking that they would become ill busy working, generally in meat-preparing food organizations at the hour of the episode. In major developed countries, capital intensive production techniques are used in the production of food products, whereas, in developing countries, the workers are considered as the drivers of the production. Hence, considering this difference, each and every country should take into account the various ways to streamline the logistics of the food supply chain in these days of pandemic to save the food industry from further damage (FAO, 2020j).

2. COVID-19 and Consumers of food products:

Previously, the demand from consumer side was dependent on major factors as consumer's income level, price of the food item, shopping preferences, consumption of the food item, availability of the time, etc. In these days of pandemic, the additional factors which define the demand for the food item are as-number of visits one makes to food store and how much money one spends at the store. Surprisingly, the number of visits to food store has reduced and the average spending per visit has increased in these days of pandemic (Bakalis et al., 2020)

As a prevention for the spread of the COVID-19, many governments announced lockdowns of the restaurants, markets and stores as well. Due to this, there is significant shift from food service to retail. The reason behind this is the change in the purchasing/eating habits of the consumers which got driven by the closure of restaurants and limited access to the markets. Reports shows that, it was equal contribution (50%) of both the supermarkets and food service channels before the outbreak of the COVID-19, but, now, the dependency on the supermarkets is almost 100% as consumers are yet, not feeling safe to access the food services. Availability of the food items also has defined the way consumers is spending his money. Due to this pandemic, many food items were not available in the required quantity. In India, there was shortage of wheat flour in the months of May & June, 2020 as it was not found on the shelves of the supermarkets being it as the main ingredient in the home-baking activities. Consumers have focused on the food items with long shelf life as -frozen items, dry and canned food due to inconvenience on frequently visiting the market for the same. Some consumers

received false information and that lead them to stock the food at home. Consumers preferred to take the food items to home as well as home delivery services due to closure of restaurants and norms of social distancing.

In a new survey by Italy's Agricultural Research and Economic Chamber (CREA), the conduct of the Italian populace on food decisions and conduct was observed under COVID-19 isolate. Around 2,900 individuals from all districts of Italy reacted. As per the outcomes, sound food and drink utilization expanded for vegetables (33%), natural product (29%), vegetables (26.5%), and additional virgin olive oil (21.5%). In any case, it was resolved that 44.5% of them had all the sweeter utilization and 16% of them drank more wine. 44% of respondents revealed weight acquire because of admission of higher calories and low degrees of active work. 37% of respondents communicated that they need to get more fit by changing their eating routine (CREA, 2020).

In a nutshell, the prices of the food items were also got hiked due to panic buying and unnecessary storage of some particular food items in the period of the lockdown in major countries. Outbreak of COVID-19 has hugely disrupted the food supply chain with respect to the consumers involved in the whole supply chain. Transportation problems in the lockdown and over buying of particular perishable foods has created chaos in the whole food supply chain (Sharma et al., 2020).

Recommendations

This outbreak of COVID-19 has increased the severity of hunger and malnutrition in some places of the world due to unavailability of food items caused by problems in the production, distribution, marketing, and logistics. World Food Program proved that the number of people who has affected by extreme hunger has increased to approximately 270 million in 2020 due to outbreak of COVID-19 (WFP, 2020a). This number is very high in low- and middle-income countries.

- **Reduction in Food Wastage:** Different stages of food supply chain as production, transportation, distribution, etc. contribute in wastage of food through ill handling or damages. In this situation of pandemic, there is almost 13% higher creation of household food wastage compared to the pre-COVID-19 scenario (Aldaco et al., 2020). One way to tackle this wastage of food is to convert the same into necessary ingredients as nutritional supplements, other foods, protein isolates, etc and reutilize this wasted food. For this, additional stations to collect and process the food are required.
- **Precautionary Measures:** According to the WHO report, the noble coronavirus can be easily transmitted by the air. Hence, all the people involved at different stages of the food supply chain should focus of taking necessary care as washing of hands, following norms of social distancing, disinfecting the workplaces, etc. to stop the spread of the same. Retailers and food preparation workers should wear mask and use sanitizers as and when required while cutting, chopping, preparing and packaging the food. It is the responsibility of consumers as well to stop the contamination of the food happened due to excessive handling, touching of the food items. Consumers should not

touch food items other than they wish to purchase (Galanakis, 2020).

- **Decentralization:** In this situation of pandemic, the highest loss was occurred to the centralized food production facilities. To minimize such kind of losses, decentralized low scale facilities near to the place where consumers are densely located can save on transportation cost as well as can reduce the damage and contamination of the food items due to handling and intermediate such operations.
- **Automation:** Use of automation can be a better tool to avoid the spread of such diseases as it will eliminate the human interference to a great extent. Also, robots can do the simple tasks as food packing, order placing, loading/unloading of food packages. In this way, robots can help to serve the consumers of the food industry with almost 'zero contact delivery'. Unsafe or low-quality food items in a food supply chain can be monitored with the help of Cyber Physical Systems (CPS) (Bowler et al., 2020).
- **Social Distancing:** Making employees mandatory to follow social distancing, layouts of food processing facilities and warehouses should be redesigned. Structures like barriers to cover major part of employees can help to follow social distancing norms stated by WHO. Also, arrangements of working shifts to contain optimum number of workers can avoid crowd at the workplace.
- **Accurate prediction of Demand:** Huge variations in the demand leads to overstocking of the products or stock outs in most of the stores of the market. This impacts the performance and effectiveness of the whole food supply chain. In situation like pandemic, particular food items or products were in high demand at the start like sanitizers, wheat, masks, perishable foods, etc. The perishable nature of most of the food items makes the food supply chain more complicated to handle which got highly affected by the COVID-19. Hence, to deal with the variations in the demands, accurate forecasting and simulation models can be helpful to reduce the gap between demand and supply of food items. Using the results of these models, the production, distribution and processing of food items can be advanced to ensure minimum wastage and other low-quality issues (Paul and Chowdhury, 2020).
- **Digitization:** web-based digital supply chain solutions to food industry enables flexible collaboration among suppliers and producers, retailers by ensuring correct flow of information in a minimum cost. This strengthens the relationship between suppliers and consumers to a greater extent.
- Government in collaboration with the private sector in India has the power to curb the further spread of the COVID-19 in the community and to save the Indian business market for further loss. For this, the crisis committee is established by the Indian government to track the impact of the COVID-19 on the different sectors of the business. This council should turn into a critical entertainer to notice the advancement and prescribe activities to diminish the impacts of COVID-19 on rural creation and food supply cuts (FAO, 2020a).
- Governments likewise ought to set up and work crisis provisioning techniques to help creation. The locales generally influenced by the episode ought to be ensured by

brief information sponsorships programs. Convenient help is fundamental for planting season for the following spring (FAO, 2020d).

- Logistics operations are likewise basic to keep up the conveyance of the nourishments, and, subsequently, a few endeavours are expected to look after tasks. In this manner, more framework speculation ought to be required to permit more management administrations, redesigned sterilization frameworks, expanded utilization of computerized documentation, and tasks. Nations ought to follow strict regulations of norms and guidelines in the circulation area to curb transmission to masses of the infection. The wellbeing and security of the strategic representatives who are involved in the trading of the food items ought to be kept up (FAO, 2020d).

Conclusion

Food and agriculture sector is the most important sector as it feeds everyone and keeps every individual alive. In the situation of COVID-19 pandemic, its really important to save this sector from further loss due to wastage, unavailability of the particular food items, huge cost of transportation of food items, etc. It is the extreme need of hour to reduce the damage of food and the related worst concussions on the world's economy. Food supply chain are disrupted to a great extent due to this COVID-19 pandemic so far and also, its in the future which will tell further losses in the same industry. To cope up with this uncertainty, every country in the world should keep herself equipped with the strategies and practices to control the spread of the COVID-19. There are many challenges in front of the big organizations and governments to make the food supply chain more flexible, robust, responsive and versatile in terms of its functions and performance to handle further such disruptions.

Conflicts of Interest:

No conflict of interest is declared by the author

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