

Food Supply Chain And Food Security During the *Covid-19* Pandemic
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ABSTRACT

An epidemic of infectious diseases are cause by the Coronavirus 2 (COVID-19) outbreak globally from Wuhan, China at the end of 2019. This outbreak harms almost all sectors, including the food supply chain system sector, which raises concerns about food security for social distance policies that limit movement and contribute to disrupting food distribution. This study aims to analyze the structure of the communication network that is an obstacle in the food supply chain network to the impact of the COVID-19 outbreak in Indonesia. The method used in this study is qualitative by using a constructivism paradigm, and the data used are secondary data sourced from Literature Review data. The results of the study show that the communication network structure is effective in resolving supply chain problems and food security during the COVID-19 pandemic, where the availability of staple food for rice and sugar for March to August 2020 is in a safe position with details of 23.2 tons of rice stock with a surplus of 7.4 tons, sugar of 2.9 tons with a surplus of 1.4 tons.

Keyword;

BACKGROUND

Until 26 May 2020 globally, the report of the WHO Coronavirus Disease Outbreak Situation there were 5,370,375 cases and 344 454 deaths for COVID-19. (WHO 2019). This outbreak has had a negative impact in almost all sectors, including the food supply chain system sector, which raises concerns about food security. (Amanta & Aprilianti. 2020). As reported by The fourth annual Global Report on Food Crises (GRFC 2020), the impact of COVID-19 on food availability and access to food because of social distance policies will contribute to an increase in food prices and disrupt the transportation of food distribution related to border closure policies that result in a decrease in the export-import activity of foodstuffs.

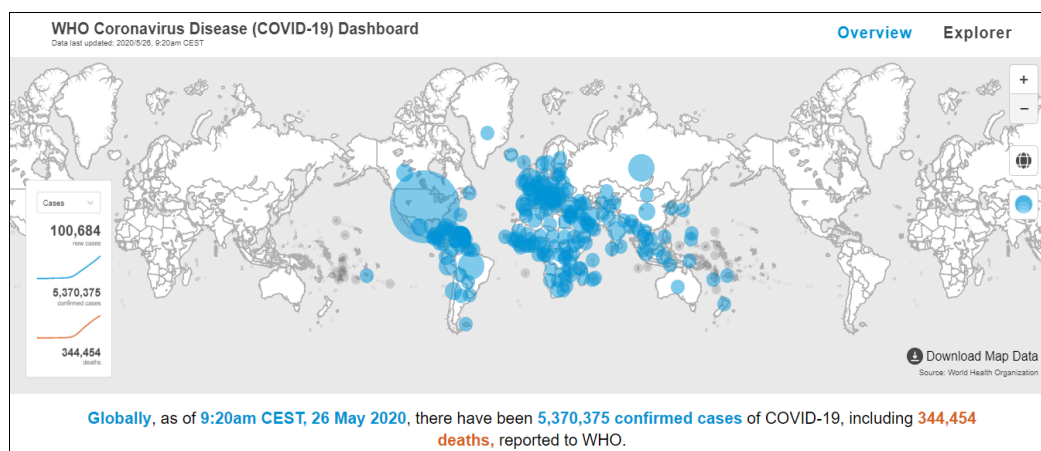


Figure 1. Source: *WHO, Covid-19* Distribution Map

Meanwhile, Indonesia with the increasing number of cases and deaths because of the spread of COVID-19, the government has adopted a policy of limiting the movement of people by establishing the physical distancing stipulated in PP of 2020 No. 21 regarding the handling of COVID-19, which preventing the spread of the Corona virus outbreak. There are concerns in the community and various experts regarding this policy regarding the distribution and availability of food. (Sahoo and Rath, 2020). The distribution system that effective to ensure that all elements of households able to access and get the ingredients of food with the amount and quality and reasonable price all the time.

The emergence of the panic buying phenomenon by buying up basic foodstuffs adds to the anxiety of low-income people where there will be increases in prices and food scarcity (Shadiqi, M.A et al. 2020), which contributes more additional problems in the COVID-19 pandemic regarding food security. Food security, which discussed by various experts, has now become a central issue because of the spread of the COVID-19 outbreak in the framework of food security (Hirawan, 2020) .

Definitions of food security refer to UU No. 18/2012; “Food is meant to reach or fulfill an adequate conditions of individual, reflected in the availability of adequate food, good quantity, and quality, safe, diverse, nutritious, fair, and affordable and does not violate the faith teachings of religion, culture and society, to live healthily, productively and actively, sustainably “. This is clarified in article 12 chapter IV paragraph 1, implying that the government and local governments are responsible for the availability of food. In Indonesia, it often identifies the word “food” with rice because this agricultural product is the major staple food for the community. “Food security” covers broad aspects and interpreted differently by several experts with the meaning of purpose and availability. Using the term food security can cause confusing issues and debates because the aspect of food security is broad but is an important concept for the world community (Braun et al. , 1992)

The disruption of the food supply chain because of the COVID-19 pandemic led to an increase in food prices in Indonesia with the average price of rice in the first week of April 2020 amounting to IDR 11,900-per kilogram where this price increased by 1.28% from the price in the previous year in December 2019. Even the price of rice was higher in traditional markets in areas that implement social distance policies such as DKI Jakarta, amounting to Rp. 13,500 per kilogram. The price increase was also significant occurred on the import of food commodities in December 2019 until the mid of April 2020 amounted to 32.97% to 35.64% the price of sugar and garlic. (Amanta & Aprilianti. 2020)

FORMULATION OF THE PROBLEM

Various problems emerged and developed in food-insecure countries during the COVID-19 pandemic, food security systems, and the food supply chain issues that discussed today. Based on the background of the problems described earlier, the formulation of the problems in this study are: How the COVID-19 pandemic impacts the stability of the food supply chain and what factors are hindering the food supply chain network so it has the potential for food scarcity.

The COVID-19 epidemic that hit the entire world and attacked millions of people caused panic globally, at the same time there were concerns about food security by countries and world organizations because of food supply chain constraints related to border crossing policies and potential crowds. the occurrence of food insecurity, this literature review analyzes the Food Supply Chain and Food Security during the COVID-19 Pandemic.

METHOD

The method used in this study is qualitative using the constructivism paradigm, and the data used is secondary data sourced from the Literature Review data. The constructivism paradigm used in this study aims that the author can subjectively provide meaning and point of view and develop experiences from reading literature. The constructivism paradigm is the knowledge and abilities the researcher understands the narrator's point of view. (Creswell, 2007) . While it applies the phenomenological method in a qualitative approach to this study to build an understanding of the Food Supply Chain and Food Security literature during the COVID-19 Pandemic. Phenomenology assumes that active people interpret oversight and try to understand the world by a personal network of meaning (Littlejohn, 2009).

THEORETICAL REVIEW

Agriculture

Agriculture is an activity of utilization rather than biological sources carried out by humans to produce food, energy sources, raw materials for industry and to manage the environment. Agriculture is a typical form of production based on the growth processes in plants and animals. Farmers manage and provide stimulus to the growth of plants and animals in an agricultural business (Mosher, 1966).

Communication development

EM Rogers (1985) states in simple terms that development is a change beneficial to and leads to a social and economic system and decided as the hope of a nation. Therefore, the role of communication in development needs to be linked with the direction of change where communication activities must work in synergy with development movements through delivering messages to change one's attitudes, opinions, and behavior. So we can conclude it that development has three components in its involvement, namely the communicator of development, the message of development, and the communicant of development to create complete human development.

Food Supply Chain

The supply chain is a channel for distributing goods from suppliers to consumers, the success of the supply chain depends on the interaction between people, in this case, the supplier and user of the goods. According to Lambert, DM Cooper, M. C (1998), the food supply chain is sending materials from product providers to customers and other stakeholders. "Supply Chain Management is the management of relationships in the network of organizations, from end customers through original suppliers, using key cross-functional business processes to create value for customers and other stakeholders "(Global Supply Chain Forum, 2000).

Food security

Ensuring the availability of food during a pandemic is very crucial. The government's social distancing policies related to preventing the spread of the epidemic, although these policies are considered being able to help reduce the health crisis caused by the pandemic, they can divert attention from the agricultural sector and hurt food security and disrupt the food supply chain so a mitigation strategy is needed. (Forsido. Et al. April 2020). Mitigation is an effort or activity to reduce the impact of a natural or man-made disaster on humans or the nation. (Carter, W, N. 1992) .

Food and food availability are the main and basic needs (Hirawan, 2020), which must be fulfilled for every human being and is one of the human rights which has meaning and an important role in the nation's life. The ability of a country to produce food in a variety of ways can guarantee its citizens to fulfill their needs up to the individual level. Other indicators used in monitoring food security are Foot Balance Sheets with balance food with anthropometric measurements, rain, and marketing. (Maxwell, G. Daniel. 1996).

Stability: "Adequate food must be obtainable at all times so that access and availability of food are not curtailed by acute or recurring emergencies. "Sufficient food stability must be fulfilled at all times so that access and availability of food are not restricted by emergencies or seasonal shortages. (FAO Food Security). "it achieves food availability when sufficient quantities of food are consistently available to all individuals within a country. "The food availability is sufficient when a consistent amount of food is available to all individuals in a country. (WHO Food Security).

Table 1: Forecasts of Strategic Food Production , Availability and Needs March to August 2020.
Availability (in1000 tonnes)

Commodities	Stock February 2020	Forecast Production	Plan Import	Total Available	Forecast	Surplus / Deficit (in 1000 tons)
	1	2	3	4 = 1 + 2 + 3	5	6 = 4-5
Rice	3,513.7	19,756.6	0	23,270.3	15,854.9	7,415.4
Sugar	386.1	1,955.7	638.9	2,980.7	1,469.6	1,511.1
Corn	661.1	13,708.3	0	14,369.4	11,063.5	3,305.9
Chicken eggs	27.6	2,422.1	0	2,449.7	2,611.5	-161.8
Chicken Race	98.6	1,880.9	0	1,979.5	1,822.6	156.9
Beef/Buffalo	14.3	236.4	275.5	526.2	393.8	132.4
Cooking oil	8,244.1	14,391.0	0	22,635.1	4,640.1	17,995.0
Shallot	154.6	711.0	0	865.6	736.5	129.1
Garlic	30	52.5	360.0	442.5	311.9	130.6
Big Chili	0	532.8	0	532.8	533.8	-1.0
Cayenne pepper	0	539.6	0	539.6	493.8	45.8

Source: *Technical Guide for Preparation of Prognosis for Strategic Food Availability and Needs in 2020*

LITERATURE REVIEW

Paul D. Leedy. 1997, defines a literature review as a description that contains statements from previous researchers identical to the research to be carried out. The literature study in writing this paper is the impact of COVID-19 on the supply chain of agricultural products and food security on a global scale.

Table 1 Literature Reference

Focus		Source
Food Chain	Supply	<i>Richard Gray (2020)</i> , Josef Schmidhuber. Et.al (2020), B. James Deaton & Brady J Deaton (2020), Dr DP Troskie (2020), Prangya Paramita Sahoo & Suvangi Rath (2020), Jill E. Hobbs (2020), William A. Kerr (2020), Food and Agriculture Organization of the United Nations (2020)
Food security		<i>Eva Anggraini (2020)</i> , Sirawdink Fikreyesus Forsido. Et.al (2020)

Based on the literature review reference in Table 1 above, the results got to answer two research questions will be discussed further in the section below;

Concern about the potential for food insecurity during the Covid-19 outbreak in various countries and world organizations have made various efforts to ensure that agricultural production is stable, the food supply process runs well and is affordable for consumers despite decreasing income and restrictions on crowds and movements, export restrictions can interfere with food safety in importing countries. (Wordbank, 2020) .

Correspondingly, agricultural access to sea, rail, and truck transport has increased during the pandemic, this is because of reduced demand for transportation services in most sectors of the economy, thus increasing the availability of transportation for most of the agricultural supply chain. (Richard Gray. 2020). In line with research conducted by the Western Cape Department of Agriculture in South Africa regarding the impact of the COVID-19 pandemic. the system supply chain of food there is evidence that the distribution of foodstuffs for the domestic market to function efficiently although there are social restrictions and border closures, however, there is a major priority for consignments of foodstuffs. The only effect is of concern in the long term is a weakening of the currency exchange rate, which will negatively affect the prices of imported food products. Up at this stage, there have been no significant concerns about the availability of food in South Africa (Troskie. April 2020)

The epidemic of infectious diseases caused by the coronavirus not only limits the space for movement but also affects the condition of the exchange rate and decreases in income so that there is a potential for access barriers to the supply chain. In the supply chain in the food and agriculture sector there is the possibility of interruption of transmission in the transport system because of road closures, queues at the port, the delay in customs clearance, venture capital and changes in exchange

rates, and lack of labor in agricultural production because social distance that lead to endangering food security. (Josef Schmidhuber. Et.al, 2020) .

Ensuring the availability of food during a pandemic is very crucial. The government's social distancing policies related to preventing the spread of the epidemic, although these policies are considered being able to help reduce the health crisis caused by the pandemic, they can divert attention from the agricultural sector and harm food security, and disrupt the food supply chain so that a mitigation strategy is needed. (Sirawdink Fikreyesus Forsido. Et al. April 2020) .

Food insecurity is usually associated with lower income, low household income is expected to affect the amount of food consumed and the goods to be purchased, the decline in income triggered by COVID-19 is expected to increase the prevalence of household food security, health problems because of Covid-19 add additional complications that can affect the prevalence and intensity of household food insecurity. To ensure the availability of food during the pandemic and post-pandemic with relatively stable food prices, collaborative efforts are made between the government and the private sector to assist residents who have lost their jobs and mortgage support and increase child care benefits, and the food supply chain is distributed by air. (B. James Deaton & Brady J Deaton. April 2020).

The main impact of the lockdown because of the Covid-19 pandemic in the agricultural sector is the disruption of activities and the supply chain for agricultural food due to the unavailability of labor which ultimately leads to a waste of harvested commodities, especially fruits and vegetables that are easily damaged and affect harvesting activities. and pre-planting, especially for crops such as wheat and legumes, and there is a gap between the selling price received by farmers and the price paid by consumers, causing financial and mental losses. (Sahoo & Rath, 2020). Constraints in the food supply chain because of the closure of airways where planes are simultaneously used for passengers and goods, restrictions on the social distance which result in the reduced workforce are the major effects on global trade. (Kerr. 2020)

Restricting trade will harm producers and consumers and even create market panic in the food supply chain caused by restrictions on movement that disrupt a complex network of interactions involving farmers, agricultural inputs, processing plants, distribution of goods, and retailers. COVID-19- affected countries must maintain food supplies, prioritize workers' health, expand and scale up emergency food help and social protection programs, provide support to small farmers to increase productivity and market agricultural products, maintain food supply chains by focusing on logistical bottlenecks, trade policy objectives, and taxes to keep global trade open and manage macroeconomic enterprises. (FAO 2020).

RESULTS AND DISCUSSION

Global pandemic COVID-19 has given rise to anxiety towards security food security around the world because of the disruption of production and supply chain. Supply chain constraints related to the distribution of foodstuffs border closures and the mass imposition of restrictions on movement, resulting in a reduction in the productive workforce in the agricultural sector which ultimately leads to the waste of commodity crops. The epidemic of infectious diseases caused by the coronavirus not only limits the space for movement but also affects the condition of the exchange rate and decreases in income so that there is a potential for access barriers to the supply chain.

The importance of achieving food production as a continuation in maintaining food security needs the attention of various parties even though some countries affected by the pandemic state that food stocks are at a safe level, however, several policies that prohibit the export of goods can cause an increase in food prices where some countries still bring in many ingredients food by exporting it from outside for daily consumption needs. During the pandemic, all countries in the world are trying to meet their domestic food availability so that the role of producers as producers of food becomes very vital. The need for the role of the government and the private sector as stakeholders to help households and facilitate the logistics sector of food in distribution is a top priority so that the supply chain and stock of materials remain safe and run stably both during the pandemic and post-pandemic or in the next emergency. unpredictable considering that there is no certainty when the pandemic will end

During the COVID-19 pandemic, all countries in the world tried to meet their domestic food availability so that the role of producers as producers of food was very vital. The need for the role of the government and the private sector as stakeholders to facilitate the logistics sector for foodstuffs in distribution is a top priority so that the supply chain and stock of materials remain safe and stable both during the pandemic and the next unpredictable emergency given there is no certainty when the pandemic will be over. To ensure the availability of food during the pandemic and post-pandemic period with relatively stable food prices, collaborative efforts are made between the government and the private sector to assist residents who have lost their jobs and mortgage support. (B. James Deaton & Brady J Deaton. April 2020). Referring to table 1 where the availability of staple food rice and sugar for March to August 2020 is in a safe position, with details of rice stock 23.2 tons with a surplus of 7.4 tons, sugar 2.9 tons with a surplus of 1.4 tons.

Even though it has been confirmed that food stocks are in the safe category until August, the problem of food handling must remain sustainable and must pay attention to the problem of distribution of the food supply chain which is constrained by uncertainty until when the policy of limiting social crowd distancing is implemented, this will cause problems and affect the growing season after August. The agricultural sector will survive actively and productively if the condition of farmers is healthy, welfare is guaranteed and there is a significant change from just-food security to food sovereignty independence (Arif Satria, 2020)

CONCLUSIONS AND RECOMMENDATIONS

Finally, an important concern that a pandemic COVID-19 is not just only impact negatively on the distribution of foodstuffs but also impacts on the sector resilience of food. steps prevention impact COVID-19 on the stability and availability of food needs special attention from the government and institutions of interests of the other stakeholders. Food is the most basic necessity for human life, challenges getting harder to remember there is no one in the world of health experts who claim to have discovered a vaccine to cure infectious diseases COVID-19, so there is no certainty how long this outbreak will air the final.

Rescue supply chain and food security need the right strategy of communication to establish cooperation to create stability in food prices, and the distribution of food goes well. Several things that should concern the government regarding the policy of limiting movement during the COVID-19 pandemic are; ensure that food production conditions are at a safe level, especially in the food supply chain, can reach remote areas, develop domestic food self-sufficiency and do not depend on the purchase of food exports, price stability needs to be maintained and monitoring of market prices needs to be done in a scheduled and consistent manner.

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