

FOOD SECURITY ASPECTS REVIEW FROM FOOD SECURITY ASPECTS AND RICE AVAILABILITY DURING THE COVID-19 PANDEMIC IN CENTRAL JAVA

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ARTICLE INFO

Keywords:

Food Security,
Rice Import Impact,
Food Availability

ABSTRACT

Food security is an important factor to ensure human survival, especially with increasing population growth and ever-increasing agricultural land. There are several things that affect food security such as food availability, food availability, benefits and other factors such as land area, food production rate and per capita income. This study aims to find out the effect of food availability, availability and utilization on food security indices in Central Java during the Covid-19 pandemic and to see food availability in terms of production in rice in Central Java before the pandemic and during the Covid-19 pandemic. This study used a descriptive quantitative method with the data analysis technique used was a hypothesis test. The subjects used in this study are 29 regencies in Central Java, the data used are secondary data derived from Central Java BPS and the annual report of the Food Security Office. Research results show that the amount of rice production during the pandemic decreased significantly compared to rice products before the pandemic. As the amount of production decreased, the amount of rice imports during the pandemic increased. Related to the availability relationship, the range and utilization of panga in Central Java has a significant and simultaneous effect on the food security index in Central Java.

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1. INTRODUCTION

Food security is one of the important factors that can support human survival. The availability of food supplies is one of the keys to ensuring human life. So that disruptions to the supply and availability of food can threaten human life. The Covid-19 pandemic has several negative effects on life not only in terms of health but also related to food security in the world. Reported from the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agriculture Development (IFAD), the United Nations International Children's Fund (UNICEF), the World Food Program (WFP) and World Health Organization (WHO) estimated that the world's population of 9 million people (WFP) had a population of 20 million. And the Covid-19 pandemic will add about 83 million to 132 million more people who are chronically starving [2].

Based on data contained in the Global Hunger Index in 2020 said that the risk related to food shortages in Indonesia before until after the pandemic was 9% of the population or around 22 million Indonesians were malnourished. This led Indonesia to rank 62nd out of 113

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countries regarding food safety issues in 2019 [4]. Indonesia's low ranking is influenced by several factors such as low affordability, quality and food safety in Indonesia. In addition, based on data from the Ministry of Health, 2 million toddlers have malnutrition, 7 million children have stunting, 2 million children are obese, and pregnant women who have anemia as much as 2.6 million.

There are important components in supporting food security such as food trade and agriculture. However, with the Covid-19 pandemic disrupting world trade mobility is no exception in Indonesia. There are several countries that impose import policies by restricting the circulation of imported products, especially from China. However, this does not apply to food and agricultural products especially for some countries that cannot produce certain food or agricultural products in Indonesia.

There are a variety of food items, one of which is rice. Rice is the staple food of Indonesians, almost 90% of Indonesians consume rice as the main source of their daily carbohydrates. Based on data contained in BPS in 2022 the consumption of rice in Indonesia increased by 718.03 thousand tons or increased by 2.9% from 2019. According to the Ministry of Agriculture, rice is one of the most widely consumed food crops by the community and rice production is known to be higher than corn or soybeans. Rice is a staple food source in the community because rice contributes higher carbohydrates in Bandung jangung and soybeans In 100 grams of rice contains 28 grams of carbohydrates while corn and soybeans contain 25 grams and 15 grams of carbohydrates

Rice production in 2019 decreased by 8% from 2018, while in 2020 it decreased by 9.7% (Ministry of Agriculture, 2020). The decline in rice production before and after a pandemic required Indonesia to continue importing rice from Thailand. Total rice production in Central Java in 2020 was 9.49 million tons of GKG, or 0.17 million tons (1.72 percent) decrease compared to 2019, so the central Javanese government is still conducting rice imports to meet production. The rice production in Central Java (Patanru&Amanta, 2022). The decline in rice production during the pandemic can be due to restrictions on social distancing and work from home (WFH) policies. Apart from disrupting rice production, the policy also has an impact on the decline in farmers' income in Indonesia.

In the realm of food security, food availability is always linked to food security. The availability of sufficient food will affect food security, therefore food availability is one of the government's focus to support the creation of safe food. Food availability is not only the responsibility of the central government but must also be taken care of by provincial and regional governments. Therefore, strengthening local food security must be started to help realize national food security [8]. The cause of Central Java's food security is due to population growth in Central Java. Central Java has a population of 34,257,865 in 2017 and 36,742,501 in 2021 (Central Java, BPS, 2020). Food availability depends on rice field area, crop area, crop area, and rice productivity [12]. Food availability must be balanced against the need for rice consumption. In addition, the population of a region has a large influence on the availability of food to balance it.

Based on the data that the author has outlined above, the author is interested in discussing the impact of food security and rice imports after the Covid-19 pandemic in Central Java.

2. METHOD

This study uses a type of quantitative descriptive research, with the data analysis technique used being a hypothesis test aimed at finding the relationship between variables. The variables used in this study were the availability, affordability, and utilization of food to the food safety index. This study was conducted in all regencies in Central Java Province.

The data used in this study are secondary data in the form of report data from the Ministry of Agriculture and Central Statistics (BPS) of Central Java, especially related to data

before the pandemic, namely data in 2018 and data during the pandemic, 2019 to 2021. Data in the form of rice harvest area, rice productivity, rice production, and rice production in central Java from 2018-2019 to 2021, rice import data in Central Java from 2018 to 2021 will be evaluated, while data on availability, availability, utilization and food security index in Central Java in 2020 will be presented. It was statistically validated by aiding the SPSS program through hypothesis test

3. RESULT AND DISCUSSION

3.1 Food Production and Availability in Central Java

Cereal products such as rice and other agricultural products such as corn, soybeans and bulbs are essential products to support food security. Rice is one of the products of serelia that is widely consumed by Indonesian people, not least in Central Java considering that rice is Indonesia's staple food. Rice is a serelia commodity that contributes as much as 50% of the average energy intake of Indonesian food consumption [10]. In order to meet the availability of rice, it is necessary to pay attention to rice production in Central Java. Based on the opinion [13] the availability of food production is influenced by the productive level of the bag and the area of the harvest. Meanwhile, data related to harvest area, productivity and rice production, rice production and rice import data of Central Java Province in 2018-2019 can be seen in table 1.

Table 1. The area of rice harvesting, production and production, rice production and rice import data for Central Java Province in 2018-2019

Years	Harvest area (ha)	Productivity (ton/ha)	Paddy Production (tons)	Rice Production (tons)	Rice Imports (tons)
2018	1.824.001	4.026	10.501.607	6.008.799	901.000
2019	1.680.498	4.010	9.655.654	5.525.988	1.000.000
2020	1.668.951	3.944	9.491.185	5.458.852	4.839.921
2021	1.698.733	3.940	9.620.679	5.533.318	1.100.005

Source: Central Java BPS, 2018-2021

Based on the table above, it can be seen that rice production before the pandemic was precisely 10,501,607 tons, which is the highest production. After the spread of the Covid-19 pandemic, the amount of rice production decreased every year. In 2019 there was an 8.1% decrease in rice production or 845,953 tons decrease, and at the peak of the spread of the Covid-19 pandemic in 2020 there was a 1.7% decrease in production in 2019. The decline in rice production in 2020 is in line with the decline in land area and productivity. Based on the table above, it is known that there was a significant decrease in land area and productivity in 2020 compared to before the Covid-19 pandemic. It is mentioned in the study [7] that rice production is influenced by crop land area and productivity. In the findings of this study, the largest crop area data was obtained in 2018 or before the pandemic of 1,824,001 ha which resulted in the highest rice production. Meanwhile, in 2020 it was the smallest rice crop area with a harvest area of 1,668,951 ha and resulted in low production of rice.

The amount of rice production in line with the amount of rice production in 2018 or before the pandemic was the year with the highest rice production of 6,008,799 tons and the least rice production occurred in 2020 which was the peak of the pandemic spread. The land area can affect the amount of production because the wider the harvest area, the higher the amount of rice produced and vice versa [13]. The conversion of farmland to housing, office, or other public facilities such as the creation of highways or railways causes the area of farmland to become more complicated and thus affect the amount of rice production.

The decline in rice production during the pandemic in 2019 and 2020 resulted in an increase in the amount of rice imports. The highest amount of rice imports occurred in 2020 at

4,839,921 tons or an increase in rice imports was approximately 400% or 4 times that of rice imports before the pandemic. The high amount of rice imports in 2020 is due to a decrease in the amount of rice production. The increase in the amount of rice imports indicates that Indonesia lacks consistency in food self-sufficiency [13]. According to FAO, the fulfillment of a country's food availability is not only from domestic production, but it can come from imports [13]. In 2021 it was the year that the spread of Covid-19 began to subside so that this year there was an increase in rice and rice production even though it was not significant.

The significant decrease in rice and rice production during 2019 and 2020 was due to government policies that restrict outdoor activities. So that it also has an impact on farmers' activities in planting rice. At the peak of the spread of the Covid-19 pandemic there was a significant decrease in rice production compared to rice production before the pandemic. The size of rice production is affected by several factors such as land area, land type, seeds used, fertilizer type and pesticide type [14].

3.2 Availability, Availability and Use of Food to the Food Security Index in Central Java

There are several aspects that affect the value of food security in a region. These aspects were food availability, pagan use and food availability. The following are data on aspects of food security as well as the food security index in 2020 or during the Covid-19 pandemic in each district in Central Java is shown in Table 2.

Table 2 Food Availability, Food Availability and Food Utilization in Central Java

District	Availability	Reachability	Utilization	IKP
Cilacap	93,67	82,84	78,19	84,23
Banyumas	81,68	80,53	78,27	79,97
Purbalingga	85,43	76,47	76,9	79,33
Banjarnegara	83,22	76,75	77,49	78,99
Kebumen	89,72	73,4	74,06	78,56
Purworejo	92,6	79,11	79,4	83,28
Wonosobo	87,18	73,34	79,19	79,83
Magelang	80,54	81,54	78,25	79,92
Boyolali	91,32	85,83	79,99	85,14
Klaten	89,98	78,31	77,78	81,6
Sukoharjo	91,84	89,13	86,01	88,7
Wonogiri	98,16	82,63	84,5	88,04
Karanganyar	90,83	84,39	87,65	87,63
Sragen	97,42	81,87	84,4	87,55
Grobogan	97,38	76,4	83,14	85,39
Blora	97,63	79,08	82,14	85,87
Rembang	92,65	73,87	82,79	83,07
Pati	97,59	84,62	84,29	88,38
Kudus	86,36	89,37	84,92	86,69
Jepara	90,07	88,25	78,72	84,98
Demak	95,74	80,09	82,69	85,82
Semarang	86,35	88,37	85,33	86,55
Temanggung	77,9	86,03	81,28	81,69
Kendal	89,09	83,84	83,25	85,18
Batang	87,27	84,28	78,79	82,98

Pekalongan	84	80,98	74,59	79,33
Pemalang	89,42	72,64	74,33	78,35
Tegal	88,1	86	73,92	81,8
Brebes	89,28	74,48	69,47	76,91
Average	89,7	81,2	80,1	83,3

Source: Food Security Office, 2022

Based on the data presented in table 2 it is known that Sukoharjo Regency has the highest food security index of 88.70 followed by Pati Regency with a food security index of 88.36, while the Regency with the lowest food security index is Brebes Regency with a value of 76.91. In 2020, Central Java has a food security score of 83.30 which falls into the food safety category. A region or region is declared safe for food if the value of its food security index is between 75-100 [1].

The food availability value in Central Java in 2020 shows an average value of 89.70 and can be well categorized. Wonogiri Regency is the regency with the highest food availability value of 98.16 followed by Blora Regency with 97.63. The regency with the lowest availability value is Temanggung regency with a value of 77.5. Temanggung has a low value of food availability compared to other regencies because the majority of agriculture in Temanggung is Tobacco Agriculture. Food availability in Central Java Province in accordance with Table 2 shows that Kudus is the regency with the highest food availability with a value of 89.37. Pemalang is a regency in Central Java with the lowest food reachability score of 72.64. The average value of food availability in central Java is 81.19.

The value of food use shows how food can be utilized optimally. The food utilization value in Central Java shows an average of 80.10 when compared to the availability value and affordability of the food utilization value is the smallest value. Food use can be influenced by several factors such as the knowledge of housewives in food slaughtering, food management, food storage facilities and methods and household management [12]. There are districts with the smallest utilization value in central Java, Brebes regency with a value of 69%, while the districts with the highest utilization value are Karanganyar regency and sukoharjo regency with a value of 87.65 and 86.01.

The relationship between availability, affordability, and food utilization

Along with the development in the agricultural sector, many areas suddenly experience food shortages or vice versa, which is improvement in food security. Based on this, further study is needed regarding the relationship between food availability, food affordability and utilization in Central Java. Based on the results of the data analysis conducted by the researcher, the results can be found in table 3 and table 4.

Table 3. T Tes Result

Coefficients ^a				Standardized		
Model				Coefficients	T	Sig.
				Beta		
1	(Constant)	0,642	1,609		0,399	0,693
	Ketersediaan	0,282	0,014	0,429	20,005	0,000
	Keterjangkauan	0,299	0,016	0,428	18,594	0,000
	Pemanfaatan	0,414	0,020	0,511	20,559	0,000

Source: SPSS 26

Based on the T test results, it is known that the significant values of the variables Availability, Availability and food utilization are 0.000, in addition, the count values for food
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availability are 20,005, reachability is 18.594 and food utilization is 20.559. The table t value obtained is greater than the table t value of 1,701 so it can be concluded that the Availability, Availability and utilization of food in Central Java has a significant effect on the Food Safety Index in Central Java.

Table 4. F Test Results

ANOVA ^a		Sum of	Mean		
Model		Squares	Df	Square	F
1	Regression	351,443	3	117,148	941,966
	Residual	3,109	25	0,124	
	Total	354,552	28		

Source: SPSS 26

Based on the F test results in the table above, it is possible to find a significant value of 0.000, in addition to the table above, 941.966 and a table f value of 3.37, so that the f count is greater than the f table, it can be concluded that together with availability, food availability and utilizationThe food supply in Central Java has a significant influence on the Food Security Index in Central Java.

DISCUSSION

The results of testing the research data using the analysis of the T test hypothesis and the F test can be concluded that the variables of food availability, food availability and food utilization have a partial and simultaneous effect on the food security index in Central Java during the COVID-19 Pandemic. Based on these results, it was proven that food security in a region can be understood as food security aspects such as availability, utilization, and affordability, which means that the higher the value of the food security index is also higher. There are several other factors that can affect food security such as agricultural land area, productivity and poverty rate [12]. One aspect of food security is that food availability is food availability. Food availability in this case is related to the productivity of food crops, one of which is rice. Rice is a staple food in Indonesia, almost 90% of Indonesian people make rice the main source of energy. Productivity can be affected by land area, the wider the farmland, the higher the productivity. This will affect the amount of rice production, so it can be said that the higher the productivity and land area, the higher the productivity. However, when the rice production pandemic in Central Java decreases, it can be influenced by government policies that impose restrictions on outdoor activities. The increasing variety of buildings and public facilities also influenced the land area. These developments and public facilities typically consume agricultural land, thus reducing the area of agricultural land. The decrease in land affects the rice production rate of the land area which is getting narrower so that the amount of rice grown is also less so that the rice harvest is also less. Increasingly narrow farmland due to over-functioning land can have an effect on food availability which also indirectly affects food security.

Land area that is increasingly diminished in addition to being influenced by land functions can also be affected by population growth. The increasing population growth has an impact on the increase in land demand for housing [12]. Food security in a region can also be affected by the socioeconomic conditions of the local community [10].

Therefore, the government is required to devise strategies related to food security issues. In order to improve food security, several efforts need to be made efforts. Efforts can be made by increasing people's purchasing power, increasing food production rate, distributing thoroughly and evenly and increasing labor wages [12].

Based on policies issued by the Ministry of Agriculture (2018) related to food security, there are five strategies used. These strategies include: (1) improving economic development in the agricultural sector, (2) improving food supply to the community, especially the underprivileged, (3) utilizing local resources for food fulfillment, (4) promoting balanced food and nutrition socialization, (5) improving quality and safety.

4. CONCLUSION

Based on data analysis conducted by researchers, it can be concluded that land area, productivity, and production have an effect on food availability in this case is rice production in Central Java. Furthermore, based on T and F tests, it can be concluded that there is a relationship between food availability, food availability, and food utilization and the community's food security index in Central Java Province during the Covid-19 pandemic. In order to improve food security in Central Java, the Central Java Provincial Government must pay attention to aspects or factors that affect food security in Central Java. To support food security, all government agencies, both the central, provincial, municipal, regency, and local governments need attention. Programs that promote food security must be the government's top priority in order to improve food security and regional development. This is the responsibility of all communities, community participation is also an important factor in order to succeed programs related to food security and regional development.

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