

# The Intensity of Agriculture in the Covid-19 from Indonesia – A Systematic Literature Review

**Abstract:** The agricultural sector will surely crushed if there is no acute attention from the government in an agrarian country. As a reflection, the importance of the agricultural sector, which produces foodstuffs in the food security agenda in a difficult situation. The objectivity of this article is to present the existence of the agricultural sector and strategic aspects to support the agricultural sector in Indonesia so that it can cope with the Covid-19 pandemic. To clarify the presentation, we use the SLR method, which will determine the extent of the fate of the agricultural sector with comparisons from previous studies relevant to this. The results of the review prove that the agricultural sector in Indonesia, especially in food, is almost 70% of smallholder agriculture. With this people's farming model, we need to conclude that we will maintain as long the food reserves in the community as the farmers keep planting. Because of this, the things that need to be done are to provide stimulus to farmers and guarantee the purchase of the products or commodities produced. In certain cases in several regions, the price of agricultural commodities declines and demand is low because thousands of restaurants and restaurants have closed, and reducing their sales capacity. ~~The availability of data and studies relevant to this article is an obstacle. In addition, the limitations of the SLR method only describe the phenomenon of the agricultural sector problems when the Covid-19 occurred in Indonesia in a broad outline without empirical findings. Abstract is too long. Avoid 'sentences' that have the potential to cause double perception. Authors should include future contributions and agendas at the end of this section (Normally it only contains 150-200 words).~~

**Keywords:** Food security; Farmers; Development model; Strategy; Agribusiness

## 1. Introduction

It well known the ASEAN region for its agrarian base which consequently the growth of almost all Indonesians, hence the need for government attention to a resilient agricultural sector. Therefore, one sector that supports the Gross Domestic Product (GDP) is the agricultural sector (Wahyuningsih et al., 2020).

As the Novel Coronavirus (Covid-19) continues to spread around the world, it is important to respond to existing and affects on the agricultural sector, both from a food supply and demand perspective (Alhawari et al., 2021). It is imperative to ensure that global and national food supply chains continue to function in ensuring the availability of food supplies, preventing food crises in countries already experiencing food security and nutrition challenges, and reducing the overall negative impact of the pandemic on the global economy (Darma et al., 2020).

Especially for Indonesia, this country also relies heavily on the agricultural sector. This means that farmers play a very important role in the entire national economy (Rokhani et al., 2020). The workforce absorbed in the agricultural sector shows this. Farmers and agriculture are the major bases of Indonesia's economy. If only this agribusiness system could get attention from the government, then Indonesia could be independent to fulfil the population's foodstuffs (Wijaya et al., 2020; Roy et al., 2019). The government's attention includes supporting the agricultural sector in the fields of research and technology that are commensurate. It would be better if there is no big attention from the government, don't expect this sector to develop (Rozaki, 2020).

In mid-1997, ASEAN countries had been hit by a regional economic crisis caused by currency depreciation from the influence of the US dollar (Sunderlin et al., 2020). In its journey, Indonesia was the worst affected among other countries in ASEAN. Evans (1998) states that the collapse of the Indonesian economy in the last few decades is the most dominant in any economy, which refers to the global market orientation. However, the existence of the agricultural sector at least still supports the sustainability of the Indonesian economy, even though other sectors have experienced a recession.

Until now, the global economy is still showing unfavorable conditions. The global trade war involving two economic giants (the United States and China) in recent times has also generated negative sentiment towards the economies of countries around the world, including Indonesia (Darma et al., 2020). The Central Bureau of Statistics of the Republic of Indonesia (2020) noted that in the third quarter of 2019, Indonesia's GDP grew 5.02% (year on year). This was relatively slow when compared to the first and second quarters of 2019 because the growth reached 5.07% and 5.05%. Behind the sluggish conditions of the world economy, we believe the agricultural sector to be a hope of maintaining the Indonesian economy (Andri, 2019).

The development of the agricultural sector needs special attention from the government because Indonesia can become a developed country, even though it must be based on agriculture. If this can do, countries close to Indonesia will depend on the aspect of foodstuffs. New Zealand and Vietnam are examples of countries that are developing their economies based on agriculture. In this article, we try to review the extent to which the intensity of the agricultural sector in Indonesia is facing Covid-19, which has caused the collapse of the global economy. The structure of the paper has not been described. The mechanisms in each point (chapter) should be detailed.

## **2. Literature Review**

### ***2.1 Agricultural Development***

The effort to develop an agricultural perspective in the first stage signifies abandoning the pre-modern view of agriculture which embraces the needs of society in the traditional era. From the historical context, problems in agricultural development do not mean changing the static-based agricultural sector into a

modern dynamic sector, but emphasizing the acceleration of agricultural productivity and the results of growth that can be in line with economic growth in other sectors by modernizing forms. Ideally, agricultural development theory is also a link between the dynamics of agricultural growth and the sources of economic growth, so that it changes form from the emergence of output growing at the level of 1% of those who traditionally farm to 4.0% or more per period (Ripoll et al., 2017; Zyl, 1989; Dercon & Gollin, 2014).

Dramatically, the role of the agricultural sector changes in line with development thinking patterns. The dualistic view states that the agricultural sector can suppress, even the role of the industrial sector needs to be protected to supply surplus labor to modern sectors such as services and finance. In fact, Mellor (1995), Mosher (1966), and Myrdal (1968) strongly support the existence of agricultural development, which highlights that the life cycle will not be sustainable by impoverishing those who are highly dependent and working in the agricultural sector. It should note, neoclassical forces also explain the relatively fast expansion through the manufacturing sector to support it (Jorgenson, 1961). On the one hand, Mellor & Johnston (1984) intensively explain how investment flows for the agricultural sector can stimulate an integrated economy to reduce poverty levels by absorbing employment, high real wages, and affordability of food prices (Hanif et al., 2019). For non-agricultural products, they can develop it to support policies that are pro-economic surplus, so that it used them for production input (capital).

The participatory agricultural movement in the 90s made rural areas able to produce community-based development. We transform this movement through an approach aimed at local government through its authority and empowering local communities who have the resources to take control of agricultural development (Kheiralla et al., 2003). The authentic form of agricultural development is real participation, technical health, sustainability, and increased accountability. Their participation is real by involving stakeholders to analyze and include the role of citizens for each policymaking. They packaged decisions on agricultural sector development with full representation through tight budget constraints and shared interests. The agricultural community also has strict control over program design, resources, implementation, and selection.

The accountability dimension will slowly shift the horizontal emphasis, where members who are members of the community deserve to be empowered to encourage improvement by taking firm action against other wrong members. Technically, community sustainability implies proven methods in various environmental and social areas. Other factors such as assets, finance, social and environmental sustainability also needed. The result is policies that are political in line with the dominant policy reforms for agricultural development. Before being widely adopted, this should consider institutional design and principles based on previous case studies (Krueger et al., 1988).

## 2.2 Agricultural Sector Economic Growth

Economists realize that support for sectoral transformation, which aims to mobilize resources, accompanied the role of economic growth in a country and absorbs labor in the agricultural sector to switch other activities (Bowles, 1986). The nature of this transition presents a two-way (causal) relationship, thus attracting debate and generating long controversy. The discussion focused on whether it balanced an increase in agricultural productivity with the transformation of the industrial revolution?. Various observers in development economics have highlighted foreign investment which gives priority to industrial development or agricultural development. In fact, Syrquin (1988), Chenery & Syrquin (1975), and Kuznets (1966) do not consider this. Initially, they presented structural transformations in the agricultural sector over several periods, with empirical studies shaping patterns of sectoral change across countries.

So far, a report from the World Bank (2009) explains that the agricultural sector has contributed to economic activity in developing countries, while for poor countries, this sector has contributed around 25% added value. The agricultural sector also has a big share in playing exports to developing countries through food and non-food crops. For case studies in several countries, the export value of raw agricultural commodities reached 15%–30% of total GDP (Gollin, 2010).

**Figure-1.** Transformation of sectors in economic development

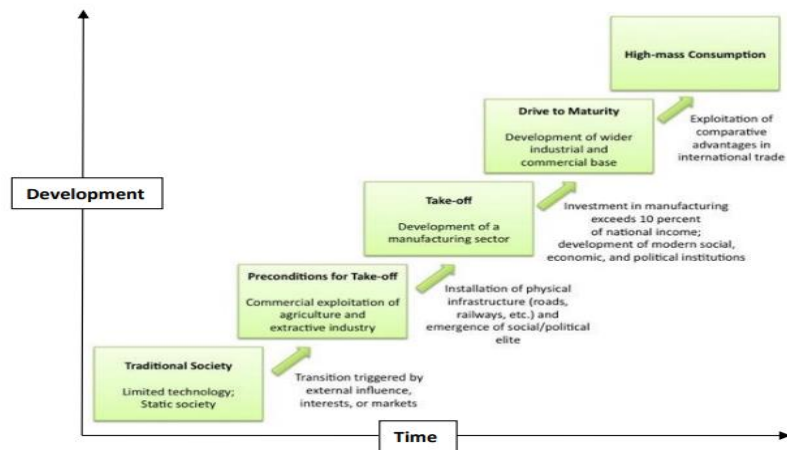
	Primary Sector	Secondary Sector	Tertiary Sector
The Traditional Society	Vast Majority	Very Few	Very Few
Pre-conditions for Take Off	Vast Majority	Few	Very Few
Take Off	Declining	Rapid Growth	Few
The Drive to Maturity	Few	Stable	Growing Rapidly
High Mass Consumption	Very Few	Declining	Vast Majority

**Source:** van Arendonk, 2015.

Figure 1 presents the role of the agricultural sector in three phases to support economic growth. Rostow (1960) adds that the agricultural sector influences other sectors such as industry from time to time, where development on economic growth in a country can take off.

Previous empirical studies reveal that there is a lack of consensus and conflicting evidence about the impact of the agricultural sector on economic growth. Several studies also explain agricultural development in a country as an absolute requirement to drive economic growth and industrialization, so other researchers also argue the opposite and this is a long debate. Schultz (1964), Awokuse & Xie (2014), and Gollin et al. (2002, 2007) concluded that aggregate economic growth highly depends on the development of the agricultural sector.

**Figure-2.** Phase on economic development



Source: van Arendonk, 2015.

The development of the economy explains the differences between the five phases of economic growth over time developing to the ultimate stage (high mass production) which represents full achievement. Phase 1 (traditional society) describes the subsistence of agriculture and almost the entire economy depends on the primary sector. In phase 2 (a prerequisite for take-off) presented the expansion of labor-intensive agricultural products through capital savings. In phase 3 marked the emergence of a developing manufacturing sector with a transition from the primary structure to the secondary structure, resulting in a shift in the economy (see Figure 2).

Appreciation of agricultural productivity is important in the transition process to the next stage. Johnston (1970) underlines the role of the market in broad terms to revitalize commodities from developing industrial sectors, so that they can generate investment for new leading sectors. In relation to the emergence of basic sectors outside of agriculture, the role of technology is important in this process. The emergence of new leading sectors through signals of secular decline (primary sector).

### 2.3 Agribusiness

The emergence of the concept of “agribusiness”, was first expressed by Rust (1957) who explained three different but interdependent spheres in the global food system. The three areas are producers of agricultural commodities, suppliers of agricultural inputs, and institutions related to the marketing of food products (Harrison & Desmond, 2011).

Yusi & Idris (2016), Arumugam et al. (2017), and Ramukumba (2013) reveal that limited financial capital can lead to agribusiness failure. So far, financial initiatives are available to help business people, including loans. Their income and raw material costs can fluctuate from time to time because of economic uncertainty. These factors will hinder their expansion of innovation and business development.

The most dominant obstacle in agribusiness is ethical issues because people need to remind themselves and the potential that emerges is normal because of the

market activity. Ethical and economic values coexist since humans are born and those who depend on business activities so that they last a long time in society. This is very important because one can see and avoid various kinds of problems that arise regarding ethics in the market (Kirsten, 2003; Harrison et al., 2019).

Entrepreneurial trends have fluctuated over the decades and are not merely theoretical, but focus more on a more practical direction. Agribusiness develops because it combines entrepreneurship and agricultural concepts. The occurrence of changes because of the economy, environment, and additional needs in the business world is consistent to maintain the economic dynamics that occur in the world. Mudiwa (2017) in his study refines entrepreneurial theory as an attempt to explain the relationship between human and market behavior.

#### ***2.4 Agricultural Technology***

Technology plays a vital role in making many changes in all disciplines. Development economists suggest developing countries to adopt technology from developed countries in order to achieve economic growth (Feder et al., 1985). Aspects related to agriculture and food, they are also interested in seeing the extent to which the function of new technologies can increase food security and productivity. By nature, environmental economists are very concerned about how they can use new technologies for efficient management of the environment and resources (Tietenberg, 2000). In contrast, Kalaitzandonakes et al. (2018) revealed that industry and companies actually advocate technology, because its acceleration will reduce production costs and increase effectiveness, efficiency, and collective labor.

The basic technology for developing agriculture is an irrigation system. Water is a scarce resource in several countries. Rural policy schemes in the past developed irrigation infrastructure to ensure the availability of irrigation water based on the increasing demand for agricultural products (Chou et al., 2001). However, this expansionary policy incurred enormous investment costs, so that its impact was widespread on the consumption of irrigation water by the agricultural sector and there was a physical scarcity of resources. Policymakers and water users are seeking to give competitive attention to the problem of water scarcity for agriculture. The design of the use of modern irrigation technology is not only a discourse, but it needs to be carefully designed as a solution for the long term (e.g., Chowdhury, 1984; Koundouri et al., 2006).

#### ***2.5 Agricultural Sector Economic Growth***

They defined food security as the uncertainty or limitation of the safety and adequacy of food nutritional intake to get socially acceptable food (Anderson, 1990). Maia et al. (2020) consider food security to be a public health problem and is much bigger when it is experienced by children. There is growing empirical evidence of the lack of attention paid to food security to negative human health outcomes from birth. This actually strengthens the relevance of his judgment in the period of life.

For example, in North America they define the term food security as a phenomenon closely related to the concepts of malnutrition and hunger. Since

1990, researchers have used a scale to measure hunger through qualitative interviews with people experiencing it. Radimer et al. (1990) classified hunger with four components, i.e. quality, quantity, psychological and social at the individual and household level. It based the reference to these components on the quality and quantity of accessible food, the psychological impact of navigation on a person's fear of insufficient food, and the way people interact socially to reach food. Until now, this concept remains relevant through the use of the term food security.

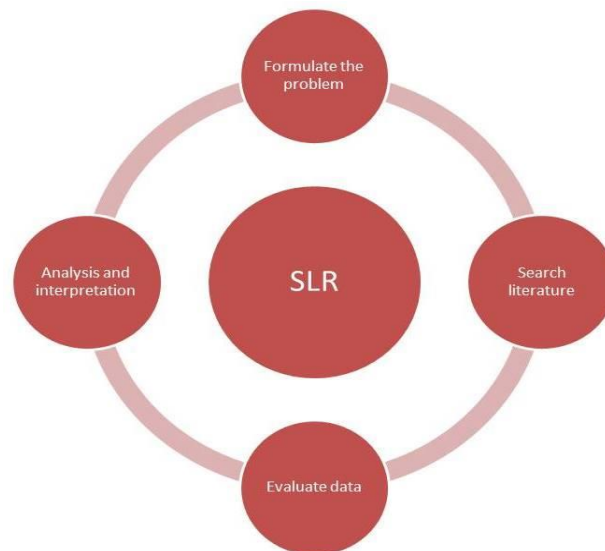
In the process of economic development, food security is an important component. In the last few decades, food security has increased, which shows agricultural productivity can reduce poverty levels. The correlation between food products and food security is very close because of government intervention (Chavas, 2016; Fogel, 2004; Barrett, 2010; Charles et al., 2010).

### **3. Methodology and Procedural**

The Systematic Literature Review (SLR supports the presentation of this article). The SLR method is often used to study, identify, interpret, and evaluate several studies that apply to topics related to certain phenomena (Triandini et al., 2019; Wahono, 2015). SLR can also form a theoretical framework for a specific topic or field of study, explain definitions, keywords, and terminology, determine models and case studies that support the topic, and develop research (Wee & Banister, 2016). With this approach, we can carry a systematic review of journals out, because the process must follow predetermined steps. What are the advantages of the 'SLR' method? I did not get detailed information about this.

We try to provide criticism through interesting ideas and ideas from this article with a special topic concerning the intensity in the agricultural sector amid the Covid-19 outbreak. This shows that the writer understands the study area, knows the main issues, has the competence, ability, and background that is appropriate for the field. Of course, SLR must also be continuous with previous studies and how they relate to the discussion in this article. Grant & Booth (2019) add that there is a need for integration and conclusions about things that are known in the chosen study area, so that there will be references to other people to stimulate new ideas.

**Figure-3.** Stages in SLR



**Source:** Leite et al., 2019.

We presented the four components in SLR in Figure 3. The first component includes selecting topics that match issues and interests, and planning problems, so must have written completely and accurately. Second, we need to find literature relevant to the study, get an overview of the study topic, compile references and supported by the knowledge of the topic being studied, and cover or conclude from previous studies. In the third component, looking at what contributions to the topics discussed, looking for data sources according to the needs of the study because this is very important in terms of the composition of quantitative data. Then the fourth is to discuss the findings and summarize the literature.

#### **4. Scheme and Discussion**

Indonesia's economic growth projected to fall in 2020 because of the impact of Covid-19. Kuniawan & Santoso (2020) project that Indonesia's economic growth will reach 0.5%, while Susilawati et al. (2020) predict between 1.0% and 1.8%. Far beyond the economic growth seen in recent years, growth for Indonesia was 5%. Bank Indonesia (2020) also highlighted that the development of economic growth in Java Island could even fall more than the national level to -2.1% (pessimistic scenario) and 0.6% (optimistic scenario). As a result, various development agendas, such as poverty alleviation and increasing the Human Development Index (HDI) will experience serious disruption. They predict unemployment to increase from 8% in 2019 to 12% in the worst scenario.

This pandemic has multiple effects on various sectors of the economy. Analysis from the Indonesian Central Statistics Agency (2020) predicts that one sector that will badly affected is the tourism sector. Meanwhile, the economy of Bali Nusa Tenggara for example, during the first quarter of 2020 contracted by nearly 7% (the worst in all of Indonesia). This also does not include the impact of social restrictions because of the Covid-19 pandemic crisis, which only started in April 2020. The manufacturing and industrial sectors will massively affect.



Ravallion (2020) considers that the global manufacturing sector and industry will hit by a serious crisis if not handled. Likewise, areas with industrial bases in Indonesia such as Banten Province, DKI Jakarta Province, and West Java Province. So far, the agricultural sector will be the least affected compared to other sectors. A reflection of social restrictions will be relatively minimal in the agricultural sector, although there is still a risk of disruption of the supply chain and a decline in demand (Kusrini & Maswadi, 2021). Projections from The Economist Intelligence Unit also confirmed the relative resilience of the agricultural sector (2020) of the Indonesian economy for April 2020. When the Covid-19 outbreak took place, the growth of the manufacturing sector from 3.0% to -1.5% (corrected -4, 5%) and the service sector by 7.2% to 2.4% (corrected -4.8%), growth in the agricultural sector only revised from 4.1% to 3.2% (-0.9%).

Apart from the relatively small impact of social restriction, it is more caused by agricultural production centers, not in densely populated areas. The agricultural sector, especially food crops, naturally will not be as bad as other sectors when a crisis occurs. This occurs because of the low elasticity of demand for food crop agricultural goods. When the economy is experiencing a booming period, the demand will not proliferate. Likewise, when there is a recession, the demand will not decrease drastically. The history of crises that have occurred in Indonesia, for example, the 1997-1998 monetary crisis, has also left a record of the relative survival of the agricultural sector, even accommodating workers who lost their jobs in urban areas. Despite the monetary crisis, the agricultural sector could still grow positively at around 0.26%. In fact, national economic growth is collapsing up to -13.10%. Muliadi et al. (2020) explain that the agricultural sector also helped the Small and Medium Enterprises (SME) sector. The role of the agricultural sector as a buffer in times of crisis will repeated this year.

Likewise, the global crisis in 2008 which caused the collapse of the world financial system. The impact is paralysis in many sectors throughout the country. The rent has dropped European industrialized countries and several Asian exporters. However, Indonesia's GDP in that year still grew by 6.1% against 2007. GDP growth in oil and gas even increased by 6.5%.

Figure 4 shows a reflection of Indonesia's GDP from the agricultural sector during these 36 periods. The average GDP growth for Indonesia at the level of 17.03% with the lowest growth comparison in 2019 was 12.72% and the highest reached 24.25% in 1986. In line big, this achievement has experienced a very significant depreciation considering that Indonesia is an agricultural country that can employ many people in this sector. For comparison based on 144 countries in 2019, the average economic growth in the agricultural sector is 10.46%. We used global ranking trends for the sector for comparison. It measured the importance of the agricultural sector for other countries and particularly in the economy in Indonesia as the added value of the agricultural sector to the percentage of GDP in aggregate.

If we trace the conditions in the GDP structure, the decline occurred in almost all sectors. We recorded only three sectors that showed positive growth (agriculture, industrial sector, and the construction sector). The agricultural sector

even recorded a significant increase from 13.7% in 2007 to 14.4% in 2008. This phenomenon shows that performing the agricultural sector has a significant influence on the growth and resilience of the national economy. The positive performance of the agricultural sector in 2008 also refers to the record of the export-import trade balance. The volume of agricultural exports that year reached 29,287,752 tons (up 12.9%) when compared to 2007, which was 21,257,150 tons. We can also see interesting data from import activity in 2008. The volume of agricultural imports in Indonesia in that period fell by 20.9%. As a comparison in 2007, the import growth from 12,582,510 tons to 12,852,510 tons. In fact, in 2008, the overall imports of Indonesia actually increased (Yusuf et al., 2020).

**Figure-4.** The GDP share of agriculture in Indonesia, 1983-2019



**Source:** The World Bank, 2019.

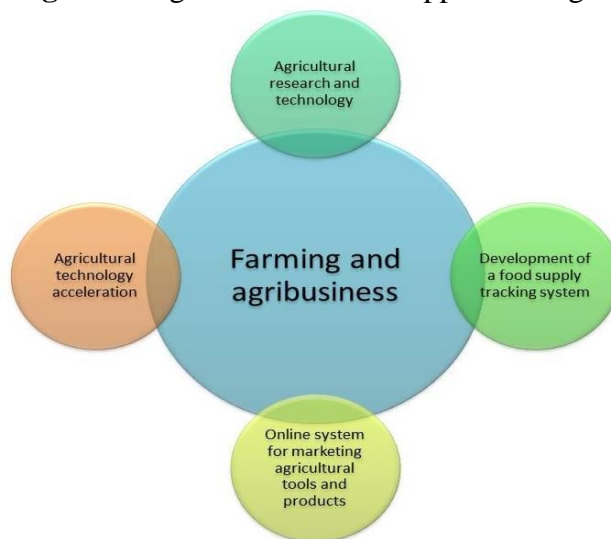
This shows that amid a slowing economy, Indonesian agricultural trade in the international market continues to progress positively despite food shortages. The threat of food scarcity occurs as the effect of the global economic crisis. Food scarcity is a situation caused by a decline in food exports to world markets. When the global market experiences food shortages, Indonesia should remain stable because the volume of exports increases along with the decrease in import volumes.

The performance of the agricultural sector is not only a food provider for Indonesia's 267 million people, but can also accommodate a large workforce, reduce poverty, and contribute significantly to improving the welfare of the community. Agriculture managed by the people has been independent for years, free from dependence on technology and aspects of capital.

Indonesia needs to fix the pattern of agricultural empowerment to increase the quality and quantity of produce in the agricultural sector to meet basic food needs. The first step that needs to be done is the provision of seeds, seedlings, cultivation techniques, and harvest and post-harvest technology. Empowerment patterns need to be done with good synergy from various sectors to develop agriculture. According to Yosi (2020), Indonesia has postponed trade in vegetables, animals, and fruits from China and other countries to prevent the Covid-19 outbreak.

Darma et al. (2022) and Abadega (2021) underline the things that are important to do so that the agricultural sector continues to exist from any situation and condition. We designed a model of an effort to revitalize the agricultural sector in this probability which refers to five stages covering agricultural research and technology, development of food supply tracking systems, accelerated technology adaptation, online systems for marketing agricultural tools and products, and packaging systems with technology (see Figure 5).

**Figure-5.** Agricultural sector support strategies



**Source:** Author's elaboration.

*First*, keep running the agendas in the agricultural technology research and development sector, especially those related to cultivation, crop protection, and agricultural digital systems. The goal is that the upstream aspects of agriculture can still support other sectors downstream. They made this commitment based on the concept of research and development, which is a long-term investment. As a result, research and development in the aspects of cultivated agriculture, crop protection, and digital systems remain in the corridor. However, this requires adequate budget adjustments because of the conditions of Covid-19. The most important thing is that it still achieved the main agendas in the agricultural aspect through this strategy.

*Second*, the continuation of ongoing research in the agricultural aspect through the development of a digital system to determine food availability. During this pandemic, mobilization in the field hampered, so we need a digital system to track food availability directly from anywhere. Of course, the distribution of food from upstream to downstream can still track effectively, efficiently, and even.

*Third*, we expect farmers to speed up technology adoption. By accessing information online and without direct intervention from extension agents provided by the government and the private sector, it can minimize problems such as pest and disease control. The role of farmers is very central because agricultural products are a necessity that must be available to the community.

*Fourth*, limited mobilization forces agricultural business actors to carry out innovation and creativity through digitization. Pandemic conditions have become increasingly promising in selling agricultural equipment and products. People are also looking for agricultural support tools because they have to work from home and like farming. Agricultural products that are sold online are a new alternative to divert boredom while at home. Agricultural products as plant seeds (cultivated and ornamental plants) or other agricultural products increase added value.

The combination of the concepts of the four elements provides added value for processed agricultural product entrepreneurs who expected to shift to automation in terms of the packaging process. This requires the packaging factory workers to be on vacation even though the business target must still be running. One solution in packaging processed products is through wholesale packages into retail packages. The level of people's income starts and adjusts their basic needs, of course, affecting their purchasing power in the market. The retail package makes it easy for people to keep buying agricultural products that the factory has processed.

## **5. Conclusion and Contribution**

Through the model in this idea, there is an opportunity that will improve the welfare of the farmers. The opportunity for market expansion during the Covid-19 outbreak also intended to build sustainable agriculture. So far, Indonesia has not panicked too much about the food stock because it has a superior agricultural sector.

The conclusions in this article are certainly very relevant to several previous studies. In connection with the impact of Covid-19 on the agricultural sector in Indonesia, Olivia et al. (2020) and Caraka et al. (2020) informs that this pandemic has a very systematic effect on the Indonesian economy, so that in the short, medium and long term, the government needs to plan vital policies in anticipation of a food stock crisis. In addition, Rusdiana & Talib (2020) and Pulubuhu et al. (2020) explains the multiplier effect because of Covid-19 in Indonesia, in sequence, it can collapse the agricultural sector which is marked by the emergence of socio-economic problems such as hunger, poverty, unemployment, layoffs, and problems related to welfare.

So that farmers can carry out activities, as usual, they need education from the government on how to handle it in reducing the spread of Covid-19. The construction of posts that specifically deal with current conditions will ensure food and other staple goods run smoothly. In addition, the Indonesian government needs to speed up exports to strategic communities in supporting the sustainability of agriculture and the national economy. Then, it expected to develop agricultural markets in each region, optimize local food, coordinate logistics infrastructure, and e-marketing, so that these labor-intensive programs can achieved on target.

The implications of the study must be explained at the end of the 'conclusion', so that it becomes a limitation for further agendas.

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### Competing Interests

The authors declare that they have no competing interests.

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The authors fully took part in this article. Contribution from Dr. Y.K is by generating ideas, developing concepts, determining objects of study, mapping problems on relevant phenomena, and looking for references (55%). Then, Mr. M.A.K and Dr. Z.I share 45% which includes the preparation of a study method or model, describing the findings, providing final conclusions, and policy implications as recommendations.

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