

# THE POTENTIAL OF BANANA TRADING COMMODITY TO FULFILL MARKET DEMAND AND SUPPORT FOOD SECURITY IN DEFENSE ECONOMIC PERSPECTIVE (STUDY IN BOGOR DISTRICT)

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**Abstract** – In order to maintain food security, it is wiser if the food priority is not limited to rice, but also encourages product diversity of local food-based such as maize, cassava, sweet potato, breadfruit, taro, and banana. The problems of utilizing banana potential in Bogor District are low production due to land use change, plant function change, some farmers have perception of bananas as a second class plant, Fusarium wilt disease, limited use of bananas as fresh fruit and small industrial processed products (such as chips, sale, molen), and production has not been able to fulfill market demand and consequently, export market opportunities have not been utilized. This study describes the extent to which large potential of banana can be used optimally by using defense economics, demand-supply, and food security theory. Primary data sources were obtained from interviews with informant from Local Government, farmers and banana traders in Bogor District, Ministry of Agriculture, Ministry of Trade. Secondary data sources include both from Ministry, Distanhorti, Disdagin, BPS, journals, and electronic media. Validation data by triangulation and data analysis of Miles-Huberman. The results show that bananas have great potential to be developed in Bogor District but its utilization is not optimal. This is due to several factors including application of inappropriate cultivation techniques with SOP, limited large-scale land, land conversion, without large company partnerships. Therefore, it is necessary to build partnerships with large private companies, synergies and coordination between stakeholders in order to increase bananas potential as trade commodity, hence can fulfill market demand. In the end it will improve economic security as one of the main focuses of the defense economy.

**Keywords:** Banana, Defense Economy, Demand, Food Security, Potential

## Introduction

The defense system adopted by the Government of Indonesia is total defense system (Sishanta), namely a defense which involves all citizens according to their roles and functions<sup>4</sup>. In principle, national defense aims to maintain the existence of the

Republic of Indonesia based on Pancasila and the 1945 Constitution of the Republic of Indonesia, improve people's welfare and realize national security.

Welfare should be enjoyed by all Indonesian citizens, not only certain communities. This includes the ability and ease of access to basic necessities, which

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<sup>4</sup> Agus Supriatna, *Pertahanan Nasional Dalam Perspektif Ekonomi*, (Bandung: Unpad Press, 2017), pp. 3-4.

are in accordance with the concept of defense economy.

Defense economics is an economic study that examines the management and potential availability of national resources (natural resources; man-made resources; human resources; facilities and infrastructure) for the sustainability of economic security and the interests of national defense in order to realize economic prosperity and national security.<sup>5</sup>

Economic security requires maintaining structural integrity and the ability to generate prosperity and the interests of political and economic entities in the context of various external risks and threats faced in the international economic system.<sup>6</sup>

In order to achieve national goals and protect national interests, integration between military defense and non-military defense is urgently needed<sup>7</sup>. With regard to national interests, national defense and defense economy, there is an element of threat. Both real and non-real threats as well as military threats and

non-military threats. One form of non-military threat is food insecurity.

In order to face the threat of food insecurity and efforts to maintain food sustainability, rice should not be the only food priority. It is essential to encourage the diversity of local food-based products such as maize, cassava, sweet potato, breadfruit, taro and banana.

A survey by the Consultative Group on International Agricultural Research (CGIAR) predicted that the food crisis and climate change will cause bananas to play a role as the world's staple food source. Experts project the production rates of corn flour, rice and wheat (as the main source of calories) in developing countries. CGIAR researchers argue that bananas have the potential to replace the role of potatoes in a number of developing countries.<sup>8</sup>

The large per capita energy contributions for fruits are found in bananas and bark. In 2015, the energy availability per capita for bananas has increased compared to 2014, from 34 kcal/day or 25.84 kg/year to 36 kcal/day or

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<sup>5</sup>Supandi Halim, *Bahan Ajar Defense Economic*, (Pusat Studi Ekonomi Pertahanan Unhan, 2018), p. 2.

<sup>6</sup>Alan Collins, *Contemporary Security Studies Second Edition*, (New York: Oxford University Press Inc, 2010), p. 253.

<sup>7</sup>Kementerian Pertahanan, *Buku Putih Pertahanan Indonesia 2015*, (Jakarta: Kemhan, 2015), p. 29.

<sup>8</sup>"Pisang Calon Makanan Pokok Dunia", in <https://lifestyle.kompas.com/>, 31 October 2012, accessed on 5 April 2018.

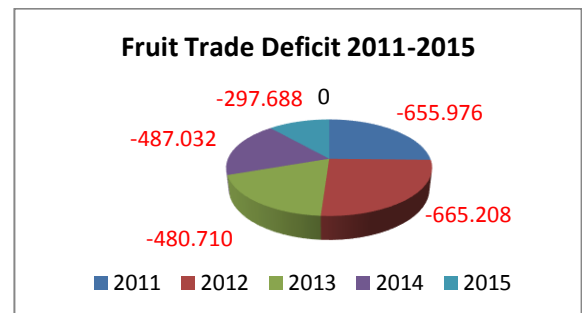
27.15 kg/year, while salak decreased from 10 kcal/day or 4, 13 kg/year to 9 kcal/day or 3.51 kg/year.<sup>9</sup>

Banana has been used as a staple in several countries such as Rwanda, Uganda, West Africa, East Africa and Sangir, North Sulawesi (Indonesia). Gapi Banana is the staple food of the Sangir community.

In terms of geographical conditions, Bogor District has the potential to become center for banana production, but this potential has not been utilized optimally, because farmers in Bogor District still consider banana plants as second-class plants. We found that farmers still sell fresh bananas to collectors at low prices, although there are some farmers who sell certain bananas to restaurants and hotels; export standards is not yet a common knowledge, farmer welfare is not high and banana processing is not optimal (chips and banana sale).

In addition, the utilization of banana export market potential is not optimal even though there are great opportunities and the production has not been able to meet the demand. This can

also be seen from the export and import values of fruit which are described as follows:



**Figure 1.** Chart Value of Fruit Export and Import 2011-2015 (US \$ Thousand)  
Source: Customs and Excise DG and BPS.go id, 2015

Figure 1 illustrates a fruit trade deficit indicated by the higher import value compared to exports. From the perspective of defense economy, this is a form of non-military threat.

If this threat is left to its own devices, it will have an impact on Indonesia's economic sovereignty. The import value of horticultural products shows that local horticultural products are still unable to compete with imported horticultural products. The dynamics in the field can be seen from several modern markets in Indonesia that make imported fruit products the main display at fruit counters. The survey conducted in several modern markets in Jakarta and Bogor

<sup>9</sup>Badan Ketahanan Pangan Kementerian Pertanian, *Laporan Tahunan Badan Ketahanan Pangan 2016*, (Jakarta: BKP, 2017).

showed that local fruits are placed in the secondary display. The existence of large quantities of imported fruit in Indonesia is a form of economic threat, especially those that threaten local fruit products.

Banana production is not optimal due to the change in land functions (residential areas and toll roads), change in plant function (banana plants turned into coffee plantations). The decline in banana production is also caused by the presence of Fusarium wilt disease. In addition, the use of bananas in Bogor District is still limited to the use of fresh fruit and processed products from small industries (banana chips, banana *sale* and molen). Compared to the banana processing industry in Lampung, it provides more variety than Bogor District. Types of processed banana products in Lampung include banana chips, banana pie (flavor variants of cheese, raisins, chocolate), banana cake, lapis legit banana, banana chips (chocolate oven flavor variant, cheese oven, green tea, roasted corn, mocca, barbeque, chocolate) and other types. The banana processing industry in Thailand includes Gluay kai (a mixture of banana, sticky rice and flour then fried), banana chips, banana paste, banana snacks and banana flowers.

Some of the advantages of bananas are: the second largest Indonesian superior fruit export commodity for the 2015-2017 period; can be cultivated (easy to grow) throughout Indonesia; has a high potassium content; as well as carbohydrate sources which act as food alternatives; hence, banan can be expected to boost food security to become food sovereignty.

Food security is defined as the condition of fulfillment of food needs from state level to individual level, which is reflected in the availability of sufficient food, whether in quantity, quality, safetiness, diversity, nutrition, equity and affordability and does not conflict with the religion, belief and culture of the community, to achieve a good nutritional status, ensuring people can live healthy, active and productive in a sustainable manner. "Food is everything derived from biological sources of agricultural, plantation, forestry, fishery, animal husbandry, and water, whether processed or otherwise, intended as food/beverage for human consumption, including food additives, food raw materials, and other materials, which is used in the process of preparing, processing and manufacturing food/beverages". Local food is food that

is consumed by local people according to local potential and wisdom. Food availability means the availability of food produced domestically and stored in national food reserves (CPN) as well as imports if the two main sources cannot meet the needs.<sup>10</sup>

The import policy is taken as the last resort if the production and National Food Reserves (CPN) as the two main sources cannot meet food needs.

Meanwhile, the definition of food security according to USAID is a condition where everyone has physical and economic access at any time to meet their consumption needs for a healthy and productive life. The Ministry of Agriculture stated about the correlation between food problems and human survival: if there is a shortage of food availability to meet the needs of the people in one country it will result in decreased welfare, hunger, disease and disaster. The warning that global climate change will have an impact on food price growth has the potential to increase the price of agricultural commodities.

Therefore, food security, food self-help and national food sovereignty are important to be promoted intensively.<sup>11</sup>

Apart from acting as an alternative source of food, bananas also act as a trading commodity. In terms of trade, bananas have great potential to be traded domestically and exported.

As a trading commodity, it cannot be separated from supply and demand. According to Sukirno, the demand theory explains the nature of buyers' demand for something. The supply theory explains the nature of the sellers in offering something they will sell.<sup>12</sup>

Referring to data from the Pusdatin of Ministry of Agriculture and the Ministry of Trade, the Asian Continent is the main destination for Indonesian banana exports, while the Continent of Europe, America and Australia have become export destinations for bananas but in small quantities. Meanwhile, bananas have not been exported to the African continent. Based on these data, it shows that there are still many export markets that are open and their potentials have

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<sup>10</sup>Peraturan Pemerintah Republik Indonesia Nomor 17 Tahun 2015 Pasal 1 ayat 1, *Ketahanan Pangan Dan Gizi*, p. 2-3.

<sup>11</sup>Entis Sutisna dan Abdul Wahid Rauf, *Keragaman Ketahanan Pangan di Pulau Terpencil: Kasus Masyarakat Kampung Sakabu Pulau Salawati*

*Tengah Kabupaten Raja Ampat-Papua Barat*, 2013, dalam [www.litbang.pertanian.go.id](http://www.litbang.pertanian.go.id), accessed on 15 March 2018.

<sup>12</sup>Sadono Sukirno, *Mikroekonomi: Teori Pengantar Edisi ke-3*, Cetakan 31, (Jakarta: RajaGrafindo Persada, 2016), p. 29, 41-87.

not been optimally utilized, especially in Europe and Africa. If the market share is more optimal, it is hoped that it will be able to increase the trade surplus which will increase the country's foreign exchange.

Several domestic banana varieties that have been exported are Cavendish (center in Lampung), Kirana banana (center in Lumajang), Mas banana (center in East Java), and Ambon banana (center in Java)<sup>13</sup>. Furthermore, based on the Data and Information Center (Pusdatin) of the Ministry of Agriculture and the Directorate General of National Export Development, the Ministry of Trade, most bananas from Indonesia are exported to China, Malaysia and Japan.

Bananas produced by Indonesia have advantages over other countries in terms of the diversity of varieties and different tastes. Besides the advantages, there are also weaknesses in terms of packaging that is not yet competitive, below standard quality and supply unsustainable supply.

In relation to bananas as a trading commodity, the utilization of banana export market potential is not optimal, even though there are great

opportunities. Moreover, the production has not been able to meet the demand.

An increase in the trade surplus correlates with an increase in state income. The escalation of state revenues and economic growth will contribute to strengthening the defense economy. In addition, in order to achieve high food security, various ways have been taken including boosting production, productivity and diversification of local food including bananas.

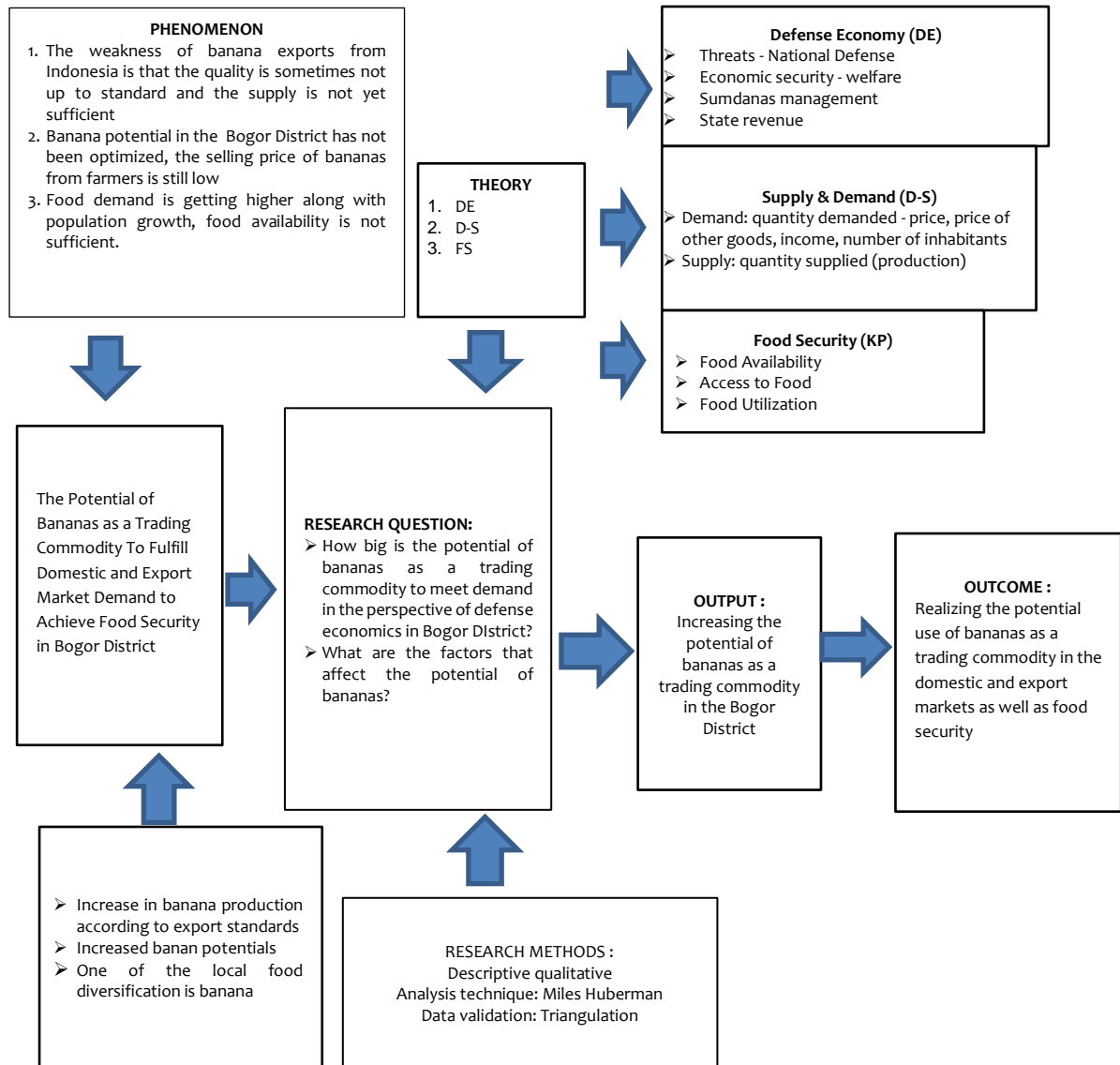
The gap in the potential for bananas is seen from the geographical condition of Bogor District which has the potential to become a center for banana production and has large demand for bananas, yet its banana production is very low due to land conversion, Fusarium disease; low banana price; lack of knowledge about export standards; low farmer welfare; and less than optimal banana processing (chips and banana sale).

Referring to the identification of the problem, namely the gap between the potential and problems in the banana trading commodity, the researcher is interested in conducting a research entitled "The Potential of Banana Trading

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<sup>13</sup>Pusat Data dan Informasi (Pusdatin) Kementerian Pertanian, *Perbandingan Ekspor*

*Komoditi Pisang Tahun 2016-2017*, (Jakarta: Kementan, 2018).



**Figure 2.** Framework

Source: Author

Commodity to Fulfill Market Demand and Support Food Security in Defense Economic Perspective in Bogor District". This research focuses on the potential of trading commodities; factors that influence it and efforts to increase the competitiveness of bananas.

The research location in Bogor District is selected due to the fact that it is one of the regions with high level of food

security (based on the Food Security Map)<sup>14</sup>, the existence of farmers who cultivate various banana varieties, majority of the livelihood is in the agricultural and trade sectors, having great potential to increase food availability that can support national food security; as well as its geographical proximity to Jakarta as one of the main markets for banana commodities.

<sup>14</sup>Kementerian Pertanian, Dewan Ketahanan Pangan dan World Food Program, *Peta*

*Ketahanan dan Kerentanan Pangan Indonesia 2015*, (Jakarta: Kementan, 2015).

In connection with food security, there are three aspects that must be considered. *First*, the aspect of food availability, including: i) domestic food production; ii) food reserves; iii) food trade; iv) food provision based on local resources. *Second*, the aspect of Food Affordability/Access, including: a) food marketing and logistics; b) stabilization of food supply and prices; c) food assistance; d) handling of those who are poor and prone to food and nutrition issues; *Third*, the aspect of Food Utilization, including: 1) food consumption patterns; 2) micronutrition fortification; 3) food safety networks; 4) food safety monitoring.<sup>15</sup>

Based on the theories and phenomena that have been described, the authors formulated the following framework (Figure 2).

### **Research Methods**

This research employs descriptive qualitative method. As described by Lesley, the qualitative research design has the following stages: identifying problems, identifying important factors,

exploring problem solving contingencies, determining risks, implementing solutions and evaluating the effectiveness of these solutions. Qualitative research focuses on the background and reasons for the emergence of a data.<sup>16</sup>

The selected subject in the study is the key informants and they are seen as a source of data which is expected to be able to answer the problems being studied because of the assumption that the subject is the person who knows best about themselves and the research theme.<sup>17</sup> Selection is not only due to consideration of aspects of population representation in the sample.<sup>18</sup>

Subjects were selected purposively as stated by Creswell that the subjects studied were selected on the basis of the characteristics and specifications of the location and participants/informants. The selection of these informants is adjusted to their respective roles and duties, which consisted of officials from the Ministry of Agriculture, Ministry of Trade, Department of Agriculture, Bappeda,

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<sup>15</sup>Badan Ketahanan Pangan Kementerian Pertanian, *Indeks Ketahanan Pangan Indonesia 2018*, (Jakarta: BKP Pertanian), p. 7.

<sup>16</sup>Lesley Farmer and D. Cook, *Using Qualitative Methods in Action Research: Qualitative Research and The Librarian*, (USA: American Library Association, 2011), p. 3.

<sup>17</sup>M. Idrus, *Metode Penelitian Ilmu Sosial (Pendekatan Kualitatif dan Kuantitatif Edisi Kedua)*, (Jakarta: Erlangga, 2009), p. 25 dan 104.

<sup>18</sup>Irawan P. Dr, M.Sc, *Penelitian Kualitatif dan Kuantitatif Untuk Ilmu-Ilmu Sosial*, (Jakarta: DIA Fisip UI, 2006), p. 9.



Department of Trade, seed entrepreneurs, traders and banana farmers.

The research object includes the less than optimal utilization of banana potential in Bogor District, the low selling price of bananas from farmers and the poor welfare of farmers. Thus, the authors raised the following research problems of: 1) the potential of bananas as a trade commodity to meet market demand in Bogor District; 2) factors affecting the potential of bananas in Bogor District.

The research was carried out in Bogor District between July-December 2018. Primary data sources were obtained from informant interviews and secondary data sources included data from related ministries, agriculture office, trade offices, BPS, journals, print and electronic media. Data testing/data validation is carried out by triangulation with method, time and source. Data analysis employs Miles Huberman technique.

### **Result and Discussion**

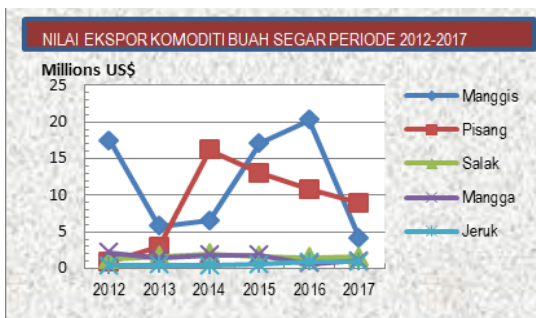
Discussions are useful for providing detailed descriptions and analysis that will make it easier to understand the field results.

The fundamental problem in realizing sustainable national food availability as conveyed by the Ministry of Agriculture is that national food production and production capacity are increasingly limited; the amount of food demand is increasing along with the increase in population; fulfillment of industrial raw materials and increased use of food in line with the development of tourism, hotels and restaurants; competition for the use of foodstuffs for bioenergy and animal feed; food insecurity due to poverty and limited provision of rural infrastructure in rural areas; low potential of food resources; decrease in the proportion of food consumption.

### **Potential of banana trading commodity**

The regional potential in Bogor District is reviewed by the food crop sub-sector; vegetable and horticulture subsector, ornamental plants subsector, and plantations. Fruit centers are mainly in Ciawi, Mekarsari, Tanjungsari and others.

Potential is defined as energy, strength or hidden ability that is possessed and has not been optimally



**Figure 3.** Chart Export Value of Fresh Fruit Commodities in 2012 - 2017

Source: Pusdatin of Ministry of Agriculture, 2018

utilized.<sup>19</sup> Meanwhile, commodities are defined as commercial goods, local handicrafts, and products produced from agriculture which are used for export commodities that meet the quality of international trade standards. Thus, the potential for trading commodities is the power or capability of each region or country in the form of raw materials, which have not been processed and can be traded. The raw materials come from agriculture, forestry, plantation, energy and mining products.

The existence of international trade, both exports and imports, will have an impact on state income. The higher the exports and the lower the import results in a trade surplus that can increase state revenue that contributes to the state budget.

This is in line with defense economics which is closely related to

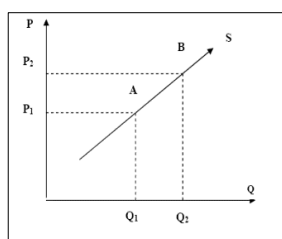
economics. If citizens get income from the production activities they carry out, then this income (economic surplus) is partly used to contribute to the state in the form of taxes. Taxes, as a component of revenue in the APBN, can be used by the state to finance the defense sector and the non-defense sector.<sup>20</sup> The export value of fresh mangosteen, zalacca, banana, orange and mango commodities from 2012 to 2017 (Figure 3).

Supply reflects decisions regarding the quantity of goods that need to be produced. The definition of the amount of supply is the total goods or services that producers will sell within a certain time with a certain price. The law of supply describes the nature of the relationship between the price and the quantity of goods supplied by producers/sellers. The law of supply states that the higher the price of an item, the more quantity of goods will be supplied by the producer/seller and vice versa.

The supply curve shows the relationship between the price of a particular good and the quantity of goods supplied. Supply in economic analysis

<sup>19</sup>Endra K. Prihadhi, *My Potensi*, (Jakarta: Elex Media Komputindo, 2004), p. 6.

<sup>20</sup>Purnomo Yusgiantoro, *Ekonomi Pertahanan Teori & Praktik*, (Jakarta: PT Gramedia Pustaka Utama, 2014), p. 3-9.



**Figure 4.** Supply Curve  
 Source: Sadono Sukirno, Mikroekonomi: Teori Pengantar Edisi ke-3, Cetakan 31, (Jakarta: RajaGrafindo Persada, 2016)

means the entire supply curve, while the quantity of goods supplied means the quantity of goods available at a certain price level.

The supply curve indicates a positive relationship between the price and the quantity of goods supplied, i.e. the higher the price, the more quantity supplied. In general, to find out supply, a production approach is used. The amount of banana production in West Java and its contribution to national production is as Table 1.

**Table 1.** Total Production and Contribution of Banana Production in West Java Province to Indonesia in 2013 - 2017

Year	National Production (Ton)	Banana Production in West Java	West Java Contribution
2013	6,279,290	1,095,325	17.4%
2014	6,862,568	1,237,171	18.0%
2015	7,299,275	1,306,288	17.9%
2016	7,007,125	1,204,084	17.2%
2017	7,162,680	1,128,666	15.8%

Source: Data from the Directorate General of Horticulture, Ministry of Agriculture, 2018

Banana production at the national level ranges from 6-7 million tons per year. Most of these are supplied to meet domestic market demand. Bananas produced in Bogor District are absorbed by the market and in fact, due to limited supply, they bring in bananas from other regions.

Bogor District has great potential for banana development, but this potential has not been optimally utilized. This unoptimal use results in low production, low banana productivity and low contribution to national production as well as export market prospects that have not been utilized by banana stakeholders.

Banana production from Bogor District is as follows:

**Table 2.** Production, Productivity, Banana-Producing Plants in Bogor District 2013-2017

Year	Producing Plants (Trees)	Productivity (Kg)	Production (Ton)
2013	688,137	2.80	19,239.4
2014	716,567	3.78	27,054.0
2015	959,804	2.92	27,993.4
2016	940,641	4.85	45,613.6
2017	862,813	5.12	44,215.3

Source: Agriculture and Forestry Monograph 2013-2017 Food Crops and Horticulture Office. Bogor District, 2018

The highest level of banana production in Bogor District from 2013 to 2017 occurred in 2016 and the lowest production was in 2013. In the production process, there are few farmers in Bogor District who have carried out cultivation techniques according to SOPs and many are still using conventional cultivation methods.

Banana cultivation techniques used by farmers in Bogor District include: use of spacing (2.5m), use of seeds from superior varieties of tillers, basic fertilization at the beginning of planting, disposal of old leaves (yellow in color), separation of banana seedlings.

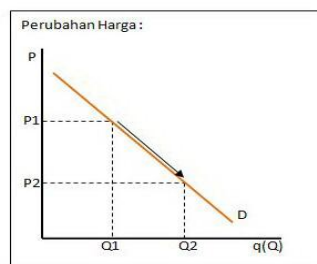
The procedure for planting bananas in the plantation and handling the harvest are in accordance with the SOP that refers to the ASEAN GAP to be used as a guideline for agricultural extension to farmer groups union (Gapoktan), farmer groups (poktan) and individual farmers<sup>21</sup>, consisting of Table 3.

The determination of banana commodity prices follows the prevailing price mechanism, which is influenced by the current supply and demand for bananas.

<sup>21</sup>Direktorat Budidaya dan Pascapanen Buah, Ditjen Hortikultura, Kementerian Pertanian, *Pedoman ASEAN-GAP Diturunkan Menjadi SOP*, (Jakarta: Ditjen Hortikultura, 2014).

Some of the factors that influence supply include: a) the price of other goods, b) costs of obtaining production factors, c) company objectives, d) technology level.<sup>22</sup>

In terms of price, the production bananas from Bogor District are higher than from other regions because they are believed to have superior quality, better taste and more variety. Bananas in Bogor District are marketed in markets in Bogor, Jakarta and Java Island. Based on the results of field research, bananas in Bogor District are still used to meet domestic demand.



**Figure 5.** Demand Curve  
Source: Sadono Sukirno, *Mikroekonomi: Teori Pengantar Edisi ke-3*, Cetakan 31, (Jakarta: RajaGrafindo Persada, 2016)

Demand provides an overview of the decision on the desire to be satisfied. The quantity demanded does not always equal the quantity purchased.<sup>23</sup> The nature of the law of demand is a

<sup>22</sup>Sadono Sukirno, *op.cit*, p. 7.

<sup>23</sup>Michael Parkin, *op.cit*, p. 59-64.

hypothesis which states that the lower the price of an item, the more demand for that good. The relationship between the quantity demanded and the price in the law of demand is caused by: First, an increase in price causes buyers to look for other goods that can be used as a substitute for goods that have experienced an increase in price. Second, an increase in prices causes buyers' real income to decrease. Declining income forces buyers to reduce purchases of

various types of goods and especially goods that experience an increase in price.<sup>24</sup>

The shape of the demand curve generally decline from top left to bottom right, due to the nature of the relationship between the price and the quantity demanded, which is inverse, depicted as follows:<sup>25</sup>

**Table 3.** SOP Derived from ASEAN-GAP Guidelines

No	Stage	Description
1	Quality Planning	The critical stages in achieving product quality during the production, harvest and post-harvest processes are identified to match the product quality target.
2	Seed	<ol style="list-style-type: none"> <li>a) Varieties are selected according to market demand</li> <li>b) If the seeds are purchased from other parties or come from outside the land, they must have a certificate and label issued by the competent authority.</li> </ol>
3	Fertilizers & Soil Additives	<ol style="list-style-type: none"> <li>1) Provision of fertilizers according to recommendations from competent parties or based on tests on soil and leaves in accordance with plant nutrient requirements.</li> <li>2) Equipment used for the application of fertilizers and other soil additives must be maintained for proper use and checked by a competent technician at least once a year.</li> <li>3) Places and facilities for composting organic materials are properly placed, made and maintained to prevent contamination of plant diseases.</li> <li>4) The application of fertilizers and other soil additives is recorded including the name of the product and material, date and location, dosage and method of application as well as the implementing officer.</li> </ol>
4	Water	<ol style="list-style-type: none"> <li>a) Use of irrigation water according to crop needs, water availability and soil moisture levels</li> <li>b) Records regarding the use of irrigation water are kept and include the type of plant, date, location, water volume and duration of irrigation.</li> </ol>

<sup>24</sup>Sadono Sukirno, *op.cit*, p. 29.

<sup>25</sup>*Ibid.*

5	Chemicals	<ul style="list-style-type: none"> <li>a) Implementers/operators of chemical applications have attended SL-PHT (Integrated Pest Management Field School) or other training related to the use of chemicals.</li> <li>b) Plant protection measures based on the recommendation of the competent party or the results of observing the symptoms of pest attacks (Plant Pest Organisms).</li> <li>c) Integrated Pest Management (IPM) is prioritized.</li> <li>d) The chemicals used are purchased from registered kiosks.</li> <li>e) The chemicals used have been registered with the Ministry of Agriculture (green book) or have received recommendations from competent parties and are proven by the latest documentation.</li> <li>f) Use of chemicals according to the instructions on the label or recommendations from the authorities.</li> <li>g) A rotation strategy is carried out for the use of chemical types and other crop protection methods to prevent pest resistance.</li> <li>h) Equipment used for chemical applications is maintained for proper use and checked by a competent technician at least once a year.</li> <li>i) The use of chemicals is recorded for each plant including the type, reason for use, date and location of application, method and dosage of application, weather conditions and implementing officers.</li> </ul>
6	Harvest & Post-Harvest Handling	<ul style="list-style-type: none"> <li>a) The product maturity index is used to determine the right harvest time.</li> <li>b) The harvesting technique used must be in accordance with the character of the product.</li> <li>c) The equipment used for harvesting must be in accordance with the character of the product and clean.</li> <li>d) Harvest containers are in accordance with the character of the product and are not too full.</li> <li>e) Cover/shield is used if the container has a rough surface.</li> <li>f) The harvesting containers are protected to prevent loss of moisture and exposure to sunlight.</li> <li>g) Clean harvesting containers.</li> <li>h) Harvesting is not done when the weather is hot or rainy.</li> <li>i) Crops are removed as quickly as possible from the plantation.</li> <li>j) The harvest is placed in a protected area in the event of a delay in transport from the plantation.</li> <li>k) Containers filled with product are not stacked carelessly to prevent mechanical damage.</li> <li>l) Containers are protected during transportation to prevent mechanical damage.</li> </ul>
7	Product Handling & Packaging	<ul style="list-style-type: none"> <li>a) Post harvest equipment is well assembled to reduce the risk of product dropping and collisions.</li> <li>b) Equipment, containers and materials that come in direct contact with the product are cleaned periodically and maintained to prevent mechanical damage.</li> </ul>

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		<ul style="list-style-type: none"> <li>c) Efforts are made to prevent pests in and around the handling, packaging and storage areas.</li> <li>d) If necessary, the product can be treated in accordance with the characteristics of the product to minimize disease progression and quality degradation.</li> <li>e) Water used for post-harvest processes such as washing and treatment of products is changed periodically to minimize contamination and pests.</li> <li>f) The product is packaged and stored in a protected place.</li> <li>g) The product is placed on a pedestal.</li> <li>h) Products are classified and packaged according to consumer or market demand.</li> <li>i) Protective materials can be used to protect the product from rough container surfaces and the risk of excessive water loss.</li> <li>j) Precooling is carried out in accordance with the character of the product.</li> </ul>
8	Storage and Transportation	<ul style="list-style-type: none"> <li>a) Products that have not been transported are placed at a temperature appropriate to the product characteristics.</li> <li>b) Transport equipment is protected and if necessary, the temperature is adjusted according to the characteristics of the product to minimize quality degradation.</li> <li>c) Transportation equipment is checked for cleanliness, for the presence of foreign objects and for pests. If there is any indication of contamination, it should be cleaned.</li> <li>d) Mixing of non-compatible products is avoided.</li> <li>e) Products are transported promptly to their destination.</li> </ul>
9	Reverse Tracing	<ul style="list-style-type: none"> <li>a) Each product is given an identity in the form of a plantation/business land registration number.</li> <li>b) Product packaging is labeled allowing reverse traceability.</li> <li>c) Record product shipments for one supply chain to the future.</li> </ul>
10	Training	Workers must have adequate knowledge or be trained according to their responsibilities. There is evidence of attending training.
11	Documents and Notes	<ul style="list-style-type: none"> <li>a) Records regarding GAP are kept for at least 2 years or more if required by government regulations or at the demand of consumers.</li> <li>b) Documents that are no longer valid are destroyed and only the most recent records are used.</li> </ul>
12	Implementation Review	<ul style="list-style-type: none"> <li>a) All activities are reviewed at least once a year, to ensure that the activity has been carried out correctly and corrective steps are taken if there is an error in the implementation.</li> <li>b) Review of activities and the follow-up is well recorded.</li> <li>c) Measures are taken to resolve complaints related to product quality and records are kept on this matter.</li> </ul>

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Source: Directorate of Fruit Cultivation and Postharvest, Directorate General of Horticulture, Ministry of Agriculture, 2014

This is what happens in the domestic banana trade where the price is one of the factors determining the demand for bananas in addition to production and the price of other fruit commodities. Production and trade are profitable with abundant produce and a high price range. The difference in banana prices in the field is influenced by the production of other fruit. If the availability of other fruits in the market is abundant, it will cause the price of bananas to decline. In terms of price, banana production from Bogor District are higher than other areas because they are believed to have super quality, better taste and more variety. Bananas in Bogor District are distributed in markets in Bogor, Jakarta and Java Island and are still used to meet domestic demand.

Market demand is in the form of fresh bananas and processed products produced by small, medium and large industries. In order to meet domestic and export demand, it is necessary to increase banana production and productivity.

Several varieties of banana exports from Indonesian production include: Mas Kirana, Cavendish, Raja, including the *Musa paradisiaca L.* category (banana with delicious fruit to eat).

The results of the research on the potential for banana trading commodities to meet market demand, both on a national scale and in Bogor District, show a great potential to be developed. This can be seen from a) the high level of demand for bananas from local, national and export markets; b) willingness/enthusiasm of the community to be involved in production and business (farmers and traders); c) a suitable agro-climate; d) profitable commodity; and e) easy to cultivate.

One way to increase banana production in accordance with market demands is to know the share, target, segmentation and market taste (production based on market demand/produce by market demand). In fulfilling market appetite, several types of superior bananas need to be produced in more quantity. Superior varieties such as Cavendish, Raja, Ambon, Mas Kirana, Tanduk and others need to be produced more.

In regard to market demand, according to the theory presented by Sukirno, the factors that influence demand include: a) the price of the goods, b) the prices of other goods closely related to the goods, c) household income and average income of the



community, d) the pattern of income distribution in society, e) community's taste, f) total population, g) forecast/expectation regarding future conditions.<sup>26</sup>

It is hoped that by developing the potential of bananas as a trading commodity in Bogor District, it will make a positive contribution to improving people's welfare, economic growth and international trade surpluses and support food security.

When viewed from a defense point of view, it is necessary to protect various germplasm (both superior types and non-superior varieties) through cultivation. These germplasm can be used as broodstock and genetic sources that can be crossed to produce superior banana varieties that have immunity to the main disease that attacks banana trees, namely *Fusarium*.

Previous research has identified the significant contribution of sorghum cultivation in Lamongan District to food security and economic security. Banana research has similarities with sorghum research, namely the same view in efforts

to increase food security by implementing local food diversification strategies. On the other hand, there are differences between the two studies, namely the research locus; commodity; and assessment of trade and market opportunities<sup>27</sup>.

### **Factors Affecting Banana Potential**

Based on its wide reach, the market as a meeting place for seller and buyer is divided into three, namely the local market (only a certain area); national market (various regions within the country); international market (various countries).<sup>28</sup>

Person/agency/institution that trades or engages in the trade of goods or services, either directly or indirectly to consumers is the definition of a trader.<sup>29</sup>

The results of research in the field on the factors that influence the potential of bananas, namely:

1. Factors that hinder the potential development of bananas in Bogor District include:
  - a. Production factors: 1) banana cultivation is not in accordance

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<sup>26</sup>Sadono Sukirno, *op.cit*, p. 7.

<sup>27</sup>Isti Septianingsih, "Potensi Budidaya Sorgum Dalam Meningkatkan Ketahanan Pangan Di Kabupaten Lamongan Jawa Timur (Studi Pada Desa Patihan)", *Tesis*, (Bogor: Unhan, 2017).

<sup>28</sup>Eeng Ahman, *Membina Kompetensi Ekonomi*, (Bandung: Grafindo Media Pratama, 2007).

<sup>29</sup>Prof. Dr. Damsar dan Dr. Indrayani, S.E., MM., *Pengantar Sosiologi Ekonomi*, (Jakarta: Penerbit Kencana, 2016).

- with the SOP (many are cultivated conventionally); 2) instability of stock/production; 3) limited plantation-scale land (mostly large-scale land), 4) land conversion, 5) lack of training and mentoring on banana production, and 6) less than optimal commitment to procure bananas;
  - b. Market factors: farmers argue that the price of bananas is too low; hence, there is no incentive for farmers to cultivate this commodity. This happens when the harvest is high, causing the price to drop;
  - c. Institutional factors: 1) the absence of an institution specifically dealing with bananas in the Bogor area; 2) there is no partnership between farmers and companies to advance the potential of bananas (as already exists in Lampung Province);
2. Supporting factors include:
- a. The suitability of agro-climate in Bogor District and even throughout Indonesia for banana cultivation. In fact, this plant can grow on marginal land;
  - b. Great diversity of banana varieties/germplasm;
  - c. Banana plants have resistance to hot climates and dry soil;
  - d. More varieties of bananas and more distinctive taste are a comparative advantage of the competitiveness of Indonesian banana products compared to other countries;
  - e. Broad market prospects;
  - f. Superior varieties such as Raja Bulu Banana. Banana from Bogor District have good quality;
  - g. There are 1900 farmer groups in Bogor District and most of these groups planted bananas; g) There is a budget allocation for banana development.
- The obstacles faced in the banana industry in Bogor District are lack of standardized taste and product quality, limited capital and technology. Efforts that have been carried out by the Regional Government of Bogor District are through mentoring, GMP (Good Manufacturing Practices) training and facilitation of licensing as well as capital assistance in the form of equipment.
- Facing constraints in the banana industry, it is necessary to increase the competitive advantage of the banana industry in Bogor District. As stated by Porter, the main factors of competitive

advantage are: a) market demand conditions, b) production factor conditions; c) company strategy, structure and competition (firm strategy, structure and rivalry); d) related industries and supporting industries (related and supporting industries). While the supporting factors include: opportunities (chance) and the role of government (role of government).<sup>30</sup>

Compared to previous researches, this banana research describes alternative policies that can be applied to increase horticultural exports; and provides an overview of the factors that influence the economic performance of mangosteen in Indonesia. Factors affecting the economic performance of mangosteen are domestic mangosteen demand; mangosteen productivity; harvested area; resident income; price.<sup>31</sup>

The classification of fruit chips based on international trade records is classified as a group of processed fruit or dried fruit which is a derivative of fresh fruit, namely bananas, apples and peaches. Sales of snacks in the world in

2014 reached US \$ 374 billion per year with an average growth of 2%/year. Based on geographic location, the snack consumption pattern shows that North America (share 45%) is the largest consumer. In this region, the United States is the main consumer country and the second is the European region which has a 33% share of the global market share.<sup>32</sup>

Furthermore, as reported in *Warta Ekspor*, the Ministry of Trade stated that in 2016, the largest exporting countries were Ecuador (1st), Thailand (2nd), Costa Rica (3rd), Belgium (4th), China (5th). Meanwhile, Indonesia was ranked 17th with a market share of 1.22 percent.<sup>33</sup>

Referring to the prospect of the export market, fresh fruit and processed snacks, especially chips, is very open to Indonesian fruit commodities. Thus, it is necessary to increase productivity, mastery of technology and high competitiveness so that Indonesia can take advantage of export market opportunities.

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<sup>30</sup>Michael E. Porter, *The Competitive Advantage Of Nations*, (New York: Macmillan, 1990).

<sup>31</sup>Ashari dkk, "Analisis Simulasi Kebijakan Peningkatan Ekspor Manggis Indonesia: Policies Simulation Analysis to Increase Indonesian Mangosteen Export", *Jurnal Habitat*, Malang. Vol. XXVI No. 1. April 2015.

<sup>32</sup>Nielsen, "Ekspor Keripik Buah Dunia Periode 2016", *Warta Ekspor Kementerian Perdagangan*, Jakarta, 2019.

<sup>33</sup>Trademap, "Ekspor Keripik Buah Dunia Periode 2016", *Warta Ekspor Kementerian Perdagangan*, Jakarta, 2016.

### **Efforts That Have Been Made To Increase The Potential Of Bananas In Bogor District**

As of 2018, Bogor District has not made banana a leading commodity. In 2019, the Bogor District Government plans to prioritize the development of Ambon Banana and Raja Bulu Banana. The realization in 2019 was carried out in the agribusiness development area for superior banana commodities in Megamendung, Ciawi and Cisarua Districts.<sup>34</sup> This program is a measure to support the national fruit program that has been established by the Ministry of Agriculture, by stimulating the production of national fruits, one of which is banana.

Efforts to increase banana production include the propagation of commercial plantations and the application of partnerships, inventory of land to be planted with bananas by developing the village concept. The goal is to acquire large-scale land, establish partnerships and open export market share.

From a defense economic perspective, there is an economic and a defense side to bananas as a trading

commodity. The economic viewpoint will focus on efforts to increase production and trade volumes aimed at meeting market demand.

Increasing production and trade will provide multi-factor effects including: a) at farmers level, through increased production and productivity, it can provide additional income; b) at groups of traders and entrepreneurs level, by expanding the volume of trade, it will increase income; c) at exports level, if the export volume gets bigger, it will increase income. Finally, if it is encouraged, it will be able to contribute to the country's foreign exchange.

This is reflected if the people carry out production and distribution activities, they will get income. The income will be used partly for consumption, which means driving the economy and partly for savings and paying taxes. If the citizen pays taxes, it shows the contribution to the state. Taxes as a source of state revenue (APBN) are allocated to finance the defense and non-defense sectors<sup>35</sup>. This shows the close relationship between defense economics and economics.

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<sup>34</sup>“Selayang Pandang Dinas Tanaman Pangan, Hortikultura dan Perkebunan Kabupaten

Bogor”, Ppid.bogorkab.go.id, accessed on 4 December 2020.

<sup>35</sup>Purnomo Yusgiantoro, *op.cit*, p. 6.

Economic security is related to access to economic sources, namely income. The biggest threat to economic security is the reduction/loss of land for employment, the absence of security at work, global economic conditions (global economic shocks and crises) which make national economic conditions unstable. The instability of the national economy affects wage cuts or layoffs. Indicators of economic insecurity are the level of poverty and the unemployment rate in a country. Food security means that all people both psychologically and economically at all times have access to food. Access to food is closely related to access to income and employment. Therefore, the involvement of the state in the provision of food will have an impact on food security in society.<sup>36</sup>

Furthermore, in an effort to increase foreign exchange, the strategy is to promote the export of fruit horticulture in the form of fresh and processed tropical fruit.

The government also coordinates and synchronizes with related parties to expand the market share of banana products and opens new markets that

have great prospects for importing fruit/processed bananas from Indonesia.

In the banana processing industry, technological mastery is required to meet market demand, especially in winning market competition. For example, in fruit chip snack processing, to get fruit chips with a crunchy texture and a savory taste, flour dough is mixed with certain herbs and spices. The fruit is also cut using a proper cutting machine, fried in vegetable oil and a vacuum frying pan.<sup>37</sup>

In connection with previous research that has been carried out by previous researchers, there are relevant considerations: referring to policies to increase export volume and value as well as increasing export quality standards of fruit and the presence of processed banana products. The government took policies to develop banana agribusiness, including pricing, trade and investment policies. This research provides information on an increase in the level of

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<sup>36</sup>Angga Nurdin Rachmat, *Keamanan Global: Transformasi Isu Keamanan Pasca Perang Dingin*, (Bandung: Alfabeta, 2015), pp. 2-18.

<sup>37</sup>Trademap, "Ekspor Keripik Buah Dunia Periode 2016", *Warta Ekspor Kementerian Perdagangan*, Jakarta, 2016.

consumption that occurred in 2005-2010, namely from 14.8 kg - 20 kg/capita/year.<sup>38</sup>.

It is hoped that by developing the potential of bananas as a trading commodity in Bogor District, it will make a positive contribution to improving people's welfare, economic growth, support food security, and can contribute to international trade through banana exports, given the national decline in market conditions.

The decline in market conditions based on data from the Indonesian Trade Development released by the DGT of the Ministry of Trade states that during the 2013-2017 period, Indonesia's exports and imports tended to decline. In general, export growth slowed by an average of 3.42% per year and imports decreased by an average of 6.01% per year. Over the past three years, Indonesia's trade balance surplus has been mainly due to a decline in imports that has been greater than export growth.

The problem that occurs in banana exports from Indonesia which importing countries complain about is the unstable stock availability of bananas from Indonesia and there are still pesticide

content that exceeds the required pesticide residue threshold. Therefore, technical obstacles must be minimized by implementing the guidelines for cultivation and post-harvest processing of bananas that have been prepared by the Ministry of Agriculture which refers to the ASEAN Good Agricultural Practices (ASEAN-GAP). Thus, it is hoped that smallholders and plantation-scale farmers are able to meet export quality standards. In addition, it requires synergy of related institutions, private sector, research institutes and universities.

Policies that have been implemented at the national level in increasing production are divided into short-term goals (aiming to meet local needs), medium-term goals (aiming to improve quality so that they meet export standards), long-term (increasing export volume).

Through the long-term roadmap for banana development, upstream to downstream integration is needed, as has been implemented in the two banana export centers, namely Lampung Province and Lumajang District.

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<sup>38</sup>Badan Penelitian dan Pengembangan Pertanian Deptan, *Prospek Dan Arah Pengembangan Agribisnis Pisang*, (Jakarta: Deptan, 2005).

In order to encourage the fruit export development program, the Ministry of Trade has followed up through several policies, namely the exemption of the export trade system for agricultural products, promoting promotional strategies carried out in collaboration with Indonesian exporters and local farmer groups to participate in exhibitions/expos. Besides encouraging the dissemination of export market opportunities and market information to each region, the government has also created a one-stop service (Customer Service Center = CSC) at the Directorate General of National Export Development.<sup>39</sup>

### **Conclusion, Recommendation, and Limitations**

The conclusions of this study are:

1. The potential for bananas in Bogor District is high but the utilization is less than optimal.
2. Production and productivity as well as the contribution of bananas from Bogor District to national production tend to be low.

3. The supporting factors for banana development in Bogor District consist of agro-climate suitability; diversity of banana/germplasm species; high demand; huge market prospect.
4. The inhibiting factors for banana development in Bogor District are: conventional cultivation, limited farm-scale land, unstable stock, low price assumptions, and no institution that deals specifically in bananas; no major corporate partnerships yet.
5. Efforts to increase banana production in Bogor District include commercial plantation expansion, budget allocation for banana development

There are two recommendations, namely theoretical and practical recommendations.

1. Theoretical recommendations include: a deeper study/research on the partnership that can be carried out between the Bogor District Government, companies, farmers and traders to determine the level of effectiveness and efficiency of the partnership.
2. Practical recommendations based on the findings of this research are

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<sup>39</sup>DJPEN Kemendag, *Perkembangan Perdagangan Indonesia*, (Jakarta: Ditjen Pengembangan Ekspor Nasional, 2018).

expected to make a real contribution to the development of the banana trading commodity potential.

Practical recommendations include:

- a. Form a roadmap for developing banana potential, especially in Bogor District;
- b. Implement production based on market demand so as to encourage farmers in Bogor to plant banana varieties that follow market tastes;
- c. From a defense perspective, there is an obligation to protect natural resources, especially the diversity of local banana germplasm from Bogor;
- d. Provide assistance from related institutions on an ongoing basis for banana farmers, traders and entrepreneurs in Bogor District;
- e. Socialize and transfer knowledge on the fundamental aspects of export so as to encourage banana farmers and traders in Bogor to take advantage of export market opportunities;
- f. Map the usable land and use idle land in order to expand the plantation-scale production land for banana development;

- g. The Trade and Industry Office as well as Food Crops, Horticulture and Plantation Office must work in synergy and full commitment.

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