

**ANALISIS FAKTOR-FAKTOR YANG MEMPENGARUHI
VOLUME EKSPOR KOPI GAYO (*Purpogegus Coffea sp*) DARI
ACEH TENGAH KE AMERIKA SERIKAT**

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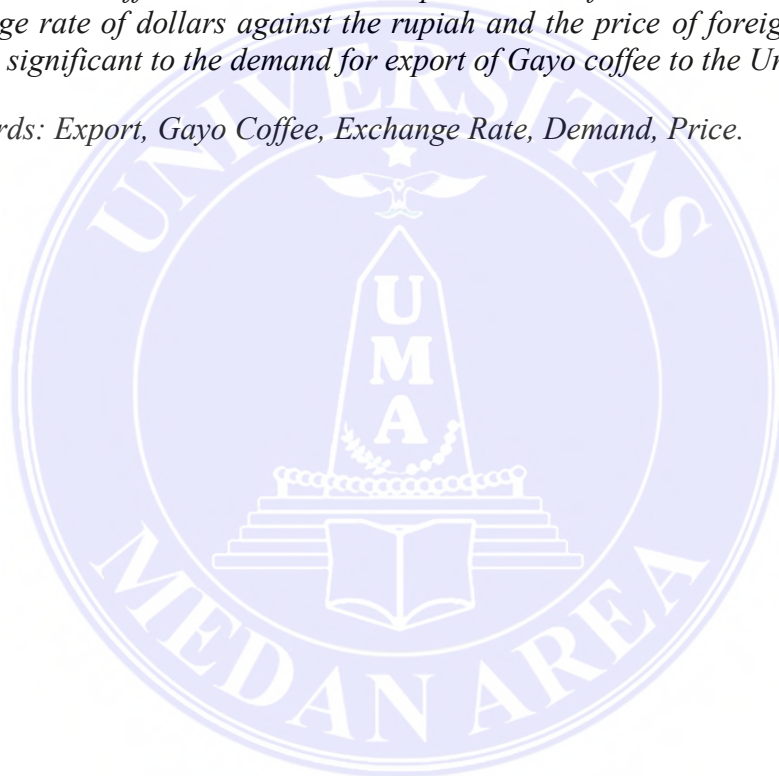
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ABSTRACT

Indonesia is one of the world's best coffee producers, this can be seen from the number of coffee commodity exports from Indonesia. In the past few years, various foreign companies have carried out massive expansion to get Gayo coffee from Central Aceh and Bener Meriah. The purpose of this study is to find out what factors influence the volume of Gayo coffee exports from Central Aceh to the United States. The method of data collection is the documentary method, which collects data that investigates and studies documents according to the variables in the research model in the period 2013-2017. Data collected is secondary data. The analytical method used is multiple linear regression with the Ordinary Least Square (OLS) Method. From the multiple linear regression analysis, it is found that a significant variable on the demand for Gayo coffee exports from the United States is the World Coffee Price. While the production of domestic Gayo coffee, the exchange rate of dollars against the rupiah and the price of foreign Gayo coffee are not significant to the demand for export of Gayo coffee to the United States.

Keywords: Export, Gayo Coffee, Exchange Rate, Demand, Price.



CHAPTER I INTRODUCTION

1.1 Background of Study

Indonesia agricultural sector has an important role in improving the national economy. This has been able to attract many workers, earn foreign exchange, and contribute to national income. Furthermore, the agricultural sector in developing countries such as Indonesia is one of a very important sector in securing national food.

Indonesia agricultural sector plays a strategic role in national economic development and is the mainstay sector of the economic development. As the agricultural sector contributes to Indonesia's Gross Domestic Product (GDP), the agricultural sector is also earning foreign exchange in a relatively large numbers for the Indonesia economic growth. Proven as a reliable sector in the national economy recovery, agricultural sector was able to contribute to the national economy even during the 1997 monetary crisis. Another important role of Indonesia agricultural sector could also be seen from the trade and payment balance, which is the surplus receipt. The surplus is earned through agricultural products exported to foreign countries or international markets and import substitutions.

Indonesia is one of the best coffee-producing agricultural countries in the world, especially the Arabica coffee. This can be seen from the number of exports from Indonesia carried out by coffee commodity exporters. In the last few years, various foreign companies have carried out massive expansion to get Arabica coffee from Central Aceh and Bener Meriah.

Indonesia is one of the developing countries using a small open economy

system, which means there is an international trade and exporting, not as a price maker so it cannot be separated from foreign trade. Countries carrying out foreign trade can increase their income by exporting raw materials, semi-finished goods, as well as finished goods.

The Government of the Republic of Indonesia has established several regulations and policies regarding international trade. These foreign trade policies are drawn up and determined by the Minister of Trade. Export policies are formulated in to improve competitiveness, ensure business certainty and sustainability of domestic industrial raw materials, support the preservation of environmental/natural resources related to Health, Security, Safety, and Environment (HSSE) and international agreements as well. In accordance with regional autonomy, Aceh Province has the authority to regulate and manage the regional government system, however, in terms of foreign trade policies these are still carried out by the central government. This is related to international agreements. The operational scope is national which requires coordination between relevant institution at the national and international levels. The grouping of export goods is regulated in the Decree of the Minister of Industry and Trade Number 558/MPP/Kep/12/1998 dated on December 4, 1998 concerning general provisions in the export sector as amended several times, most recently by Regulation of the Minister of Trade Number 87/M-DAG/PER/10/2015.

In export regulation, it consists of goods whose export is regulated, supervised, prohibited and those which are free to export. Coffee is a commodity which exports are regulated, as stated in the Minister of Trade regulation of the Republic of Indonesia Number 27/M-DAG/PER/7/2008 concerning Provisions for

Coffee Exports.

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Aceh Province is one of the provinces in Indonesia that has potential for its natural resources, both oil and gas resources as well as in agriculture, plantation, forestry, fisheries and marine sectors. Various strategies were carried out by the regional governments of Aceh Provinces to improve regional income from the existing potential through foreign exchange earnings from exporting. Along with the declining of oil and gas exports, the government is trying to increase exports through the non-oil and gas sector. Coffee is one of the export commodities that contributes to the national foreign exchange earnings and is one of the leading commodities in Aceh Province. Currently, Aceh Province is classified as one of the regions that produce Arabica and Robusta coffee in Indonesia. Arabica coffee is a commodity that possesses an important role in the regional economy of Central Aceh Regency as an Arabica coffee producing area. This commodity creates jobs for the people, becomes raw material industry and national foreign exchange provider through exporting.

The plantation sector is a leading sector in Central Aceh Regency which provides the largest contribution to the formation of Gross Regional Domestic Product (GRDP). The leading plantation commodity is coffee. The area of coffee plantations in Central Aceh Regency reaches 48,000 ha of the regency's area, with an average production of coffee (green beans) 25,187 tons/year. The number of Gayo Arabica coffee production for the period 2013-2017 can be seen in table 1.1.

Table 1. 1 Gayo Arabica Coffee Production, Central Aceh Regency 2013-2017

Year	Gayo Arabica Coffee/Ton
2013	253,699,992
2014	25,926,996
2015	268,509,996
2016	16,482,000
2017	29,238,996

Source : Central Aceh Regency Statistics Agency (Processed Data)

For the expansion of coffee plantations, there is still a potential land area of total 58,744 ha in almost all sub-districts, so the total proportion of Central Aceh coffee exports reaches 7% of the total national export volume. However, the profits from the coffee productions and sales have not been directly in favor of the farmers but this commodity is still enjoyed by the traders, due to the limited knowledge and information of the farmers. The Arabica coffee distribution can be seen in table 1.2.

Tabel 1. 2 Area, Arabica Coffee Production and the Number of Smallholder Plantation Farmers in 2016

Regency/City	Total Area (HA)	Production (Tons)	Farmers (Family Cards)
Central Aceh	48,000	16,482	33,474
Bener Meriah	39,679	14,286	27,628
ACEH	87,679	30,768	61,102

Source: Indonesian Plantation Statistics for Coffee Commodities 2014 – 2016

Central Aceh is one of the largest Arabica coffee exporters, especially to the United States which reached 703,200 kilo grams of total exports during January to December 2017, other than United States, Gayo Arabica coffee exports also reached Australia for 57,600 kilo grams, Canada for 268,800 kilo grams, and Germany for 36,000 kilo grams. Export demands for Gayo Arabica coffee is always increasing or even insufficient. Importing countries demand '*specialty*' of grade 1 (one) and grade 2 (two) coffee. The type of coffee exported is in the form of raw beans or often called

green beans, which has criterion if there are defective coffee beans in 300 grams, the value must not more than 11. (KBQ Baburayyan)

Table 1. 3 Export Volume of Gayo Arabica Coffee in Aceh Province in 2013-2017

<u>Year</u>	<u>Export Volumes</u>
2013	1,669,200
2014	2,222,400
2015	1,670,400
2016	1,531,200
2017	1,065,600

Source: Koperasi Baitul Qiradh Baburayyan (Processed Data)

Realizing the importance of coffee exports role for the economic growth of the Central Aceh region, the writer was interested in knowing the problem of Arabica coffee since Arabica coffee is the largest coffee commodity in Central Aceh Regency. The large export volume of Gayo Arabica coffee is a problem that must be analyzed, what was wrong with Gayo Arabica coffee and what factors affected Gayo Arabica coffee exports.

From the descriptions, it showed that the Gayo coffee commodity has many interesting aspects to study, especially related to coffee exports from Central Aceh. This study was scoped on the domestic Gayo coffee production, the real exchange rate, world coffee prices, and how the price of Gayo coffee abroad affected the demand for Gayo coffee exports from Central Aceh.

1.2 Problem of Study

1. What factors affected the export volume of Gayo coffee from Central Aceh to United States?

1.3 Objective of Study

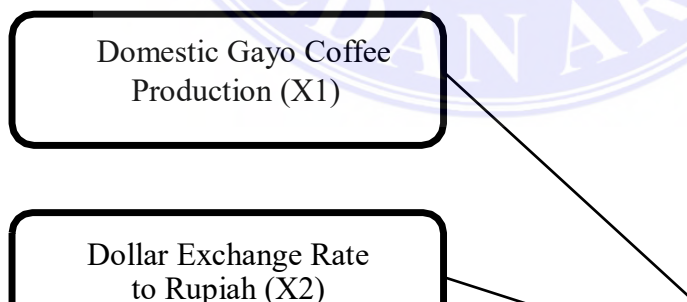
1. To to find out what factors affected the export volume of Gayo coffee from Central Aceh to the United States.

1.4 Significances of Study

1. To provide an overview of the factors that affected the United States' Gayo coffee exports.
2. To be a reference for the other next researchers.

1.5 Framework

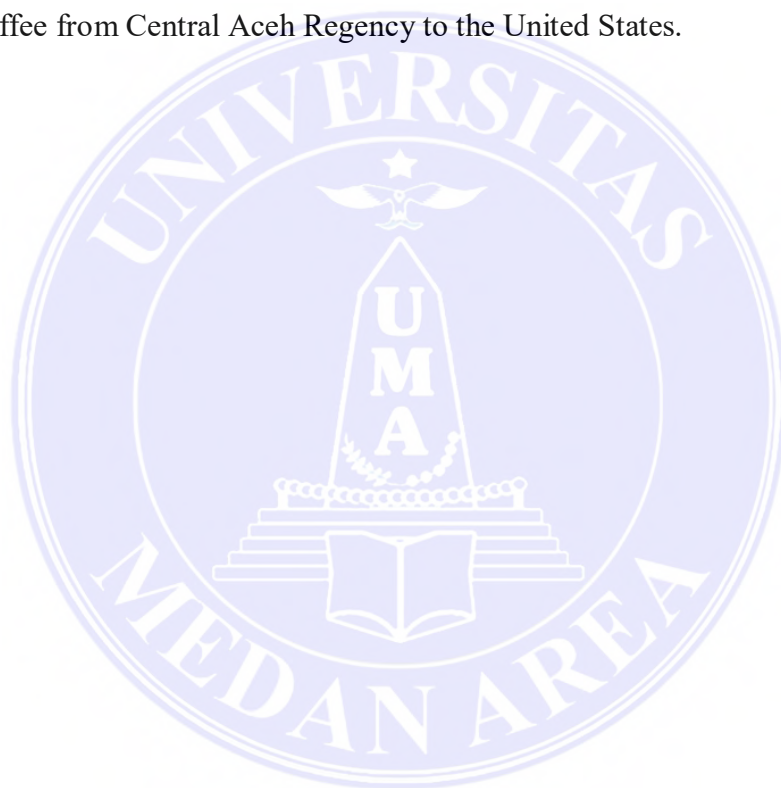
The factors that affect the demand for certain commodities are influenced by the price of the goods, the average income of the consumers, the number of populations, and the prices of other goods related to their uses (Samuelson, 1997). Based on the theoretical basis that has been discussed and the results of the previous researches, there were several variables included in this model: Domestic Arabica Coffee Production, Dollar Exchange Rate to Rupiah, World Coffee Prices and Gayo Coffee Prices Abroad. The difference between this research and previous research is that in this research, there were different commodities, the Gayo Coffee and the variables. Hence, a theoretical framework could be formulated about the factors that affected the Gayo coffee exports as the following:



1.6 Hyphoteses

Based on the background and the scope of the problem as well as the descriptions of previous researches and the theoretical framework, in this study, the following hypotheses could be proposed:

1. Domestic Gayo coffee production has positive effects on the export of Gayo coffee from Central Aceh Regency to the United States.
2. The real exchange rate has negative effects on the export of Gayo coffee from Central Aceh Regency to the United States.
3. World coffee prices have negative effects on Gayo coffee exports from Central Aceh Regency to the United States.
4. The price of Arabica coffee abroad has positive effects on the export of Gayo coffee from Central Aceh Regency to the United States.



CHAPTER II REVIEW OF LITERATURE

2.1 Review of Literature

Writing a review of literature in this study began with an assessment of several theories related to the topics discussed. The theory being studied was the basis for testing its facts. Furthermore, a search was also conducted on any related previous research results, so the writer could find the findings and models used in the researches.

2.2 Coffee Description

Coffee plant is a small tree named *Perpugenus Coffea*, sp in the family of Rubiaceace and the type of *Coffea*. Coffee is not a homogeneous product, there are many varieties and several ways of processing it (Spillane, 1990).

Initially, the type of coffee cultivated in Indonesia was Arabica, and then Liberica and finally Robusta coffee. Arabica coffee is best grown in areas with an altitude of 1,000-2,100 meters above sea level (masl). The higher the location of the coffee plantation, the better the taste of the coffee beans. Due to this reason, coffee plantations are only found in certain areas (areas that have altitude above 1,000 meters above sea level). (Panggabean, 2011).

2.3 International Trade

International trade is a trade carried out by residents of one country with residents of other countries on the basis of mutual agreement. The residents can be between individuals (individuals and individuals), between individuals and the government of a country or the government of a country with the government of another country. International trade is vital since foreign trade will increase the possibility of a country's consumption. Foreign trade allows a country to consume

more goods than those are available across the production possibilities frontier in a state of self-sufficiency without foreign trade (Lindert, 1993).

Exporting is an activity of selling products from one country to another. So basically, the purpose of exports is to earn or obtain foreign exchange in the form of foreign currency which is used to increase GDP (Gross Domestic Product) and economic growth. Exports are goods and services that are sold to residents of other countries along with the services provided to residents of that country by ship lifting, giving capital and other services that can help the exporting (Tan, 2009).

The key to international trade is the theory of comparative advantage. The principle of this theory is that a country can increase its standard of living and real income by specializing in the production of high-productivity commodities. Countries will prioritize to produce the most productive commodities. The principle of comparative advantage shows that specialization will benefit all countries even though there are countries that are absolutely more efficient in producing all goods than the others. If these countries are willing to specialize their products where they have a comparative advantage (or relatively higher efficiency), then trade between countries will benefit all. Therefore, considering the productive conditions in each country are very different, these countries are very aware that it will be more profitable to specialize in a certain type of goods production (Lindert, 1993).

The modern theory related to international trade is known as the Heckscher and Ohlin (H-O) theory. This theory is also known as *factor proportion theory*. The basis for this theory is that international trade, for example, between Indonesia and Japan occurs due to the different *opportunity costs* between these countries. The

difference in alternative costs is due to differences in the number of production factors (eg: labor, capital, land and raw materials owned by the two countries). Indonesia possesses more land and more raw materials and labors (especially the low-educated people) than Japan. On the other hand, Japan has more workers with higher education than Indonesia. Hence, since the endowment factors are different, according to market law, the prices of these production factors are also different between Indonesia and Japan. For instance, there are only two factors of production, labor (L) and capital (C) with the respective prices of w (wage) and r (interest rate). Thus the salary rate in Indonesia is cheaper than in Japan and the interest rate in Indonesia is more costly than in Japan. However, with the difference in the price of these factors, is Indonesia superior to Japan in producing goods? It is not. It depends on the intensity level of the use of labor and capital in producing these goods

The intensity of the use of production factor is the ratio of production factor production to the output. For example, there are only two types of goods, X and Y; X is labor intensive (intensity of use of labor factors is low).

This means that the price of X in Indonesia is lower than Japan and the price of Y in Indonesia is higher. Based on the price ratio of the two goods, Indonesia has an advantage over Japan in making X and Japan is over Indonesia in making Y. Based on this example, it can be concluded that according to the premise of the H-O theory, the structure of a country's foreign trade depends on the endowment factor and the intensity factor determined by technology. So according to the H-O theory, a country will specialize in the production and export of goods which main inputs (production factors) are relatively large in that country and imports of goods which the main inputs are not owned by the country (limited quantities). In

Indonesia, the country will export products that are labor-intensive (but from the

unskilled workers categories) or solid raw materials that are abundant in the country, such as oil, coal and agricultural commodities (Tulus Tambunan, 2001).

The H-O theory uses the assumption of $2 \times 2 \times 2$ in a sense as the following, international trade occurs between two countries, each country produces the same two kinds of goods, each country uses two kinds of production factors, the labor and machinery, but with the same amount/different proportion. The essences of H-O theory are:

- a. The production price/cost of an item will be determined by the number/proportion of production factors owned by each country.
- b. The comparative advantage of a product owned by each country will be determined by the structure and proportion of the production factors it has.
- c. Each country will tend to specialize the production and export of certain goods since it has relatively many production factors and lower cost to produce them and the other way around. (H.Hady,2001).

2.4 The Advantages of International Trade

The advantages that can be taken from international trade or foreign trade are (Deliarnov, 1995):

1. Anything that cannot be produced domestically, can now be used by importing it from other countries. This includes consumer goods (e.g. Indonesia imports TV, cars, airplanes), capital goods (e.g.machinery, equipment, computers), raw materials (e.g. Japan imports oil and iron ore from Indonesia), and so on.
2. Foreign trade allows specialization so the goods can be produced cheaper since they are more suited to the conditions of the country, both the raw materials and production methods. These clearly really support the efficiency

of resource utilization towards a better direction.

3. Countries that carry out foreign trade can produce more than the domestic market needs. Thus, the economy level along with national income can be increased and the unemployment rate can be suppressed. This advantage applies especially to developing countries where by conducting international economic relations, a country can learn more modern technologies, skills and managements, which can then be applied domestically.

Tariffs are taxes imposed on imported goods. The tax can be a specific tax, a fixed tax per unit of advalorem tax, which is a tax that must be paid as a percentage of the price of goods. The purpose of imposing import tariffs is to protect domestic producers from competing with foreign countries and which are a source of trade for the government. The import duty rates tend to increase prices, reduce the amount consumed and imported, and increase domestic production. The government regularly sets import tariffs on foreign products that are also produced domestically. Other than generating tax revenue, tariffs aim to protect domestic producers from competing with foreign products that are also produced domestically (Nopirin, 1999).

In macro-economic analysis and the calculation of national income (with an expenditure approach), government expenses and exports are also expenditures. The government expenses level (G) will affect national production since the government itself is a big consumer. Hence, the government's consumption also covers a large part of national consumption. Exports show effective demand originating from abroad. The greater the export, the more national production is consumed (Sukirno, 2004).

2.5 Demand Function

In economics the demand function is a function that shows the relationship between goods and the number of goods demanded by society, the demand function is written as $P = F(q)$. Where P , the vertical line, is the price (the price of goods), and q , the horizontal line, is the quantity of goods (the number of goods), and F represents the dependence between the price and the number of goods.

2.6 Export Function

Export is an activity of taking goods from the Indonesian customs area to another country's. Generally the export process begins with an offer from a party accompanied by approval from another party through a sales contract process, in this case the Exporter and Importer. The payment process for this shipment can be carried out through the Letter of Credit (L/C) or non-L/C method, each method has its own risks and benefits. (Kemendag.go.id)

2.7 Factors Affected the Demands

There are various factors affected the demand for an item and the following were described theoretically and analyzed in this study. Those are:

a. Domestic Gayo Coffee Production

The relationship between domestic coffee production and Indonesian coffee exports to the United States is that when domestic coffee production increases, Indonesian coffee exports to the United States will also increase. On the other hand, when domestic coffee production has decreased, Indonesian coffee exports

to the United States will also decreased. The more the domestic coffee production produced, the greater the exports that will be carried out. (Ratna Puspita, 2015)

b. World Coffee Price

The price of goods is the main aspect in economic theory discussion and the price formation of an item occurs in the market through a mechanism. In this mechanism, there are two main forces that interact with each other, the supply and the demand for these goods. If at a high level the quantity of goods demanded exceeds the quantity supplied, the price will rise, otherwise if the quantity of goods supplied at that price is greater than the quantity demanded, the price tends to fall. The price shows the rarity of the goods. At the highest price level, consumers tend to replace these goods with other goods that have a close use and are relatively cheaper (Budiono, 2001).

c. US Dollar Exchange Rate to Rupiah

The decline in rupiah value to US dollar will result in an increase in the dollar's ability to buy more coffee produced by Indonesia at the rupiah exchange rate. If the rupiah exchange rate strengthened, it will result in a decreased ability of the dollar to acquire goods with rupiah value. The foreign exchange rate is a very important factor in determining whether goods in other countries are "cheaper" or "more expensive" than domestic goods.

The exchange rate is divided into two types, the nominal exchange rate and the real exchange rate. The nominal exchange rate is the relative price of the two countries' currencies. To understand this, we will consider the exchange rate of the Japanese yen and the United States dollar. If the dollar's value is high, for example, the exchange rate is US dollar = 200 yen, then the goods in the US are

relatively expensive. A dollar worth goods in the United States requires 200 yen if a Japanese wants to import American goods into Japan. On the other hand, if the dollar's value is low, for example one US dollar = 100 yen, then US goods will be relatively cheaper. A dollar worth goods only costs 100 yen to acquire it. The lower the price of American goods, the higher the Japanese demand for it (Sadono Sukirno, 2004).

d. Gayo Coffee Price Abroad

The price of Indonesia Arabica coffee, especially Gayo Arabica Coffee in the New York market shows a movement that tends to increase annually, this is due to the high demand. Even though American countries enforce food safety by setting very strict regulations and requirements as an effort to protect the consumers, Gayo Arabica coffee can permeate the market share in USA. This success was caused by the support of all parties to improve the quality of the Arabica coffee produced. According to the market mechanism, the higher the demand for an item, the higher the price will be. This is in align with the analysis data, where the demand for Arabica coffee increased analyzed through the increase in export volume along with the increase of the price.

Based on this information, it can be concluded that if the exchange rate or foreign exchange rate increases, it means the value of the domestic currency to foreign currency is valued higher lower than before. On the contrary, if the exchange rate or foreign exchange rate falls, it means the domestic currency to foreign currencies is valued lower than before. Thus, if the exchange rate increases, it means the price of imported goods is lower than before, so the quantity of imported goods demanded will increase, *ceteris paribus*. This is in

accordance with the law of demand which states that the number of goods purchased per unit of time becomes large when the *ceteris paribus* price is lower. On the other hand, if the exchange rate falls, it means the price of imported goods is higher than before, so the quantity of imported goods demanded will decrease. This is also in accordance with the law of demand which states that the quantity demanded of a good will decrease if the price, *ceteris paribus*, is higher. While the real exchange rate is the relative price of goods between two countries. The real exchange rate shows the rate at which we can trade the goods of one country for the goods of another country. If the real exchange rate is high, foreign goods are relatively cheaper, and domestic goods are relatively more expensive. If the real exchange rate is low, foreign goods are relatively more expensive and domestic goods are cheaper (N. Gregory Mankew, 2003).

2.8 Previous Researches

In the following, previous researches that are relevant to this research were discussed:

Perseveranda (2005) conducted a research on exports of East Nusa Tenggara coffee from Japan, which analyzed the factors influencing the Japanese demand for coffee in East Nusa Tenggara region in short and long term in 1974-2003. The analytical model used was PAM and ECM. The estimation using ECM showed that in the short term, Japan's per capita income had a significant effect. Meanwhile, in the long term it had no significant effect. The US \$ foreign exchange rate to rupiah in the short term had no significant effect, while in the long term it had a significant effect. The world Robusta coffee price, Arabica coffee price and Japanese coffee consumption had no significant effect in both the short and long term. The estimation using PAM showed that in the short term, the

foreign exchange rate of US \$ to rupiah had a significant effect. The price of world Robusta coffee in the short term had no significant effect, while in the long term it had a significant effect. The world Arabica coffee price, Japan's per capita income and Japanese coffee consumption had no significant effect both in the short and long term.

Research on the demand for Indonesian coffee exports from United States was conducted by Dewi Anggraini (2006) who identified the Factors Affecting the Long-Term Demand for Indonesian Coffee from United States in 1975-2004. The analytical model used was a multiple regression analysis model and the method was Ordinary Least Square method (OLS). The variables that had a significant effect on Indonesian coffee exports volume from USA were the world coffee price variable, the world tea price, the total population of USA and the United States coffee consumption variable one year earlier, meanwhile the variables that had no significant effect on Indonesian coffee exports volume from USA were USA per capita income variable, USA population and the exchange rate of dollar to rupiah, and the world coffee price variable had a significant negative effect on Indonesian coffee exports volume from USA with the elasticity of 0.301047. Meanwhile, the variable of world tea price, and the variable of American coffee consumption and the USA population had a positive effect on Indonesian coffee exports volume from USA with elasticities of 0.5077878; 0.871061 and 2.076102.

Research on the Analysis of Factors Affecting Aceh Arabica Coffee Exports was conducted by Dewi Navulan Sari (2013) who analyzed the Factors Affecting Aceh Arabica Coffee Exports in 2001-2010. The analytical model used was multiple regression analysis. The variables that had a significant effect on Aceh coffee exports were the Arabica coffee production variables, the Indonesian

currency exchange rate to dollar, and the price of Arabica coffee abroad. All independent variables used in the model were able to explain the relation of independent variables with the export volume of Aceh Arabica coffee by 91.07%, while the remaining 8.93% was explained by other factors not included in the model. The dominant variable affecting the export volume of Aceh Arabica coffee was the exchange rate of rupiah to US dollar, this was indicated by the coefficient value in the regression results using shazam (partial standardized coefficient) for this variable which was greater than the coefficient value of the other variables.

Research on the factors affecting Arabica coffee exports in North Sumatra was conducted by Esterina Hia (2013) who analyzed the Factors Affecting North Sumatra Arabica Coffee Exports in 2002-2012. The variables that significantly influenced Arabica coffee exports in North Sumatra were the international price of Arabica coffee, real GDP per capita of the destination country for the Arabica coffee exports (United States), North Sumatra Arabica coffee export price (X1), and real GDP per capita of United States (X2) that had a positive effect on the coffee exports value in North Sumatra and the nominal exchange rate of rupiah to dollar (X3) had a negative effect on the export value of arabica coffee in North Sumatra.

Sinaga (2005) analyzed the Factors Affecting the Export Supply of Sidikalang Coffee in Dairi Regency. This research discussed how much the effect of coffee export price, exchange rates, and total coffee production had on the coffee export volume in Sidikalang, Dairi Regency. The results of the analysis showed that coffee export price and the total coffee production had a positive effect on the export volume of Sidikalang coffee. The exchange rate had a negative (not significant) effect on the export volume of Sidikalang Coffee, Dairi Regency. This was caused by the increase of rupiah's value to US dollar so the demand for the

coffee was decreased.

Edo Soviandre (2014) analyzed the Influential Factors Affecting the Volume of Coffee Exports from Indonesia to United States. The independent variables found in this study were Domestic Coffee Production, International Coffee Price, and the Exchange Rate of Rupiah to US dollar, meanwhile, the dependent variable was the Coffee Exports Volume from Indonesia to United States. The research was a descriptive research with a quantitative approach. The data used in this study was monthly time series data for January 2010-December 2012 with a total of 36 data. This research was conducted using official websites to obtain research data, such as: the Central Statistics Agency, the Indonesia Ministry of Trade, the International Coffee Organization, and Bank Indonesia. The data analysis in this study used multiple linear regression analysis. In the simultaneous test results (f test), the variables of Domestic Coffee Production, International Coffee Price, and the Exchange Rate of Rupiah to US Dollar, the results had a significant effect on the Coffee Exports Volume from Indonesia to United States. On the results of the partial test (t test), the Domestic Coffee Production, and International Coffee Price variables partially had a significant effect on the dependent variable. As in the variable of Rupiah Exchange Rate to US Dollar, it partially had no significant effect on the dependent variable.

Rexsi Nopriyandi (2017) analyzed the Factors Affecting Indonesia Coffee Exports. The data in this study were time series data, obtained from various government agencies. The Error Correction Model (ECM) method was used to analyze the effect of coffee prices, GDP and exchange rates on the Indonesian coffee exports volume. The estimation showed that the coffee price, Indonesia GDP and the exchange rate had a short and a long-term equal relation to the coffee exports

volume. Based on the long-term estimation of coffee price variable, GDP and exchange rates did not really affect the volume of coffee exports, while in the short-term, these three variables greatly affected coffee exports volume.

Ratna puspita (2015) analyzed the Effect of Domestic Cocoa Production, International Cocoa Price, and Exchange Rates on Indonesian Cocoa Exports to United States (Study on Cocoa Exports in 2010-2013). Istis Baroh (2014), This study aimed to analyze the competitiveness of Indonesia coffee in the domestic and international markets, in terms of demand for Indonesian coffee. The data used in this study were time series data with a period of 1990-2011. To analyze the competitiveness of coffee in two different markets, the Revealed Comparative Advantage (RCA) approach was used to analyze competitiveness in the domestic market, while the gton model was used to analyze the competitiveness of Indonesian coffee in the international market based on the RCA index. Based on Armington's model, Indonesian coffee faced different competitors in each export destination country. This implied that Indonesia must cooperate with partner countries as well as neutral countries in order to compete with coffee from other countries.

CHAPTER III RESEARCH METHOD

3.1 Research Place and Time

This research was conducted in May, 2018. This research was conducted using the official websites and the researcher directly took the data to the companies involved in Gayo Arabica Coffee exports to obtain various sources of accurate and supportive data, they were: Central Statistics Agency of Indonesia, Central Aceh Statistics Agency, Central Aceh Forestry and Plantation Service, International Coffee Organization (ICO), Bank Indonesia, Indonesia Coffee Exporters Association (AEKI), and Koperasi Baitul Qiradh Baburayyan. The use of these official websites was because of the validity and their accurate data and had been recognized by the government and international institutions.

Based on data from Aceh Forestry and Plantation Service in (2011), Central Aceh Regency has a coffee plantation area of 48,000m² and a total coffee production of 25,187 tons/year and the volume of coffee exports carried out by KBQ Baburayyan for the last 5 years was 1,065,600 tons. The reason of the research location was Central Aceh is one of the regions that produce Arabica coffee with the best quality and Central Aceh is also number six coffee exporters in Indonesia.

The data from the Coffee Export Approval Letter issued by Central Aceh Government showed the total exports of Gayo Arabica coffee in the first semester of 2014 reached 3,391.2 tons with an export value of US\$ 13.8 million. Interestingly, from 3,391.2 tons of Gayo Arabica coffee exports, it turned out that 3,365.6 tons or 99.2% were exported to United States while the export value of Gayo Arabica coffee to United States reached US\$ 12.9 million.

3.2 Data Type and Source

The data collecting method used in this research was secondary data. The secondary data used was the data recorded systematically in the form of time series data. In this study, the data used were from year 2013-2017 obtained from various sources, which were: the number of exports of Gayo Arabica coffee for a period of 5 years from Gayo Coffee exporters such as, KBQ Baburayyan, the data of the world coffee price were obtained from ICO (International Coffee Organization), areas, production of Arabica coffee, and the number of smallholder plantation farmers in 2016 were obtained from Aceh Province Forestry and Plantation Service. Meanwhile, the data on the exchange rate of US Dollar to Indonesia Rupiah written in Rupiah per Dollar was obtained from Bank Indonesia.

3.3 Data Collecting Method

The data collecting method was conducted using documentary study method, which is to obtain data by investigating and studying documents according to the variables in this research model for the period of 2013-2017. The data were secondary data. Secondary data is data obtained from the results of library research and official publications from various agencies. The data were taken from research journals, literature and library books related to this research as well as publications from Central Statistics Agency.

3.4 Data Analysis Method

This research was focused on obtaining the interrelation between the export demand for Gayo Coffee and the factors of the world coffee price, the exchange rate of US dollar to rupiah, based on economics point of views. The analysis method was multiple linear regression analysis and the method used was OLS

(*Ordinary Least Square*). The OLS method has several advantages, which technically is very easy to draw interpretations and calculations as well as estimation of the BLUE (Best Linear Unbiased Estimator).

The relation of each variable in this study was:

$$I = f(\text{PROD KOPI GAYO DOMESTIK, KURS, HRG KOPI DUNIA, HRG KOPI GAYO DI LN,})$$

where :

I	= Gayo Export Volume to USA (Ton)
PROD KOPI GAYO DOMESTIK	= Domestic Gayo Coffee Production (Ton)
KURS	= Dollar to Rupiah Exchange Rate (\$)
HRGKOPI DUNIA	= World Coffee Price (\$)
HRG KOPI ARABIKA DI LN	= Gayo Coffee Price Abroad (\$)

The equation was used as a multiple regression model so:

$$I = \beta_0 + \beta_1 \text{ PROD KOPI DOMESTIK} + \beta_3 \text{ KURS} + \beta_2 \text{ HRGKOPI DUNIA} + \beta_6 \text{ HRG KOPI GAYO DI LN} + e_i$$

I	= Gayo Export Volume to USA (Ton)
PRODKOPIDOMESTIK	= Domestic Gayo Coffee Production (Ton)
KURS	= Dollar to Rupiah Exchange Rate (\$)
HRGKOPI	= World Coffee Price (\$)
HRG KOPI ARABIKA DI LN	= Gayo Coffee Price Abroad (\$)
β_0	= Intercept
e_i	= Confounding Variable
$\beta_1, \beta_2, \beta_3, \beta_4$	= Parameter

3.5 Classical Assumption Test

The model generated before being used for hypothesis testing was tested to get the "best fit model". The test was conducted using classical assumption test:

3.5.1. Autocorrelation Test

Autocorrelation is the correlation between members of a series of observations ordered by time (such as a time series). To determine the autocorrelation, the Durbin Watson (DW) test was used. The autocorrelation in the regression can be found by using the Durbin-Watson test. The Durbin-Watson test was carried out with the following steps: (Gujarati, 2003):

- a. Complete model regression to get residual value.
- b. Calculate d (Durbin-Watson statistic) with the formula:

$$\frac{\sum(e_n - e_{n-1})^2}{\sum e_n^2}$$

- c. The results of the formula (d value) were then compared with the d value of Durbin-Watson table. The table contains 2 values: the upper limit value (d_u) and the lower limit value (d_l) for various values of n and k. For positive autocorrelation ($0 < \rho < 1$), the null hypothesis (H_0) is accepted, if $d > d_u$, otherwise H_0 is rejected if $d < d_l$. For negative autocorrelation, the null hypothesis (H_0) is accepted if $(4-d) > d_u$, otherwise it is rejected if $(4-d) < d_l$.

3.5.2. Multicollinearity Test

Multicollinearity problems arise when there is a perfect or definite relation between several variables or all independent variables in the model. In serious multicollinearity cases, the regression coefficients no longer show the pure effect of the independent variables in the model. There are several models to detect the multicollinearity. To detect multicollinearity, a test is used on independent variables with measurements of *Varian Inflatio Factor* (VIF) if the VIF value

is below 10 it is said that the equation does not contain multicollinearity (Gujarati, 2003).

3.5.3. Heteroscedasticity Test

In multiple linear regression, one of the assumptions that must be met in order for the estimated parameter in the model to be BLUE (Best, Linear, Unbiased, and Estimator) is that $\text{var}(u_i) = \sigma^2$ has the same variation. In other cases where the u_i variation is not constant, it is a changing variable. To detect heteroscedasticity, some tests can be carried out, for instance, the Glejser test method.

The heteroscedasticity test was carried out with the Glejser test. (Imam Ghozali, 2001) proposed to regress the absolute value of the residual on the independent variable using the following regression equation:

$$U_t = \alpha + \beta X_t + v_i, \dots \dots \dots$$

If β turns out to be statistically significant (important), then the data has heteroscedasticity, and if it is not, it can hold heteroscedasticity assumption.

3.6 Statistical Test

To get the standard value of proportional regression coefficient, each independent variable was tested using statistical tests as the following:

Coefficient of Determination R^2 (*R Square*)

The measurement of model fit is conducted by taking into account the magnitude of the coefficient of determination (R^2). The model is considered good if the R^2 value is close to 1, R^2 also shows the effects of all independent variables on the dependent variables. The value of R^2 will increase with the number of

independent variables, the degrees of freedom will be smaller, therefore R^2 Adjusted is used which has considered the degrees of freedom, in addition, the coefficient of partial determination (R^2) can be found which shows how much the ability of each independent variable affects the dependent variable. The formula for calculating the coefficient of determination:

$$R^2 = (TSS - SSE) / TSS = SSR/TSS$$

Where:

$TSS = Total\ Sum\ of\ Square$

$SSE = Sum\ of\ Square\ Error$

$SSR = Sum\ of\ Square\ due\ to\ Regression$

R^2 Value = $0 < R^2 < 1$, so it can be concluded that:

- If the R^2 value is close to zero, the ability of the independent variables in explaining the dependent variable is very limited.
- If the R^2 value is close to one, the independent variables have almost all the information needed to predict the dependent variable.

3.6.1 F Test

The F test is used to determine whether the variables of domestic Arabica coffee production, the US dollar exchange rate to rupiah, world coffee price, gayo coffee price abroad have effects to the variable of Central Aceh Arabica coffee export volume. The hypothesis used is:

$$H_0 : \beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$$

It means the variables of world coffee price, and the exchange rate of US

dollar to rupiah were not significant for the variable of Central Aceh coffee exports volume.

$$H_a : \beta_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$$

This means the variables of world coffee price, and the exchange rate of US dollar to rupiah are significant for the variable of Gayo Coffee export volume.

While the procedure for accepting or rejecting H_0 is as follows:

- a. If the calculated F value is greater than the F table at the specified significant level, it means H_0 is rejected and H_a is accepted, this means that there is a significant effect.
- b. If the calculated F value is smaller than the F table at the specified significant level, H_0 is not rejected and H_a is rejected, it means there is no significant effect.

3.6.2 T Test

To see whether there is an effect of each independent variable, the t test is carried out. In the t test, a hypothesis was drawn as the following:

$$H_0 : \beta_1 = 0$$

$$H_0 : \beta_2 = 0$$

$$H_0 : \beta_3 = 0$$

$$H_0 : \beta_4 = 0$$

This means that the variables of world coffee price, and the exchange rate of US dollar to rupiah partially had no significant effect on the variable of Central Aceh coffee exports volume.

$$H_a : \beta_1 \neq 0$$

$$H_a : \beta_2 \neq 0$$

$$H_a : \beta_3 \neq 0$$

$$H_a : \beta_4 \neq 0$$

This means that the variables of world coffee price, and the exchange rate of US dollar to rupiah partially had a significant effect on the variable of Central Aceh coffee exports volume.

To test the hypothesis whether H_0 is accepted or rejected, a t test is carried out, with degrees of freedom $(n-k)$.

Where:

n =sample number,

k =variable number.

The indicators for accepting or rejecting H_0 are as follows:

- 1). If the calculated value of t is greater than t table at the specified significant level, H_0 is rejected and H_a is accepted, it means that there is a significant effect.
- 2). If the calculated value of t is smaller than t table at the specified significant level, H_0 is not rejected and H_a is rejected, it means that there is no significant effect.

From the method of testing above and the value of the t table, the effect of each independent variable can be analyzed towards the dependent variables.

3.7 Limitation and Operation Definition

3.7.1. Definition

1. Domestic Gayo Coffee Production

Domestic Gayo Coffee Production is the total production of Gayo Arabica Coffee in ton. The year period used was 2013-2017.

2. World Coffee Price

The real exchange rate is the exchange rate of a country's currency valued in terms of other countries' currencies. In this research, the exchange rate of US dollar to Indonesia Rupiah was stated in units of Rupiah per US Dollar. The year period used was 2013-2017.

3. US Dollar Exchange Rate to Rupiah

The exchange rate of US dollar to rupiah is a comparison of the relative prices of currencies between two countries: dollar and rupiah. The term “exchange rate” between two countries as applied in the foreign exchange market is the exchange rate of this nominal currency. The year period used was 2013-2017.

4. Gayo Coffee Price Abroad (US \$)

The price of Gayo coffee abroad is the price at the export level which was written in a unit of US \$/Kg. The year period used was 2013-2017.

3.7.2 Operational Limitation

1. This research was conducted using the official websites and direct data collection from the exporting company to obtain various sources of accurate and supportive data, which were: Central Statistics Agency of Indonesia,

Koperasi Baitul Qiradh Baburayyan, Central Aceh Statistics Agency, Central Aceh Forestry and Plantation Service, International Coffee Organization (ICO), Bank Indonesia, and Indonesia Coffee Exporters Association (AEKI). The use of these official websites used in this study because of the validity of the accurate data and has been recognized by the government and international institutions.

2. This research was conducted in 2018.



CHAPTER IV OVERVIEW OF THE RESEARCH LOCATION

4.1 Overview of the Research Location

This research was conducted using the official websites and direct data collection from the exporting company to obtain various sources of accurate and supportive data, which were: Central Statistics Agency of Indonesia, Koperasi Baitul Qiradh Baburayyan, Central Aceh Statistics Agency, Central Aceh Forestry and Plantation Service, International Coffee Organization (ICO), Bank Indonesia, and Indonesia Coffee Exporters Association (AEKI). The use of these official websites used in this study because of the validity of the accurate data and has been recognized by the government and international institutions. This research was conducted in June 2018. This research covered the factors influencing the export of Gayo Arabica Coffee from Central Aceh to United States

4.2 Overview of Arabica Coffee

4.2.1 Brief History

Coffee plant is a small tree named *Perpugenus Coffea*, sp in the family of Rubiaceace and the type of *Coffea*. Coffee is not a homogeneous product, there are many varieties and several ways of processing it. There are currently around 4,500 types of coffee worldwide, which can be divided into four major groups, which are: (Spillane,1990)

1. *Coffea Canephora*, which one of the varieties produces Robusta coffee.
2. *Coffea Arabica* produces Arabica coffee.
3. *Coffea Excelsaysing* produces *Excelsa* coffee.
4. *Coffea Liberica* produces *Liberica* coffee.

The coffee plant was assumed to have come from African continent, in Ethiopia country. In the 9th century, a young man named Kaldi accidentally ate

raw seeds he found from a bush. Kaldi felt a tremendous change after eating the seeds and he told the locals and the story spread to various areas. The raw seeds he ate were coffee beans or often abbreviated as "*bean*". Others call it *coffe*, *qawah*, *café*, *mbuni*, *koffie*, *akeita*, *kafe*, *kava*, dan *kafo*.(panggabean, 2011)

In the 10th century, coffee beans were considered as a food by several tribes in Ethiopia. Mostly they cook coffee beans with other foods, such as meat or fish. During the glory of Islamic countries in the 15th century, research on coffee continuously carried out. According to the research, coffee has the potential as medicine and sleepiness suppression. And the traders at that time continuously spread coffee to the East.

4.2.2 Coffee Plant Reached Indonesia

The spread of coffee plants in Indonesia, especially in Java, happened in the 1700s. At the beginning, a Dutch brought Arabica coffee plants to the botanic garden in Amsterdam, Netherland. During the Dutch colonial era in Indonesia, various experiments on planting Arabica coffee were carried out on Java, Sumatra and Sulawesi islands. The first experiment was conducted in Pondok Kopi, Jakarta. When it was going well, coffee plants were planted in West Java (Bogor, Sukabumi, Banten, and East Priangan) through the culture system. (Panggabean, 2011)

4.2.3 Coffee Plant Reached Central Aceh

The presence of Dutch in Gayo in 1904 was immediately followed by the other immigrants. Central Aceh was used as *onder afdeeling nordkus atjeh* with sigli as the capital. On the other hand, the presence of the Dutch had also given a new life by opening plantations with one of them as a coffee plantation in Gayo

(at an altitude of 1,000-1,700 meters above sea level). Before coffee came to Gayo, tea and pepper plants were brought. Unfortunately, these two plants did not receive serious attention from the colonial government. In the end, the Dutch introduced and opened the first coffee plantation with an area of 100 ha in 1918 in Blang Gele. In 1925-1930 the locals opened coffee plantations. This was based on the knowledge the people had who lived near the Dutch plantations. (Wikipedia, sat/11/08/2018, 21:00)

4.3 Production

In 1912, as stated by Haarer, smallholder plantation companies had produced 8 sacks (60 kg a sack) per hectare for 3 years and more than 20 sacks per hectare for more mature trees. Gayo coffee production in 2013 reached 253,699,992 tons and continued to increase until 2014 with 25,926,999 tons, while in 2015, the realization of production reached 268,509,996, in 2016, it reached 16,482,000, and lastly in 2017 it reached 29,238,996 (Refer to Table 1.1). The increase in coffee production happened due to the awareness of farmers who carried out reforestation or rejuvenation of old plants so the production and export volumes could be fulfilled every year. The area of Gayo coffee plantations in Central Aceh and Bener Meriah in 2014-2016 was 87,679 (Refer to Table 1.3). The types of coffee producers in Central Aceh Regency were as follows:

a. Farmers

Coffee cultivation is generally cultivated extensively by the locals and not attended by proper maintenance so the production per hectare is relatively low. The locals' coffee plants are mostly old plants, seedlings they sowed themselves without special knowledge and the coffee beans sown are coming from old stems.

Coffee farmers generally consider coffee as side businesses apart from cultivating

the fields. The locations of the fields were scattered over a wide area of about 87.679 million hectares in 2016 and were cultivated as closed fields. Many are also cultivated as garden plants at home. The production so far is relatively low at around 30.768 million tons/year. As for domestic and foreign marketing, 100% were produced from smallholder plantations so the domestic coffee marketing started from the farmers who produced coffee randomly to the exporters through various distribution channels, such as intermediaries which included middlemen who operated in villages and sub-districts and the merchants who gathered in the cities. Sorting and processing companies sometimes also acted as exporters. As for the chain or distribution channel of the coffee trade on smallholder plantations, it can be referred to Figure 4.1 and Figure 4.2.

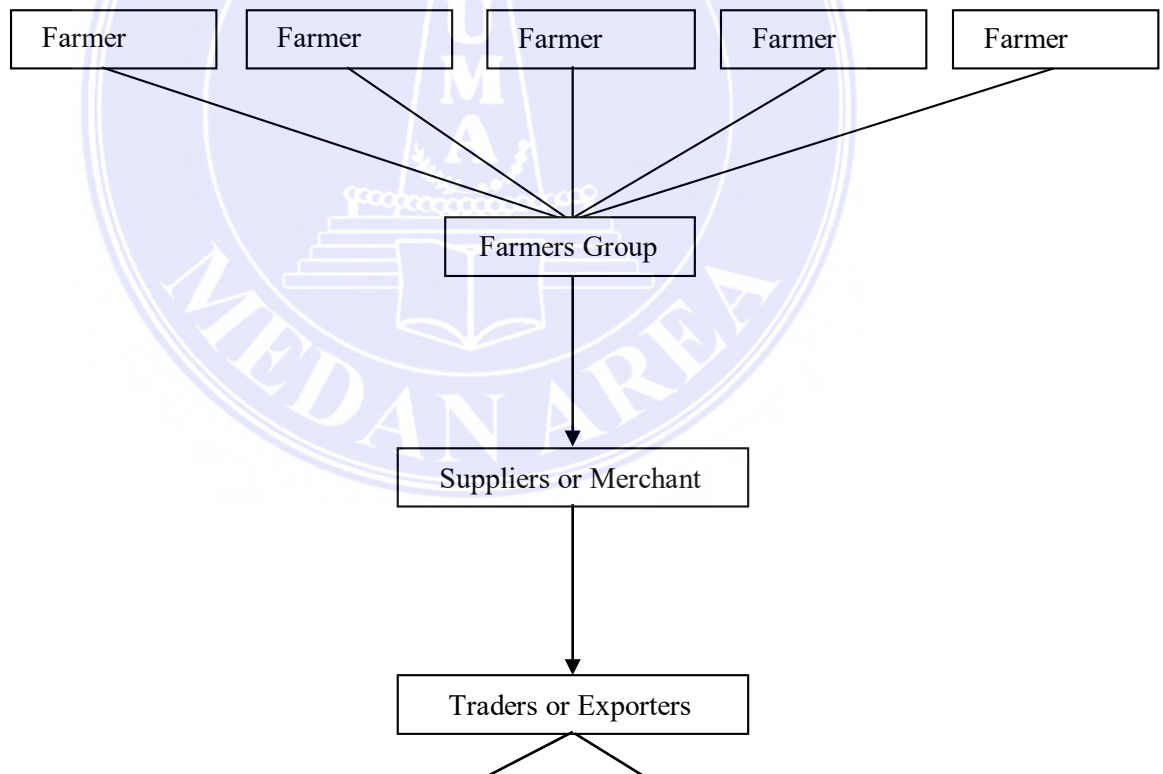


Figure 2.4. Modern Coffee Marketing Outline of Koperasi Baitul Qiradh Baburayyan

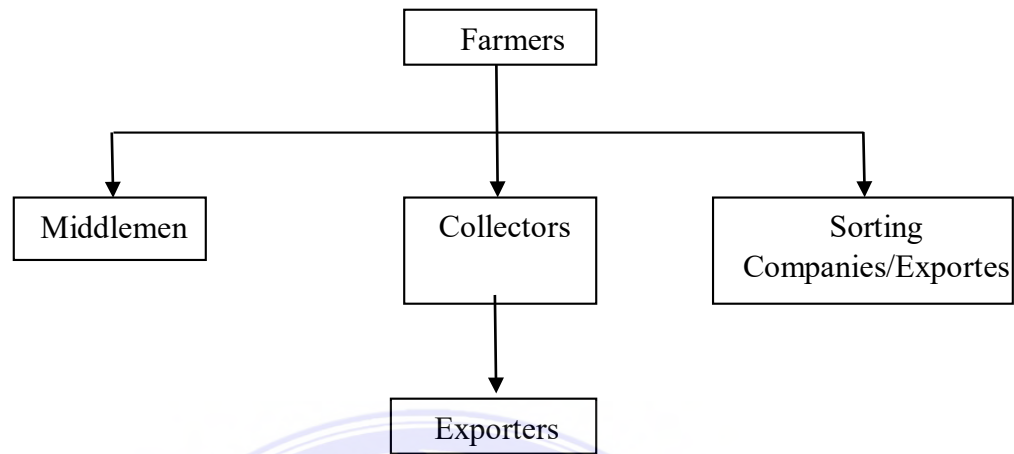


Figure 2.5. Traditional Coffee Marketing Outline

4.4 Population

Based on the 2018 population census, the population of Central Aceh reached 204,273 consisting of 102,882 men and 101,391 women. Takengon is one of the regencies in Aceh Province with an area of 4454.04 km². The people main professions were in agriculture, forestry, fisheries animal husbandry, then followed by trade, restaurants and hotels, and also in the social services, as is in transportation and communication, followed by banks and financial institutions, excavations, electricity, and drinking water.

4.5 Land Cultivation

Most of the land in Central Aceh Regency has been used for agriculture and industry. In addition, other natural resources it had were lake fisheries and forestry which potentially could be developed.

4.6 Potential in Agricultural Sector

The agricultural sector of Central Aceh consisted of various sub-sectors, including the staple crops, secondary crops, plantations and forestries. Central

Aceh Regency is one of coffee plantations centers in Indonesia. The first coffee plantation in Central Aceh Regency was 100 Ha in 1918 in the Belang Gele area, which is currently in Bebesen District, Central Aceh Regency. The most important plantation commodities from Central Aceh were Arabica and Robusta coffee. Gayo Arabica coffee production in Central Aceh Regency in 2017 was 29,238,996 tons with a land area of 87,679 Ha. Central Aceh and Bener Meriah districts were the producers of Gayo coffee. Gayo Arabica coffee even has been very popular among American and European importers.

4.7 Overview of Gayo Coffee

According to Najiyati (2006), coffee is an annual tree plant. In trading, there are several kinds of coffee, but the most commonly cultivated are Arabica, Robusta, and Liberica.

Gayo Arabica coffee is famous for having a distinctive taste with the characteristics of complex aroma and strong viscosity. The difference in taste is due to differences in land, altitude, and temperature. Sometimes Gayo Arabica Coffee shows higher levels of sugar and acidity, which balances the viscosity.

According to Panggabean (2011), the type of coffee that grows in most parts of Sumatra is Arabica. The districts that produce one of the best Arabica coffees in Indonesia are Central Aceh and Bener Meriah which often known as Gayo Coffee. The production of arabica and robusta coffee by sub-districts can be seen in table 4.1 below:

Table 4.1. Robusta and Arabica coffee production by districts in 2017.

No	Districts	Production (Ton)	
		Robusta	Arabica
1	Kebayakan	0.20	1,860
2	Bebesen	-	1,387
3	Pegasing	0.20	2,738
4	Bies	-	598
5	Silih Nara	0.70	2,060
6	Rusip Antara	1.70	1,980
7	Linge	3.00	2,166
8	Jagong Jeget	-	3,378
9	Atu Lintang	-	3,554
10	Bintang	2.00	1,568
11	Ketol	1.00	2,127
12	Kute Panang	-	922
13	Lut Tawar	1.00	1,047
14	Celala	1,00	1,467
	Total	10.8	36,452

Source: Central Aceh Statistic Agency 2017.

Based on table 4.1 above, it can be seen that the production of Arabica coffee is higher than Robusta coffee. Central Aceh Regency is one of the districts that have potential in Arabica Coffee production, especially Gayo Coffee. This can be seen from the high coffee production. Arabica coffee production was higher than Robusta production in Central Aceh Regency. This was due to the selling price of Arabica Coffee which tends to be better than the Robusta Coffee and the domestic as well as foreign consumer demands which tend to choose Arabica Coffee. This has caused the locals cultivated Arabica Coffee than Robusta Coffee.

4.8 Exports

Coffee exports fluctuated both in volume and in foreign exchange earnings, following the development of the international coffee market, which since 1962 has been handled by International Coffee Organization (ICO).

4.9 USA Coffee Demands

United States is an important market for Indonesia coffee. In five years (2013-2017), the demand for Indonesia coffee to United States was the highest compared to other countries. The demand for Indonesian coffee to United States is still relatively high, so it is still a suitable target for Indonesia coffee exports. The increase in US coffee demands reached its highest in 2013-2017, with an amount to 1,670,400 tons, due to the strengthening of US dollar, made it very profitable for US to obtain as much coffee as possible from Indonesia. USA strictly monitored the quality of the coffee entering the country along with its origins. It is implemented by Food and Drug Administration (FDA) which established the regulations and requirements. The FDA basically is responsible for protecting the consumer community from possibilities that can harm and endanger the consumer community health. Indonesia coffee was often detained and the importers were required to do reconditioning or refumigation before being allowed to enter the country. It was very common for coffee beans sold to US by Indonesian exporters got an agreement of *Not Guaranteed to Pass the FDA*. This is a disadvantage to Indonesia coffee and of course this needs to be taken into account in determining the purchase price by buyers, which is actually a national loss. These advantages require real solutions in handling them.

CHAPTER VI CONCLUSIONS AND SUGGESTIONS

6.1. Conclusions

Based on research findings and analysis, the following conclusions were be drawn:

1. Central Aceh is one of the largest exporters of Gayo coffee, especially to the United States, which reached 3.15 million kilo grams of total exports.
2. The domestic Gayo coffee production variable, the dollar exchange rate to rupiah and Gayo Arabica coffee price abroad, were not significant to the demand of Indonesia coffee export to USA. Meanwhile, a significant variable on the demand for Indonesia coffee export to USA was the world coffee price variable.

6.2 Suggestions

1. The government should pay more attention to policies related to the production of Gayo Coffee so the quantity and quality of the coffee could improve. In the future, quality certification for Gayo Coffee is necessary which makes government is very important in providing incentives for farmers to improve the productivity and quality of Gayo Coffee produced in order to increase the export volume of Arabica Coffee which has an effect in increasing the Gayo Coffee price in Central Aceh Regency as well as the export value of Central Aceh Gayo Coffee and being able to compete to a better export market.
2. It is expected that future researchers will be able to conduct further research on the variables that influence the factors affected the export volume of Gayo Coffee to USA.