Problems identification of Arabica coffee commodities on traditional farming in Indonesia: A review

Rico¹, R Darma², D Salman² and Mahyuddin²

¹Agriculture Science Program, Graduate School Hasanuddin University, Makassar, Indonesia
²Department of Socio-Economic, Agriculture Faculty, Hasanuddin University, Makassar, Indonesia

Email: ricosia3@gmail.com

Abstract. Arabica coffee is one of the plantation commodities that has an important role in Indonesia's economic activities. Arabica coffee as one of the leading export commodities that contributes to the country's foreign exchange. However, in reality the rate of growth in the value and volume of imports is greater than the growth of exports. This study aims to identify the problems of traditional Arabica coffee farmers in Indonesia. The results of a journal review show that some of the problems of smallholder farmers in Indonesia are low productivity, low farmer skills and knowledge, inadequate land use and climate, inadequate transportation facilities and infrastructure, coffee farming capital, market uncertainty and unstable selling prices, so that a strategy is needed to reduce and overcome these problems in order to improve the welfare of coffee farmers. The active role of the government is expected to be able to issue consistent policies to increase the competitiveness of Arabica coffee.

1. Introduction

Coffee is one of the commodities from the plantation sub-sector that plays an important role for the national economy, especially as a source of foreign exchange, a provider of employment and as a source of income for farmers and for other economic actors involved in cultivation. Currently, the development of coffee in Indonesia continues to experience significant progress. It is a hope for Indonesia to become the largest coffee producer in the world, as well as Indonesia has a specialty coffee in the eyes of the world [1].

Coffee is an important commodity in Indonesia's economy because of relatively high economic value in the world market. Indonesia is the world's fourth largest coffee exporter with production reaching 660,000 tons [2]. At 2016, Coffee is a commodity that has a trade export value reached US$1.01 billion of total trade value reached US$25.58 billion, which means contributing 3.94% [3]. Export activities backed by Indonesia's coffee production in 2018 reached 722.46 tons [4]. Coffee scattered in various parts of Indonesia, especially Sulawesi, Java, Sumatra, Bali and Nusa Tenggara with about 95% of the total area of a plantation owned by the people [5].
About one century Arabica coffee has grown as a crop of the people. Try first coffee plantations in Central Java (Semarang and Kedu) at the beginning of the 19th century and in Besuki new even in the late 1900s. Nearly two centuries Arabica coffee became the only type of commercial coffee planting in Indonesia. Arabica coffee cultivation is declining because of disease leaf rust (*Hemileia vastatrix*) which belongs to Indonesia since 1876. Arabica coffee could only survive in areas of high (1000 m above) where the attack was not so severe disease [6].

Currently, the development of coffee in Indonesia continues to experience significant progress. This is a hope for Indonesia to become the largest coffee producer in the world. The increasing demand for national and world coffee requires investment in the Indonesian coffee sector. In addition to increasing the quantity of coffee beans, quality is also predicted to increase due to technological innovations. However, Indonesia's coffee production per hectare is still low compared to other major coffee-producing countries. Arabica coffee in Indonesia is mostly classified as specialty coffee, with legendary names such as Mandheling coffee, Gayo Mountain coffee, Toraja coffee and Java coffee. Based on the research results of the Coffee and Cocoa Research Center (PPKKI), Indonesia still has areas/areas that can potentially be developed for Arabica coffee cultivation. In addition, there are still areas of Robusta coffee plantations that are actually suitable for Arabica coffee plants. In early 1993, AEKI had socialized the "arabikanization" program with the ideal ratio between Arabica coffee and Robusta coffee production of 30:70 percent, while the composition of Arabica and Robusta coffee production at that time was around 9:91 percent. At the same time, specialty coffee that already exists in Indonesia and has been known abroad must be maintained and maintained because it is one of the country's invaluable assets [5].

Increased production and productivity can be supported by government intervention in the cultivation of the coffee plant. The government needs to improve aspects of plant management such as ease of seeds, ease of fertilizers and more intensive coaching and counseling. Rejuvenate coffee plants that are no longer productive and less productive. Involve all stakeholders to develop and increase coffee production. Participate in coffee certification programs either run by farmer groups or coffee companies to increase production and ensure price certainty. With improvements in all coffee cultivation and marketing systems, it is hoped that coffee development can become Indonesia's mainstay commodity in the future [1].

2. Analysis

The research data comes from articles recorded in electronic databases, from several journal or article provider sites, such as Google Scholar, Science Direct, Mendeley, Researchgate, and the Google search engine. According to Widiasih, Karningsih and Ciptomulyono (2015) [7], there are many techniques or methods that can be used to carry out problems identification stages, including interviews, brainstorming (depth interviews), questionnaires, assessments based on experience and existing documents, and observations of objects of observation. Problems identification in this study is carried out based on existing documents, or research that has been done before. Furthermore, journals related to the research objectives will be analyzed carefully, in order to obtain information on the problems identification of traditional Arabica Coffee farming. Then the results of the review will be reported with the description analysis method. The research stages will be described in Figure 1 below, to make it easier to collect and present research results.
3. Problems identification of Arabica coffee commodities on traditional farming in Indonesia

3.1. Low productivity
Coffee is one of the commodities from the plantation sub sector plays an important role in the national economy, especially as a source of income, a provider of employment and as a source of income for farmers as well as for other economic actors involved in the cultivation, processing and marketing of coffee, especially in the regions coffee production centers such as South Sumatra, Lampung, North Sumatra and East Java. In general, coffee plantations are not managed well as on large plantations so that various problems arise one of them is a problem of productivity. High productivity will be achieved if all production factors are allocated optimally [8]. According to Siahaan (2008), Arabica coffee industry in terms of competitive advantage is still weak, because this kind of coffee land area is small compared to the type of robusta coffee, making it difficult to increase the amount of production. As a result, the competitiveness of this commodity in the market also becomes weak [9].

3.2. Low farmer skills and knowledge
The capacity of farmers still needs to be improved in seed nurseries. This capability is needed considering that currently the superior seeds to be developed are local seeds which are historical relics when coffee became a superior commodity during the Dutch East Indies colonial period so that its agro-climatic suitability has been tested compared to seeds currently scattered in coffee plantations. It is necessary to increase the capacity for vegetative propagation of seeds. Moreover, so far the seeds used by farmers have decreased in quality from the original seeds. Another capability that needs to be improved to support the development of Buhun coffee seeds is cultivation techniques to replace existing coffee varieties with superior varieties without having to plant from scratch for existing coffee plantations. Cultivation activities that are quite strategic are garden maintenance, especially in new coffee plantations. Cleaning weeds that can inhibit the growth of coffee plants is absolutely done routinely [10]. According to Dinas Pertanian dan Ketahanan Pangan Kabupaten Sumedang (2018), the problem faced by some coffee farmers in Sumedang Regency is the production process at the time of the main harvest. Where today, most farmers still sell to collectors in the form of cherries or logs. Whereas farmers can increase the added value and selling value if the farmers are able to produce grain and green beans (rice) from the coffee
Furthermore, according to Rico et al. (2020), coffee farmers generally sell dried coffee beans to collectors. After that the collecting traders sell to wholesalers, and then wholesalers sell again to industries or exporters in their territory [12].

3.3. Land is not optimal and unfavorable climate
The land used for coffee cultivation has been planted with perennials so that it affects the spacing and the number of coffee tree populations per hectare which is less than ideal. Coffee farming with agroforestry patterns under pine stands with an average land area of 0.9 ha is decreasing return to scale. There are several conditions that cause low productivity due to limited land and agro inputs. The types of trees that exist are mostly pine trees. Coffee can be planted between pine trees, but pine is not an ideal plant to be a coffee cover crop. Secondly, the provision of agro-inputs is still limited, both in the form of agricultural equipment and machinery such as production facilities for soil processing equipment or cultivars, as well as production facilities for high-quality fertilizers and seeds. The characteristics of coffee plants can thrive in dry season conditions. Due to heavy rainfall during 2017, coffee productivity has decreased. When compared to 2016, where the intensity of rainfall was quite small, in July 2016, coffee farmers had entered the harvest period [13].

3.4. Facilities and infrastructure
Limitations of freight transport infrastructure from the garden to the processing. Coffee farmer in general still do not have the equipment and facilities in the form of coffee processing pulper for processing coffee cherries wet skin and Huller for treating the epidermis / outer skin of the coffee. Even if they already have relatively complete equipment, only in a few groups, and there are still many who have pulpers but use their hands manually or are still simple and traditional [10].

3.5. Coffee farming capital
Smallholder coffee farmers do not have sufficient capital to buy fertilizer. Coffee grown plants are not given adequate nutrition, so the less than optimal yields. Can be seen from the coffee beans spindles with large water content, and condition of the coffee beans rice with which one side is in good condition, while the other side has a large water content [10]. In addition the bank credit assistance to help the industry of Arabica for the purchase of agricultural inputs, agricultural equipment and the cost of labor for pruning and resources and science and technology infrastructure is still inadequate. This led to farmers who generally have not been able to produce quality coffee beans as required [9].

3.6. Market uncertainty and unstable selling prices
Coffee farmers currently sell coffee to those who buy coffee at high prices, namely to middlemen. The shape of the coffee beans sold is still in the form of logs. The shape of rice coffee beans actually has a greater selling value, but with the condition of the coffee harvest period for 12 months, having a coffee processing machine that produces coffee beans in the form of rice becomes inefficient, because the machine is only used once a year. In addition, coffee producers are only interested in coffee plantations with high productivity. So the greater the productivity of the coffee plantation is, the greater the selling price. So that coffee plantations that produce coffee once a year, attract less attention from coffee producers on an industrial scale [13]. Arabica coffee farmers in North Toraja Regency have problems with the selling price of coffee in the country. With price fluctuations in the world market that have an impact on national prices, farmers are often forced to sell their coffee below the market price to meet their daily needs [14]. To overcome this problem, cooperatives are needed that will help and improve the bargaining position of farmers and help overcome farmers' problems from upstream to downstream. Other promotional tools that have been taken so far by several coffee entrepreneurs are through coffee festival
facilities, both at the local Sumedang level, West Java Regional, National, and even at the international level. Relevant regional apparatus, such as the Department of Agriculture and Food Security and the Department of Cooperatives, SMEs, Trade and Industry, have facilitated many coffee activists in Sumedang to participate in various events as well as promote coffee from Sumedang, one of which is the East Manglayang KAJP [10].

For policy makers, it is important to know whether the futures market or the cash market dominated pricing arrangements. Agricultural policy makers often focus on the cash market, while many economists argue thus more liquid futures market, can absorb new information more quickly, and thus contribute more to the discovery than the cash market price. It serves as a reminder that both producers and policy makers should pay more attention to the futures market when evaluating and predicting economic results in agriculture. This study provides empirical evidence to the regulator, hedgers and traders futures market dominance on the spot market can be affected by speculation it will interrupt the cash market [15].

Selection depends on the following marketing channels: land area, the amount of production, transportation, facilities, and the ability of farmers. The longer the distribution chain pattern is, the higher the margin between farmers and consumers. Pruning its distribution pattern grows naturally be done by restoring the orderly functioning farmer groups to facilitate activities related to Arabica coffee plantation farm in the district of Semarang. With the return of the function of farmer groups, farmers can receive information about market prices and control of market prices. Farmer groups are expected to improve the structure and way of the market and to manage the marketing network is expected to increase farmers' income. The government must create a purely competitive market system by shortening the chain of distribution patterns, increasing the added value of products, and increasing the bargaining position of farmers [16].

The active role of government is expected to issue a consistent policy to enhance the competitiveness of Arabica coffee, provide interest subsidy to farmers Arabica coffee, reduce taxes and help overcome market strategies as well as set the policy to replace coffee with cash crops such as citrus with understanding and approach to farmers more wise and wise, because the area is a very good potential for the development of the coffee industry [17].

4. Conclusion
The results of a journal review show that some of the problems of small farmers in Indonesia are low productivity, low farmer skills and knowledge, inadequate land use and climate, inadequate transportation facilities and infrastructure, coffee farming capital, market uncertainty and inadequate selling prices. stable, so we need a strategy to reduce and overcome these problems in order to improve the welfare of coffee farmers. The active role of the government is expected to be able to issue consistent policies to increase the competitiveness of Arabica coffee.

References
[1] Wahyudi E, Martini R and Suswatiningsih T E 2018 Perkembangan Perkebunan Kopi di Indonesia J. MASEPI 3
[2] International Coffee Organization 2016 Monthly Coffee Market Report
[3] Pusat Data dan Sistem Informasi Pertanian 2017 Outlook Kopi Komoditas Pertanian Subsektor Perkebunan (Jakarta)
[4] Pusat Data dan Sistem Informasi Pertanian 2019 Outlook Kopi Komoditas Pertanian Subsektor Perkebunan (Jakarta)
[5] Yahmadi M 2007 Rangkaian Perkembangan dan Permasalahan Budidaya dan Pengolahan Kopi di Indonesia (Surabaya: Asosiasi Eksportir Kopi Indonesia, Jawa Timur)
[6] Panggabean I E 2011 Buku pintar kopi (Jakarta: Agromedia Pustaka)
[7] Widiasih W, Karningsih P D and Ciptomulyono U 2015 Identifikasi Risiko pada saat Implementasi Lean Manufacturing dengan Metode Delphi Prosiding Seminar Nasional Manajemen Teknologi XXIII vol 23

[8] Santoso B and Syafa’at N 1999 Analisis Model Ekonomi Kopi di Indonesia Econ. Financ. Indones. 47 59–74

[9] Siahaan J A 2008 Analisis Daya Saing Komoditas Kopi Arabika Indonesia di Pasar Internasional (Institut Pertanian Bogor. Bogor)

[10] Ginanjar Y, Apiatno A and Amanda H 2020 Kinerja Rantai Pasokan Kopi Arabika Java Preanger Di Kabupaten Sumedang Jawa Barat E-Jurnal Manaj. 9 3511–32

[11] Dinas Pertanian dan Ketahanan Pangan Kabupaten Sumedang 2018 Perkembangan Usaha Kopi di Kabupaten Sumedang

[12] Rico, Darma R and Asrul L 2020 Impact of the lowest unit price of arabica coffee on increasing farmers’ income in North Toraja Regency Eurasian J. Biosci. 14 4017–21

[13] Sari P A, Suryana U and Hedismarlina M 2018 Analisis Permasalahan Petani Tanaman Kopi Rakyat Di Pangalengan Dengan Mengadaptasi Theory Of Change Dharma Bhakti Ekuitas 2

[14] Rico, Darma R and Asrul L 2019 Determination of the lowest unit price through the value-added approach for Arabica Coffee Commodities in North Toraja Regency IOP Conference Series: Earth and Environmental Science (2020) vol 473 (IOP Publishing) p 12016

[15] Wulandari A E, Harianto H, Arifin B and Suwarsinah H K 2019 The impact of futures price volatility to spot market: case of coffee in Indonesia J. Organ. dan Manaj. 15 1–15

[16] Abdul H 2016 Analysis of Distribution Chain of Arabica Coffee in Semarang Regency in 2015 Econ. Dev. Anal. J. 5 243–9

[17] Udayana I G B 2015 Model Development Industrial Cluster Coffee Arabica in The District Bangli, Province of Bali Int. J. Adv. Sci. Eng. Inf. Technol. 5 294–7