

Comparative Advantage and Export Performance of Indonesia and Vietnam Coffee to the US Market during 2001-2019

✉¹Dian Galuh Pratita & ²Rahmat Budiarto

¹Department of Agricultural Production, State Polytechnic of Jember, Indonesia

²Department of Agronomy, Universitas Padjadjaran, Indonesia

Received: April 2021; Accepted: October 2021; Published: October 2021

ABSTRACT

Coffee as a strategic commodity in the world opens up opportunities for various producing countries including Indonesia and Vietnam. Both countries have a significant role to supply the US market as the main export destination. This study aims to evaluate comparative advantage and export performance of Indonesian and Vietnamese coffee. Quantitative method has been used by calculating the Revealed Comparative Advantage (RCA), Export Competitiveness Index (ECI), and Export Product Dynamic (EPD) using secondary data from 2001-2019. In term of RCA, both Indonesia and Vietnam have a comparative advantage in US. Indonesia's RCA value was lower than Vietnam's ones, i.e., 5.52 < 8.57. This result was caused by the lower Indonesia's export performance rather than Vietnam's ones. The ECI of both countries were dynamic but tended to decrease in international market. In term of EPD, Indonesia and Vietnam were both in the rising star position that indicated strong capability of both countries in supplying coffee to the US market. Therefore, both countries shared a similar big opportunity to increase their coffee export quantities.

Keywords: Coffee, RCA, EPD, ECI, Export.

INTRODUCTION

Coffee is an economically important commodity worldwide, since the tradition of drinking coffee has been around for many years. In addition to beverage, the coffee is also used for food flavor and pharmaceutical industries recently. Besides being high in demand, coffee is also a strategic commodity in various countries in the world. The Asia region is a home of coffee plantation fields that supplies the world coffee need.

Indonesia has been a coffee producing country for such long period. The abundant coffee production can supply not only domestic but also international market. Indonesian coffee is a strategic commodity with a high competitiveness to supply the international market (Sofyan *et al.*, 2018). Most of plantations in Indonesia are owned

and operated by small holder farmers (96.3%), followed by 1.78% and 1.59% from government and private plantations, respectively. Most of production area is found in South Sumatra (25.59%), followed by Lampung (14.63%), North Sumatra (9.39%), Aceh (9.36%), and East Java (8.54%). Indonesia frequently export coffee to international markets, such as US, Italy, Germany and Japan, during the past 10 years. Three Indonesian coffee types, namely HS: 0901110, HS: 09012120, HS: 09011190 are exported to international market in 2018, with the volume for about 98%, 1.1% and 0.7%, respectively.

Data obtained from international trade center ITC (2021) reported the list of top five exporter countries who supply coffee product (excluding roasted and decaffeinated) to United States of America

✉ Corresponding author :

Email : dian.gp@polije.ac.id

are Brazil, Colombia, Vietnam, Guatemala, and Indonesia. Both Indonesia and Vietnam are two main coffee producing countries in Asia that supply coffee to the international market, especially United States of America (USA) as the main targeted market. Aside USA, Vietnamese coffee is also mainly exported to Germany and Italy (Nguyen, 2020).

During 2001-2019, the mean of annual imported coffee product by USA from Vietnam and Indonesia are 161092 and 70771, respectively (ITC, 2021). The sum of imported coffee product by USA during 2001-2019 from Vietnam and Indonesia are 3 million tons and 1.3 million tons, respectively (ITC, 2021). The graph of annual imported coffee product by USA from both mentioned Asian exporter countries is showed at Figure 1. The highest number of coffee product imported by USA from Vietnam and Indonesia are 250 331 tons at 2016 and 118 434 tons at 2005. In general, coffee product from Vietnam is imported 2x more than Indonesia ones. It is important to measure the level of competitiveness of both Indonesia and Vietnam as the coffee exporter to the US market. Therefore, this

research aims to evaluate comparative advantages and export performances of the Indonesian and Vietnamese coffee. To the US market during 2001 to 2019.

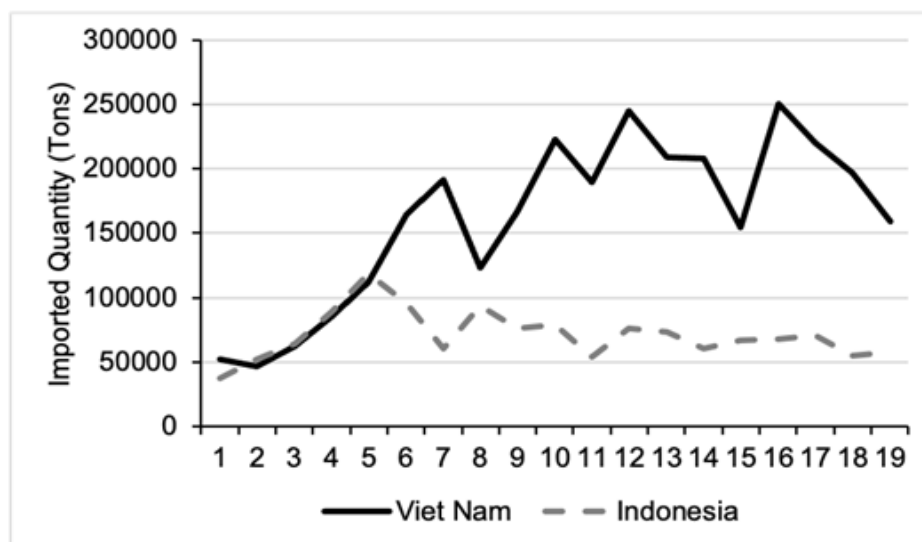
METHODOLOGY

Quantitative method in present study used secondary data originating from the International Trade Center and International Coffee Organization (ITC), United Nations International Trade Statistics Database (UN COMTRADE), and Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) with a period of 19 years, from 2001 to 2019 with a data group with the HS code 090111.

RCA (Revealed Comparative Advantage)

RCA was performed to measure the comparative advantage of not only agricultural products as raw products, but also finished products (Alexander & Nadapdap, 2019; Firmansyah *et al.*, 2017; Hamzah *et al.*, 2020; Rosiana *et al.*, 2018; Wardani & Mulatsih, 2017; Zuhdi & Suharno, 2016).

$$RCA = (X_{ik} / X_i) / (X_{ak} / X_a)$$



Source: International Trade Center/ITC (2021)

Figure 1
The Number of Imported Quantity (Tons) of Coffee Product by United States of America from Vietnam and Indonesia During 2001 to 2019.
Product: 090111 Coffee (Excluding Roasted and Decaffeinated)

Where **RCA** is Revealed Comparative Advantage, X_{ik} is export value of Indonesian/Vietnamese coffee to USA, X_i is export value of total Indonesian/Vietnam export to US, X_{ak} is world export value to US, and X_a is world total export to US. The result is classified into to two categories, i.e., $RCA > 1$ meant it has comparative advantage, while $RCA < 1$ meant no comparative advantage.

ECI (Export Competitiveness Index)

The ECI was used to measure the trend of a product in the target market share and this variable was important to know the long-term export prospects of a product.

$$ECI = (X_{ij}/X_w)_t / (X_{ij}/X_w)_{t-1}$$

Where **ECI** is Export Competitiveness Index, X_{ij} is export value of Indonesian/Vietnamese coffee, X_w is export value of world coffee, t is on going period, and $t-1$ means previous period. The result of $ECI > 1$ implied that the direction of the commodity export trend was experiencing an upward trend, whereas the $ECI < 1$ implied that the trend declined (Alexander & Nadapdap, 2019; Putraet al., 2015).

EPD (Export Product Dynamic)

The EPD was measured to identify the competitiveness of a commodity and also to determine whether a commodity has a dynamic performance or not. This variable showed the market position of a country's commodity for a specific market purpose. The classification of EPD was displayed in Table 1.

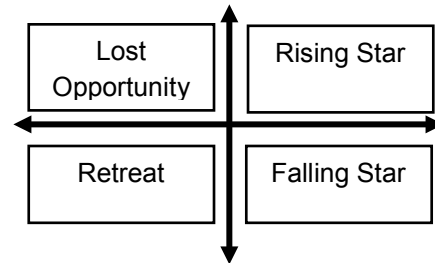
X-axis showed growth in market share of total exports (Indonesia and Vietnam) as follow:

$$\frac{\sum_{t=1}^t (X_{aj}/W_{aj})_t \times 100\% - \sum_{t=1}^t (X_{aj}/W_{aj})_{t-1} \times 100\%}{T}$$

Y-axis showed growth in product market share as follow:

$$\frac{\sum_{t=1}^t (X_{ij}/W_{ij})_t \times 100\% - \sum_{t=1}^t (X_{ij}/W_{ij})_{t-1} \times 100\%}{T}$$

Where X_{aj} is export value of Indonesian/Vietnamese coffee to US, W_{aj} is world export value of coffee to US, X_{ij} is total value of Indonesian/Vietnamese to US, W_{ij} means total world export to US, and T is total year.



Source : Eztherhuizen, (2006)

Figure 2. Export product dynamic quadrant

Market attractiveness was calculated based on the growth of the demand for a commodity for a specific market destination. The result was plotted in four quadrants, i.e rising star, falling star, lost opportunity, and retreat position (Firmansyah et al., 2017), as showed in Figure 2.

**Table 1
Classification of Export Product Dynamic**

Country Export Share in World Trade (X)	Product Share in World Trade (Y)	
	Rising/Dynamic (+)	Falling/Stagnant (-)
Rising/Competitive (+)	Optimal Rising Star	Vulnerable Falling Stars
Falling/Non-Competitive	Weakness Lost Opportunity	Restructuring Retreat

Source: Eztherhuizen, 2006

RESULTS AND DISCUSSION

Both Indonesia and Vietnam predominantly export their robusta coffee to world market (Manalu *et al.*, 2020). Both countries export in form of coffee bean instead of powder with a higher selling price. The exports of Indonesian coffee to the US displayed fluctuated pattern in similar to Vietnamese ones; however, both countries tended to have an increasing trend. In 2017, Vietnam experienced a very sharp decline in exports compared to Indonesia. This condition might be caused by the weather restriction issues over there. FAOSTAT (2020) reported that coffee plantation area in Indonesia was decline more than 4% compared to Vietnam. The decreasing of production area impacted on the growth of Indonesian coffee production for only 30% while Vietnam's growth almost 100%.

RCA (Revealed Comparative Advantage)

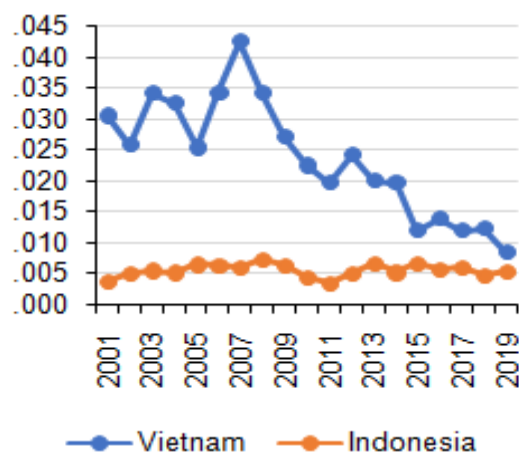
Indonesia and Vietnam showed a relatively difference performance during 2001 to 2019. The RCA of Vietnam was higher than Indonesia, because their export quantity to US was more than Indonesia (Figure 3). Both countries had an $RCA > 1$, thus implied that both countries had a comparative advantage for coffee commodity in the world, specifically US market share.

In more detail, Indonesia's RCA value in 2010 was 4.57 while Vietnam's RCA value has exceeded 22.6. This value is influenced by the high value of Vietnam's coffee exports compared to Indonesia. In 2016, Vietnam's export value reached a the highest record for the period of 2016-2019. However, the export value continued to decline by 36% in 2019. On the other hand, the decline in the value of Indonesian coffee exports in the 2016-2019 period was only around 14%. Although both countries experienced a decline, the decline in Vietnam's RCA value in 2019 was more drastic than Indonesia's RCA value.

The presence of comparative advantage was implied the export competitiveness. In this case, comparative advantage was defined as the capability of certain country to produce coffee at a

lower price compared to other competitors/countries. Rosiana *et al.*, (2018) reported that Indonesian coffee possessed a comparative advantage in their market share. Setiawan and Sugiarti (2016) also reported that Indonesian coffee had a comparative advantage during 1999-2004 in the Malaysia's market. This comparative advantage subsequently affected other production factor (Zuhdi & Suharno, 2016).

However, there was a relatively different RCA fluctuation trend between Indonesia and Vietnam during 2001–2019. Vietnam had a sharp decline in performance over the past 19 years, while the fluctuation of Indonesia seemed to lower. The RCA value for Indonesian coffee experienced a decline only in 2010, in similar to earlier report by Rahardjo *et al.*, (2020). Coffee bean exporting countries, including Indonesia, experienced a decline in their export competitiveness, due to changes in world coffee bean prices (Alexander & Nadapdap, 2019).



Source: Data Processed, 2021

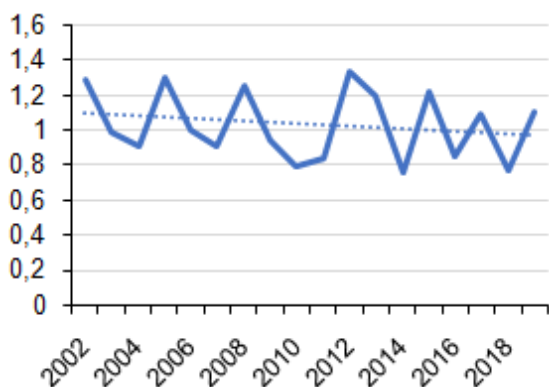
Figure 3
The Revealed Comparative Advantage of Indonesia and Vietnam

In similar to present study, Purnamasari *et al.* (2014) reported that the competitiveness of Indonesian coffee from 1990 to 2011 was categorized as a low level, indicated by a low RCA value, as compared to other competitors. Some cases attributed to the low RCA of Indonesian coffee were (i) the low quality

of exported coffee in form of green bean, defect bean and bean with the higher water content; (ii) limitation of up-to-date knowledge and bargaining position due to small scale holder. Pratita *et al.*, (2018) reported that the farmer knowledge level was affected by personal, technical and managerial competences. Thus, there is a need to formulate follow-up strategies ranging from the production side, supply chain, value chain, trade regulations and other export regulations in order to increase the RCA value (Hamzah *et al.*, 2020).

ECI (Export Competitiveness Index)

The ECI value in present work showed the trend of both Indonesian and Vietnamese coffee export performance to the world market shares. This variable was important to consider by the government and stakeholders during the policy formulation in order to increase the export performance both for Indonesia and Vietnam.

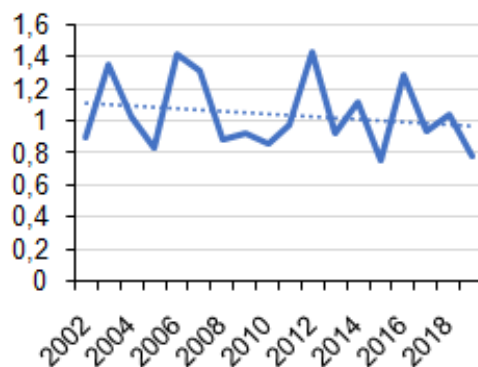


Source: Data Processed, 2021

Figure 4
The Export Competitiveness Index of Indonesian Coffee

The ECI value of Indonesian coffee showed a dynamic pattern, with a high tendency to decline over the past 19 years. The lowest Indonesia’s coffee ECI value was noted in 2014 and 2018 at 0.76 and 0.77, respectively. The low Indonesia’s coffee ECI value might be caused by various factors. Natural resources, human resources, science and technology, capital resources, and infrastructural resources were categorized as internal elements that

could influence the volume of Indonesian coffee exports. Indonesia has a lot of advantages in terms of natural resources, such a high biodiversity and suitable places for coffee plantation. However, Indonesia still faced several problems related to the less farmers’ knowledge (Baso and 2018) that related to the low adoption of technology.



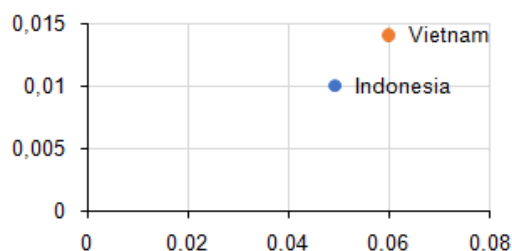
Source: Data Processed, 2021

Figure 5
The Export Competitiveness Index of Vietnamese Coffee

In similar, the ECI value of Vietnamese coffee also sharply fluctuated and seemed to decline over the past 20 years. The lowest ECI value experienced by Vietnam was noticed both in 2015 and 2019 at 0.76 and 0.78, respectively. In perspective of production, productivity, and production area, Vietnam showed no decline over the past 20 years. Thus, the lowering ECI of Vietnamese coffee might be caused by the weakening of domestic exchange rate against USD, and the decline of demand from recipient countries. In addition, the decline of Vietnamese coffee export performance might relate to the presence of certain policies that potentially impede the export to the international market (Nha *et al.*, 2020).

EPD (Export Performance Dynamic)

The EPD value was expected to detect Indonesia’s competitiveness in the international coffee trade. Along with RCA, the EPD reflected the condition of coffee exporting countries competitiveness to the US market share.



Source: Data Processed, 2021

Figure 6
The Export Performance Dynamic of Indonesian and Vietnamese Coffee to the US Market

Table 2
The Revealed Comparative Advantage (RCA) and Export Performance Dynamic (EPD) of Indonesian and Vietnamese Coffee during 2001 - 2019

Country	RCA Index	EPD		Position
		X axis	Y axis	
Indonesia	5.63	0.05	0.01	Rising Star
Vietnam	23.86	0.06	0.01	Rising Star

Source: Data Processed, 2021

The result in Table 2 showed that the EPD value of Indonesia in both the horizontal and vertical axes was placed in the rising star quadrant. This work also resulted that Vietnam also placed in rising star position. Previous study conducted by Zuhdi & Suharno (2016) also reported the similar result.

Since placed into rising star quadrant, the export trade performance of both countries was so dynamic. Based on ITC data at Figure 1, the volume of Indonesian coffee exports to the USA had increased in 2005 by 219% from 2001, but showed a declining trend in the following years. Indonesia's coffee export volume in 2019 decreased by 51% compared to 2005. On the other hand, Vietnam also managed to increase its coffee export volume in 2016 by 379% compared to 2001. Unfortunately, Vietnam's coffee export volume also declined in 2016, namely a decrease of 36% in 2019 compared to 2016.

The fluctuation of coffee volume exports was certainly influenced by domestic coffee production. The higher domestic coffee production supported the increase of export volume and *vice versa*.

In addition to domestic production scale, domestic coffee prices also impacted on the export volume. When the domestic coffee price increased, the export volume tended to decrease, and *vice versa*. This situation was caused by the high tendency of coffee farmer to sell their coffee into domestic market, due to the high demand of domestic market. During the last five years, the consumption of instant coffee has been significantly increased, with an average of 9.66% per year (Kementerian Pertanian 2020). Another factor that influenced the export volume is the demand from importer countries. The abundant of ready-to-export coffee product in domestic level would be meaningless if the volume of demand was reduced (Prajanti *et al.*, 2020). The supply, demand, and price of Indonesian coffee became important factor determining export performance (Sagita 2013). In addition, the increase of coffee prices at international level was also successfully proved to increase the export volume (Desnky *et al.*, 2018; Setiawan & Sugiarti 2016).

The rapid growth of new consumer countries and the decline of importing

demand from any competing countries, especially certain country with limited production due to extreme weather condition opening a larger opportunity for both Indonesia and Vietnam to increase export volume. To increase Indonesia's coffee competitiveness in the USA market, there is a need to have a strength collaboration between farmers to penta-helix subjects, i.e., academicians, business, community, government and media. Academicians play a key role in determining the research, development and social empowerment. Business gave a support in terms of capital and financial skill. Community could allow the transfer of technology and are not apathetic to cooperation. Government produced favorable policies for farmer. Media took an important step in transferring favorable information. Earlier study has been reported that penta-helix collaboration in city-scale level is indispensable in developing the potential of a central coffee production area in order to meet the demand for coffee markets at national and international levels (Virgawati & Murdiyanto 2020).

CONCLUSION

Both Indonesia and Vietnam had a comparative advantage for coffee commodity in the US market share. The RCA of Vietnamese coffee was higher than Indonesian ones; however, Vietnamese coffee also displayed sharper fluctuation and deeper decline over the past 19 years. The ECI value of both countries seemed to decrease during study period, due to the decline of production for Indonesia; the strengthening US currency and the decline of demand for Vietnam case. Both countries placed in the rising star position to supply US market coffee demand. To increase Indonesia's coffee competitiveness, farmers should collaborate with penta-helix subjects. Future research related to the implementation of penta-helix in a broad level is still interesting to study.

REFERENCES

- Alexander, I., & Nadapdap, J. (2019). Analisis Daya Saing Ekspor Biji Kopi Indonesia di Pasar Global Tahun 2002-2017. *Jurnal Sosial Ekonomi Pertanian*, 12(2), 1–16. DOI:10.19184/jsep.v12i2.11271
- Baso, R.L., Anindita, R. (2018). Analysis of Competitiveness Indonesia's Coffee. *Jurnal Ekonomi Pertanian dan Agribisnis*, 2(1), 1-19
- Desnky, R., Syaparuddin, & Aminah, S. (2018). Ekspor kopi Indonesia dan Faktor-faktor yang Mempengaruhinya. *E-Jurnal Perdagangan, Industri dan Moneter*, 6(1), 23–34.
- Eztherhuizen. (2006). *Measures of Competitiveness : A Dynamic Approach to South Africa' S Trade Performance in the 1990s* (Vol. 70). University of Pretoria.
- FAOSTAT Food and Agriculture Organization Corporate Statistical Database. (2021). Crops and Livestock Product Data. Retrieved from <https://fao.org/>
- Firmansyah, Widodo, W., Karsinah, & Oktavilia, S. (2017). Export Performance and Competitiveness of Indonesian Food Commodities. *Journal of Economics and Policy*, 10(2), 289–301.
- Hamzah, Y. I., Ibrahim, J. T., Baroh, I., & Mufriante, F. (2020). Analisis Daya Saing Kopi Indonesia di Pasar Internasional. *Journal of Agricultural Socioeconomics and Business*, 3(1), 17–21.
- ITC International Trade Center. (2021). List of Exporters for the Selected Product: product no. 090111. Retrieved from <https://www.intracen.org/>

- Kementerian Pertanian. 2020. Buku Outlook Komoditas Perkebunan Kopi. <http://203.190.37.34/download/file/564-outlook-kopi-2020>
- Manalu, D. S. T., Harianto, Suharno, & Hartoyo, S. (2020). Permintaan Kopi Biji Indoensia di Pasar Internasional. *Agriekonomika*, 9(1), 114-126.
- Nguyen, D. D. (2020). Determinants of Vietnam's Rice and Coffee Exports: Using Stochastic Frontier Gravity Model. *Journal of Asian Business and Economic Studies*, (October). DOI: 10.1108/JABES-05-2020-0054
- Nha, D. R. H., Hanh, P. tran M., & Oanh, N. T. (2020). Factors affecting Vietnam's coffee exports to the EU market : agravity model approach. *Journal of Business and Management*, 22(5), 45–50. DOI: 10.9790/487X-2205054550
- Prajanti, S. D. W., Pramono, S. E., & Adzim, F. (2020). Factors Influencing Indonesia Coffee Exports Volume. *International Cofferece on Research and Academic Commuity Services*, 390, 41–45.
- Pratita, D. G., Irham, & Mulyo, J. H. (2018). Entrepreneurship Competence Level of Organic Farmers In Yogyakarta Province. *Agro Ekonomi*, 29(2), 231–243.
- Purnamasari, M., Hanani, N., & Huang, W.-C. (2014). The Competitiveness Analysis of Indonesian Coffee Export in the World Market. *AGRISE*, 14(1), 1412–1425.
- Putra, H. T. F., Muhaimin, A. W., & Suhartini. (2015). The Competitiveness Analysis of Indonesia's Tobacco in the International Market. *Habitat*, 26(1), 57–60.
- Rahardjo, B., Akbar, B. M. B., Iskandar, Y., Shalehah, A. . 2020. Analysis and strategy for improving Indonesian coffee competitiveness in the international market. *BISMA (Bisnis dan Manajemen)*, 12(2), 154–167. DOI: 10.26740/bisma.v12n2.p154-167
- Rosiana, N., Nurmalina, R., Winandi, R., & Rifin, A. (2018). Dynamics of Indonesian Robusta Coffee Competition Among Major Competitor Countries. *Journal of Industrial and Beverage Crops*, 5(1), 1–10.
- Sagita, T., & Hidayati, D.R. (2016). Keragaan Kopi Pasar Domestik Indonesia. *Agriekonomika*, 2(1), 49-57.
- Setiawan, A. D., & Sugiarti, T. (2016). Daya Saing dan Faktor Penentu Ekspor Kopi Indonesia ke Malaysia dalam Skema CEPT-AFTA. *Agriekonomika*, 5(2), 212-220.
- Sofyan, M. I., Sebayang, T. E., & Syafni, V. K. (2018). Investigation of Coffee Export Dynamics. *BISMA (Bisnis dan Manajemen)*, 11(1), 67–76.
- Virgawati, S., Murdiyanto, E. (2020). Kolaborasi Pentahelix dalam Mendukung Peningkatan Produksi Kopi Berkualitas di Temanggung. *Prosiding Seminar Nasional Fakultas Pertanian UPN Veteran Yogyakarta 2020*, 334-344
- Wardani, M. A., & Mulatsih, S. (2017). Analisis Daya Saing dan Faktor-faktor yang Memengaruhi Ekspor Ban Indonesia ke Kawasan Amerika Latin. *Jurnal Ekonomidan Kebijakan Pembangunan*, 6(1), 81–100.
- Zuhdi, F., & Suharno. (2016). Analisis Daya Saing Ekspor Kopi Indonesia dan Vietnam di Pasar ASEAN. *Habitat*, 26(3), 152–162.