JAMBURA AGRIBUSINESS JOURNAL

VOLUME 5 ISSUE 1 JULY 2023
E-ISSN: 2685-5771 | **P-ISSN:** 2685-5860
Publisher: Agribusiness Department
Agriculture Faculty State University of Gorontalo
DOI: 10.37046/jaj.v5i1.16964

VALUE-ADDED OF PROCESSED COCOA SEED: A CASE STUDY IN CV. PUTRA MATARAM, POLEWALI MANDAR REGENCY

Muhammad Arifin Fattah [*)1)], Arifin [2)], Mohammad Anwar Sadat [3)], Azisah [4)], Abdul Asis Pata [5)]

[1)] Agribusiness Masters Study Program, Postgraduate Program, University Muhammadiyah of Makassar, Indonesia

[2,3,4,5)] Department of Agribusiness, Faculty of Agriculture, Animal Husbandry and Forestry, Muslim University of Maros, South Sulawesi, Indonesia

[*)] Corresponding Author, E-mail: arifin.maros13@gmail.com

(Received: November 9, 2022 | Accepted: July 29, 2023 | Published: August 14, 2023)

ABSTRACT

The purpose of this study was to analyze the added value of processed cocoa bean products in chocolate bars and powder at CV. Putra Mataram, Poolewali Mandar Regency. This research was conducted at CV. Putra Mataram, Polewali Mandar Regency in July to August 2022. The data collection techniques used in this study were observation, interviews, and documentation. The data analysis method used in this research is descriptive quantitative. The data were analyzed by the Hayami method. The results showed the added value obtained by CV. Putra Mataram from processing cocoa beans into chocolate bars and cocoa powder for one production, which is IDR. 527,640, with details for chocolate bars of IDR. 406,640 and cocoa powder for IDR. 121,000. The added value and benefits obtained by CV. Putra Mataram from the processing of cocoa beans is larger than chocolate bars compared to cocoa powder. Therefore chocolate bars need to be prioritized to produce larger quantities to increase profits.

Keywords: Added Value; Chocolate Bars; Cocoa Beans; Cocoa Powder.

INTRODUCTION

The development of agro-industry is a must to achieve an agricultural-based industrial society, both large-scale agro-industry and small-scale agro-industry such as home agro-industry (Herdiyandi *et al*., 2016). Defines agro-industry in two ways, firstly, agro-industry is an industry with the main raw materials from agricultural products, and secondly, agro-industry is a stage of development as a continuation of agricultural development but before the development stage reaches the stages of industrial development (Melani *et al*., 2021; Suprianto & Sarifudin, 2020). One of the efforts that can be done is the development of agro-industry based on local resources and the farmer's economy. The development of agro-industry is meant in terms of processing that can increase the value of the product (Prabowo *et al*., 2020; Kamisi, 2011).

Agroindustry is an industrial activity that processes agricultural raw materials into other forms that are more attractive and provide added value and can create jobs for the community (Kaleka *et al*., 2022; Rahmawati *et al*., 2021; Menang *et al*., 2021; Maryam *et al*., 2020). Agroindustry is important to do to increase the added value of a commodity, especially when production is abundant with low product prices, and damaged or low-quality products, then this is the right time to process it further and can increase profits, absorb labor, improve the welfare of both processors and farmers (Suliati *et al*., 2021; Halid *et al*., 2021; Aprilliani *et al*., 2019; Haq & Wulandari, 2020;

Lawalata & Imimpi, 2020). The industry has broad linkages, both upstream in the form of increasing farmers' income through more competitive cocoa bean prices and downstream in the form of employment and expansion of the industrial sector and other service sectors (Septiaji *et al*., 2017).

Cocoa is one of Indonesia's export commodities that has strategic potential to build the national economy through the foreign exchange it generates. Indonesia is one of the world's main producers and produces more raw products than processed products. Every year Indonesia exports 53% of its total cocoa production. Meanwhile, the final product of processed chocolate is only 15 thousand tons, and cocoa beans at 27.8 thousand tons. Most of Indonesia's exported cocoa, up to 96%, is still in the form of raw and semi-finished products. Meanwhile, imports are carried out in the form of processed high-grade chocolate. This trend illustrates the condition of the cocoa industry in Indonesia which has not developed well (Prabowo *et al*., 2020).

Agro-industry development in Polewali Mandar Regency is a must, especially in rural areas to lead to an industrial society based on agriculture and plantations and to improve the welfare of rural communities. The nature of agricultural products that are easily damaged, and not durable, should be able to be overcome by the people in Polewali Mandar Regency by processing the agricultural products they produce. The cocoa bean processing industry and the small-scale industry or also called Micro, Small, and Medium Enterprises are the right and potential solutions for Polewali Mandar Regency. In addition to the increasingly open export opportunities, the domestic cocoa bean market is still quite large. The potential market that will absorb the marketing of cocoa beans is the cocoa processing industry in Indonesia (Jayanti *et al*., 2021).

The potential for the development of the downstream cocoa industry is very large if it is seen from the abundance of available raw materials and the opportunity to obtain added value and employment is very large so it must be utilized by cocoa business players in Indonesia (Septiaji *et al*., 2017; Jumrah *et al*., 2018). Value-added describes the rewards for labor, capital, and management (Yudiastuti & Wijaya, 2021; Munawir *et al*., 2018). To increase the added value of cocoa beans, it is necessary to process cocoa beans into semi-finished and finished products. Semi-finished products can be in the form of powder and cocoa paste while the finished products can be in the form of processed products such as ready-to-eat chocolate bars. If cocoa farmers can process cocoa beans into semi-finished products or products that can be directly consumed, it will increase income and improve the welfare of cocoa farmers (Prabowo *et al*., 2020).

Downstream cocoa processing activities into cocoa raw materials that change the shape of the primary product into a new product with higher economic value after going through the production process, will be able to provide added value because costs are incurred resulting in higher new prices and greater profits. In addition, there is a need for better handling of the marketing system for fermented cocoa beans, so that it will make the farmers' position stronger. If the marketing mechanism goes well, then all parties involved will benefit (Septiaji *et al*., 2017). The purpose of this study was to analyze the added value of processed cocoa bean products in chocolate bars and powder at CV. Putra Mataram, District of Poolewali Mandar.

METHOD

This research was conducted at CV. Putra Mataram, which is located in Sidorejo Village, Wonomulyo District, Polewali Mandar Regency. CV. Putra Mataram is the only company that processes cocoa beans into chocolate bars and powder. This research was conducted from July to August 2022. CV. Putra Mataram led by Dheny Frisandy Nur as the Chief Executive Officer, as the object and research sample.

Data collection techniques used in this study were observation, interviews, and documentation. The types of data in this study are qualitative data and quantitative

data. While the data source is anything that provides information about the data based on the source. There are two sources of data, namely primary and secondary data.

The data analysis method used in this research is descriptive quantitative. The data obtained from the field are first grouped, classified, analyzed, and processed using the value-added calculation of the Hayami method. The method of calculating added value according to the Hayami method can be seen in Table 1.

Table 1. Calculation of Value-added Method of Hayami

No.	Variable	Description
I.	**Output, Input, and Price**	
1.	*Output* (kg/process)	(1)
2.	*Input* (kg/process)	(2)
3.	Labor (labor day/Hour)	(3)
4.	Conversion Factor	(4) = (1) / (2)
5.	Labor Coefficient	(5) = (3) / (2)
6.	Output price (IDR/kg)	(6)
7.	Labor Wages (IDR/process)	(7)
II.	**Revenue and Profit**	
8.	Raw Material Price (IDR/kg)	(8)
9.	Contribution of Other Inputs (IDR/kg)	(9)
10.	Output Value (IDR/kg)	(10) = (4) x (6)
11.	a. Added Value (IDR/kg)	(11a) = (10) – (8) – (9)
	b. Value-added Ratio (%)	(11b) = (11a / 10) x 100
12.	a. Labor Income (IDR/kg)	(12a) = (5) x (7)
	b. Labor Department (%)	(12b) = (12a / 11a) x 100
13.	a. Profit (IDR/kg)	(13a) = (11a) – (12a)
	b. Profit rate (%)	(13b) = (13a / 11a) x 100
III.	**Reply to the Owner of the Factors of Production**	
14.	Margin (IDR/kg)	(14) = (10) – (8)
	a. Labor Income (%)	(14a) = (12a / 14) x100
	b. Other Input Donations (%)	(14b) = (9 /14) x100
	c. Entrepreneur's Profit (%)	(14c) = (13a / 14) x100

Source: Hayami Method 1987 in (Jayanti *et al*., 2021)

RESULTS AND DISCUSSION

CV. Putra Mataram is one of the companies or industries engaged in the processing of cocoa beans. This company was established on March 25, 2015. This company has two fostered farmers and partner farmers as the main raw material suppliers, namely wet and dry cocoa beans which will then be processed into chocolate products in the form of chocolate bars and chocolate powder that are ready for consumption. This company uses online and offline marketing. Online marketing can be accessed through the website www.macoa.co.id, and via Instagram with the account name @Macoa.Official. While offline it is marketed in West Sulawesi and South Sulawesi which are scattered in gift shops, hotels, airports, and cafes and you can also directly visit Macoa outlets Polewali Mandar Regency.

Added Value of Processed Cocoa Bean Products

Added value is a change in value that occurs due to the treatment of an input in a production process. The flow of increasing value-added agricultural commodities occurs in every supply chain from upstream to downstream starting from farmers to end consumers. The added value of agricultural commodities can be done by providing quality and sustainable raw materials and involving chain actors. In the process of processing value-added can be identified as the difference between the value of the product and the cost of other input raw materials, excluding labor (Hendriawan *et al*., 2020).

The value-added analysis is carried out to determine the amount of added value obtained from processing raw materials into a product. Processing of agricultural products is intended to increase the income and added value of a product (Fitry *et al*., 2017). The amount of added value depends on the costs incurred including the cost of purchasing raw materials and other input contributions (Salsabilla *et al*., 2019).

CV. Putra Mataram is one of the businesses that run an agro-industry business for processing cocoa beans into chocolate bars and powder. This effort is carried out to realize the added value of cocoa beans, create jobs and generate profits or profits. The amount of added value is the processing process obtained from the production value minus the cost of raw materials and other inputs to the value of the resulting product, excluding labor. The results of the analysis of the added value of processed cocoa bean products into chocolate bars and powder can be seen in Table 2.

Table 2. Added Value of Processed Cocoa Bean Products into Chocolate Bars and Powder CV. Putra Mataram Polewali Mandar Regency

No.	Description	Unit	Value-added	
			Chocolate Bar	Cocoa powder
1.	Input volume (Chocolate Bar and Cocoa Powder)	Kg	30	30
2.	Output/one-time production (Chocolate Bar and Cocoa Powder)	Kg	27.6	24
3.	Labor Input (Person)	labor day	12	12
4.	Conversion Factor		0.92	0.8
5.	Labor coefficient		0.4	0.4
6.	Output Price	IDR	460,000	170,000
7.	Labor wages	IDR	50,000	50,000
8.	Raw material input price	IDR	15,000	15,000
9.	Other input contributions	IDR	1,560	0
10.	Output value (IDR/Kg)	IDR	423,200	136,000
11.	a. Value-added (IDR/Kg)	IDR	406,640	121,000
	b. Value-added ratio (IDR/Kg)	(%)	96.09	88.97
12.	a. Labor income (IDR/hour)	(IDR/hour)	20,000	20,000
	b. Labor share (%)		4.91%	16.52%
13.	a. Profit (IDR/hour)	(%)	386,640	101,000
	b. Profit rate (%)		91.36	74.26
14.	Margin (IDR/Kg)	IDR/Kg	408,200	121,000
	a. Labor income (%)		4.89	19.80
	b. Other input contributions (%)		0,38	0
	c. Company profit (%)		94.71	83.47

Source: Primary data processed, 2022

Table 2 shows that the results of the added value analysis in one production process show that the average use of raw materials in the processing of cocoa beans into chocolate bars and cocoa powder uses 30 kg of raw materials for IDR. 15,000/kg. From the processed raw materials, it produces 27.6 kg of chocolate bars and 24 kg of cocoa powder. The workforce used are 12 people in each production time. The average wage received by these workers is IDR. 50,000 per day and working 8 hours per day. The conversion factor is the division between output and input. The conversion factor value for chocolate bars is 0.92 while cocoa powder is 0.8 obtained from the division between the resulting output of 27.6 kg of chocolate bars and 24 kg of cocoa powder from the input of 30 kg of cocoa beans. The number 0.92 means that every 1 kg of cocoa beans used will produce 0.92 kg of chocolate bar products. Likewise, the number 0.8 means that every 1 kg of cocoa beans used will produce 0.80 kg of cocoa powder products.

The labor coefficient is the quotient between labor and the number of raw materials used in the production process so the more raw materials used, the smaller the coefficient value produced. The use of workers in the agro-industrial to ocoa beans into chocolate bars and powder by CV. Putra Mataram amounted to 12 labor day using 30 kg of raw materials, resulting in a labor coefficient value of 0.40. This value can be interpreted as the amount of labor needed to produce 30 kg of cocoa beans into chocolate bars and powder 0.20 labor day. This study is consist with (Rahmawati *et al*., 2021) which obtained the same coefficient value in the Rengginang Gulung Agroindustry. However, this result differs from that of Prabowo *et al*. (2020), Septiaji *et al*. (2017), and Hariyati *et al.* (2022) who obtained a labor coefficient value of 0.03-3.71 for cocoa powder chocolate paste, and pure cocoa drinks. These results are largely determined by the use of the factor of the number of workers per period compared to raw material inputs.

The value of the contribution of other inputs is obtained from the division between the number of auxiliary materials used in the amount of IDR. 1,560 : 30 kg per one-time production with a total output of IDR. 423,000 + IDR. 136,000 per one-time production. The conversion factor is multiplied by the output price so that the value of the product produced from each kilogram of cocoa beans with a selling price of IDR. 423,000 chocolate bars and IDR. 136,000 cocoa powder. The added value obtained by CV. Putra Mataram for cocoa powder of IDR. 406,640 and cocoa powder for IDR. 121,000. Based on the analysis of the added value obtained from processing cocoa beans in one production of chocolate bars and cocoa powder, if added together, it is IDR. 527,640. The value-added ratio is the ratio between value-added and output. The added value ratio of the two processed cocoa bean products is 96,09% chocolate bars and 88.97% cocoa powder. Thus, the largest added value ratio is obtained by chocolate bars.

Based on the value-added results obtained by CV. Putra Mataram, it is necessary to have policies related to these results, namely the target of economic growth and equal distribution of employment opportunities to be achieved simultaneously. Thus, both CV. Putra Mataram, namely cocoa and powder can be developed together. Agroindustry that produces a high level of profit is suitable for increasing economic growth, while agroindustry that produces a high share of labor is suitable for equal distribution of employment opportunities (Wati *et al*., 2021). If the level of profit obtained is high, then the agro-industry plays a more important role in increasing economic growth. If the ratio of labor benefits to added value is high, then such agro-industry plays a more important role in providing income for its workers, so it plays a greater role in overcoming the problem of unemployment through equal distribution of employment opportunities (Hasanah *et al*., 2015).

CONCLUSION

Based on the results of the study, it can be concluded that the added value obtained by CV. Putra Mataram from processing cocoa beans into chocolate bars and cocoa powder for one production, which is IDR. 527,640, with details for chocolate bars of IDR. 406.640 and cocoa powder for IDR. 121,000. The added value and benefits obtained by CV. Putra Mataram from the processing of cocoa beans is larger than chocolate bars compared to cocoa powder. Therefore chocolate bars need to be prioritized to produce larger quantities to increase profits.

REFERENCES

Aprilliani, A., Bano, M., & Levis, L. R. (2019). Analisis Nilai Tambah Diversifikasi Produk Olahan Jagung (Studi Kasus Pada Industri Rumah Tangga di Kota Kupang). *Buletin Excellentia*, *VIII*(2), 115–123. https://ejurnal.undana.ac.id/index.php/JEXCEL/article/view/1755

Fitry, N., Herdiansah, D., & Hardiyanto, T. (2017). Analisis Nilai Tambah Agroindustri Kecap (Studi Kasus pada Pengusaha Kecap Cap Jago di Desa Cibenda Kecamatan Parigi Kabupaten Pangandaran). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, *3*(3), 352–359. https://jurnal.unigal.ac.id/index.php/agroinfogaluh/article/view/814/716

Halid, R., Saleh, Y., & Bakari, Y. (2021). Analisis Nilai Tambah Kelapa di Desa Rumbia Kecamatan Botumoito Kabupaten Boalemo. *Agrinesia: Jurnal Ilmiah Agribisnis*, *6*(1), 49–57. https://ejurnal.ung.ac.id/index.php/AGR/article/view/13641/4017

Haq, Q. A., & Wulandari, E. (2020). Analisis Nilai Tambah Produk Olahan Kentang (Solanum tuberosum) di Kecamatan Cikajang Kabupaten Garut. *Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis*, *6*(2), 532–541. http://dx.doi.org/10.25157/ma.v6i2.3261

Hariyati, Y., Saputri, W. E., & Hasanah, A. U. (2022). Farmers' contributions in the establishment of value-added from holistic cocoa processing: A case study in Trenggalek Regency, East Java. *IOP Conference Series: Earth and Environmental Science,* 974(1), 1-7. https://doi.org/10.1088/1755-1315/974/1/012128

Hasanah, U., Masyhuri, & Djuwari. (2015). Analisis Nilai Tambah Agroindustri Sale Pisang di Kabupaten Kebumen. *Ilmu Pertanian (Agricultural Science)*, *18*(3), 141–149. https://doi.org/10.22146/ipas.10615

Hendriawan, I., Rochdiani, D., & Setia, B. (2020). Analisis Nilai Tambah Agroindustri Tempe (Rhizopus Oligosporus) (Studi Kasus pada Perusahaan Bapak Maman di Desa Jalatrang Kecamatan Cipaku Kabupaten Ciamis). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, *7*(3), 715–722. https://doi.org/10.25157/jimag.v7i3.4003

Herdiyandi, Rusman, Y., & Yusuf, M. N. (2016). Analisis Nilai Tambah Agroindustri Tepung Tapioka di Desa Negaratengah Kecamatan Cineam Kabupaten Tasikmalaya (Studi Kasus pada Seorang Pengusaha Agroindustri Tepung Tapioka di Desa Negaratengah Kecamatan Cineam Kabupaten Tasikmalaya). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, *2*(2), 81–86. https://doi.org/10.25157/jimag.v2i2.62

Jayanti, R., Irmayani, & Arman. (2021). Analisis Nilai Tambah Agroindustri Cokelat Batangan (Macoa) (Studi Kasus CV. Putra Mataram, KecamatanWonomulyo, Kabupaten Polewali Mandar. *Jurnal Ilmiah Ecosystem*, *21*(1), 32–38. https://doi.org/10.35965/eco.v21i1.698

Jumrah, Iswandi, R. M., & Yunus, L. (2018). Analisis Nilai Tambah Biji Kakao menjadi Produk Coklat Olahan. *Jurnal Ilmiah Membangun Desa Dan Pertanian*, *3*(4), 113–117. http://dx.doi.org/10.33772/jimdp.v3i4.7975

Kaleka, M. U., Budiasa, I. W., & Ustriyana, I. N. G. (2022). Analisis Nilai Tambah dan Finansial Pengolahan Tepung menjadi Pie Kelor Bali. *Jurnal Manajemen Agribisnis*, *10*(1), 490–507. https://doi.org/10.24843/jma.2022.v10.i01.p01

Kamisi, H. L. (2011). Analisis Usaha dan Nilai Tambah Agroindustri Kerupuk Singkong. *Agrikan: Jurnal Ilmiah Agribisnis Dan Perikanan*, *4*(2), 82–87. https://doi.org/10.29239/j.agrikan.4.2.82-87

Lawalata, M., & Imimpi, R. (2020). Analisis Nilai Tambah dan Pemasaran Produk Agroindustri Kelapa (cocos nucifera l .) pada Perusahaan Wootay Coconut. *Agrica (Jurnal Agribisnis Sumatera Utara)*, *13*(1), 66–80. https://doi.org/10.31289/agrica.v13i1.3513.g2554

Maryam, D., Setiawan, I., & Isyanto, A. Y. (2020). Analisis Nilai Tambah Agroindustri Keripik Beledag di Desa Citeureup Kecamatan Kawali Kabupaten Ciamis. *Jurnal*

Ilmiah Mahasiswa Agroinfo Galuh, *7*(3), 789–796. https://jurnal.unigal.ac.id/index.php/agroinfogaluh/article/view/4017/pdf

Melani, C. R., Sjah, T., & Dipokusumo, B. (2021). Analisis Nilai Tambah Berbagai Produk Olahan Industri Rumah Tangga Berbasis Bahan Baku Ubi Kayu di Kecamatan Gerung Kabupaten Lombok Barat. *Agimansion*, *22*(2), 87–98. https://doi.org/10.29303/agrimansion.v22i2

Menang, A. D. S., Waney, N. F. L., & Sondakh, M. F. L. (2021). Nilai Tambah Sabut Kelapa pada Industri Pengolahan PT. Berkat Abadi Korindo Kecamatan Matuari Kota Bitung. *Agri-SosioEkonomi*, *17*(2), 161–266. https://doi.org/10.35791/agrsosek.17.2.2021.33825

Munawir, H., Ciptaningtyas, A., Djunaidi, M., & Setiawan, E. (2018). Analisis Nilai Tambah Produk Olahan Ketela Ungu dan Rantai Pasok Ketela Ungu. *Jurnal Ilmiah Teknik Industri*, *17*(2), 151–157. https://doi.org/10.23917/jiti.v17i2.6875

Prabowo, Y. D., Gandhy, A., & Nurunisa, V. F. (2020). Analisis Nilai Tambah Produk Olahan Kakao pada CV Wahyu Putra Mandiri, Kabupaten Trenggalek, Jawa Timur. *AgriHumanis: Journal of Agriculture and Human Resource Development Studies*, *1*(2), 77–86. https://doi.org/10.46575/agrihumanis.v1i2.66

Rahmawati, S., Rochdiani, D., & Setia, B. (2021). Analisis Nilai Tambah Agroindustri Rengginang Gulung (Studi Kasus pada Agroindustri Rengginang Gulung Ibu Hj Oom Desa Ciganjeng Kecamatan Padaherang Kabupaten Pangandaran). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh*, *8*(3), 874–881. https://jurnal.unigal.ac.id/index.php/agroinfogaluh/article/view/6000/pdf

Salsabilla, S., Haryono, D., & Syarief, Y. A. (2019). Analisis Pendapatan dan Nilai Tambah Agroindustri Keripik Pisang di Desa Sungai Langka Kecamatan Gedong Tataan Kabupaten Pesawaran. *Jurnal Ilmu-Ilmu Agribisnis*, *7*(1), 68–74. https://doi.org/10.23960/jiia.v7i1.68-74

Septiaji, I. D., Cepriadi, & Tety, E. (2017). Analisis Nilai Tambah Agroindustri Produk Hilir Kakao (Studi Kasus Pabrik Mini Chocato Kelurahan Kapalo Koto, Kecamatan Payakumbuh Selatan, Sumatera Barat). *Jurnal Agribisnis*, *19*(2), 72–86. https://doi.org/10.31849/agr.v19i2.775

Suliati, N. K., Haeruddin, & Rasyid, S. A. (2021). Analisis Nilai Tambah Usaha Jagung Bakar serta Kontribusinya terhadap Pendapatan Rumah Tangga di Kota Palu. *Jurnal Kolaboratif Sains*, *04*(06), 287–295. https://doi.org/10.56338/jks.v4i6.1880

Suprianto, & Sarifudin. (2020). Analisis Efisiensi dan Nilai Tambah Produk Agroindustri Olahan Kerupuk Kulit Sapi (Studi Kasus di Seganteng Kota Mataram. *Jurnal Ekonobis*, *6*(2), 114–133. https://doi.org/10.29303/ekonobis.v6i2.51

Wati, R., Darsono, & Antriyadarti, E. (2021). Analisis Profitabilitas dan Nilai Tambah Usaha Industri Pangan Produk Carang Mas Di Kabupaten Magetan. *Jurnal Ilmiah Sosio-Ekonomika Bisnis*, *24*(02), 1–9. https://doi.org/10.22437/jiseb.v24i02.15391

Yudiastuti, S. O. N., & Wijaya, R. (2021). Analisis Nilai Tambah Edamame melalui Penanganan Pasca Panen menggunakan Air Berozon. *Jurnal Ilmiah Inovasi*, *21*(1), 1–6. https://doi.org/10.25047/jii.v21i1.2625