Existing Performance of Cocoa Agroindustry: Learn From Pt. Indonesia Hijau, Polewali Mandar, Indonesia

Muthia Natasya Kautsar[1*], *Muhammad* Arsyad[2,] *A.* Nixia Tenriawaru[2]

[1]Master Program of Agribusiness, Faculty of Agriculture, Hasanuddin University, 90245, Makassar, Indonesia.
[2]Department of Agricultural Socio-economics, Faculty of Agriculture, Hasanuddin University, 90245, Makassar, Indonesia.

Abstract. PT. Indonesia Hijau carries out innovation in the form of a processing business made from fermented cocoa beans. Processing cocoa beans into several types of chocolate products creates added value and also sells buy order chocolate products. This research aims to analyze production performance and marketing mapping of processed chocolate products. The method used in this research is quantitative descriptive analysis. The results of the production performance of PT. Green Indonesia from the productivity aspect is categorized as good (>21,55 kg/HOK) and the capacity aspect is also categorized as good (>0.7). From the aspect of raw material and product quality, PT Indonesia Hijau has SNI, P-IRT, Halal and BPOM status. Apart from that, the flexibility aspect is considered to be good because it meets 3 dimensional measurements and also has a relatively good process speed aspect. However, this research suggests that the use of e-commerce in marketing can be optimized. Apart from that, you need to think about product delivery, which currently still takes a long time (because you have to transit first) in several cities, before arriving at the final destination city by means of the local government making a port of delivery of goods.

1 Introduction.

Cocoa is one of the mainstay commodity plantations whose role is quite important for the national economy, especially as a provider of employment, source of income and foreign exchange [1]. Cocoa is the country's foreign exchange provider and plays a role in encouraging regional development and agro-industry development [2].

*Corresponding author: tasyakautsar561@gmail.com

In 2018 cocoa was recorded as contributing US$ 1.245 billion to Indonesia's foreign exchange [3]. Apart from that, Indonesia is also one of the largest producers of cocoa beans in the world. Indonesia's cocoa bean production level is the highest in Asia and Oceania [4], in 2016 cocoa bean production was 658.4 thousand tonnes, rising to 734.8 thousand tonnes in 2019 or an increase of 11.60%. In 2020 it is estimated that cocoa bean production will increase to 720.66 thousand tonnes or 1.92% [5]. and national cocoa production in 2021 will reach 706.5 thousand tons. This figure decreased 0.97% from the previous year which was 713.4 thousand tons. This is caused by a reduction in the area of plantation land in 2020, down to 1,508,956 ha [6].

One of the cocoa production centers in Indonesia is West Sulawesi. Cocoa is a superior commodity because apart from making a large contribution to the Gross Regional Domestic Product (GRDP), it also acts as a provider of employment opportunities for the majority of the population. The area of cocoa plantations in West Sulawesi reaches 145,787 hectares with a total production of 48,930 tonnes in 2019 [7]. Cocoa production in Polewali Mandar Regency as a mainstay commodity in the plantation sub-sector has the largest production in Bulo District of 4,632.53 thousand tons with a planting area of 5,170.65 thousand Ha, Luyo District of 4,586.35 thousand tons with a planting area of 5,583.15 thousand ha, Matangnga District 3,053.38 thousand tons with 4,284.62 thousand ha, Anreapi District 2,864.95 thousand tons with an area of 4,942.78 thousand ha, Binuang District 2,731,60 thousand tons with an area of 3,363.95 thousand ha, Tubbi Taramanu District 5,558 thousand tons with an area of 6,602.30 thousand ha, Tapango District 4,725 thousand tons with an area of 5,515.53 thousand ha and Binuang District the size of Mapilli 3,454 thousand ha with 4,567.00 tons of planted area [8].

One of the agro-industries developing in West Sulawesi, especially Polewali Mandar, is the agro-industry Pt. Green Indonesia is an agro-industry whose production activities are upstream to downstream from the agricultural process to producing cocoa products such as chocolate powder, chocolate bars, burgers and pasta that meet quality standards. The performance of the cocoa agro-industry of Pt. Green Indonesia uses cocoa beans which are obtained directly from farmers around the company and this agro-industry also has a cocoa plantation. Because this company processes cocoa beans, if there is market demand, this raw material will be stored first in a storage warehouse until this raw material is ready to be processed into chocolate products. It is then used to produce several types of chocolate made from cocoa. This shows that there are efforts to develop added value to cocoa through the creation of derivative products. An increase in added value will be followed by an increase in the income and profits of the agro-industry so that an evaluation of the increase in the performance of the agro-industry is needed [9].

Problems that occur Sometimes farmers sell their cocoa beans to entrepreneurs who provide prices according to their requests. Apart from the price of raw materials, an always available and sufficient supply of raw materials is very necessary in processing cocoa in PT's agro-industry. Green Indonesia. Processing activities are activities to create products. If raw material processing activities are carried out well, it will produce high quality production. This results in production performance becoming a supporting factor in development [10].

And where is PT. Indonesia Hijau is marketed in areas that make requests or buy orders. So it could be said that it is still relatively narrow, because the agro-industry of PT. Green Indonesia is a growing agro-industry, so good marketing is needed so that the products reach consumers. Processing cocoa into several types of chocolate will create added value and increase profits for agro-industry players. Achieving success and progress in the processing agro-industry cannot be separated from its production performance. Therefore, a production performance assessment needs to be carried out to determine the level of success of the agro-industry

To increase the added value of cocoa beans, it is necessary to process cocoa beans into semi-finished products and finished products. Semi-finished products can be in the form of cocoa powder and paste while finished products can be in the form of processed products such as ready-to-consume chocolate bars [12] and produce high-quality chocolate products and their derivatives [13]. This research aims to analyze production performance and marketing mapping of processed chocolate products.

2 Method

This type of research is a qualitative descriptive analysis. This research was carried out by PT. Green Indonesia in Polewali Mandar Regency, West Sulawesi Province. The choice of location took into account that Polewali Mandar was the largest cocoa producer among the 5 regencies in West Sulawesi with total production in 2018 (33,259) and 2019 (33,438). The area of the Polewali Mandar cocoa plantation is also the largest, namely in 2018-2019 (48,930) [7] and also the Agro-industry of PT. Green Indonesia in Polewali Mandar is an agro-industry that carries out production processes from upstream to downstream to produce cocoa products and also collaborates with cocoa farmers in providing raw materials for PT. Green Indonesia. Determination of informants using the method by Purposive Sampling [14]. The informants in this study are the leaders of PT. Green Indonesia.

Collecting primary data obtained directly from the owner of PT. Green Indonesia to obtain data or information needed by using a list of questions (questionnaire) regarding research indicators. According to the indicators, analyzing production performance is seen from the aspects of productivity, capacity, quality, flexibility and process speed [15]. The measurement of single factor productivity is formulated as follows [16].

1. The productivity of agro-industry is calculated from the units produced (output) with the inputs used (labor and machinery) which is formulated as follows:

$$\text{Productivity} = \frac{Output\ (kg)}{Input\ (HOK)} \quad (1)$$

Information Output Units produced (kg), Input Input used, namely labor and machines (HOK).

a. If productivity is ≥ 7.20 kg/HOK, then the agro-industry's performance is good.
b. If the productivity is <7.20 kg/HOK, then the performance of the agroindustry is not good.

2. Design capacity is the theoretical maximum output of the system in a certain period of time under ideal conditions. Effective capacity is the capacity that is estimated to be achieved by a company with current operating limitations [16].
   Capacity is a measure that concerns the ability of the output of a process. Agro-industry capacity is obtained from actual output, namely output in the form of processed cocoa bean products produced and design capacity, namely the maximum capacity to produce cocoa bean products in kg units. Agro-industry capacity can be formulated [17]:

$$\text{Capacity Utilization} = \frac{Actual\ Output}{Desain\ Capacity} \quad (2)$$

   Information Actual output Output produced (kg), Design capacity Max. capacity Producing (kg).
   a. If the capacity is ≥ 0.5 or 50 percent, then the agro-industry is producing well;
   b. If capacity is <0.5 or 50 percent, then the agro-industry is producing poorly.
3. The quality of the process is generally measured by the level of nonconformity of the product produced. The quality of chocolate products can be assessed using parameters that can be seen, for example aroma, taste, odorlessness and good texture.
4. Flexibility, namely measuring how the transformation process becomes better by requiring performance here. There are three dimensions of flexibility. The first form of flexibility indicates how fast the process can go from producing one product or product family to another. Second is the ability to react to changes in volume. The third is the ability of the production process to simultaneously produce more than one product.
5. Process speed is a real comparison through the time taken from the product to go through the process divided by the added value of the time needed to complete the product or service. Where the speed of this process is measured by looking at how long it takes from the process of arrival of cocoa beans to produce processed chocolate products. The fewer days it takes to produce chocolate products, the process speed aspect in the agroindustry can be said to be good.

Marketing mapping analysis is carried out in the form of product market area data to describe the marketing area of processed cocoa beans that are sent to points of sale or markets, so that the flow of goods distributed from producers to wholesalers and retailers in regional and outside markets will be seen. until the goods reach the consumers. Price data on processed cocoa bean product price mapping is used to determine the geographic price structure of processed cocoa beans. Many factors can affect price changes, including raw material prices, weather factors, transportation and so on. Traffic data for processed cocoa bean products is tabulated and analyzed using descriptive analysis methods and then discussed descriptively [18].

3 Results and Discussion

3.1 Production Performance

Measuring production performance has a very strong relevance in realizing the level of effectiveness and efficiency of the company's work as a whole. This can be seen from the efforts of the production process which are always oriented towards fulfilling consumer needs, both in quantity and quality. In addition, the measurement system built also refers to achieving stability and continuity of the operating process so that it will have an impact on improving and improving performance [22].

Agroindustry production performance of PT. Green Indonesia is seen from the aspects of productivity, quality, speed of delivery, flexibility and speed of process. PT. Green Indonesia has 8 workers divided into certain fields. This field is divided into production and packaging processes. PT. Indonesia ferments cocoa beans every day, and the production process is carried out every time there is an order, for the UIH cooperative (For Green Indonesia) 4 times a month while PT. East Indo Fair Trading places orders 6 times a year.

3.1.1 Productivity

Productivity is a measure of converting input from the transformation process into output. The productivity of agro-industry is calculated from the productivity between the units produced (output) and the inputs used (labor and machinery). Every production process of PT. Green Indonesia uses 375 kg of cocoa beans and produces 356 kg of Nib, 250 kg of Paste, 60 kg of Cocoa Butter, 100 kg of Coca Powder. Based on the calculation results, the labor productivity of PT. Green Indonesia can be seen in Table 1.

Table 1. Labor Productivity of PT. Green Indonesia

No.	Activities	Production (kg)	HOK	Productivity (kg/hour)
1	Drying cocoa beans	375	22,86	16,41
2	Sorting	356	5,71	62,30
3	Grinding	250	14,29	17,50
4	Conching	62,5	5,71	10,94
5	Tempering	4,2	7,14	0,59
Average				**21,55**

Table 1 shows that the productivity of PT. Indonesia Hijau > 21,55 kg/HOK shows that the productivity of PT. Green Indonesia has been said to be good because it has exceeded the productivity value standard, which is based on research by Danasari et al (2018),

Agro-industry productivity standards are said to be good if the productivity value is > 7.2 kg/HOK.

Labor productivity is good because PT. Green Indonesia has six processing machines so that the output produced is greater. The capacity of the processing machine

for processing chocolate into paste is 250 kg from the raw material for cocoa beans is 375 kg. This is in line with research [23] on ways that can be done to increase yaki productivity by adopting new technological developments, namely machines that can process cocoa beans into high quality chocolate products and also unique shapes that suit the production capacity of the agroindustry.

3.1.2 Capacity

Capacity is a measure that concerns the ability of the output of a process. Agro-industry capacity is obtained from actual output, namely output in the form of chocolate products produced and design capacity, namely the maximum capacity to produce chocolate products in kg units. Study [16] states that if the capacity is > 0.5 or 50% then the agro-industry has produced well.

Table 2. Capacity of PT. Green Indonesia

No	Material Raw	Output	Output Maks	Capacity
1	pasta	250	375	0,7
2	powder	62,5	250	0,25
3	chocolate bar	4,2	6	0,7
Average				**0,5**

Table 2 shows PT. Indonesia Hijau produces a paste output of 250 kg with a maximum output of 250 kg, for cocoa powder output of 6.2 kg with a maximum output of 187 kg, while the output of chocolate bars is 4.2 kg with a maximum output of 5,5 kg. The average overall capacity for processing chocolate paste, chocolate powder, chocolate bars is 0.7or 70%.

PT capacity value. Green Indonesia has exceeded the standard capacity value of > 0.7 or 70%, so the capacity of PT. Green Indonesia can already be said to be good. This is caused by the use of labor and the use of tools effectively and efficiently according to their capabilities. This is in line with research [24] where the capacity of agro-industry can still be maximized by increasing the supply of raw materials, improving the quality of human resources and using more modern equipment to obtain the desired quality.

3.1.3. Quality

Selection of quality cocoa bean products as a basic component of food and beverage products is very important because it affects product quality. PT. Green Indonesia uses good quality raw materials. The cocoa beans used in the processing process have status (SNI 01-2323-2008) classified as AA cocoa beans max 85. The cocoa beans used have been fermented properly, to maintain the taste of the beans themselves is the main criterion for the chocolate industry The quality of cocoa beans is taste. Chocolate products processed from fermented cocoa beans will have a stronger aroma compared to chocolate products made from non-fermented cocoa beans.

Chocolate products produced by PT. Indonesia Hijau has a strong aroma, a taste of 70% dark chocolate, and a light brown or chocolate color, and does not use artificial coloring or sweeteners, so the quality and safety of the chocolate products it produces remains good. PT. Green Indonesia has received Home Industry Food Production Certification in 2015, namely P-IRT No. 20776020200150-25, as well as the Halal Certificate of the Indonesian Ulema Council (MUI) and BPOM. The quality of PT. Green Indonesia can be said to be good, because it is guaranteed halal and has a permit.

The results of this research are in line with research [23] in the Siregar Tempe Chips agro-industry using good quality soybeans and not mixing other ingredients which could reduce the quality of tempeh chips so that the tempeh chips produced can be well preserved. This agro-industry also has Home Industry Food Production (P-IRT).

3.1.4 Flexibility

Flexibility has 3 dimensions, namely: (1) at PT. Green Indonesia, namely the arrival of raw materials for cocoa beans and processing into chocolate products takes 10 days, this is caused by the procurement of raw materials, sometimes the producer PT. Green Indonesia does not stock. If PT. Green Indonesia has the raw materials for the production process so the time required is 3 x 24 hours. The process of making cocoa beans into processed chocolate products requires time for the beans to ferment for 5 days, then drying the cocoa beans for 5 days, then sorting for 1-2 hours, roasting 2 hours with a temperature of 110o, grading 9-10 hours non-stop spinning in the machine to become a paste, then to become cocoa powder using a machine for 1 hour, as well as to become a chocolate bar it takes 1-2 hours to process using a machine. The width of the production time span is influenced by the number of workers used for the production process, the more workers eat, the shorter the time to produce this chocolate product. (2) the ability of PT. Indonesia is green in volume changes from raw material processing. PT. Indonesia Hijau requires 375 kg of cocoa beans as raw material to produce 250 kg of pasta, which follows the capacity of the processing machine which can only produce as much as 250 kg of pasta. (3) the process of processing cocoa beans at one time can produce several products, namely nib, paste (cocoa liquor), fat (cocoa butter) and cocoa powder (cocoa powder). Based on the three dimensions that have been described, in this research the flexibility aspect of PT. Green Indonesia is considered good enough because it has carried out measurements in these three dimensions.

3.1.5 Processing Speed

PT. Green Indonesia implements the Just In Time (JIT) system. In this system, the company carries out production activities if there is a request by a definite customer order. In the Just In Time system, production employees must be able to operate all machines in production activities. The goal is to optimize efficiency. Using this method, employees do not become experts in a particular field, but can become experts in any field. PT. Indonesia Hijau produces chocolate products in limited quantities, so the Just In Time system in product quality is very important because product quality requires perfection and has no tolerance for defective products. Because PT. Green Indonesia

really maintains the company's reputation, to avoid failed or defective products, the company needs to be highly responsible for quality.

The speed aspect of the production process can be determined based on how long it takes from the process of the arrival of raw cocoa beans to the production of several chocolate products by PT. Green Indonesia. Raw materials (cocoa beans) are obtained from cocoa farmers and collectors. So that the time used to process cocoa beans is 7 days. The process of processing cocoa bean raw materials into primary and semi-finished materials takes 3 x 24 hours, while the process of making chocolate bars and packaging requires 4 x 24 hours. At the processing stage, the workforce already has skills in processing cocoa beans into chocolate products.

The time required is 7 days because it adjusts to the conditions of the workforce who are also Housewives (IRT). The processing of cocoa bean raw materials is carried out by skilled workers, so that there are no obstacles in the speed of the process. PT. Green Indonesia can be said to be good in terms of production process speed, because it adjusts the working hours used in one production process.

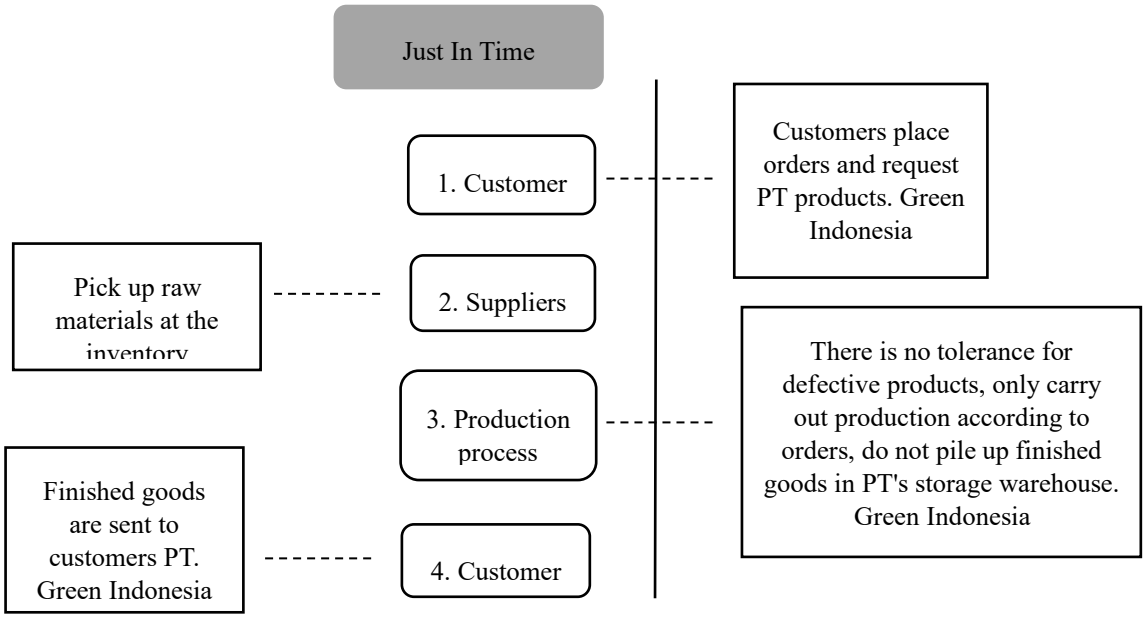

Fig. 1. PT. Just In Time System. Green Indonesia

3.2 Marketing Mapping

In Bonra Village, Mapilli District, Polewali Mandar Regency, there is an agro-industrial industry that manages and produces cocoa beans and produces various types of chocolate of varying quality. The institution whose role is to sell PT. Indonesia Hijau is a UIH cooperative. The main problem in this agro-industry is less than optimal product marketing.

3.2.1 Mapping the quantity of Chocolate Products

Mapping the quantity is a mapping that aims to determine the amount of production produced by PT. Green Indonesia. The following is a mapping of the quantity of PT chocolate products. Green Indonesia. Can be seen in Table 4 below.

Table 3. Quantity mapping of PT Chocolate Products. Green Indonesia in 2022

Name of Agroindustry	Material	Amount of Ingredients (kg)	Production (kg)
PT. Green Indonesia	Cocoa Beans	2.250 kg	1.500 kg

Table 3 shows that the mapping of the quantity of PT. Indonesia Hijau produces 2,250 kg of cocoa 1,500 kg of Pasta, 375 kg of Cocoa Powder, 1,584 kg of Chocolate Bar/pack. Cocoa beans are the main production factor in conducting business in the production of chocolate types. Cocoa beans are used as the main raw material for the chocolate-making process. The more cocoa beans used, the more types of chocolate will be produced.

3.2.2 Mapping the Chocolate Products Market Area

Market area mapping is a mapping description of an item that will be sold to several consumers. Market area mapping includes regional markets and markets outside the region. Regional markets are markets that are around the production area and Polewali Mandar Regency, while markets outside the area are markets that are outside Polewali Mandar Regency.

Chocolate from PT. Green Indonesia is usually marketed directly to consumers by producers. Because sometimes consumers ask PT. Green Indonesia to make several types of chocolate products which will later be used by consumers for resale or used to make other processed chocolate products. Table 5 shows the mapping of the chocolate product market area of PT. Green Indonesia.

Table 4. Mapping of PT Chocolate Product Market Areas. Green Indonesia in 2022-2023

Name of Agroindustry	Market Area	
	Regional Market	**Regional Foreign Market**
PT. Green Indonesia	UIC Cooperative	PT. East Indo Fair Trading (Bali)
	Cafe Chillos	PT. Korte Surabaya
	Café	Modko Batu Malang Company
		Crocoa Lampung Company
		Company From K Japan

Table 4 shows that the market area of PT. Indonesia Hijau markets its chocolate products in regional markets, namely the UIH Cooperative, warkop such as powdered chocolate, chocolate bars while Cafe Chilos buys cocoa powder. For markets outside the

region such as PT. East Indo Fair Trading buys chocolate paste products, while PT. Korte Surabaya, Modko Batu Malang Company, Crocoa Lampung company buy cocoa beans. Meanwhile, companies from K Japan buy cocoa beans. Marketing process of PT chocolate products. Green Indonesia by buying directly at the place or placing an order via a cell phone.

3.2.3 Price mapping of chocolate products

Price mapping is the selling price of chocolate products from PT. Green Indonesia is outlined on a map to determine its geographic price structure. The price of chocolate products is determined by PT. Green Indonesia itself. Following are the prices for PT chocolate products. Green Indonesia Bonro Village, Kec. Mapilli, Polewali Mandar Regency. Can be seen in Table 5.

Table 5. Price Mapping of Chocolate Products PT. Green Indonesia

No.	Product name	Size	Selling Price IDR/Kg	Number of Products
1.	Cocoa beans	1 kg	Rp 58.000 – Rp 60.000	668 kg
2.	Nib's	1 kg	Rp 102.000	1.575 kg
3.	Pasta	1 kg	Rp 230.000	1.500 kg
4.	Chocolate Powder	1 kg	Rp 150.000	375 kg
5.	Chocolate Bars	30 g	Rp 17.000	1.584/ Wrap

Table 5 shows the prices of PT chocolate products. Green Indonesia which has the highest price is pasta products with a price of Rp. 230,000/Kg. Because pasta is produced over a long period of time compared to other products. Each cocoa bean, nib's, paste, chocolate powder is sold in 1 kg size, while chocolate bars are sold in 30 gr size.

3.2.4 Chocolate Product Traffic Mapping

Traffic mapping is delivery mapping. The vehicles used to transport chocolate products use two-wheeled vehicles, four-wheeled vehicles and water vessels. Because many goods will be distributed to wholesalers both inside and outside the region. The following is a traffic map of PT chocolate products Green Indonesia Table 6.

Table 6. PT. Chocolate Product Traffic Map. Green Indonesia

No.	Vehicle	Regional Market	Regional Foreign Market
1.	MA	UIC Cooperative	
2.	SM	Cafe Chillos	
		Café	
3.	MA, KA		PT. East Indo Fair Trading

No.	Vehicle	Regional Market	Regional Foreign Market
4.	MA, KA		PT. Surabaya Korte
5.	MA, KA		Malang Batu Modko Company
	MA, KA		Lampung Crocoa
6.	MA, KA		Company From K Japan

Information MA Four-wheeled vehicles, SM Motorcycles, KA Water Vessel.

Table 6 shows that the means of transportation used to deliver products to several consumer locations, for regional markets using MA and SM. Meanwhile, foreign markets use MA and KA because the products sent have a large capacity. The delivery time for chocolate products is usually in the morning. Chocolate products are treated in shipping to the consumer market using packaging and then putting them in styrofoam. It takes quite a long time because Polewali Mandar Regency does not have a port, so the product to be sent must go through the port in Makassar City. The condition of the road terrain influences the marketing process, where the road terrain is good, the chocolate sold by PT. Green Indonesia will arrive on time at its destination, so transportation is the main factor used to sell local chocolate production, outside the region for industrial needs. This research is in line with [24] traffic maps used to distribute galangal crops in Muktijaya Village using different means of transportation to get to their destinations or markets, including using motorcycles, pick-up cars, and trucks.

4 Conclusion

PT. Indonesia Hijau innovates the processing of fermented cocoa beans into several types of chocolate products to create added value. Marketing of chocolate products is still carried out according to demand or purchase orders. This study aims to analyze production performance, find out the marketing mapping of processed chocolate products, and analyze the added value of processed chocolate products. This research was conducted at PT. Indonesia Hijau in Polewali Mandar Regency, West Sulawesi Province. The method used in this study is quantitative descriptive analysis. Production performance targets, marketing mapping, and added value are the main discussions in this study. The results show good productivity and capacity, as well as good quality and flexibility. The company implements a Just In Time (JIT) system for processing efficiency. Marketing mapping includes the total quantity of cocoa bean production, processed into various forms of products, and market areas. Price mapping includes cocoa beans Rp. 60,000/kg, chocolate paste Rp. 230,000/kg, cocoa powder Rp. 160,000/kg, and chocolate bars Rp. 17,000/pack. In traffic mapping, regional market transportation means using cars (MA) and motorcycles (SM). While foreign markets use cars (MA) and water boats (KA).

References

1. S. Sumiati, M. Arsyad, and P. Diansari. The Role of Key Farmers (Cocoa Doctors) in the Adoption of Certified Cocoa Farmer Production Improvement Packages.

Journal of Agricultural Socioeconomics, **14**, 1 (2018)
2. S. Bulkis, I. M. Fahmid, H. Hidayah, M. Arsyad, A. Amiruddin, R. Khaerati, F. C. Situmorang, and A. Amrullah. *Competitiveness analysis of cocoa commodities in South Sulawesi*. IOP Conference Series: Earth and Environmental Science, **343**, 1 (2019)
3. ITC. List of importing markets for a product exported by Indonesia Product: 18 Cocoa and cocoa preparations (2019)
4. ICCO. ICCO Quarterly Bulletin of Cocoa Statistics, **XLV,** 1**,** Cocoa year (2018).
5. BPS. Indonesian Cocoa Statistics 2020 (H. and P. Directorate of Food Crop Statistics, Ed.). (2020)
6. BPS. Indonesian Cocoa Statistics (2021)
7. BPS. West Sulawesi Provincial Central Statistics Agency. News.Ge. (2021)
8. https://satudata.polmankab.go.id
9. M. H. Panuju, T. Endaryanto, and L. Marlina. Performance Analysis and Added Value of Tofu Agroindustry in Gadingrejo District, Pringsewu Regency. J. Agribus. Sci. **9**, 2 (2021).
10. S. Anatapuri, A. Nugraha, and W. D. Sayekti. Performance of Production and Sustainability of Emping Melinjo Agroindustry in Takakan District, Serang City. J. Agribus. Sci. **9**, 3 (2021)
11. Rosniati and Kalsum. Processing of Cocoa Powder From Fermented Cocoa Beans As Functional Food Ingredients. Center for Plantation Products Industry, 107–116. (2018)
12. T. R. Akbar, D. A. H. Lestari, and A. Nugraha. Analysis of Marketing Mix, Risk and Financial Performance of the Lampung Obor Mas Cap Obor Coffee Ground Coffee Agroindustry, in Kotabumi Kota District, North Lampung Regency. J. Agribus. Sci. **8**, 1 (2020).
13. Sugiyono. Quantitative Qualitative Research Methods and R & D. (Alfabeta, Bandung, 2017).
14. I. F. Danasari, Suparmin, and A. Usman. Analysis of Factors that Influence Labor Productivity in the Bread Agroindustry in Mataram City. Journal of Agroteksos **26**, 21 (2018).
15. J. Heizer, and R. Barry. Operations Management Book 1 Edition 9. (Salemba Empat, Jakarta, 2009).
16. H. Prasetya, and L. Fitri. Operation management. (Media Pressindo, Yogyakarta, 2009).
17. E. Aswariny, M. Meutia, and A. Aliudin. Mapping the Marketing of Local Processed Food Products in Serang Regency. Leuit (Journal of Local Food Security), **1**, 1 (2020).
18. Febriyanti, M. I. Affandi, and U. Kalsum. Financial Analysis and Added Value of UMK Scale Banana Chip Agroindustry in Metro City. Journal of Agribusiness Science: Journal of Agribusiness Science, **5**, 1 (2017).
19. I. Rahmi, and L. Trimo. Added Value to Dodol Tomat Agroindustry (Case Study in Mentari Women Farmer Group Business in Genteng Village, Sukasari District, Sumedang Regency). Journal of Food Systems and Agribusiness, **3**, 1 (2020).
20. Y. S. Arianti, and L. R. Waluyati. Analysis of Added Value and Development

Strategy of Brown Sugar Agroindustry in Madiun Regency. Journal of Agricultural Economics and Agribusiness, **3**, 2 (2019).
21. N. Setiawan, and M. Annisa. Measuring Hot Strip Mill Production Performance Using the Overall Equipment Effectiveness (Oee) Method (Case Study in the Steel Industry in Cilegon, Banten). Technoin, **23**, 2 (2017)
22. A. F. Zahrotul, D. Haryono, and E. Rufaidah. Production Performance Analysis of Cost Structure and Income of the Tempe Chips Agroindustry (Case Study of the Siger Mas Tempe Chips Agroindustry in Metro City. Journal of Food System and Agribusiness, **3**, 1(2022),
23. I. R. M. Sari, W. A. Zakaria, and M. I. Affandi. Production Performance and Added Value of the Emping Melinjo Agroindustry in Bandar Lampung City. J. Agribus. Sci. **3**, 1 (2015).
24. R. E. Mulya, and A. Astuti. Galangal Marketing Mapping (*Alpania galangal* L) (Case Study From Muktijaya Village, Bekasi Regency) **6**, 1 (2023).