COST BENEFIT ANALYSIS OF KEY ACTORS IN THE COCOA BEANS MARKETING

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Abstract: Efficient marketing can increase the profits of all the stakeholders involved. Profit increased at the farmer level will encourage the ability and motivation to manage the farm. This study aims to identify the benefits obtained by farmers, collectors, wholesalers, and purchasing units of exporters in the marketing of cocoa beans. This research was conducted through the survey using by Hayami Method. The results showed that: Profit received by farmers amount Rp314/kg was lower than those received by collectors amount Rp1,022/kg, wholesalers at Rp736/kg, and unit purchases at Rp2,826/kg. This was due to the cost of labor incurred by farmers, and the amount of Rp2,100/kg was higher than by collector's amount of Rp230/kg, the wholesaler's Rp12.5/kg, and the purchase unit Rp8.25/kg. Another factor was the price of production input costly (such as fertilizer dan pesticides), which was not followed by the increase in output price (cocoa beans) determined by marketers. The low productivity and quality of cocoa beans produced by farmers also affected low profit. The government must be able to control the purchase price of marketing actors, improve the knowledge and skills of farmers in the management of cocoa farms by establishing business groups/cooperatives, increase the role of farmer groups, and also to improve the internet infrastructure that supports the digital marketing of cocoa commodities.

Keywords: main stakeholders, cocoa beans, profit, marketing, Hayami method

Abstrak: Pemasaran yang efisien dapat meningkatkan keuntungan semua pemangku kepentingan yang terlibat. Keuntungan yang meningkat di tingkat petani akan mendorong kemampuan dan motivasi dalam pengelolaan usahatani. Penelitian ini bertujuan untuk mengidentifikasi keuntungan yang diperoleh petani, pengepul, pedagang besar, dan unit pembelian eksportir dalam pemasaran biji kakao. Penelitian ini dilakukan melalui survei dengan Metode Hayami. Hasil penelitian menunjukkan bahwa: Keuntungan yang diterima petani Rp314/kg lebih rendah dibandingkan dengan yang diterima pengepul Rp1.022/kg, pedagang besar Rp736/kg, dan pembelian satuan Rp2.826/kg. Hal ini disebabkan biaya tenaga kerja yang dikeluarkan oleh petani sebesar Rp2.100/kg lebih tinggi dibandingkan dengan pengumpul sebesar Rp230/kg, pedagang besar Rp12,5/kg, dan unit pembelian Rp8,25/kg. Faktor lainnya adalah mahalnya harga input produksi (pupuk, pestisida, dll) yang tidak diikuti dengan kenaikan harga output (biji kakao) yang ditentukan oleh pedagang. Keuntungan yang rendah juga dipengaruhi oleh rendahnya produktivitas dan kualitas biji kakao yang dihasilkan petani. Pemerintah harus mampu mengendalikan harga beli pelaku pemasaran, meningkatkan pengetahuan dan keterampilan petani dalam pengelolaan kebun kakao dengan membentuk kelompok usaha/koperasi, meningkatkan peran kelompok tani, serta meningkatkan infrastruktur internet yang mendukung pemasaran digital komoditas kakao.

Kata kunci: pemangku kepentingan utama, biji kakao, keuntungan, pemasaran, metode Hayami

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INTRODUCTION

One of the leading cause factors of low-income cocoa farmers is the profits gained in low-cacao farming due to inefficient marketing (Saputro and Sariningsih, 2020). Efficient marketing can increase the profits of all the stakeholders involved (Mabe et al. 2020). Profit increased at the farmer level will encourage the ability and motivation to manage the farm (Babalola et al. 2017) (Olivares-Aguila and ElMaraghy, 2020).

Integrated marketing can increase the value generated by the stakeholders involved (Kenneth Peprah, 2019). Productive marketing activities create added value due to changes in form, space, function and ownership (Darma, 2017). To meet the criteria of the definition, coordination among the stakeholders involved in marketing (Pun and Poudyal, 2018; Nawaz et al. 2019). Successful coordination, integration and management of business processes for all marketing members/actors can balance the level of benefit between the upstream and downstream sides (Ahoa, Kassahun and Tekinerdogan, 2020; Delgado et al. 2021; Cogollo-Florez and Correa-Espinal, 2019). Competition or imbalance does not occur among members in marketing if there is coordination and supervision of the stakeholders, particularly the government (Asir et al. 2019). According to Ordofa, Zemedu and Tegegne, (2021) and Asir et al. (2019), to keep marketing sustainable, it is necessary to increase the involvement of some institutions that can support the financial strengthening and marketing performance.

Efficiency is needed in the marketing of cocoa beans to increase the prices at the farm level (Hariyati et al. 2020). The price determinant in the marketing of cocoa beans is the trader, who benefits from high margins, so the price becomes very low at the farm level (Supristiwendi and Khairuddin, 2017). According to Asir et al. (2019) and Lenou Nkouedjo et al. (2020), the condition occurs because information and financial strength are controlled to make traders able to dictate to farmers, is used by traders to seek profit. According to Abubakar, Hakim and Asmarantaka (2017), one way to increase farmers' bargaining position in determining cocoa prices is to improve the quality of cocoa through fermentation. This can be done by empowering farmers systematically and sustainably.

West Sulawesi Province is one of Indonesia's cocoa centers, with a total garden area of about 170,000 ha. Mamuju District is the widest land, more than 60,000 ha, then Polewali Mandar District is more than 47,000 ha. Furthermore, the rest of it spreads in Mamasa and Majene Districts. Hence, cocoa has been an excellent commodity for farmers in West Sulawesi Province since 10 years ago. It contributes substantially to Gross Regional Domestic Product (GRDP), amount 20%, and provides employment for most of the population. This excellent commodity falls when thousands of hectares of cocoa plants get the disease. This attack is aggravated by the age of plants, generally over 20 years. The knowledge of farmers in the cocoa farming techniques is still low (Arsyad et al. 2019), also influenced by the interest of farmers to care for the cocoa garden is getting decreased (Muhammad Asir Mahyuddin, Muhammad Arsyad, 2017; Alwi and Kasmad, 2018).

Figure 1 shows that the decline in production occurred since 2013, from 712,231 tons to 608,345 tons in 2019. The decrease in exports and imports in the same year, whereas the increase of 1.5 million ha in 2011, became an average of 1.7 million ha in 2012 – 2019. According to the Ministry of Agriculture, Indonesian cocoa farms' productivity declined due to pests/diseases, old crops, small farmers' land tenure, inadequate garden maintenance, and lack of improved varieties (clones) (Direktorat Jenderal Perkebunan, 2018). This condition was exacerbated by the weak bargaining position of farmers in the oligopsony-tends marketing system (Nahraeni et al. 2021; Sheyoputri and Abri, 2021).

Increasing profits had to be felt by all cocoa agro-industry actors. Long marketing involves many stakeholders (Fitriana, Amir and Indah, 2020). Many agro-industry marketing actors were obstacles to achieving fair benefits for all marketing actors (Chávez et al. 2018). Efficient marketing would increase the profitability of every stakeholder involved (Jin et al. 2020; Samal, 2019). High profits, especially at the level of farmers as cocoa bean producers, would increase the ability and motivation to manage the garden (Keukama, Ambarawati and Ustriyana, 2020). A well-managed cocoa plantation would improve the productivity and quality of cocoa beans, resulting in the continuity of the supply of cocoa beans from upstream to downstream (Mulyono, 2017; Depparaba and Karim, 2019).

This study examines the profit each cocoa bean marketing stakeholder earned in Mamuju District, West Sulawesi Province, starting with the farmers, collectors, wholesalers, and purchasing units (exporters).

METHODS

This study uses a quantitative approach, which is an approach that allows real research data to be recorded in the numeric or numeric form to facilitate the process of analysis and interpretation using descriptive statistics.

The study was conducted for 12 months, from January to December 2021. In general, this research was conducted in three stages: data collection, data processing, and data analysis. The data collection phase began with discussions with farmers, stakeholders, or agencies involved in cocoa bean marketing. This research was conducted in two sub-districts, namely Sampaga and Kalukku Sub-district, Mamuju District. To determine these two sub-districts as a research site because they were the primary cocoa producer location in West Sulawesi Province.

The respondent populations were the main actors in cocoa marketing (farmers, collectors, wholesalers, exporters, and downstream industries). Respondents as not farmers were chosen by purposive sampling with paying attention to their knowledge about cocoa and cocoa beans supply chain of 14 people (two people from each of these actors/stakeholders).

The respondent farmers have a big population size, so the sampling technique used Area technique (cluster) Sampling (Sugiyono, 2019). From each district were selected three villages, and in each village were selected five cocoa farmers, so overall, 30 farmers were selected. Selected villages are villages that have cocoa potential, and selected farmers are farmers who know about managing cocoa plantations from planting to selling. So that the respondents, 30 farmers, already represent the information needed.

The data obtained consist of primary data and secondary data. Primary data were the data obtained directly from the respondents, including data on the garden's condition and the description of the cocoa supply chain at that time. Secondary data were obtained from literature, agriculture and plantation services, and the Central Bureau of Statistics (BPS).

Data collection, especially primary data, was done in several ways as follows: Field observation to directly see the activities of all actors in marketing cocoa commodities, ranging from producers (farmers), collectors, wholesalers, and exporters. In-depth interviews with actors or stakeholders of the cocoa supply chain. Data analysis used in this research is Hayami added value method, i.e., the calculation of income, labor cost, and profit (Hayami et al. 1987) (Table 1).
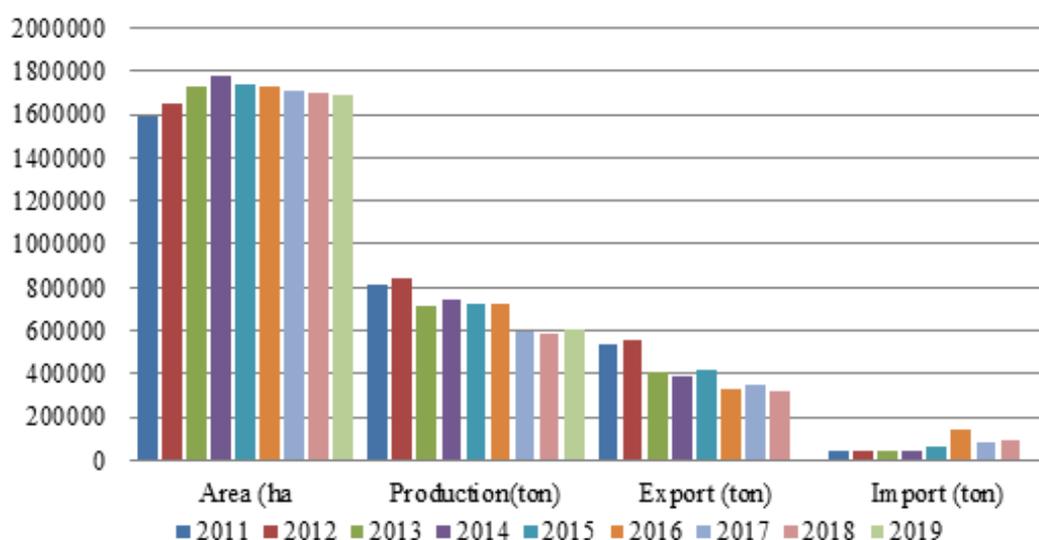
Figure 1. Area, production and export volume of national cocoa imports in 2011-2019

Table 1. Calculation of Hayami Benefits

Variable	Value
Output, Input, dan Price	
Output (kg/ha)	(1)
The input of raw materials (kg/ha)	(2)
Labor (person-day)	(3)
Conversion factor	(4) = (1) / (2)
Labor coefficient (person-day/kg)	(5) = (3) / (2)
Price of output (Rp/kg)	(6)
The average wage of labor (Rp/kg)	(7)
Income and Profit	
Input price (Rp/kg)	(8)
Other input prices (Rp/kg)	(9)
Output value (Rp/kg)	(10) = (4) x (6)
a. Value-added (Rp/kg)	(11a) = (10) – (8) –(9)
b. Value-added ratio (%)	(11b) = (11a) / (10) x 100
a. Revenue of labor (Rp/kg)	(12a) = (5) x (6)
b. Share of labor (%)	(12b) = (12a) / (11a) x 100
a. profit (Rp/kg)	(13a) = (11a) – (12a)
b. Level of profit (%)	(13b) = (13a) / (10) x 100

The input values in the calculation of Hayami's Added Value are:

1. Output (kg/period) is the number of dry cocoa beans ready to be sold to stakeholders or marketers.
2. The raw material input at the farm level is wet cocoa beans produced yearly (kg/ha). Raw material input at the level of marketing actors is cocoa beans purchased from previous actors (kg/week).
3. Labor (person-day) at the farm level is the number of labor days needed in plant maintenance (fertilizing, spraying, harvesting, and drying). Person-day at the level of marketing actors is drying, cleaning, and packaging.
4. The output price (Rp/kg) is the selling price of cocoa beans to the next actor.
5. The average labor wage (person-day/Rp) is each worker's daily wage.
6. Input price (Rp/kg) at the farm level is the annual price of raw materials (fertilizers and pesticides). Input prices at the level of marketing actors are the prices of cocoa beans purchased from previous actors.
7. The price of other inputs (Rp/kg) is the price of packaging and transportation costs.

RESULTS

The Benefit of Farmers

The farmer's profit was analyzed for the fertilizing activity of crop yielding, harvesting, cleavage, and drying with raw material in cocoa fruit. Farmer profit analysis was divided into three groups based on selling dried cocoa beans, i.e., to collectors, wholesalers, and purchasing units. Famers received the profit comparison on the sale of cocoa beans to collectors, wholesalers and purchasing units, as shown in Table 2.

The Benefit of Collector

Profit analysis on collectors (village and sub-district collectors) was carried out on drying and cleaning of dirt analysis of profitability on collectors based on selling dry cocoa beans to wholesalers and purchasing units. Profit calculation was done over one week. The results of the benefit analysis of collectors who sold cocoa beans to wholesalers and purchasing units can be shown in Table 3.

Table 2. Profits of farmers who sell to collectors, traders, and units of purchase (representatives of processing industries and exporters

Variable	Sales value to the collector	Sales value To the wholesalers	Sales value to the purchasing unit
Output, Input, and Price			
Output (kg/ha)	800	800	800
The input of Raw Materials (kg/ha)	2400	2400	2400
Labor (person-day)	96	102	106
Conversion factor	0.33	0.33	0.33
Labor coefficient (person-day/kg)	0.04	0.042	0.044
Price of output (Rp/kg)	24500	26000	27200
The average wage of labor (Rp/person-day)	50000	50000	50000
Income and Profit			
Input price (Rp/kg)	5800	5800	5800
Other input prices (Rp/kg)	200	300	500
Output value (Rp/kg)	8085	8580	8976
a. Value-added (Rp/kg)	2085	2480	2676
b. Value-added ratio (%)	25.78	28.90	29.81
a. Revenue of labor (Rp/kg)	2000	2100	2200
b. Share of labor (%)	95.92	84.67	83.74
a. profit (Rp/kg)	85	380	476
b. Level of profit (%)	1.05	4.42	5.30

Table 3. Calculation of Profits on Collectors

Variable	Sales value to the collector	Sales value To the wholesalers	Sales value to the purchasing unit
Output, Input, and Price			
Output (kg/ha)	630	630	800
The input of Raw Materials (kg/ha)	650	650	2400
Labor (person-day)	3	3	106
Conversion factor	0.97	0.97	0.33
Labor coefficient (person-day/kg)	0.0046	0.0046	0.044
Price of output (Rp/kg)	26000	27200	27200
The average wage of labor (Rp/person-day)	50000	50000	50000
Income and Profit			
Input price (Rp/kg)	24500	24500	5800
Other input prices (Rp/kg)	50	50	500
Output value (Rp/kg)	25220	26384	8976
a. Value-added (Rp/kg)	670	1834	2676
b. Value-added ratio (%)	2.66	6.95	29.81
a. Revenue of labor (Rp/kg)	230	230	2200
b. Share of labor (%)	34.32	12.54	83.74
a. profit (Rp/kg)	440	1604	476
b. Level of profit (%)	1.74	6.08	5.30

The Benefit of Wholesalers

Profit analysis on wholesalers was done on drying, cleaning dirt, sorting, and packaging profit analysis on wholesalers based on selling dried cocoa beans to the purchasing unit. Profit calculation was done over one week. The results of the profit analysis of wholesalers who sold cocoa beans to the purchasing unit in Mamuju and exporters/processing in Makassar can be shown in Table 4.

The Benefit of Purchasing Unit

Profit analysis on the purchasing unit was carried out on drying activities, dirt cleaning, sorting, grading, and packaging. Analysis of profitability on purchases unit based on dry cocoa beans sales to processing industries and exporters. Profit calculation was done over one week. The result of the profit of purchasing unit analysis that sold cocoa beans to the processing and exporter can be shown in Table 5.

The income comparison, labor costs, and profits earned by farmers, collectors, wholesalers and purchasing units can be shown in Figure 2. The profit received by farmers is Rp314/kg lower than that received by the collectors Rp1,022/kg, wholesalers Rp736/kg, and purchases Unit Rp2,826/kg. This is due to the labor cost incurred by farmers amount Rp2,100/kg higher than the labor cost incurred by the collectors Rp230/kg, wholesalers Rp12.5/kg, and purchases units Rp8.25/kg.

The high cost of labor or income at the farm level is due to crop maintenance (fertilization, spraying, and pruning), harvesting, and longer drying time than other actors (Oseni, Olutumise and Olutumise, 2018). The high cost of labor at the farm level is also influenced by the low price of output or the selling price of cocoa beans (Rp24,500/kg) received by farmers from collectors. The sales percentage of cocoa beans from farmers to collectors is still larger than that of wholesalers and purchasing units because farmers obtain capital loans from collectors before harvesting (Bannor et al. 2019). Low prices at the farm level are due to the need for price disclosure of marketing actors and a long marketing chain that involves several key stakeholders in the marketing of cocoa beans (Akinlabi et al. 2019).

Table 4. Calculation of Profits on Wholesalers who sell to Unit Purchases in Mamuju

Variable	Value of sales to the purchasing unit	Value of sale to exporters/processing in Makassar
Output, Input, and Price		
Output (kg/ha)	19600	19600
The input of Raw Materials (kg/ha)	20000	20000
Labor (person-day)	5	5
Conversion factor	0.98	0.98
Labor coefficient (person-day/kg)	0.00025	0.00025
Price of output (Rp/kg)	27200	28000
The average wage of labor (Rp/person-day)	50000	50000
Income and Profit		
Input price (Rp/kg)	26000	26000
Other input prices (Rp/kg)	50	550
Output value (Rp/kg)	26656	27440
a. Value-added (Rp/kg)	606	890
b. Value-added ratio (%)	2.27	3.24
a. Revenue of labor (Rp/kg)	12.5	12.5
b. Share of labor (%)	2.06	1.40
a. profit (Rp/kg)	594	878
b. Level of profit (%)	2.22	3.20

Table 5. Calculation of Profit on Purchases Unit

Variable	Value
Output, Input, and Price	
Output (kg/ha)	45000
The input of Raw Materials (kg/ha)	45000
Labor (person-day)	5
Conversion factor	1
Labor coefficient (person-day/kg)	0.00011
Price of output (Rp/kg)	31234
The average wage of labor (Rp/person-day)	75000
Income and Profit	
Input price (Rp/kg)	27200
Other input prices (Rp/kg)	1200
Output value (Rp/kg)	31234
a. Value-added (Rp/kg)	2834
b. Value-added ratio (%)	9.07
a. Revenue of labor (Rp/kg)	8.25
b. Share of labor (%)	0.29
a. profit (Rp/kg)	2826
b. Level of profit (%)	9.04
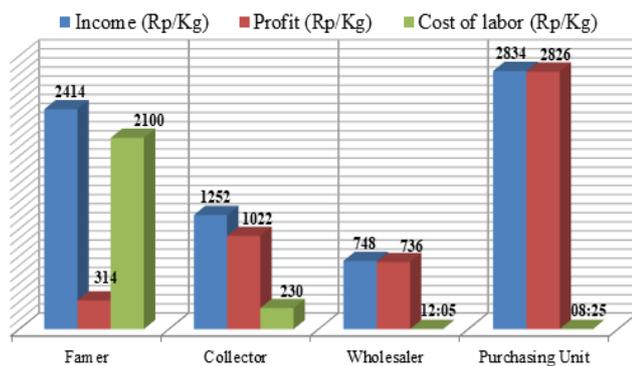
Figure 2. Histogram of income levels, profits, and labor costs of each major marketing actor

Figure 2 also shows that farmers' efforts are inefficient, as shown by the percentage of labor cost (88.11%) higher than the income ratio of farmers (28.16%). It means that the cost to pay for labor is greater than the net profit of 88.11% of the added value of Rp2,414/kg of Rp2,100/kg is allocated to pay for labor, while the net profit of the remaining Rp314/kg of cocoa beans. This indicates that there is a need for more labor usage because of the number of job variables that do not impact increasing the results. Regarding the frequency of excessive use of pesticides, cocoa farmers in Mamuju have a habit of spraying pests and diseases twice a month without taking into account the active ingredients of pesticides with the target pests/diseases of plants.

Farmers with an average harvest capacity of 800 kg/ha of dry cocoa beans carry out garden maintenance according to technical instructions or receive guidance from government extension workers or private assistants (NGOs). More intensive garden maintenance will result in better productivity and quality of cocoa beans. One of the reasons for the low productivity of cocoa in Mamuju is the low attention of farmers to maintaining their cocoa gardens. According to Varina et al. (2020); Suprehatin and Shidiq (2020), the policies to increase the farmer production must focused on the improvement of technical skills and manajerial capabilities of farmers on the efficient use of resources and advanced technology.

Weak institutional roles, such as farmer groups and cooperatives, also influenced low profits at farm levels. These institutions only functioned when there were government-level assistance programs at the farm level. According to Saing et al. (2019) and Muhardi, Abdul Rauf and Effendy (2021), farmer organizations needed to be directed in the marketing and quality improvement of cocoa beans to create a well-performing chain marketing system that could provide added value for farmers. According to Ikhwan et al. (2021), the good organizations can make better decisions on choosing facilities more efficiently, managing supplies efficiently and be can use the information itself to increase profits by implementing learning organizations.

Farmers must be considered because these main actors carry out more activities and higher costs to increase added value in the cocoa bean supply chain. The form of attention must be carried out by supporting stakeholders, especially the government. The supports are to improve prices at the farm level by controlling the basic price of purchasing cocoa beans by exporters, wholesalers and collectors and to increase the productivity and quality of cocoa beans by increasing the knowledge and skills of farmers in cocoa cultivation techniques and post-harvest handling. Then the government is expected to be able to bridge farmers with banks to obtain capital loans for garden maintenance to reduce farmers' dependence on collectors.

Manajerial Implications

The supply of cocoa beans as industrial raw material has decreased due to the low productivity and quality of cocoa beans produced by farmers. Based on the results of this study, the low productivity and quality of cocoa beans are due to the low interest of farmers in

managing cocoa farms due to the low profits earned in marketing cocoa beans. The results of the Hayami method analysis show that the profit received by farmers is Rp314/kg lower compared to that received by collectors Rp1,022/kg, wholesalers Rp736/kg, and unit purchases Rp2,826/kg. This is due to labor costs incurred by farmers amounting to Rp2,100/kg, which is higher than Rp230/kg, wholesale Rp12.5/kg, and unit purchases of Rp8.25/kg. Another factor is the high price of production inputs (such as fertilizers and pesticides) which are not followed by increased output prices (cocoa beans) determined by traders. The government must be able to control marketers' purchase prices, increase farmers' knowledge and skills in managing cocoa farms by forming business groups/ cooperatives, increase the role of farmer groups, and improve internet infrastructure that supports the digital marketing of cocoa commodities.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The costs incurred by farmers were much more significant than other stakeholders, so the profit and efficiency of farmers were low. The profit gained by each stakeholder in a row was Rp2,826/kg for the unit of purchase, Rp1,022/kg for collectors, Rp736/ kg for wholesalers and Rp314/kg for farmers. The cacao farm farmers managed inefficiently in return for labor at 88.11% and an income ratio of only 28.16%. There should be advisory and good farm management training.

Recommendations

The government should control prices at the exporter, trader, and collector levels to increase profits received by farmers. Increasing the productivity and quality of cocoa beans was done by improving the knowledge and skills of farmers in order to improve cultivation techniques and post-harvest handling. This activity can be done by forming business groups/cooperatives, increasing the role of farmer groups, and improving internet infrastructure that supports the digital marketing of cocoa commodities. Further research is needed regarding the education level of farmers and the impact of information technology on increasing cocoa production and supply chain patterns in the digital technology era.

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