

# An Experimental Analysis of the Role of Stakeholders in the Cocoa Commodity Supply Chain in West Sulawesi, Indonesia

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**Abstract:** *The quality and continuity of cocoa seed supply is determined by stakeholders in the cocoa supply chain. In general, the activity of cocoa bean production has not been efficient enough to compete as raw material for domestic industry and export of seeds. So that cocoa beans in West Sulawesi Province can compete and increase the income of cocoa farmers, it is necessary to increase the role of stakeholders in the cocoa supply chain network, especially those that support the improvement of cocoa bean productivity. The research objective is to analyze the role of stakeholders in cocoa seed supply chain through survey method by identifying the supply chain of cocoa beans. The results showed that farmer groups, marketing institutions (large traders, and exporters) still lacked a role in the supply chain of cocoa commodities. The expected role of marketing institutions was partnerships, especially price guarantees and support for increasing the productivity of farmers' gardens. Collector traders are considered to be very instrumental because the cooperation in the form of loans and ready to buy cocoa beans from farmers although the amount is small, but the prices received by farmers from the collector tends to be low. Formal institutions or stakeholders at the farm level in the form of farmer groups have not functioned optimally. Partnership between farmers with institutions or stakeholders in supply chain networks such as wholesalers and exporters or industries has not yet been running, so farmers as key stakeholders do not get price and capital certainty to maximize the production.*

**Keywords:** *Cocoa, Stakeholders, farmers*

## I. INTRODUCTION

Stakeholders in the form of institutions are very important in the development of agro-industries, especially as a medium for the dissemination of agricultural innovations [1]. Institutional is a system of organization and control over resources and at the same time regulating relationships [2]. According to Dentoni, Bitzer, and Pascucci (2016), stakeholder-oriented institutions are very effective in creating dynamic relationships in cross-sector partnerships and only companies that interact with stakeholders can maintain sustainability [3].

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Based on the context with the study referred to by institutions here are farmers, farmer groups, collecting traders, factories, exporters, local governments, research institutions, extension agencies, financial institutions, universities, media and agricultural facilities suppliers.

An integrated supply chain will increase the overall value produced by the supply chain [4, 5]. To meet the criteria of the definition, coordination is needed between relevant stakeholders in the supply chain. Coordination, integration and management of successful business processes for all members / supply chain actors will balance the level of profit and risk between the upstream and downstream sides [6, 7]. Competition or imbalance does not occur between one member in the supply chain if there is coordination and supervision from supporting stakeholders, so there needs to be a change in the strategy of supply chain partnerships between key stakeholders and supporting stakeholders [1, 8]. According to Astuti (2012), the supply chain remains sustainable it is necessary increase the involvement of several institutions that can support financial strengthening and performance of the supply chain [9].

The findings of Four Foundation and KPPOD (2013) in Majene Regency, farmers are still lacking awareness to sell cocoa beans with a certain drought standard [10]. Farmers buy inputs with credit to providers who also work as collectors. Existing farmers have not maximized to strengthen the bargaining position of farmers. There are no regulations governing the production and standard of cocoa beans desired by employers or manufacturers. There is no direct market access between farmers and manufacturers as well as lack of coordination and synchronization between stakeholders in improving productivity and quality. FAO studies state that the development of agro-industry requires a response of healthy supporting institutions to optimize the potential for achieving supply chain benefits and reducing risks [11].

In connection with the supply chain in cocoa commodities found that the main problem is the increase in productivity and quality that many farmers cope with [12]. Increased production and quality of cocoa can be done through assistance / extension and procurement of production inputs by increasing the role of government and private institutions [13]. Fertilizer price subsidy policy has a positive impact on increasing Indonesian cocoa production and export volume [14]. In addition farmers' organizations (Gapoktan) need to be directed in marketing and improving the quality of cocoa beans so as to create a supply chain system that performs well and is able to provide value added to farmers [15, 16].



The government has made various policies to increase cocoa productivity, but the policies and programs that have been rolled out have not been fully implemented in an integrated, efficient and effective manner to restore the glory of cocoa by launching the National Movement of Cocoa Production and Quality Improvement (Gernas Pro-Cocoa). However, this Gernas did not succeed in increasing productivity because there are still many obstacles, especially in the distribution of assistance facilities or packages for intensification, rehabilitation and rejuvenation activities, such as fertilizers, pesticides and harvest tools.

The condition of Gernas's failure is due to lack of synchronization between stakeholders so that the position and role of each stakeholder does not go as expected. In Gernas's context is a national program that should synergize all stakeholders. According to Caballero (2008), the main driver of changes in the agricultural system in guarding the policy framework is largely determined by the role of stakeholders [17].

Therefore, this study examines the role of each stakeholder in the cocoa seed supply chain in Mamuju District, West Sulawesi Province as well as identifies the role and level of coordination / relations between stakeholders involved in the cocoa seed supply chain, and also provide recommendation for a sustainable cocoa supply chain risk control strategy.

## **II. METHODOLOGY**

### **Research Approach**

This study used both qualitative and quantitative approaches. Qualitative approach that allows the actual recording of research results data in numerical or numerical forms so as to facilitate the process of analysis and interpretation by using descriptive statistics. Quantitative approaches were chosen to get an overview of the efficiency improvement of the supply chain of cocoa commodities by increasing the role of stakeholders who should be involved.

### **Stage and Location of Research**

This research was conducted in three stages, namely the data collection stage, the data processing stage and the data analysis stage. The data collection stage began with a series of discussions with experts on understanding the stakeholders or institutions involved in the cocoa bean supply chain.

The study was conducted in Sampaga and Kalukku Subdistrict, Mamuju Regency, West Sulawesi Province. The determination of these two sub-districts is because they are the main cocoa producing locations that represent West Sulawesi Province and have a fairly far supply chain. West Sulawesi Province is the main source of income because of the suitability of land with cocoa commodities, and was once the center of the Gernas Pro-Cocoa Program.

### **Population and Research Sample**

The population as respondents in this study were the main actors in the cocoa supply chain (farmers, collectors, wholesalers, exporters and downstream industry) and cocoa experts and cocoa supply chains (academics). Respondents other than farmers were selected by purposive sampling

based on knowledge about cocoa and the cocoa seed supply chain as many as 10 people (2 people each from each of the main actors and academics). Because the size of the population if farmer respondent is quite large, so the sampling technique uses Area Sampling technique (cluster) [18], that is, from each sub-district (Sampaga and Kalukku Subdistricts) 2 respondents and 5 respondents of cocoa farmers are selected who understand the crop conditions and cocoa seed supply chain respectively, so that a total of 20 cocoa farmers were selected.

### **Type, Source and Data Collection**

The data in this study consisted of primary data and secondary data. Primary data is obtained directly from secondary data which is obtained through relevant agency documents such as the agriculture and plantation services, the Central Statistics Agency (BPS). Data collection, especially primary data, is carried out in the following ways:

- a. Field observations, namely seeing directly the activities of all actors in the cocoa commodity supply chain, starting from producers (farmers), traders, processors (processors / industries), exporters to consumers.
- b. In-depth interviews (in-depth interview) with:
  - Cocoa supply chain actors or stakeholders to understand the characteristics / types of cocoa supply chains at that time and the risks they face.
  - Experts who understand cocoa and risk control strategies in the cocoa supply chain. Experts are chosen based on the criteria that the expert has a reputation for expertise and has shown credibility as an experienced expert in his field.

### **Analysis of Stakeholder Roles**

To see the involvement / role of stakeholders in the cocoa supply chain in West Sulawesi Province, there were stakeholders who were considered (obtained from the identification of literature and expert opinions), namely Farmers / farmer groups, Collector traders, Large traders, Exporter, Downstream factories / industries, Government, Financial institutions (banks, cooperatives, etc.), Extension agencies (offices, private sector, NGOs), College, Media information and Agencies to channel agricultural facilities

The relationship or role between stakeholders in the cocoa supply chain will be obtained from a collection of opinions of farmers as producers and businesses in the cocoa commodity supply chain.

### **Analysis Method**

Data analysis used in this study is qualitative descriptive analysis, which presents data according to units, indicators, and parameters that have been determined based on the reality that occurs in the field. Table 1 shows the stages, data sources and data processing techniques.



Table. 1 Stages, data sources and data processing techniques

Research Steps	Output	Data source	Data Collection Method	Data Type	Data Processing Techniques
Research preparation	Background, objectives and scope of research	Preliminary observations and literature	Literature study, field survey, internet	Primary and secondary	Qualitative descriptive analysis
Description of the current cocoa supply chain	Actors, supply chain stages	Observation, perpetrator information	Field survey, Interview	Primary	Qualitative descriptive analysis
Stakeholder identification	Position / role of supporting stakeholders	Observation, expert information, and perpetrators	Questionnaires and interviews	Primary	Qualitative descriptive analysis

### III. RESULT AND DISCUSSION

#### Partnership Conditions

Since 2003 the cooperative relationship has often been socialized by the local government in running the cocoa bean business in West Sulawesi. It was done to improve efficiency in the supply chain because of the distance of West Sulawesi which is quite far from the industrial location in Makassar. Conceptually farmers, collectors and entrepreneurs have a bond of cooperation in achieving mutual benefits with the principle of mutual need. Farmers produce cocoa beans, then collected by collectors, then

processed / processed and marketed by entrepreneurs. But in reality implementation and concepts often occur inequality and in the end what happens is ordinary trade relations among business people. This is because partner actors, especially at the level of small collectors, are still in the learning phase of partnering and some cocoa farmers do not want to join the farmer groups as recommended by the local government to mobilize partnerships. Table 2 shows the implementation and the problems that arise from the relationship between the actors / stakeholders of the cocoa seed supply chain in MamujuRegency, West Sulawesi.

Table. 2 Implementation and problems of relations between farmers and industry / exporters

Aspect	Implementation	Problem
Law	<ul style="list-style-type: none"> <li>Not clear</li> </ul>	<ul style="list-style-type: none"> <li>Each actor does not understand his rights and obligations</li> </ul>
Functions, rights and obligations of farmers	<ul style="list-style-type: none"> <li>Production activities are less optimal.</li> <li>Most farmers sell to middlemen, because they have a high dependence on middlemen with easier and faster loans (although with higher interest than cooperatives / banking)</li> <li>Not all farmers enter the farmer group</li> </ul>	<ul style="list-style-type: none"> <li>The quality of cocoa beans is unsatisfactory, a loss for farmers and entrepreneurs because of low export prices.</li> <li>The price of cocoa beans is low.</li> <li>Not getting information together, unable to increase bargaining power.</li> </ul>
Functions, rights and obligations of employers	<ul style="list-style-type: none"> <li>Socialization of capital loans to farmers is still lacking.</li> <li>Coaching from entrepreneurs is still lacking.</li> </ul>	<ul style="list-style-type: none"> <li>Farmers carry out production processes with modest capital or borrow capital to middlemen.</li> <li>Farmer human resources are still low, resulting in losses for farmers and entrepreneurs.</li> </ul>
Farmer education Pricing	<ul style="list-style-type: none"> <li>There is no regular guidance, only when there is a problem</li> <li>Less price information so that prices are often played by entrepreneurs, for reasons; quality, abundant harvest, sluggish market, there is no measuring device for water and dirt.</li> </ul>	<ul style="list-style-type: none"> <li>Farmers' HR improvement is still lacking</li> <li>Farmers are disadvantaged</li> </ul>
Risk	<ul style="list-style-type: none"> <li>Pests and diseases.</li> </ul>	<ul style="list-style-type: none"> <li>Unfair distribution of risks so that farmers suffer greater losses.</li> </ul>

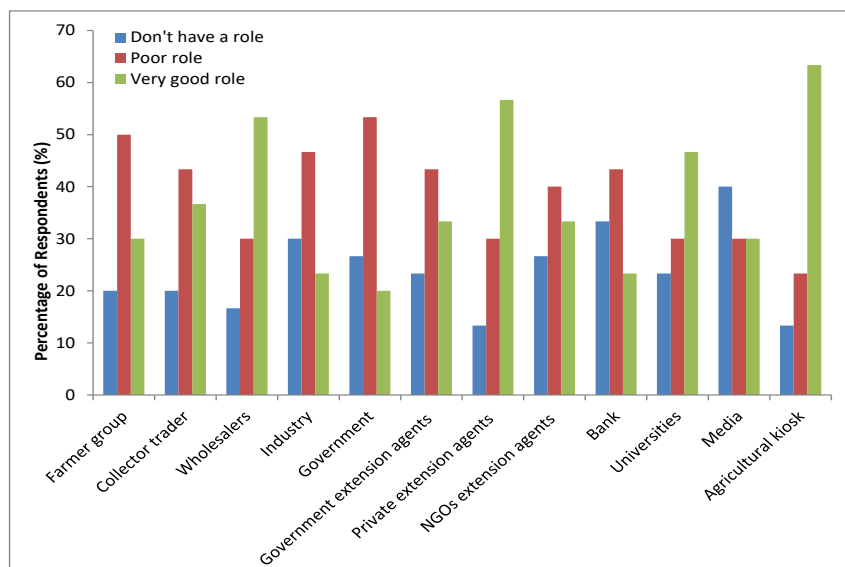
**The Role of Stakeholders Cocoa Supply Chain**

The data on the types and roles of stakeholders that support the success of the cocoa seed supply chain in Mamuju West Sulawesi is shown in Table 3. These stakeholders have their respective roles which all provide

good benefits for the sustainability of the cocoa seed supply chain if they can run or optimize their role. The respondent's answer the roles of various stakeholders in Mamuju District, West Sulawesi is illustrated in the Figure 1.

**Table. 3 Stakeholders involved in the cocoa supply chain**

No.	Stakeholders	Stakeholder Role
1	Farmer	Cultivators and cocoa bean providers
2	Farmer Group / Gapoktan	Media discussion, coordination between farmers
3	Village collectors	Direct purchase to the farmer's house, drying
4	Sub district traders	Purchasing to village collectors, drying
5	Regency traders	Purchases to collectors / village / village collectors according to world prices
6	Wholesalers	Cocoa bean suppliers downstream and exporters
7	Exporter	Purchases to wholesalers and collectors
8	Downstream factory / industry	Processing of cocoa beans
9	Regional Agriculture Office	Support production improvement programs
10	Provincial Plantation Service	Procurement of agricultural facilities
11	Directorate General of Infrastructure	Support infrastructure provider
12	Directorate General of Plantation	Running a cocoa & assistance program from the National Budget, providing PPL personnel, training and coaching
13	Banking	Credit Provider (KUR)
14	Cooperative	Provider of capital, means, markets production
15	NGO	Farmer assistance
16	College	Support cocoa research and development
17	Production Facility Kiosk	Provide (sell) production facilities needed by farmers, such as: pesticides, fertilizers and agricultural equipment (hoes, <i>sabil</i> , machetes, scissors, hand sprayers, saws, etc.)



**Fig. 1 The roles of various stakeholders in Mamuju District, West Sulawesi**

**Farmer group**

Stakeholders / institutional cocoa farmers referred to in this study include all forms of institutions that collect cocoa farmers in supporting the sustainability of cocoa supply chain. The majority of respondents, about 15 people (50%) stated that the existence of farmer groups played a bad role in supporting the cocoa supply chain. Furthermore, 9 people (30%) stated that the existence of farmer groups played a very good role in supporting the supply chain. While the remaining 6 people (20%) stated that the existence of the farmer group in Mamuju District did not have a role.

**Collector trader**

The collecting traders referred to in this study were small collectors who were under large traders who received or picked up small and large scale farmers' cocoa beans without measuring water content. There are 13 people (43%) stated that the existence of the collector traders played a bad role in supporting the cocoa supply chain.



11 people (37%) stated that the presence of collectors played a very good role. and the remaining 6 people (20%) stated that the collecting traders did not have a role in supporting the cocoa supply chain.

### Wholesalers

The large traders referred to in this study are large-scale collectors who have warehouses in sub-districts or districts. These large traders buy cocoa beans from the collector traders below and from farmers who have large crops. There are 16 people (53%) stated that the existence of large traders plays a very good role in supporting the cocoa supply chain. 9 people (30%) stated that the presence of collectors played a bad role. and the remaining 5 people (17%) stated that wholesalers did not have a role in supporting the cocoa supply chain.

### Industry

The industry referred to in this study is a small-scale industry that processes cocoa beans into snack foods that are managed by the target group. These processing industries have two units or locations in Mamuju district. There are 14 people (47%) stated that the existence of the small industry plays a bad role in supporting the cocoa supply chain. Then 9 people (30%) stated that the existence of the small industry did not have a role and the remaining 7 people (30%) stated that the industry played a very good role in supporting the cocoa supply chain.

### Government

The government referred to in the study is the regional government and the central government that provide programs or assistance in increasing the production of gardens (fertilizers, pesticides, etc.) and post-harvest equipment (fermentation tools, etc.). There are 16 people (53%) stated that the government played a bad role in supporting the cocoa supply chain. Then 8 people (27%) stated that the government did not have a role. and the rest only 6 people (20%) stated that the government played a very good role in supporting the cocoa supply chain.

### Institutional extension

The institutional instructor referred to in this study includes all institutions of extension include government, private and self-help/NGO. There are 13 people (43%) stated that government extension workers played a bad role in supporting the cocoa supply chain. Then 10 people (33%) stated that the government extension agents played a very good role. and the remaining 7 people (23%) stated that the government extension agents did not have a role in supporting the cocoa supply chain.

There are 17 people (57%) stated that private extension agents played a very good role in supporting the cocoa supply chain. 9 people (30%) stated that private extension workers played a bad role and the remaining 4 people (13%) stated that private extension agents did not have a role in supporting the cocoa supply chain.

There are 12 people (40%) stated that self-help / NGO extension workers played a bad role in supporting the cocoa supply chain. Then 10 people (33%) stated that the NGO extension workers played a very good role. and the remaining 8 people (27%) stated that the NGO extension

workers did not have a role in supporting the cocoa supply chain.

### Institutional financing

The financing institutions referred to in this study include official financing institutions such as banks, cooperatives, and other financial institutions that are officially registered. From the results of the study it was found that the financial institutions in Mamuju Regency were BRI. There are 13 people (43%) stated that banks played a bad role in supporting the cocoa supply chain. Then 10 people (33%) stated that banking did not have a role. and the remaining 7 people (23%) stated that banking played a very good role in supporting the cocoa supply chain.

### Institutional research

Institutional research referred to in this research is universities that conduct research and provide input to farmers in the cultivation of good cocoa plants. There are 14 people (47%) stated that universities played a very good role in supporting the cocoa supply chain. 9 people (30%) stated that tertiary institutions played a lesser role and the remaining 7 people (23%) stated that universities did not have a role in supporting the cocoa supply chain.

### Institutional information

The institutional information referred to in this study is an institution or stakeholder that provides information that supports the increased production and marketing of cocoa beans such as TV, newspapers, and the internet. It is found that the information institutions in Mamuju Regency that can be accessed by farmers are television. There are 12 people (40%) stated that the media did not have a role in supporting the cocoa supply chain. 9 people (30%) for each stated that the television media played less role and played a very good role in supporting the cocoa supply chain.

### Provider of agricultural facilities

Agricultural facilities provider institutions referred to in this study are kiosks of agricultural facilities and agricultural cooperatives, but the existing facility providers in Mamuju Regency are agricultural facilities kiosks. There are 19 people (63%) stated that the kiosks of agricultural facilities play a very good role in supporting the cocoa supply chain. 7 people (23%) stated that the kiosk of agricultural facilities played a bad role. and the remaining 4 people (13%) stated that the kiosk facilities did not have a role in supporting the cocoa supply chain.

The results of the identification of stakeholders showed that there were 11 related institutions in the cocoa commodity supply chain in Mamuju District, West Sulawesi.

Based on the number of main tasks and activities carried out by the institution or stakeholders, only 5 (five) stakeholders have the duties and functions and direct linkages in each supply chain of cocoa commodities (key stakeholders), namely farmers / farmer groups, collectors, wholesalers, industry and exporters.

Stakeholders who should have the most influence in cocoa supply chain activities are farmers,



industry and exporters. Farmers as providers of primary ingredients (cocoa beans) but have not played role because of the constraints of meeting the needs of facilities that support the improvement of gardens due to the attack of pests and the age of the old plants that are still minimal or not even there, especially from the government and banks as supporting stakeholders. The industries in MamujuSulbar are still small-scale so that the need for cocoa beans is still small. While exporters still buy the same price between fermented and non-fermented seeds.

The results of the analysis also show that collectors, wholesalers, private extension agents, universities and suppliers of agricultural facilities have a very good role in cocoa supply chain business processes in Mamuju District, West Sulawesi. However, these stakeholders do not have good support from farmer groups, downstream industries, exporters, local governments, agricultural extension agents, and banks (which show an unfavourable role from the results of the analysis). The support of government policies related to capital loans has not been intensively socialized to cocoa businessmen. Cocoa, especially farmers as producers of cocoa beans must be supported by the strength of financial capital. Therefore, it is necessary to support the government and banking institutions as institutions that have strong mobility in the supply chain of cocoa beans.

#### IV. CONCLUSION

It was found that farmer groups, marketing institutions (large traders and exporters) still lacked a role in the supply chain of cocoa commodities. The expected role of marketing institutions is partnerships, especially price guarantees and support for the cost of increasing the productivity of farmers' gardens. Collector traders are considered to be very instrumental because of cooperation in the form of loan funds and ready to buy cocoa beans from farmers even though the amount is small but the prices received by farmers from collectors tend to be low. Formal institutions or stakeholders at the farm level in the form of farmer groups have not functioned optimally. Inter-farmer partnerships with institutions or stakeholders in supply chain networks such as large traders and exporters or industries have not yet run, so farmers as key stakeholders do not get price and capital certainty to maximize production. Farmers as producers of cocoa beans which are the determinants of the success of the supply chain have not received the attention of other stakeholders to support the increase in cocoa plantation production. For this reason, operational policy steps that need to be realized in cocoa agribusiness development are through participatory planning, implementation and supervision.

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