

Study on Stakeholders Position and Role in Supply Chain of Cocoa Commodities

Muhammad Asir*¹, Rahim Darma^{#2}, Mahyuddin^{#3}, Muhammad Arsyad^{#4}

*Graduate School of Agricultural Sciences, Universitas Hasanuddin Makassar, Jl. Perintis Kemerdekaan KM.10 Makassar 90245, Indonesia

[#]Faculty of Agriculture, Universitas Hasanuddin Makassar, Jl. Perintis Kemerdekaan KM.10 Makassar 92045, Indonesia

¹ muhammad_asir@polinas.ac.id

² rdarma@unhas.ac.id

³ mahyuddin@agri.unhas.ac.id

⁴ arsyad@unhas.ac.id

Abstract— The quality and continuity of cocoa beans supply is determined really stakeholders in related to the cocoa supply chain. In general, the activity of cocoa beans production has not been efficient yet to compete as raw materials for domestic and foreign industries. In order for cocoa commodities in West Sulawesi Province can compete and increase the income of cocoa farmers, so it is necessary to increase the role of main stakeholders and to support the cocoa supply chain especially those support the improvement of cocoa beans productivity. The objective of study is to analyse the position and role of stakeholder in the cocoa bean supply chain. The method used to identify the stakeholders' position / structure is *Interpretative Structural Modelling* (ISM) method, and the role of stakeholders by survey method is to identify the cocoa bean supply chain that becomes the object of research. The results of the study indicate that famers are the most important stakeholders who need to get the attention of other stakeholders in the sustainability of the cocoa supply chain. Marketing institutions (collectors, wholesalers, processing industries, exporters), government / agricultural extension workers, still have few roles in the supply chain of cocoa commodities. The roles as expected of marketing institutions are partnership especially price guarantees and costs support of increasing farmers' garden productivity. The expected roles of governmental extension institution, Non Governmental Organization, college, and banking are to improve the knowledge of farming management through intensive assistance and the capital fulfilment of farmer through soft loan facility, also determining the basic price (minimum price) of cocoa bean among actors who is regulated for and controlled by government.

Keywords— Stakeholder, Position and Role, Institution, Supply Chain, Cocoa Commodity.

1. Introduction

Stakeholders in institutional form are very important in the development of agroindustry especially as media of agricultural product innovation [6]. Stakeholder-oriented institutions are very effective for creating dynamic relationships in cross-sectoral partnerships and only companies that interact with stakeholders can maintain

sustainability [14, 21]. Based on the context of the institutional review here are farmers, farmers' group, collecting traders, factories, government, research institutions, extension agencies, financial institutions, universities, media and agricultural equipment suppliers

An integrated supply chain will increase the overall value of the supply chain. To meet the criteria of the definition is required a coordination between the stakeholders involved in the supply chain [4]. Coordination, integration and management of business processes across all supply chain members / actors will balance the level of profit and risk between the upstream and downstream sides [26, 31]. Competition or imbalance does not occur among members in the supply chain if there is coordination and supervision of the support stakeholders [22, 27]. That's why, there needs the change of supply chain partnership strategy between the main stakeholders and the supporting stakeholders [1, 13]. According to [5] in order that the supply chain keeps sustainable, it requires to increase the the involvement of several institutions that can support the financial strengthening and performance of the supply chain.

The results finding of Four Foundation and KPPOD [30] in Majene District, farmers are still lack of awareness to sell cocoa beans with certain drought standards. Farmers buy agricultural facilities by credit to providers who also work as collectors. Farmer' group is not maximized to strengthen the bargaining position of farmers. There is no regulation that regulates the production and standard of cocoa beans desired by the entrepreneur or manufacturer. There is no direct market access between farmers and manufacturers. Lack of coordination and synchronization between stakeholders in the program of productivity improvement and quality of cocoa as well. Study of FAO stated that the development of agroindustry requires a healthy response of supporting institutions to optimize the potential in achieving supply chain advantage and reducing risk [16].

In regarding to the supply chain on cocoa commodities found that the main problem is to increase the productivity and quality that's hold a lot by farmers [2].

Increasing of production and quality of cocoa can be done through assistance / counseling and procurement of input production with increasing role of government and private institutions [24]. The policy of subsidizing the price of fertilizer has a positive impact in increasing the production volume and export of Indonesian cocoa [3]. In addition, farmer organization (gapoktan) needs directing in marketing and quality improvement of cocoa beans in order to create a supply chain system that performs well and is able to provide added value for farmers [18, 19].

The Government has made efforts to make various policies in order to improve cocoa productivity, but the policies and programs that have been implemented are not fully integrated, efficient and effective [20]. In 2009, Sulbar cocoa area decreased to 170,000 ha, which triggered the spirit of West Sulawesi Provincial Governor, H. Anwar Adnan Shaleh to return the glory of cocoa by launching the National Movement for Production and Cocoa Quality (Gernas Pro-Cocoa). However, Gernas has not been successful in increasing productivity because there are still many obstacles, especially on the distribution of facilities or packages of assistance in intensification, rehabilitation and rejuvenation activities, such as fertilizers, pesticides, and harvesting equipment.

Gernas is getting failure because of lack of synchronization among stakeholders so the position and role of each stakeholder does not run well as expected. Whereas Gernas is a national program that should synergize all stakeholders. As [8] argued that the main drivers of agricultural system changes in guarding the policy framework are largely determined by the role of stakeholders.

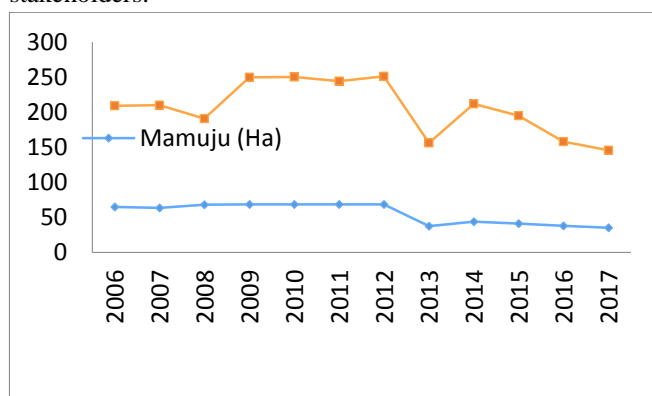


Figure 1. The development of cocoa plantation area in West Sulawesi.

Figure 1, shows that the development of cocoa plantation area in Mamuju District, West Sulawesi gets fluctuated and tends declined because of land conversion in order to oil palm plantation and corn crops. The level of productivity is very influential on the sustainability of the supply chain. However, productivity improvement is not enough yet, but it must be followed by improvements in marketing channels (supply chains) [9]. One of the improvements of the supply chain is to increase the value

received by farmers with strengthening institutions and increasing the role of stakeholders, resulting in efficiency and effectiveness of cocoa seed marketing to downstream. Effective marketing is needed in marketing cocoa beans to create price stability. The higher the selling price of the cocoa, the farmers are more motivated to increase the production. This study aims to identify the role of stakeholders involved in the cocoa bean supply chain, so resulting in a sustainable cocoa supply chain recommendation.

2. Methodology

This study used quantitative approach in order to ease the process of analysis and interpretation by using descriptive statistics. Research had been done for 6 months, since August 2016 to January 2017. In general, this research was conducted in three stages, i.e. data collection phase, data processing stage and data analysis phase. The data collection stage was begun with a series of discussions with experts on understanding of stakeholders or institutions involved in the cocoa bean supply chain.

The research was conducted in Sampaga and Kalukku sub-districts of Mamuju District, West Sulawesi Province, Indonesia. The determining of these two sub-districts because these two sub-districts were main cocoa producing location that represents West Sulawesi Province and had a supply chain which was quite far away. West Sulawesi province was the main source of income due to land suitability with cocoa commodity, and had ever been a centre of Gernas Pro-Cocoa Program.

The populations as respondents in this study were the main actors of the cocoa supply chain (farmers, collecting traders, wholesalers, exporters, and downstream industry players) and cocoa supply experts (academics and researchers). others respondent were chosen by purposive sampling based on knowledge about cocoa and cocoa beans supply chain amount 10 people (2 of each main actors and academic / researcher).

Respondent of farmers because the population size is huge, so the sampling technique used the technique of Area (cluster) Sampling [29], that every sub-district (Sampaga and Kalukku) 2 villages selected and each village was selected 5 cocoa farmers who understood the condition of crops and supply chain of cocoa beans, so overall selected 20 cocoa farmers.

The data obtained consist of primary data and secondary data. Secondary data was obtained through relevant agency documents such as agriculture and plantation agencies, Central Bureau of Statistics (BPS). Meanwhile primary data obtained through several ways as follows:

1. Field observation, which is to see directly the activities of all actors in the supply chain of cocoa commodities, ranging from producers (farmers),

collecting traders, processors (processors / industries), exporters to consumers.

2. In-depth interviews with farmers, actors or stakeholders and experts to understand the positions and roles of key stakeholders and supporters.

Stakeholders who were considered to be analyzed (obtained from results of library identification and experts opinion), i.e.:

1. Farmers / farmer groups
2. Merchant collectors
3. Big traders
4. Exporter
5. Downstream plant / industry
6. Government
7. Financial institutions (Banks, Cooperatives, etc.)
8. Extension agencies (offices, private sector, NGOs)
9. College
10. Media information
11. Institute of agricultural equipment suppliers
12. Transportation provider
13. Agricultural means provider

Stakeholders in the cocoa supply chain are derived from some of farmers' opinions as producers and entrepreneurs in the cocoa supply chain. Analysis of stakeholders' positions and roles aim to; 1) determining the position of each stakeholder, whether as a primary or supportive stakeholder (secondary, tertiary), and 2) knowing the role of stakeholders at each stage of the cocoa commodity supply chain. So the results of this analysis obtained which one of stakeholders have a strong force in the process of supply chain business of sustainable cocoa commodities.

Table 1. Comparison of agency interests involved in the supply chain.

Marks	Descriptions
V	If the institution in the left column supports institutional involvement in the right column, but not in vice versa.
A	If the institution in the right column supports institutional involvement in the left column, but not in vice versa.
X	If the institution in the right column and the institution in the left column support each other of their involvement.
O	If there is no relationship between both institutions in the right column and in the left column.

Positions or relationships of stakeholders within the cocoa supply chain will be obtained from some of experts' opinion in the ISM (Interpretative Structural Modelling) method. This analysis is preceded with

determining the stakeholder variables which is analyzed by the experts based on the concept developed by Saxena (1992). Comparison of the interests of each stakeholder by selecting the letters V, A, X, O as in table 1 above.

3. Results and Discussion

3.1. The Position of stakeholders in Cocoa Supply Chain

Based on the results of research done then obtained data about the type and role of stakeholders who support the success of the cocoa bean supply chain in Mamuju district West Sulawesi, as shown in table 2:

Table 2. Stakeholders who are involved in the cocoa supply chain.

No	Stakeholders	Roles
1	Famers	Cultivator and provider of cocoa bean.
2	Farmer groups	Media of discussion, coordination among famers.
3	Colletor of Village level	Direct purchase to famers' house, drying.
4	Collector of sub-district	Purchase to collector of village level, drying.
5	Collector of district	Purchase to collector of village/sub-district according to world prices.
6	Wholesalers	Supplier of cocoa bean to downstream and cocoa bean exporter
7	Factory/industry	Cocoa bean processor
8	Government	Program or assistance provider.
9	Regional Agriculture Dept.	Support the production improvement program.
10	Provincial plantation	Procurement of agricultural facilities.
11	Directorate of plantation	To hold program of cocoa & assistance from APBN, PPL power provider, training and coaching.
12	Banking	Credit provider (KUR).
13	Cocoa forum (NGO and Private)	Assistance of famers
14	College/University	To support of research and development of cocoa.

15	Transportation provider	Transportation service of cocoa beans among agents.
16	Agricultural tools distributor/provider	To provide (sell) production facilities are required by famers, such as: pesticides, fertilizer and agricultural equipment (hoe, sickle, machetes, scissor, hand sprayer, saw, etc).
17	Media of Information	Provider of price information and cocoa marketing.

The stakeholders shall provide good benefits for the continuity of the cocoa bean supply chain if they are able to run or to optimize their roles. The result of analysis with *Interpretative Structural Modelling (ISM)* method in related to the position of each institution will be described as follows.

The structural model diagram of cocoa commodity supply chain institute in Mamuju-West Sulawesi is shown in Figure 2. The DP-D matrix of supply chain institutional structures can be made based on Driver Power (DP) and Dependence (D), the matrix shown in Figure 3.

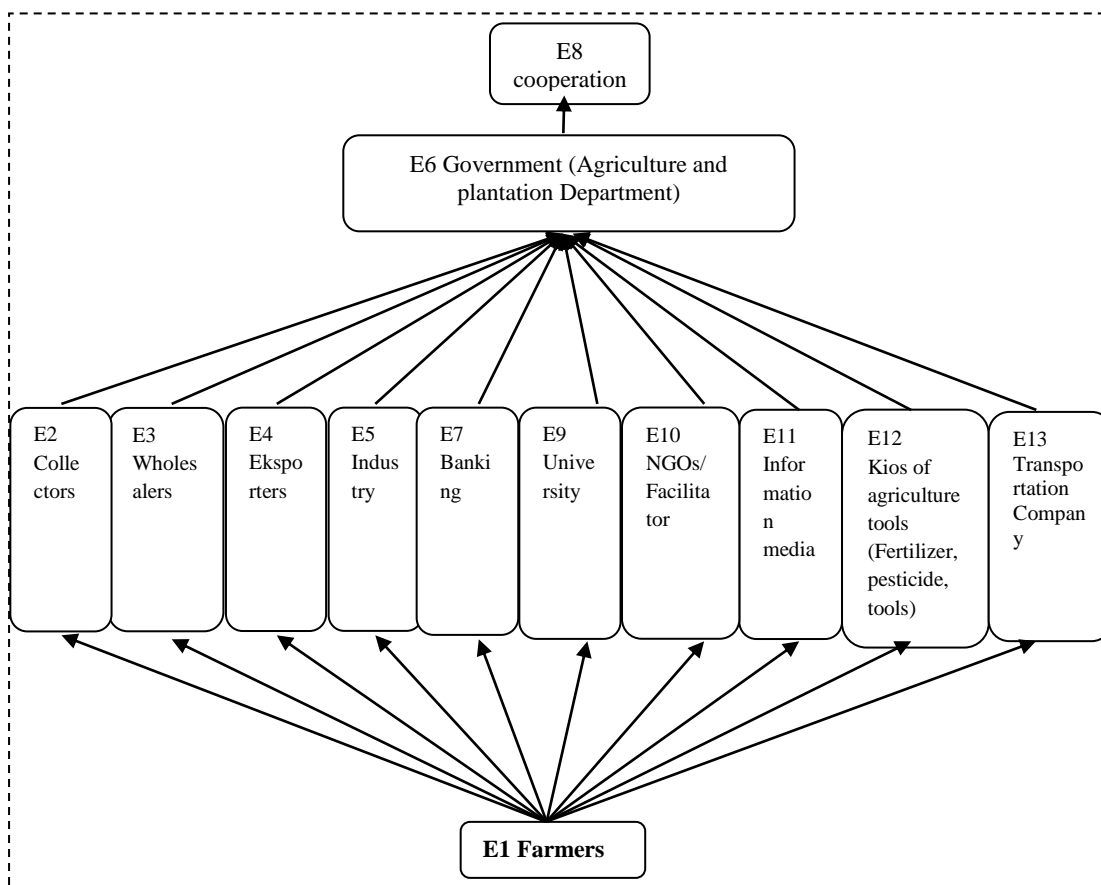
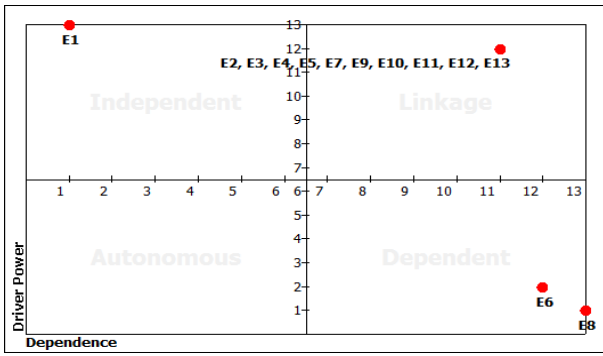


Figure 2. Diagram of structural model of cocoa commodity supply chain institutional in Mamuju-West Sulawesi

Institutional structural diagrams showed that farmers had a strong force in sustainability of the cocoa commodity supply chain business process in Mamuju-West Sulawesi. The farmers had a weak dependence on other stakeholders in the supply chain (Figure 2). With strong mobility and reliance with other weak stakeholders, farmers are the principal actors or stakeholders to be addressed in this supply chain.



- Level 1: E8
↑
- Level 2: E6
↑
- Level 3: E2, E3, E4, E5, E7, E9, E10, E11, E12, E13
↑
- Level 4: E1

Figure 3. DP-D matrix of cocoa commodity supply chain institutional structure.

Hasil Pengolahan TSM VAKIO

No.	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13
E1	1	1	1	1	1	1	1	1	1	1	1	1
E2	1	1	1	1	0	0	0	0	0	0	0	0
E3	0	1	1	1	1	0	0	1	0	0	1	1
E4	0	1	1	1	1	0	0	1	0	0	1	1
E5	0	1	1	1	1	1	1	1	1	1	1	1
E6	0	0	0	0	1	0	1	0	0	0	0	0
E7	0	1	1	0	1	1	0	0	1	0	0	0
E8	0	0	0	0	0	0	1	0	0	0	0	0
E9	1	1	1	0	1	0	1	1	1	0	0	0
E10	1	1	1	1	1	1	0	1	1	0	0	0
E11	1	1	1	0	1	1	0	1	1	1	1	1
E12	1	1	0	0	1	1	0	0	0	0	1	1
E13	1	1	1	0	1	0	0	0	0	0	1	1

Sub Elemen Kunci : E1

Tampilan: Reachability Revisi Grafik Struktur

Deskripsi Sub Elemen

No. Sub Elemen	Deskripsi
1	PETANI
2	PEDAGANG PENGUMPUL
3	PEDAGANG BESAR
4	EKSPORTIR

Figure 4. Interpretation Reachability of the final matrix for institutional structure of cocoa commodity supply chain.

The handling of farmers as cocoa beans producers in the cocoa commodity supply chain in Mamuju-West Sulawesi is to increase the income by setting base prices through partnerships with other cocoa commodities (Figure 2).

Farmers are stakeholders who support the involvement of collectors, wholesalers, exporters, industries, banking, universities, NGOs, information media, and farming kiosks. The stakeholders are the institutions in the cocoa commodity supply chain in Mamuju West Sulawesi that have great driving and dependency. The changes of these institutions can affect the change of other institutions, i.e. the government (agriculture / plantation Department). In order to the sustainability of the cocoa commodity supply chain, so the institutions must support the government program. Programs / policies will work well if the government establishes / strengthens the business institutions at the farm level, such as cooperatives or farmer groups (Figure 2). One of the main objectives of institutional strengthening of farmers is as a media partnership between farmers and traders, processing industries also exporters.

[7], found that partnerships are not only between groups or institutions but also between individual and institutions, the goal is to distribute the resources among partners for common prosperity. A prosperous farmer will increase his ability in procuring production facilities and technology both in quantity and quality, so the quality and continuity of supply of cocoa beans are sustainable. [28], a partnership with increasing the coordination among government and private stakeholders can ensure cocoa sustainability.

3.2. Role of Supporting Stakeholders on Any Supply Chain Network

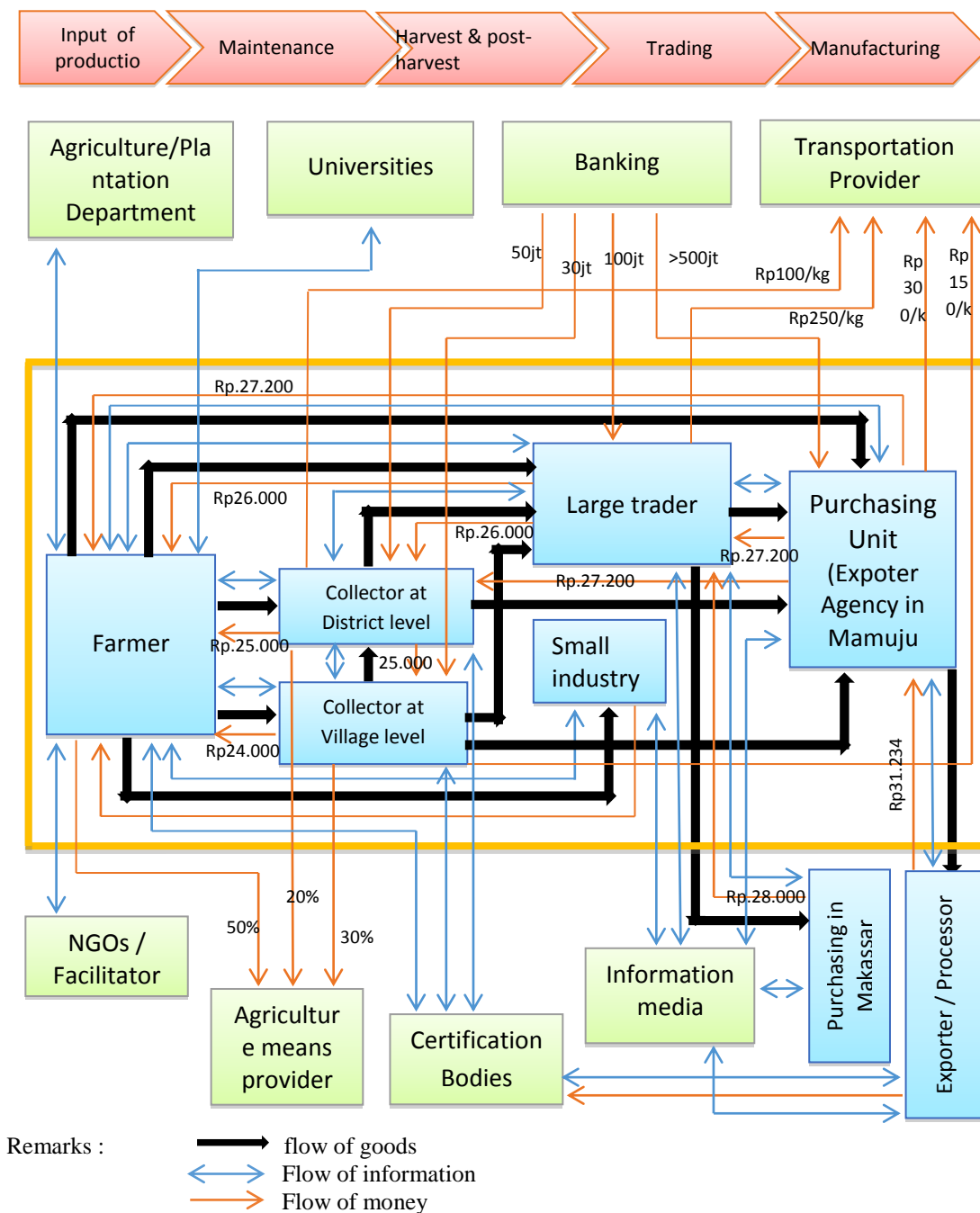


Figure 5. Main stakeholder relationships with supporting stakeholders in the cocoa commodity supply chain of West Sulawesi.

Figure 5, shows that farmers only get support from some of external institution of agriculture, NGOs / facilitators, colleges, certification bodies, and providers of agricultural means. These institutions are also not optimal in providing their support. Such as the Plantation Office only does counseling or mentoring to farmer groups when there is government assistance / program. NGOs / facilitators only do counseling / mentoring to their target group is still limited. The certification body also only accompanies the farmers whose location is not far from the purchasing unit as the partner of the institution.

Universities are also not optimal in providing information on the findings that are useful in improving the productivity of farmers' cocoa fields.

Cocoa farmers in Mamuju obtain the dominant loans from village collectors (60%) and the rest from sub-district collectors (20%) and wholesalers (10%), the rest is self-expenditure. Cocoa farmers in Mamuju are more likely to obtain loans from village collectors because they are easily accessible to farmers and partly because of family ties. The forms of loans provided by village collectors and sub-district collectors to farmers are in the form of

production facilities (fertilizers and pesticides) and cash capital (money).

Supporting institutions or stakeholders that support collectors (Figure 5). Such as providers of agricultural facilities (fertilizers, pesticides and agricultural tools) as partners of agricultural equipment procurement to meet the needs of farmers with a loan system whose payments will be cut at harvest season. Banking as creditor of cocoa beans' purchase capital to farmers. The certification body, as an institution to improve the quality of cocoa beans with training on how to care the garden and treatment after harvest. Providers of transport services, which assist the distribution of cocoa beans to wholesalers or purchasing units.

Village and sub-district collectors in Mamuju either obtaining loans from banks or loans from wholesalers. However, the source of the loan from the banking is more dominant (50%) than the loan from the wholesalers (25%), the rest is the cost itself. This indicates that village collectors have been able to increase the capacity of cocoa beans to farmers. Village collectors in Mamuju are expected to shift into large traders located at farmers area, so that the cocoa bean marketing chain can be shortened to increase farmers' income.

In Figure 5, it indicates that wholesalers with purchasing stations in sub-district and district are supported by institutions or stakeholders, such as: Banking, which provides support in the form of business capital loans. Media information, as a provider of price information and the needs of exporters and industries in the country. Providers of transportation services, which assist the distribution of cocoa beans to the purchasing unit in Mamuju and Makassar.

Figure 5 shows that exporters of cocoa beans and large processing industries that process cocoa beans into powder, butter, liquid, and cake get support from stakeholders such as: Banking, as a provider of loans. Media information, as a provider of information on the rupiah exchange rate and fluctuations in world market prices. The certification body, as a certificate of quality seeds and processed products ready for export. Providers of transport services, which help the distribution of cocoa beans or processed products to consumers.

Results of identification of stakeholders indicate that there are 16 (sixteen) of stakeholders in related to cocoa commodity supply chain in Mamuju District, West Sulawesi. Based on the number of main tasks and activities undertaken by these institutions or stakeholders, only 6 (six) stakeholders have duties and functions as well as direct linkages within each supply chain of cocoa commodities (main stakeholders), ie farmers, collectors, wholesalers, small (local) processing industries, large processing industries, and purchasing units (exporters). Stakeholders who should have the greatest influence in cocoa supply chain activities are farmers and industry.

Farmers as the main material providers (cocoa beans) have not played roles well because the constraints to meet the needs of facilities that support the improvement of gardens due to pests and diseases of old age plants are still minimal even none, especially from the government and banking as a stakeholder support. The existing industry in Mamuju-West Sulawesi is still small scale so the need of cocoa beans is also still small. Large traders as large industry representatives and exporters are also still buying at the same price between fermented and non fermented seeds.

The results of the analysis also show that financial institutions / banking, transportation service providers, provider of farming facilities, and information media are instrumental in increasing efficiency and effectiveness of supply chain of cocoa commodities. However, these stakeholders have not gotten good support from the government. Government and Non-Government Organizations (NGOs), universities still need to be improved in supporting the supply chain of cocoa commodities. Government policy support related to capital loan has not been intensively socialized yet to cocoa business actors. Improving the performance of each key stakeholder of the cocoa supply chain, especially farmers as cocoa seed producers should be supported by the strength of financial capital. Therefore, it needs an integrated support between the government and the private sector to bridge the banking institutions in the provision of soft loan facility to the farmers. Integrated supply chain is able to increase the value generated by the stakeholders involved. Productive supply chain or marketing activities create added value due to changes in form, space, function and ownership [11]. To manage an efficient supply chain, managers need to understand the complex interactions of stakeholders involved in the supply chain [23] of agriculture commodity. Just like [32] found that the agricultural economic activity variable that has the strongest positive direct effect on poverty reduction is cocoa production, including agricultural extension sustainability [30] in the country.

4. Conclusion

The most important stakeholders who need to get the attention of other stakeholders in the sustainability of the cocoa supply chain are the farmers. Farmers have yet to get appropriate supporting from stakeholders, particularly government. Other stakeholders (collectors, wholesalers, exporters, processors, banks, universities, NGOs, information media, agricultural facilities providers, transport service entrepreneurs) should support the government in establishing business units or cooperatives as farmers' organizations in meeting their needs, especially the availability of farming capital.

Financial institutions / banking, transportation service providers, agricultural equipment providers, and information media are instrumental in increasing the efficiency and effectiveness of the cocoa commodity supply chain.

Government and Non-Government Organizations (NGOs), universities still need to be improved in supporting the supply chain of cocoa commodities. Therefore, the policy operational steps that need to be realized in cocoa agribusiness development is improve the knowledge of farming management through intensive assistance and the capital fulfilment of farmer through soft loan facility, also determining the basic price (minimum price) of cocoa bean among actors who is regulated for and controller by government.

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Reference

- [1] Abbas F. J., Nobanee H., Khan M., Varas J., "The Influence of Supply Chain Management and Net Trade Cycle on Financial Performance", *International Journal of Supply Chain Management*, Vol. 6, No. 4, pp. 51-60, 2017
- [2] Aini H., "Analisis Risiko Rantai Pasok di Indonesia dengan Metode Analytic Network Process dan Failure Mode Effect Analysis Terintegrasi", Fakultas Ekonomi Manajemen, IPB Bogor, 2013.
- [3] Arsyad M., B.M Sinaga, Yusuf S. "Analisis Dampak Kebijakan Pajak Ekspor dan Subsidi Harga Pupuk terhadap Produksi dan Ekspor Kakao Indonesia Pasca Putaran Uruguay", Direktorat Jenderal Pendidikan Tinggi (DP2M), Depdiknas, 2011.
- [4] Arsyad M., "The Dynamis of Cocoa Smallholders In Indonesia", Research Result for the Student Program at Rykoku International Center, Kyoto, Ryukoku University, 2010.
- [5] Astuti R., "Pengembangan Rantai Pasok Buah Manggis", Disertasi, IPB Bogor, 2012.
- [6] Budi LS., Maa'rif MS., Sailah I., Raharja S., "Strategi Pemilihan Model Kelembagaan dan Kelayakan Finansial Agro Industri Wijen", *Jurnal Teknologi Industri Pertanian*, Vol. 19, No. 20, pp. 56-63, 2009.
- [7] Bitzer v., Glasbergen P., Leroy P., "Partnerships of a Feather Flock Together, An Analysis of The Emergence of Networks of Partnerships in The Global Cocoa Sector", *Journal Global Networks*, Vol. 12, Issue 3, pp. 355-374, 2012.
- [8] Caballero Rafael, "Stakeholders Interactions in Castile-La Mancha, Spain's Cereal-Sheep System", Springer Science Business Media B.V., 2008.
- [9] Chopra S., Meidl P., "Supply Chain Management: Strategy, Planning and Operations", 3rd Edition, Pearson Education International, Upper Saddle River, NY. Prentice-Hall, 2007.
- [10] Christopher M., "Logistic and Supply Chain Management", *Creating Value-Adding Networks*, Prentice Hall, Harlow, 2005.
- [11] Darma R., "Agribusiness: An Introduction to Agricultural Development", Liblitera Institute Makassar, Indonesia, 2017.
- [12] Direktorat Jenderal Perkebunan, "Statistik Perkebunan Kakao Indonesia", Kementerian Pertanian, Jakarta, 2016.
- [13] Drajat B., "Peluang Peningkatan Nilai Tambah Kakao Domestic melalui Regulasi Perdagangan", *Pelita Perkebunan*, Vol. 27, No. 2, pp. 130-149, 2011.
- [14] Dentoni D., Bitzer V., Pascucci S., "Cross-Sector Partnerships and the Co-creation of Dynamic Capabilities for Stakeholder Orientation", *Management Studies Group, Wageningen University Hollandseweg, Netherlands*, Vol. 135, pp. 35-53, 2016.
- [15] Eriyatno, "Ilmu Sistem: Meningkatkan Mutu dan Efektifitas Manajemen", IPB Press, Bogor. 2003.
- [16] FAO, "The Statistic Division", <http://www.fao.org>, 2010.
- [17] Grunow M., Gunther H.O., Westinner R., "Supply Optimization for The Production of Raw Sugar", *International Journal of Production Economics*, Vol. 110, No. 1-2, pp. 224-239. 2007.
- [18] Hasibuan M. dkk, "Peran Organisasi Petani dalam Mengoptimalkan Kinerja Rantai Pasok dan Pembentukan Nilai Tambah Kakao", Balai penelitian tanaman industri, Indonesia, Vol. 2(1), pp. 1-12, 2015.
- [19] Herawati, Rifin A., Tinaprillan N., "Performance and Efficiency of Cocoa Beans Supply Chain in Pasaman", West Sumatera, 2015.
- [20] Hidayat S., "Model penyeimbang Nilai Tambah Berdasarkan Tingkat Risiko pada Rantai Pasok Minyak Sawit", IPB Bogor, 2012.
- [21] Lambert D.M., "Supply chain management: Processes, Partnerships, Performance", 3rd Edition. Sarasota FL (US): Supply Chain Management Institute, 2008.
- [22] Milan E.L., Fernandez S.M., Aragones L.M.P., "Sugar Cane Transportation in Cuba", A Case Study. *European Journal of Operational Research*, Vol. 174, pp. 374-386, 2006.
- [23] Piya S., Shamzujjoha A., Khadem M., Al-kindhi M., "Supply Chain Complexity Drivers and Solution Methods", *International Journal of*

- Supply Chain Management, Vol. 6, No. 4, pp. 43-50, 2017.
- [24] Primadita, Reza, "*Analisis Rantai Pasok di Kecamatan Kalukku Kabupaten Mamuju*", Kasus Petani Program Nestle Cocoa Plan PISAgro, Departemen Agribisnis, IPB Bogor, 2014.
- [25] Rezha Boedi, Karlinda Elizabeth, "*Kebutuhan Pengembangan Usaha Kakao dengan Pendekatan Rantai Nilai dan Evaluasi Gerakan Nasional Peningkatan dan Mutu Kakao (Gernas Kakao)*", Studi Kasus Kabupaten Majene Sulawesi Barat, Ford Foundation dan KPPOD, Jakarta, 2013.
- [26] Ruben R., Boselie D., Lu H., "*Vegetables Procurement by Asian Supermarkets*": A Transaction Cost Approach. Supply Chain Management, An International Journal, Vol. 12, pp. 60-68, 2007.
- [27] Roekel J.V., Kopicki R., Broekmans C.J.E., Boselie D.M., "*Building Agri Supply Chain*": Issues and Guidelines. Agricultural Economics Research Institute (LAEI), Wageningen, 2009.
- [28] Shapiro J. F., "*Modelling the Supply Chain*", Massachusetts Institute of Technology, Duxbury, USA, 2009.
- [29] Sugiyono, "*Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*", Alfabeta, Bandung, 2013.
- [30] Thalyta E. Yuwono, Mohammad Mustajab, Muhammad Arsyad, "*Abstracts of doctoral theses on the Indonesian economy*", Bulletin of Indonesian Economic Studies, 46(2), 251-254, DOI: 10.1080/00074918.2010.486113, 2010.
- [31] Vorst, J.G.A.J. van der, "*Performance Measurement in Agri-Food Supply-Chain Network*": Quantifying the Agrifood Supply Chain, Springer Science Business Media, Netherlands, 13-24, 2006.
- [32] ZK Ekasari, S. A. M. Saleh, K. Jusoff, D. Salman, Akhsan, A. Kasirang, Muhammad Arsyad, A.A. Amrawaty, L. Fudjaja, "*Communication Pattern and Conflict in Agricultural Extension*", Asian Social Science, 9(5), 27-33, 2013.