




Identifying Agribusiness Institutions and their Role in Increasing Cocoa Production: Evidence from Polewali Mandar, Indonesia



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ABSTRACT

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Polewali Mandar Regency is one of the cocoa producers in West Sulawesi Province whose production has tended to decline in the last five years. The study aims to identify agribusiness institutions and their role in increasing cocoa production. The study employed the Interpretative Structural Modeling (ISM) method. The results showed that there were 12 institutions that played a role in the development of cocoa agribusiness. The key institutions could be expected to improve cocoa production were corporate institutions, non-governmental organizations and farmer groups. Therefore, government responsible and private institutions must carry out their respective roles in order to increase farmers' interest in developing their cocoa production.

1. INTRODUCTION

Cocoa is one of the leading commodities in the plantation sector which plays an important role in the Indonesian economy. Cocoa production is a means of providing employment in agricultural development programs. In addition, cocoa is the country's largest foreign exchange earner after palm oil and rubber. Indonesia is ranked third in the world with a production volume of 659.7 thousand tons in 2020 [1]. On the other hand, consumption of cocoa products in Indonesia is still relatively low with an average of 0.6 kg per capita per year. This value is much lower than the consumption of people in European countries, namely 8 kg per capita per year. Low consumption coupled with the region's high potential for cocoa cultivation and the large demand for cocoa on the international market have made Indonesia a potential cocoa exporting country [2].

The condition of smallholder cocoa plantations is still facing various challenges, including: most of them are managed not in accordance with technical guidelines with low levels of production, productivity and quality, high attacks by Plant Pest Organisms (OPT), limited business capital, access to inadequate information and market resulting in low competitiveness of farmers [3]. The problems with cocoa commodities are not only production and post-harvest problems, but also problems with cocoa agribusiness institutions that are still weak [4]. It is felt that the existing cocoa agribusiness institutions are not functioning properly. Cocoa agribusiness problems can be grouped into six aspects,

namely production, diversification, post-harvest, waste utilization, facilities and infrastructure, and institutions.

According to the studies [5-7], several things that cause cocoa agribusiness institutions to not work, namely: (1) Institutions are usually formed based on technical interests to facilitate coordination if there are programs or activities from the government, so they are not program oriented and do not guarantee institutional independence; (2) Institutional formation and development does not use local social capital base, with the principle of local self-reliance formed through the principle of empowerment; (3) The formation and development of farmer institutions are generally based on a top down approach, so that community participation does not grow well; (4) Institutions built are limited to strengthening horizontal ties, and not vertical ties; (5) Participation and cohesiveness of group members in institutional activities is still low, and is usually reflected in the low level of attendance of group members in institutional meetings; (6) The farmer's institution as a joint activity forum has not been able to become a unifying forum for members' activities and bind the needs of members together; (7) The introduction of institutions from outside pays little attention to the existing local institutional structures and networks, as well as the current economic, social, and political characteristics; (8) The coaching that is carried out in general tends to be individual in nature, that is, only to administrators, so that a social learning approach does not occur; (9) Institutional development always uses a structural path, and is weak from the development of its cultural aspects.

The development of the chocolate industry should be able to become a driving force for a cocoa agribusiness system that is more competitive both nationally and internationally, but Indonesia's processed cocoa production is still very low and the cocoa processing industry is not developing [8]. One of the contributing factors is the still weak institutions related to cocoa agribusiness, including cocoa farmer institutions which are still very weak, which makes the bargaining position of farmers weak in facing the existing market system [9]. Farmer institutions greatly contribute to increasing the independence and welfare of farmers [10] because institutions have very strong ties to the techno-social conditions of farmers [11]. Hidayanto et al. [12] mention that the development of farmer institutions is very important for several reasons, namely (1) many agricultural problems can be solved by farmer institutions; (2) providing continuity to efforts to disseminate technology or technical knowledge to farmers; (3) preparing farmers to be able to compete in a more open economic structure; and (4) the existence of farmer cooperation which can encourage more efficient use of resources. However, the condition that occurs is that cocoa farmer institutions are still very weak, making the bargaining position of farmers weak in facing the existing market system because the structure of the cocoa market at the farmer level is oligopsony [13]. The Weak institutional subsystems supporting cocoa farmers certainly have an impact on increasing production and the level of welfare of cocoa farmers. The institutional capacity of farmers is still diverse and the existing institutions do not play an optimal role and coordinate with each other to advance cacao, access to financial institutions is still very difficult to obtain loan capital to finance the production process, and the minimal role of agricultural institutions in the on farm and off farm sectors due to limitations number of farmers human Resources [14]. Therefore, a study is needed to identify agribusiness institutions and their role in increasing cocoa production.

2. MATERIAL AND METHODS

The research was conducted in Polewali Mandar Regency, West Sulawesi, Indonesia. This study used a qualitative approach through an expert system approach using survey methods. The data obtained in the field were analyzed by applying structured descriptive modelling techniques, using Interpretative Structural Modeling (ISM) data processing [15-17]. Research using the ISM analysis model does not require a large sample size. The number of experts/practitioners who can be used as sample recommendations is quite a lot with the priority of having a level of understanding, mastery, and/or being directly involved in cocoa farming. To support the achievement of research objectives, the number of samples is 7 institutional actors, namely the Polewali Mandar Regency Agriculture Office, agricultural extension workers, universities, companies, cooperatives, traders, and farmer groups selected purposively. Collecting data through interviews using questionnaires. Data processing is carried out using Interpretative Structural Modeling (ISM) analysis, through the following stages: (1) Developing a Structural Self-Interaction Matrix (SSIM), which is obtained from respondents from the previous sub-elements, as a result of consideration of contextual relationships, using symbols V, A, X and O. The symbol V is given, if the first sub-element 1 is more important than the second sub-element. Symbol A, if the second sub-element is more important than the first sub-

element). The symbol X, if the first and second sub-elements are equally important, and the symbol O is given if the first and second sub-elements are equally important); (2) Formulating contextual relationships and compiled using a structural interaction matrix (SSIM). The SSIM preparation uses symbols V, A, X, and O with the numbers 1 and 0; (3) Develop a model for each element; and (4) Compilation of the resulting Power-Dependent Driver (DP-P) matrix [18].

Table 1. Elements and sub-elements

Element	Sub-Element
Institution	1. Local Office for Agric Services
	2. Department of trade, industry, and micro, small and medium enterprises
	3. Development planning, research and development agency
	4. Agricultural extension agency
	5. University
	6. Cocoa company
	7. Cooperative
	8. Trader/middleman
	9. Non-Government Organization
	10. Agrochemicals
	11. Financial institutions
	12. Farmer's group

3. RESULTS AND DISCUSSION

Identification of agribusiness institutions that play a role in increasing cocoa production is analyzed using the ISM analysis tool. The opinion of the expert/actor is expressed in the form of a matrix starting from the SSIM (Structural Self Interaction Matrix) to see the aggregation of answers from the experts/actors based on their frequency. Then the SSIM whose contents are in the form of VAXO letters is converted into a matrix form so as to produce an Initial Reachability Matrix. The matrix is then converted into a Final Reachability Matrix to fulfill the law of transitivity between sub elements, the law of transitivity shows whether or not there is an indirect relationship or influence between sub elements. The Final Reachability Matrix, the Driver Power and Dependence are calculated from each sub-element to then see the results of the ISM method expressed in a directional graph and level structuring.

3.1 ISM output interpretation: Cocoa agribusiness institutions

ISM is conducted through interviews with the help of questionnaires to experts/actors related to any institutions that play a role in increasing cocoa production. Then all answers from experts/actors were analyzed using the ISM analysis tool. The result of the first analysis from ISM is to look at the frequency of answers from each expert/actor and then determine the SSIM as shown in Figure 1. The matrix describes the aggregation of answers from experts/actors regarding what institutions play a role in increasing cocoa production.

The SSIM is then converted into the initial reachability matrix shown in Figure 2 by converting the letters VAXO into the numbers 1 and 0 according to the ISM rules. Furthermore, to find out the direct or indirect effect between the sub-

elements, the initial reachability matrix is then reprocessed so that it meets the law of transitivity and produces the final reachability matrix which can be seen in Figure 3. In the figure, you can see the part that is colored gray. This shows that in that section there is a relationship between the sub-elements. An example is the relationship between A1 (company) and A5 (trader). In Figure 2, the relationship between these sub-elements is expressed in the number 0 which means that A1 is not expected to play a role more than A5. But in Figure 3, after using the law of transitivity, the relationship between the two elements is worth 1 which indicates that indirectly A1 is more expected to play a role than A5. This happens because there is a direct relationship between the sub-elements A2 (Agriculture) and A5 (Traders) which is worth 1, meaning that A2 is expected to play a role more than A5 (Figure 2). Thus, although A1 is not expected to play a greater role than A5 (Figure 2), the relationship between A2 and A5 indicates that A1 is indirectly expected to play a more important role than A5. The same thing happens to the relationship between other sub-elements in Figure 3 Final Reachability Matrix which is grayed out.

	12	11	10	9	8	7	6	5	4	3	2	1
1	O	A	O	V	X	O	X	A	X	V	V	
2	A	X	A	V	X	A	A	X	V	V		
3	V	A	A	V	A	V	O	O	A			
4	A	O	A	O	V	O	A	X				
5	V	O	O	A	V	A						
6	O	O	A	O	A	V						
7	X	A	A	O	A							
8	O	O	A	A								
9	V	A	V									
10	A	A										
11	V											
12												

Figure 1. SSIM of the institutions playing a role

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
A1	1	1	1	1	0	1	0	1	1	0	0	0
A2	0	1	1	1	1	0	0	1	1	0	1	0
A3	0	0	1	0	0	0	1	0	1	0	0	1
A4	1	0	1	1	1	0	0	1	0	0	0	0
A5	1	1	0	1	1	0	1	0	0	0	0	1
A6	1	1	0	1	1	1	1	0	0	0	0	0
A7	0	1	0	0	0	0	1	0	0	0	0	1
A8	1	1	1	0	1	1	1	1	0	0	0	0
A9	0	0	0	0	0	0	0	1	1	1	0	1
A10	0	1	1	1	0	1	1	1	0	1	0	0
A11	1	1	1	0	0	0	1	0	1	1	1	1
A12	0	1	0	1	0	0	1	0	0	1	0	1

Figure 2. Initial reachability matrix of institutions playing a role

	A	A	A	A	A	A	A	A	A	A	A	A
A	1	2	3	4	5	6	7	8	9	10	11	12
A1	1	1	1	1	1	1	1	1	1	1	1	1
A2	0	1	1	1	1	0	1	1	1	1	1	1
A3	0	0	1	0	0	0	1	0	1	1	0	1
A4	1	0	1	1	1	0	1	1	0	0	0	1
A5	1	1	0	1	1	0	1	0	0	0	0	1
A6	1	1	0	1	1	1	1	0	0	0	0	1
A7	0	1	0	0	0	1	0	0	0	0	0	1
A8	1	1	1	0	1	1	1	1	0	0	0	0
A9	0	0	0	0	0	0	1	1	1	0	0	1
A10	0	1	1	1	0	1	1	1	0	1	0	0
A11	1	1	1	0	0	0	1	0	1	1	1	1
A12	0	1	0	1	0	0	1	0	0	1	0	1

Figure 3. Final reachability matrix of institutions playing a role

Description:

- A1 = Cocoa company
- A2 = Department of agriculture
- A3 = University

- A4 = Cooperative
- A5 = Trader
- A6 = Non-government organization
- A7 = Agrochemicals
- A8 = Agricultural extension agency
- A9 = Financial Institutions
- A10 = Department of trade, industry, and micro, small and medium enterprises
- A11 = Farmer's group
- A12 = Development planning, research and development agency

Through ISM rules, to identify agribusiness institutions and their role in increasing cocoa production. Furthermore, by incorporating the concept of transitivity [19], Canonical Matrix (Figure 4) is obtained. Transitivity in contextual relations is a basic assumption made in ISM. This concept states that if variable X is related to Y and Y is related to Z, then X must be related to Z [20, 21]. The reachability matrix also provides the driving power and dependence power of each element. Thus, in the last reachability matrix table, the driving power for A1 (cocoa company) is the total number of entries in the row, which is 12. Meanwhile, the dependence power value for A1 (the sum of the entries in the column) is 6. Similarly, the values of driving power and dependence power are calculated for all the remaining elements. Cocoa companies take the role of increasing cocoa production in Polewali Mandar Regency in line with the increasing demand for quantity accompanied by the quality of cocoa beans. For example, the company Barry Callebaut and PT. Olam Indonesia is collaborating with the Agriculture and Food Service of the Polewali Mandar Regency in conducting outreach and farming partnerships with a focus on three areas, namely cocoa farmers, the cocoa community, and the environment. Furthermore, they focus on protecting cocoa farming communities, conserving forests, and increasing farmers' income.

In implementing the company Barry Callebaut and PT. Olam Indonesia conducts mentoring activities for farmer groups. So that a company partnership with farmers is realized, this is done so that farmers can sell their cocoa products directly. This partnership activity is certainly beneficial for the farmers because there is certainty of demand for cocoa to increase cocoa production. Furthermore, the partnership between farmer groups and companies. Farmers are directly fostered and directed how modern agriculture.

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	DP	R
A1	1	1	1	1	1	1	1	1	1	1	1	1	12	1*
A2	0	1	1	1	1	0	1	1	1	1	1	1	10	2
A3	0	0	1	0	0	0	1	0	1	1	0	1	5	6
A4	1	0	1	1	1	0	1	1	0	0	0	1	7	4
A5	1	1	0	1	1	0	1	0	0	0	0	1	6	5
A6	1	1	0	1	1	1	1	0	0	0	0	1	7	4
A7	0	1	0	0	0	0	1	0	0	0	0	1	3	8
A8	1	1	1	0	1	1	1	1	0	0	0	0	7	4
A9	0	0	0	0	0	0	0	1	1	1	0	1	4	7
A10	0	1	1	1	0	1	1	1	0	1	0	0	7	4
A11	1	1	1	0	0	0	1	0	1	1	1	1	8	3
A12	0	1	0	1	0	0	1	0	0	1	0	1	5	6
D	6	9	7	7	6	4	11	6	5	7	3	10		
R	5	3	4	4	5	7	1	5	6	4	8	2		

Figure 4. Canonical matrix of institutions playing a role

Description:

- DP : Driver Power
- D : Dependence
- R : Ranking (* is the key element)

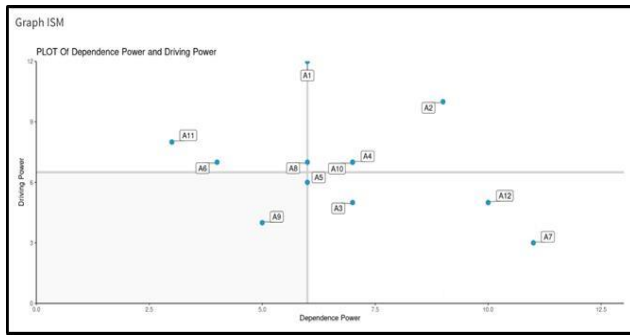


Figure 5. Directional graph (DP-D) of institutions playing a role

Figure 5 clearly shows that the results of the ISM analysis have 12 institutional sub-elements that play a role in increasing cocoa production which are divided into four quadrants, namely independent, linkage, dependent, and autonomous. A total of four sub-elements are in the independent quadrant, namely A1 (cocoa company), A6 (non-government organization), A8 (agricultural extension agency), and A11 (farmer's group) because they have high driver power and dependence is low. This means that these four sub-elements can influence or be stronger than the sub-elements that are in the linkage, dependent, and autonomous quadrant. In addition, the four sub-elements also show the importance of their influence in increasing cocoa production. In addition, the company is a key actor in this quadrant because it has driver power with a value of 12 which indicates that the institution plays a more important role than other institutions.

The four sub-elements of this institution indicate that if these four institutions continue to exist in carrying out their duties and functions, without the contribution of other institutions, then cocoa farming will continue to experience an increase in production. However, what is expected by farmers is not just an increase in production, but an increase in income that improves the welfare of farmers. These four institutions are institutions that have shown their roles so far, although an increase in the roles and functions of these four institutions will still be needed in the future.

In the linkage quadrant there are three sub-elements, namely A2 (department of agriculture), A4 (cooperative), and A10 (department of trade, industry, and micro, small and medium enterprises). Sub-elements in this sector need to be studied carefully because they have unstable relationships between sub-elements, which means that actions taken from sub-elements in this quadrant can affect sub-elements in their own quadrant and in other quadrants. This is because the sub-elements in this quadrant have high driver power and also high dependent.

Furthermore, in the dependent quadrant there are three sub-elements, namely A3 (university), A7 (agrochemical), and A12 (development planning, research and development agency). The three institutions have low driver power and high dependence. This shows that this institution is strongly influenced by other sub-elements that are in the quadrant above it (linkage and independent). Agrochemicals occupies the lowest position or level in the dependent quadrant because in fact this institution is an external institution that has no special obligation to contribute to increasing cocoa production. But the role of this institution can still be expected to play a role if they have a program to foster farmers in line with government programs. The position of agrochemicals is different from university institutions and development

planning, research and development agencies whose positions tend to approach the linkage quadrant, this is because the contribution of universities and development planning, research and development agencies in increasing cocoa production through research is still considered important even though university institutions and development planning agencies, research and development cannot affect farmers directly. Weak driver-power in this institution can be caused by various factors and other variables.

In the autonomous quadrant there are two sub-elements, namely A5 (traders) and A9 (financial institutions). The small value of driver-power and dependent obtained indicates that these two institutions are not the driving factors for increasing cocoa production. Based on this description, it can be said that there are four institutions that have a large driving force/influence on increasing cocoa production, namely cocoa companies, non-governmental organizations, agricultural extension agency, and farmer groups. The results of the study are in line with the results of research conducted [22] which shows that the plantation office and farmer groups are key actors in the development of agricultural institutions for cocoa commodities in Indonesia's border areas [23]. who suggested that farmers/farmer groups are key actors in the sustainability of the cocoa supply chain agro-industry improvement in Luwu Regency, South Sulawesi. The results are similar to the research conducted [17] that farmer groups are key actors in increasing cocoa production in Pinrang Regency. While the results of research conducted [24], that the ASKINDO organization (Indonesian Cocoa Association) is a key actor.

3.2 Structuring agribusiness institutions in increasing cocoa production

Increasing cocoa production can be done through structuring agribusiness institutions that play a role. The structure of the institutions can be arranged as shown in Figure 6. The results of the ISM analysis show that there are eight levels of institutions that play a role in increasing cocoa production where institutions at level one are the key actors or can be said to be the institutions with the highest driver power, while the institutions at level eight are the key actors. level eight is the institution with the lowest driver power and has the highest dependence.

Institutions that are at level-1 are companies that are at the peak of level structuring because they are key actors in increasing cocoa production. Meanwhile, institutions at level 8, namely agrochemicals, are institutions that are on the basis of level structuring. The results of this study indicate that the success of increasing cocoa production is largely determined by the role of institutions at the top level and the support from institutions at the lower level. Meanwhile, the role of institutions at the basic level is the final determinant in efforts to increase cocoa production.

Cocoa companies are key actors (level-1) because they act as farmers' partners in increasing cocoa production by ensuring farmers have buyers for farmers' cocoa beans. Companies currently directly involved with local governments are Barry Callebaut and PT. Olam has a Cocoa for Generations program that focuses on three main things, namely empowering cocoa farmers, strengthening cocoa communities, and preserving the environment. In an effort to increase cocoa production, farmer empowerment programs are the main thing, namely by providing assistance to farmer groups to focus on cacao cultivation.

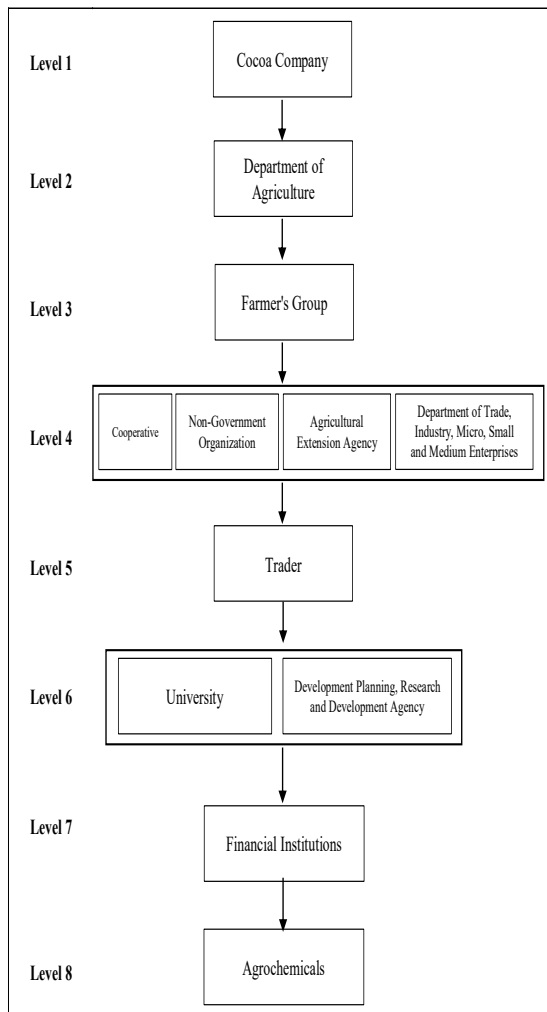


Figure 6. Structuring agribusiness institutions playing a role

At level-2 is the department of agriculture which is a government agency and is responsible for cocoa production. In addition, it is the duty of the agency to seek to increase cocoa production. The results of interviews with farmers and employees of the department of agriculture show that the agency has so far played a major role in increasing cocoa production through counselling/field schools, assistance with plantation conditions and farmer institutions, and bringing several farmer groups to work. comparative study.

The department of agriculture, in this case the head of plantation, stated that the government always directs farmers to improve the quality of the quality of beans for export by assisting farmers in doing good cultivation and providing an understanding of the quality of cocoa beans. farmers by providing opportunities for companies to enter Polewali Mandar Regency. Apart from the above functions, the Polewali Mandar department of agriculture and plantation has programs such as facilitating cost assistance in 2013, namely revitalization to access credit assistance provided by banks with installments after harvest, while the proceeds from the sale of cocoa commodities are left entirely to the mechanism and structure. growing market in Polewali Mandar Regency.

The local government empowers through the department of agriculture and plantation to provide assistance to cocoa farmers in the subsystem of production facilities in this case in the form of seeds, fertilizers, and capital needed in the cocoa cultivation process to increase farmer productivity [25]. Institutions at level-3 are farmer groups that have an influence

in increasing cocoa production because farmers who own the majority of plantation land and subjects who cultivate cocoa, farmers are subject to extension, and are the target recipients of government assistance. Therefore, farmers have a strategic position as institutions that play a role in increasing cocoa production. In addition, it should be noted that most of the farmers in Polewali Mandar practice polyculture (planting many types of plants), but in production centres such as in Tutar, Mapilli and Topango Districts, cocoa still dominates as their source of income. Therefore, the institution is most expected to play a role in increasing cocoa production in Polewali Mandar Regency.

Furthermore, at level-4 there are cooperatives, non-government organization, agricultural extension agency, and the department of industry, trade, micro, small and medium enterprises. Similar to companies, cooperatives have a strategic role as farmers' partners in terms of being buyers for farmers' cocoa beans. In addition, the cooperative provides empowerment programs through training and mentoring for farmers to cultivate cocoa plants. Cooperatives must be developed and are expected to be able to provide guidance in various aspects, both in terms of improvement and in terms of production sustainability, empowering cocoa farmers.

Non-governmental organizations take on the role of increasing cocoa production by providing seed assistance and coaching to farmer groups. Furthermore, agricultural extension agency according to Law No. 16 of 2006 concerning the extension system are expected to play a role in empowering farmers through capacity building through the creation of a conducive business climate, growing motivation, developing potential, providing opportunities, raising awareness, mentoring and facilitation of Agricultural extension agency.

The department of industry, trade, micro, small and medium enterprises actually does not have a direct effect on increasing cocoa production, but this institution is expected to play a role in ensuring trade policies and market availability for cocoa commodities so that farmers always have a place to market their commodities. In addition, this institution can also play a role by coordinating and consulting between regional apparatus organizations in preparing strategic plans and work plans to support increasing the competitiveness of cocoa.

At Level-5 there are traders who have a big role in the success of cocoa development. Aspects of cocoa marketing that have not been touched in the institutional setting. Farmers still lack a good price bargaining position. Therefore, the institutions that have been built are cocoa agribusiness institutions that can improve the bargaining position of farmers through the role of traders.

Level-6 contains universities and development planning, research and development agencies. University institutions are expected to play a role through research and development in the field of cultivation such as the application of Good Agricultural Practices, post-harvest, quality standards, institutions, socio-economics, and policies/regulations. As institutions that have a great influence in increasing cocoa production, research institutions are also expected to play a role by conducting joint research with local organizations and cocoa companies. The research results from the university are expected to be applied at the farmer level to increase the production of their farm products. One of the universities in Polewali Mandar Regency is Asyariah Mandar University. The Faculty of Agriculture has a mentoring and community service program which aims to be a learning class for farmers

both in processing their cocoa products and carrying out the development of cocoa cultivation, one of which is the integration of goats and cattle. Cocoa, the results of this study indicate that farmers can be helped in cultivating their farms because production facilities can be met without incurring additional costs and increasing cocoa production. The role of universities in cocoa agribusiness institutions is evidenced by the many results of research and community service carried out by universities that produce policy recommendations and formulation of cocoa commodities.

The government's role is very important in facilitating efforts increasing productivity, quality, market access, and developing downstream industries [26]. Development Planning, Research and Development Agency is a regional technical institution in the field of regional research and planning, development, research and development led by a head of agency in the administration of regional government in the field of research and regional development planning. This policy is in line with the results of research within the development planning, research and development agency of Polewali Mandar Regency, in order to support policy planning in the agricultural sector, especially in plantations. The strategic policies of the development planning, research and development agency, namely: conducting agricultural sector planning and research involving researchers from public/private universities, agencies, industries, business groups and cocoa farmers, as a strategic policy in the plantation sector for potential development of cocoa.

At level-7 there are financial institutions in this case are banking institutions. Banking institutions for capital assistance through people's business credit funds which aim to help farmers get their source of capital on credit which provides financial access to farmers to support the smooth running of their cocoa nursery business. At level-8 it was found agrochemicals. This institution does not actually have a direct effect on increasing cocoa production, but it is hoped that this institution will play a role in ensuring the supply of cocoa production facilities runs smoothly and reaches all farmers.

These findings above indicates that the description of the structuring of agribusiness institutions that play a role in increasing cocoa production. It can be explained that the institutional system of cocoa agribusiness is still very low. One of the contributing factors is the weak institutions related to cocoa agribusiness, including cocoa farmer institutions. The development of cocoa farmers' institutions is very important because: (1) there are many agricultural problems that can be solved by farmers' institutions; (2) providing continuity in the effort to disseminate technology or technical knowledge to farmers; (3) prepare farmers to be able to compete in a more open economic structure; and (4) the existence of farmer cooperation that can encourage the use of farmers' resources to be more efficient [27]. However, the condition that occurs is that cocoa farmer institutions are still very weak, thus making the bargaining position of farmers weak in facing the existing market system because the cocoa market structure at the farmer level is oligopsony [28]. The development of cocoa through farmer institutions is not yet in accordance with the functions and roles of the institutions that should be because the role of institutions in the agribusiness system determines the success of agricultural development in the future [29]. So that a model of institutional structuring of cocoa agribusiness is needed that can increase cocoa production.

4. CONCLUSIONS

Some conclusions of the study are there are 12 agribusiness institutions that play a role in increasing cocoa production. There are 4 quadrants, namely independent, linkage, dependent, and autonomous. In the independent quadrant there are 4 institutions namely A1 (Cocoa company), A6 (Non government organization), A8 (Agricultural extension agency), and A11 (Farmer's group). In the linkage quadrant there are 3 institutions namely A2 (Department of agriculture), A4 (Cooperative), and A10 (Department of trade, industry, and micro, small and medium enterprises). In the dependent quadrant there are 3 institutions namely A3 (University), A7 (Agrochemicals), and A12 (Development planning, research and development agency). And in the autonomous quadrant there are 2 institutions namely A5 (Trader), and A9 (Financial institutions). There are 8 levels of institutions that play a role in increasing cocoa production. At level 1 namely cocoa company; level 2 namely department of agriculture; level 3 namely farmer's group; level 4 namely cooperative, non government organization, agricultural extension agency, and department of trade, industry, and micro, small and medium enterprises; level 5 namely trader; level 6 namely university, and development planning, research and development agency; level 7 namely financial institutions; and level 8 namely agrochemicals. Further studies are needed to determine the relationship between roles between institutions and strategic programs for cocoa agribusiness institutions.

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