

Network Structure of Institutions in Cassava Agro-Industry Development in Lima Puluh Kota District

Rini Hakimi^{a1}, Melinda Noer^{b1}, Nofialdi^{b2}, Hasnah^{b3}

^a Study Program of Agricultural Science, Faculty of Agriculture, Andalas University, Limau Manis Campus, Padang, 25163, Indonesia
E-mail: rini.hakimi@gmail.com

^b Social Economics Department, Faculty of Agriculture, Andalas University, Limau Manis Campus, Padang City, 25163, Indonesia
E-mail: ¹melindanoer@yahoo.com, ²nofialdi@yahoo.com, ³annase69@gmail.com

Abstract— The development of cassava agro-industry in Lima Puluh Kota District is very potential. It is related that Lima Puluh Kota District is the largest cassava commodity production district in West Sumatera Province. There are formal and informal institutions that support the development of agro-industry through various activities involving agro-industry. This study aims to describe the network structure of formal and informal institutions in the development of cassava agro-industry in Lima Puluh Kota District. This research uses mixed methods research. Data and information in this study are obtained from literature studies, observations, in-depth interviews, and Focus Group Discussions (FGD) used for quantitative and qualitative analysis. The quantitative analysis used descriptive statistics, and qualitative analysis used the interactive model. The results of this research showed that the frequency of interactions of informal institutions and agro-industry is more often than formal institutions. Social relations are more dominant than business relations in the network structure of formal institutions and agro-industry. On the other hand, the network structure of informal institutions and agro-industry, business relations are more dominant comparing social relations. Social relations can get through coaching activities such as counseling, training, procurement of production equipment, and business licensing. While business relationships can get through transactions such as purchasing, selling, land leasing, loan of capital, saving of money, and transfer of money. Informal institution relations occur in every agro-industry activity, starting from procurement of raw materials, auxiliary materials, processing, and marketing products. Formal institution relations occur in processing and marketing products.

Keywords— cassava agro-industry; formal institutions; informal institutions; relations; network.

I. INTRODUCTION

The agricultural sector plays a significant role in the economic growth of a country [1]-[3], where agricultural development is closely related to agribusiness development [1], [4]. The most important part of the development of agribusiness is the development of agro-industry [2], [5]. Agro-industry is an industry that processes agricultural products [6]-[8], which have many benefits. First, it has a multiplier effect that increased the production of agricultural products [9]; later, it grows the job opportunities [10]. Afterward, it increased the added value of agricultural products [4], [11]. These three advantages proofed that agro-industry is a strategic sector to develop.

Agro-industries were almost present in the form of Small Medium Enterprises (SMEs) in every country [9], [12]. This SME is determined by absorbing more workers rather than the big industry [13]. However, it still has several obstacles such as lack of raw materials, lack of skill of human

resources, limitation of capability the technology, lack of funding, limitation of marketing, lack of innovation, and weak of coordination among stakeholders [5], [10], [14]-[16]. Many challenges faced the SME agro-industry.

The experts have suggested several ways to solve the problems. First, the procurement of raw material should form in legal contracts with suppliers [5], [17] to guarantee the quantity, quality, and price of raw materials [18], [19]. Second, the improvement of human resources quality and technology capability can be achieved through coaching programs conducted by governments, associations, or other institutions [20], [21]. Third, improving production technology, such as equipment and machinery, through collaboration with a large firm [17]. The material procurement, human resources competencies, equipment, and machinery, can be achieved through a good partnership among stakeholders.

Other researchers suggested that the government and cooperatives can be a source of funding for the SME agro-industry [22]. It was hoped that the Corporate Social

Responsibility (CSR) programs of a big firm would do by purchasing the product of SME through sales contracts. It is believed that it can solve the marketing problems of SME [9]. Next, the marketing of SME products should use the e-commerce method [23]. The other solution for lack of innovations is using the Open Innovation Models by combined the internal and external ideas in an open system [12]. Then, the government should improve the coordination and interactions among various institutions. These above solutions mentioned that all stakeholders have to be active in developing good SME agro-industry.

Some research has found that the keyword for good SME agro-industry development is the links and the interaction among government, industry, and civil society or communities [12], [24]-[27]. The fact, the inter-relationships between institutions among government institutions, universities, associations, cooperatives, and banks were relatively the same [26]. Furthermore, other studies explain the relationship between government and civil society to firm CSR in agro-industry development is also important [24]. While other studies state that government relation with agro-industry is more dominant than other institutions, there is a need to clarify the role of public and private sectors [5]. Undoubtedly continuous relationships between SMEs and several institutions can increase SME sales [27]. From the statement above can be seen that many factors and many stakeholders/institutions play an essential role in the development of SME agro-industry.

Although the strategy has been carried out by involving many actors in the development of agro-industry, the results are still far from expectations. For example, many clusters of agro-industry SMEs have not yet succeeded developed. Moreover, the results of the research above showed relationships among the institutions as a solution for the development of agro-industry SMEs. However, no study has been found that focuses on the type of relationship between formal and informal institutions in a network structure.

It is essential to find the frequency of interactions and the network structure between institutions and agro-industries in their development. These results can be used as guidelines for stakeholders to create competitive agro-industry clusters. For this purpose, good relations, mutually reinforcing, and sustainable relationships will be able to increase agro-industry productivity. Above all, increased agro-industry productivity directly impacts on increasing demand for agricultural commodities (farmer's income) and increasing the availability of jobs in the agricultural industry sector, so that will make an economic growth increase. Based on the description above, this study aimed to describe the network structure of formal and informal institutions in the development of cassava agro-industry.

II. MATERIALS AND METHOD

This research was conducted in the SME cassava agro-industries and institutions in Lima Pulu Kota District-West Sumatra Province – Indonesia. The SME agro-industry that is dominant in West Sumatra Province is the snack industry. This is including the agro-industry that processes cassava to snacks in Lima Pulu Kota District. Eventually, the purposive technique is used and set the agro-industry as key

informants. Including the snowball, the technique is used to set the institutions as key informants.

There are three categories of local institutions: First, the institutions that are organizations. Second, the institutions that are informal organizations. Third, the institutions that are not organizations [28]. Refer to the opinion; this research categorized the institutions become two kinds based on the legal form of organizations. They are formal institutions and informal institutions. A formal institution is a body or organization that carries out an activity and usually has a clear structure and written rules and objectives. The informal institutions are bodies or organizations or groups of people that grow from the bottom formed by the community, exist, and are rooted in the community. They have unclear structure or unwritten rules, or unplanned objectives. The formal and informal institutions that are questioned on those research are the institutions within the geographical area of the Lima Pulu Kota District.

This research design used was a mixed methods research that combines quantitative and qualitative methods [29]. Data and information are collected from literature studies, observations, in-depth interviews, and Focus Group Discussions (FGD). The instruments used for data collection were interview guides and questionnaires. The data and information used to quantitative and qualitative descriptive analysis. The quantitative analysis used to describe the frequency of interaction between agro-industries with institutions in the development of agro-industries. The quantitative analysis tool is descriptive statistics. The qualitative descriptive analysis used to describe the relation between agro-industry with formal and informal institutions. The qualitative analysis tool is an interactive model.

The steps taken in descriptive statistical analysis were started by calculating the frequency of the relationship between agro-industry and formal institutions or informal institutions. The frequency of the relationship calculated is the number of contacts and communications that occur between agro-industry with formal and informal institutions. The rate of interactions with formal institutions is seen within three years. This period was taken to be able to capture all interaction activities because the interaction activities carried out by formal institutions are limited based on planned work programs. The work program for the development of cassava agro-industry has been carried out in the last three years. The frequency of interaction between agro-industry with informal institutions is seen within one year. The next step is making the tabulation of data frequency. This step followed by making a bar chart from the data tabulation results and finally describing the frequency of agro-industry relations with formal and informal institutions.

The steps taken in the interactive model analysis are:

1) *Data reduction:*

- Identifying the institutions in the Lima Pulu Kota Districts.
- Grouping these institutions by formal and informal institutions.
- Classifying roles and relationships that occur with agro-industry based on work programs, performance reports, and activities are undertaken.

The output obtained at this stage is the group of institutions and types of their relationships.

2) *Data presentation:*

- Describing social and business relations that occur between agro-industry and formal institutions or informal institutions.
- Creating relationship tables and figures (network structure).

The output obtained in this stage is the description of relationships and network structure.

3) *Drawing conclusions and verification:*

- Making temporary conclusions from the results of the study.
- Conducting focus group discussions (FGDs) to discuss and verify research results.
- Making conclusions from the results of the discussion and verification.

The output obtained from this stage is the description of relationships and network structures that have been discussed and verified.

III. RESULTS AND DISCUSSION

A. Network Structure of Formal Institutions in Cassava Agroindustry Development in Lima Puluh Kota District

The formal institutions that play a role in the development of cassava agro-industry in Lima Puluh Kota District are categorized for five groups. They are Local Governments, Regional-Owned Enterprises (ROEs), State-Owned Enterprises (SOEs), Formal Institutions under the Ministry and Other Formal Institutions that can be seen in Table 1. Most of these formal institutions have interactions with agro-industry (22 institutions) but few institutions have no interactions with agro-industry (5 institutions). Even though there are no direct contact, they support the development of cassava agro-industry in Lima Puluh Kota District on the other way.

The biggest Interaction occurs among State-Owned Enterprises (SOEs) and agro-industries (Table 1). The interactions happen with *Bank Rakyat Indonesia (BRI)* as much as 484, *Bank Negara Indonesia (BNI)* as much as 249, and *Bank Mandiri* as much as 115. These high frequency of interaction are because of the agro-industries have interact continuously in a weekly or monthly period with BRI for saving money, transfer money, and repay loans. It shows that the agro-industry needs of business capital and business transactions require support from institutions that provide financial services (banks and cooperatives). This related the result of research that the government and cooperatives could be a source of funding for the SME agro-industry [22]. Business capital loans carried out by agro-industry are used to purchase production equipment, purchase raw materials, and marketing cost.

Other Formal Institutions in forms of Cooperatives and Place of Drug and Food Control also have many interactions frequency. Interactions among agro-industries and cooperatives are also in term of capital loans and saving. The interactions among agro-industries and Place of Drug and Food Control in term of certification of the food and supervision of agro-industry facilities.

TABLE I
THE INTERACTION FREQUENCY AND THE NUMBER OF AGROINDUSTRIES INTERACTED BETWEEN AGRO-INDUSTRIES WITH FORMAL INSTITUTIONS

No	Formal Institutions	Interaction frequency	Number of Agro-industries Interacted (n = 50)
A	Local Government		
1.	<i>Sekretariat Daerah</i> (Regional Secretariat)	0	0
2.	<i>Dewan Perwakilan Rakyat Daerah</i> (Regional House of People's Representative)	6	0
3.	<i>Dinas Kesehatan</i> (Health Office)	5	2
4.	<i>Dinas Pekerjaan Umum dan Penataan Ruang</i> (Public Works and Spatial Planning Office)	0	0
5.	<i>Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu</i> (Investment and Integrated One-Stop Services Office)	1	1
6.	<i>Dinas Perdagangan, Koperasi dan Usaha Kecil Menengah</i> (Trade, Cooperatives and SME's Office)	29	21
7.	<i>Dinas Perindustrian dan Tenaga Kerja</i> (The Industry and Labor Office)	78	24
8.	<i>Dinas Komunikasi dan Informatika</i> (Communications and Informatics Office)	0	0
9.	<i>Dinas Pemberdayaan Masyarakat dan Nagari</i> (Community Empowerment and Nagari Office)	2	2
10.	<i>Dinas Lingkungan Hidup, Perumahan Rakyat dan Permukiman</i> (Environment, Public Housing and Settlements Office)	0	0
11.	<i>Dinas tanaman Pangan, Hortikultura dan Perkebunan</i> (Food Crops, Horticulture and Plantations Office)	22	11
12.	<i>Dinas Pangan</i> (Food Office)	1	1
13.	<i>Badan Perencanaan Penelitian dan Pengembangan</i> (Research and Development Agency)	0	0
14.	<i>Pemerintahan Kecamatan</i> (Sub District Government)	10	5
15.	<i>Pemerintahan Nagari¹</i> (Nagari Government)	19	11
B	Regional Owned Enterprises (ROEs)		
16.	<i>Bank Nagari</i>	3	2
17.	<i>Bank Perkreditan Rakyat (BPR)</i>	39	1
18.	<i>Nagari-Owned Enterprises (NOEs)</i>	2	2
C	State-Owned Enterprises (SOEs)		
19.	<i>Bank Rakyat Indonesia (BRI)</i>	484	8
20.	<i>Bank Negara Indonesia (BNI)</i>	249	2
21.	<i>Bank Mandiri</i>	115	2
D	Formal Institutions under Ministry		
22.	<i>Kantor Pertanahan</i> (Land Office)	1	1
23.	<i>Pusat Layanan Usaha Terpadu (PLUT)</i> (Integrated Business Services Center for Cooperatives and SMEs (IBSC))	3	3
24.	<i>Politeknik Pertanian Negeri Payakumbuh</i> (Payakumbuh State Agricultural Polytechnic)	7	3
E	Other Formal Institutions		
25.	Cooperatives	336	6
26.	Creative Home	2	2
27.	<i>Loka Pengawasan Obat dan Makanan</i> (Place of Drug and Food Control)	336	1

¹ *Nagari* is the unity of a customary law society with territorial limits and authorized to regulate and administer the interests of the local community in the *Minangkabau* and or based on local origins and customs. The *Nagari* Government is under Sub District Government in the West Sumatra Province [30].

These two Institution should create innovative program to attract more agro-industries interacted since they have a strategic position. Local governments with having a high frequency of interaction with agro-industry are the Industry and Labor Office (78 interactions), Trade Cooperative and SME Office (29 interactions), Food Crop, Horticulture, and Plantation Office (22 interactions). The interactions occur in forms of training and coaching. Interaction activities involve many agro-industries. These activities support the statement that the coaching of agro-industry and commerce of the product is indeed to create strong agro-industries institutions [31]. These strategic local institutions should create an integrated and well-planned program to achieve sustainable good agro-industries.

The Regional State Enterprises also have interactions in moderate numbers. The interactions occur in terms of capital relations. The *Bank Perkreditan Rakyat (BPR)* and *Bank Nagari (BN)* provide capital loans for agro-industries. The number of agro-industries interacted is still in few numbers since the *BPR* and *BN* not so popular among agro-industries.

The Formal Institutions under the Ministry are the institutions that have a direct order from The President Of Republik Indonesia trough the Minister to create the development. In Lima Puluh Kota District, there are three forms of these institutions. They are Land Office, Integrated Business Services Center for Cooperatives and SMEs (IBSC), Payakumbuh State Agricultural Polytechnic. These institutions only have few interactions. The Payakumbuh State Agricultural Polytechnic, a government-owned university, has three agro-industries interactions with agro-industries. It shows the low involvement of the Educational Institutions in the development of the cassava agro-industry area. Whereas in some regions, successful SME development involves intensive interaction from universities around the region [32]-[35].

Besides, the high frequency of interaction does not directly describe the high number of agro-industries that interact. For example, the percentage of interaction frequency between agro-industry and BRI is 34.181%, but the percentage of the number of agro-industries that interact with BRI is only 16%. While the percentage of interaction frequency between agro-industry and The Industry and Labor Office is 5.508%, but the percentage of the number of agro-industries interacting with this institution is highest, that is 48%. This shows that the local government has a high potential to support regional development. The percentage of interaction frequency and percentage of the number of agro-industries interacted with formal institutions can be seen in Figure 1.

Formal Institutions in Lima Puluh Kota District have met the minimum requirement of innovation system theory since it has the Government, Businesses, and University. However, agro-industries cannot increase productivity because of the small number of interactions and agro-industries involved in these interactions. Interaction is one of the key factors in the success of the regional development innovation system [36-38].

In Table 1 and Figure 1, it can be seen that the number of interactions and frequency of interactions still not proportional. Only some of the Formal Institutions get intents interactions with agro-industries.

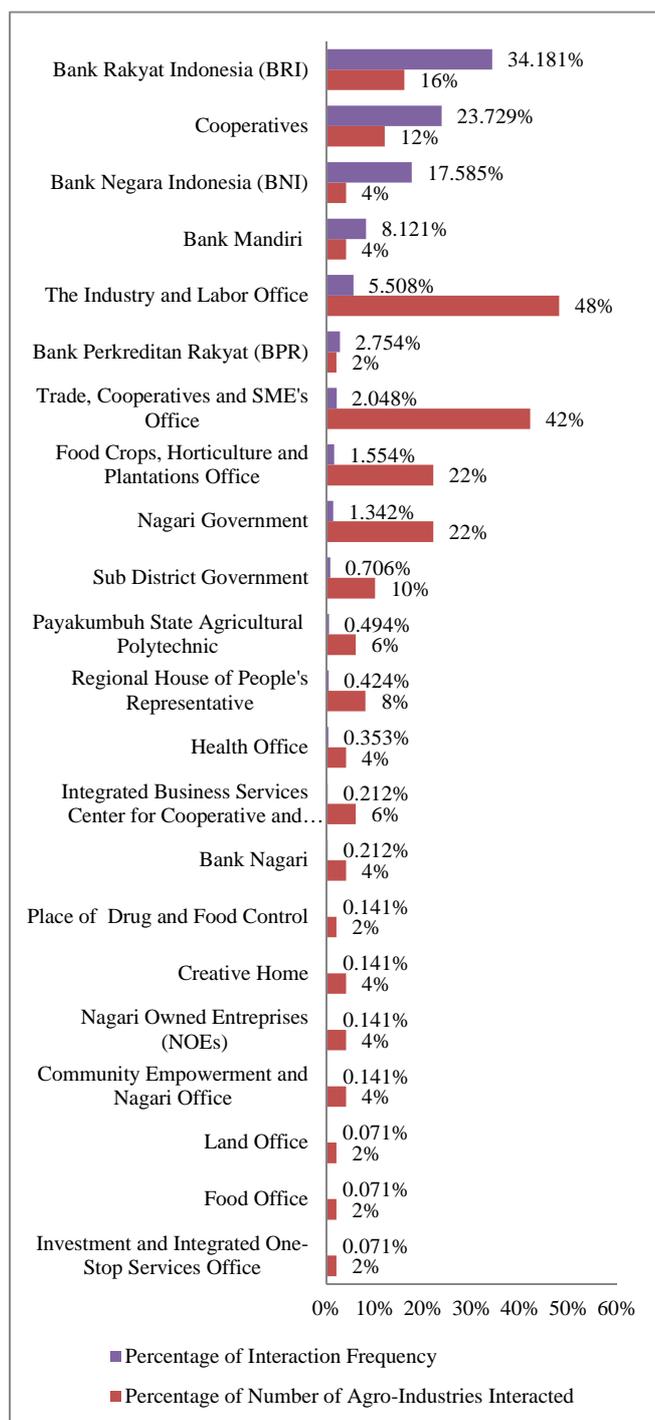


Fig. 1 Percentage of interaction frequency and percentage of number of agro-industries interacted with formal institutions

Interaction results are sustainable relationships between formal institutions with agro-industry. This type of relationship is in the form of communication and instrumental. This type of communication relation is based on information exchange. The type of instrumental relations is based on the interests of one actor to be fulfilled by another actor [39]. This relationship is carried out through coaching and services to the agro-industry. The relationship between agro-industry with the formal institution can see in Table 2.

TABLE II
THE RELATIONSHIP BETWEEN AGRO-INDUSTRY WITH FORMAL INSTITUTIONS

No	Formal Institutions	Relations with Agro-industry		Relationship	Activity
		Direct	Indirect		
A	Local Government				
1.	Regional Secretariat		√		
2.	Regional House of People's Representative	√		Social	Procurement of production equipment
3.	Health Office	√		Social	Counseling Licensing
4.	Public Works and Spatial Planning Office		√		
5.	Investment and Integrated One-Stop Services Office	√		Social	Licensing
6.	Trade, Cooperatives and SME's Office	√		Social	Counseling, training, demonstration, consulting, procurement of production equipment, product monitoring, and product promotion
7.	Industry and Labor Office	√		Social	Counseling, training, demonstration, consulting, procurement of production equipment, product monitoring, and product promotion
8.	Communications and Informatics Office		√		
9.	Community Empowerment and Nagari Office	√		Social	Counseling and product promotion
10.	Environment, Public Housing and Settlements Office		√		
11.	Food Crops, Horticulture and Plantations Office	√		Social	Counseling, training, demonstration, consulting and procurement of production equipment
12.	Food Office	√		Social	Product promotion
13.	Research and Development Agency		√		
14.	Sub District government	√		Social	Counseling and licensing
15.	State Government	√		Social	Counseling and licensing
B	Regional Owned Enterprises (ROEs)				
16.	<i>Bank Nagari</i>	√		Business	Saving, loan, and money transfer
17.	<i>Bank Perkreditan Rakyat (BPR)</i>	√		Business	Saving and loan
18.	<i>Nagari-Owned Enterprises (NOEs)</i>	√		Social Business	Financial service information Money transfer
C	State-Owned Enterprises (SOEs)				
19.	<i>Bank Rakyat Indonesia (BRI)</i>	√		Business	Saving, loan, and money transfer
20.	<i>Bank Negara Indonesia (BNI)</i>	√		Business	Saving, loan, and money transfer
21.	<i>Bank Mandiri</i>	√		Business	Saving, loan, and money transfer
D	Formal Institutions under Ministry				
22.	Land Office	√		Social	Legalization of business locations
23.	Integrated Business Services Center for Cooperatives and SMEs (IBSC)	√		Social	Counseling, training, demonstration, consulting
24.	Payakumbuh State Agricultural Polytechnic	√		Social	Counseling, training, demonstration
E	Other Formal Institutions				
25.	Cooperatives	√		Social	Distribution of government funding
				Business	Saving and loan
26.	Creative Home	√		Social	Counseling, training, demonstration, consulting
27.	Place of Drug and Food Control	√		Social	Counseling and licensing

The relationship between agro-industries and formal institutions can be seen in Table 2 and Figure 2. There are two types of relations, which are direct and indirect relations. In direct relations, these institutions have face to face with agro-industries. The indirect relationship, these institutions do not have direct interaction with agro-industries, but they have interactions with other institutions.

There are five Local governments that have an indirect relationship with agro-industry. They are Regional Secretariat, Public Works and Spatial Planning Office, Communication and Information Office, Environment,

Public Housing and Settlements Office, the Planning, and Research and Development Agency. These institutions have a relationship with other institutions through coordination in several activities such as designing activity plans for each institution, budget approval, performance accountability, giving licenses related to the required business licenses, providing business land legalization, providing coaching, infrastructure development, and formulating Regional Regulation on Industrial Development. So, these five institutions have a strategic position in agro-industries development.

The direct relationship occurs in most of the relations among institutions except the five indirect that mentioned above. There are two types of relationships, which are social and business relationships. The social relationship has happened when agro-industries and institutions have no profit orientation. On the other hand, business relations are relations that aim for profit-oriented.

Social relations among formal institutions with cassava agro-industry is generally carried out by the activities of coaching, licensing, and legalization of business locations. The activities of coaching are counseling, training, demonstration, consulting, procurement of production equipment, product monitoring, and promotion. Social relations between government institutions with agro-industry are carried out in monthly and annual periods.

These transfer of knowledge mentioned above that have been done by the formal institutions are in four types of innovations, which are product innovation, process innovation, organization innovation, and marketing innovation [40].

The institutions that have done the transfer knowledge for innovations are Health Office, Trade Cooperatives and SME's Office, Industry and Labor Office, Food Crops Horticulture and Plantations Office, Integrated Business Services Center for Cooperatives and SMEs (IBSC), Land Office, and Creative Home. They create product innovation by coaching about safe food ingredients, cooperation in the procurement of raw materials, product diversification, and rotation of cassava planting time.

Process innovation carried out through coaching in producing healthy products, production efficiency, and competition in production technology innovation, producing product variations, and providers of production equipment.

Organization innovation is carried through counseling activities and consulting services in improving enterprise management (a division of tasks and bookkeeping business), business licensing (Industrial Business Permits), business certificates, and legalizing business locations.

Marketing innovation is carried out through coaching in packing product improvement, making business licenses (Commerce Business Permit), and conducting online marketing.

These social relations described above do not have good results. It is because of the knowledge transfer only up to the knowledge diffusion level. It can be seen that only a few agro-industries applied the knowledge that they received. This condition because of the discontinued of the coaching and monitoring knowledge transferred. It is better to have a level of knowledge applications in knowledge transfer, so the agro-industries can apply the knowledge and then deployed the new knowledge of innovation [25], [41].

The business relationships of agro-industry with formal institutions were through saving, loan, and money transfer activity. The period of interaction in business relationships with cooperatives is done on a daily, weekly, and monthly basis. The period of interaction in business relationships with ROEs and SOEs is usually done weekly and monthly.

Besides of business relations, the social relations formed between ROEs with agro-industry. The social relations of *Nagari* Owned Enterprises (NOEs) with agro-industry through information provided related to opening savings

accounts in BRI and BNI and loaning funds of People's Business Credit. Besides, SOE's social relations with the creative home are through funding provided in the establishment, implementation of activities, and management of the creative home. It can be stated that the business relation of agro-industries only with the financial institution.

Unfortunately, there are no business relations between SME agro-industry and the association or industry. Meanwhile, for the success of the agro-industry development, we need the business relationship between them in the form of procurement of raw and auxiliary material, marketing of the product, product development [25], [33], [42], [43].

From the network structure in Figure 2 can be seen that the local government plays an important role in agro-industries development since there are many links connected to them in terms of social relations. For a successful agro-industries development, we need good collaborations among the government, universities, industry/business (large firms), and SME agro-industries in the form of the social and business relationship. Unfortunately, the business relationship still not develop as it should be.

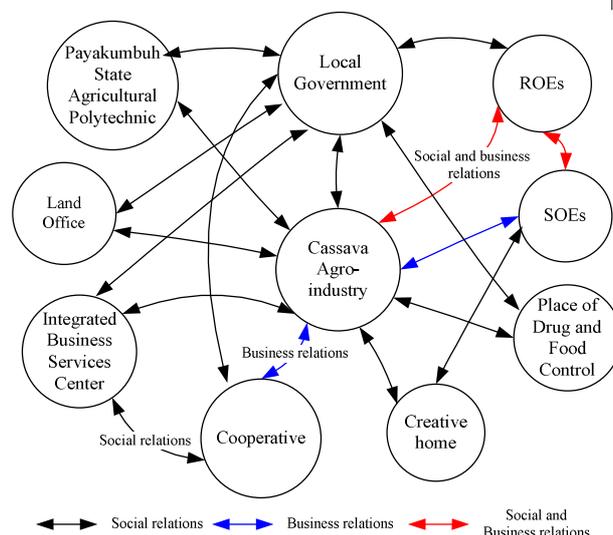


Fig.2 Network structure of formal institution in the development of cassava agro-industry in Lima Pulu Kota District

B. Network Structure of Informal Institutions in Agro-Industry Development in Lima Pulu Kota District

There are fifteen informal institutions that play role in agro-industry development that can be seen in Table III and Figure 3. Twelve institutions have interact directly with agro-industries which are landowners, farmers, greengrocer, traditional grocery store, firewood sellers, customers, retailers, collecting traders, wholesalers, and traditional financial institutions. Three institutions have not to interact directly which are sellers of agricultural production facilities, farmer groups, and customs institutions or *Kerapatan Adat Nagari (KAN)*². This indirect interaction because of their role to make an interactions with farmers or landowner.

² *Kerapatan Adat Nagari (KAN)* / Custom Institution is a group of indigenous leaders whose maintain the sustainability of custom and concern about social and inheritance problem occure among people in *Nagari* [30].

They do not make a direct contact with the agro-industries even though they have an important position to improve the agro-industries development.

The biggest Interaction occurs among customers and agro-industries (Table 3). The interactions frequency as much as 72,893.

TABLE III.
THE INTERACTION FREQUENCY AND THE NUMBER OF AGROINDUSTRIES INTERACTED BETWEEN INFORMAL INSTITUTIONS WITH AGRO-INDUSTRY

No	Informal Institutions	Interaction frequency	Number of Agro-industries Interacted (n = 50)
1.	<i>Pedangang Sarana Produksi Pertanian</i> / Sellers of agricultural production facilities	0	0
2.	Landowner	1	1
3.	Farmers	4,118	22
4.	Group Farmers	0	0
5.	Greengrocer	2,835	30
6.	Traditional grocery stores	2,042	35
7.	<i>Pedagang Kayu Bakar</i> / Firewood sellers	1,376	39
8.	Customers	72,893	28
9.	Retailer	3,619	27
10.	Collecting traders (<i>Nagari</i>)	2,866	24
11.	Collecting traders (Subdistrict)	1,190	11
12.	Collecting traders (Region)	1,040	13
13.	Wholesalers	392	9
14.	Traditional Financial institutions	135	5
15.	<i>Kerapatan Adat Nagari (KAN)</i> / Customs Institutions	0	0

Based on the percentage of interaction frequency between agro-industry and informal institutions (Figure 3), the highest percentage of interaction frequency occurs with consumers because some agro-industries make direct sales to the customer. Fifty-six percent of the agro-industries sell the product directly to the market and also have their display. Few agro-industry also sell the product online, or customers can order the product by phone than the product sent by the couriers. Until now, there is no agro-industry has the initiative to expand the marketing by using these loyal customers to open new branch retailer in the customer place.

The agro-industries have a lot of direct interactions with farmers because they need a supply of raw material. Some agro-industries have their land, which process by the member of the family. Some agro-industries give a capital loan to the farmers so that the farmers will sell the cassava to them. On the other hand, the traders also give the supply of raw material to the agro-industries. Many interactions happen because the majority of agro-industries do the production process every day, so the interactions happened quite often. The availability of raw materials and supporting materials is a crucial factor for continuous production activities [7], [16], [25].

The interacting of agro-industries with firewood sellers are carried out by agro-industries in weekly periods (1-2 times per week) and monthly (1-2 times per month). On the other hand, although the number of agro-industries interacting with firewood traders is higher than that of agro-

industries interacting with farmers, the percentage of interaction frequency with farmers is higher than that of firewood traders. It proves the results of a study which states that the development of agro-industrial areas has a high relationship with the source of raw materials [25].

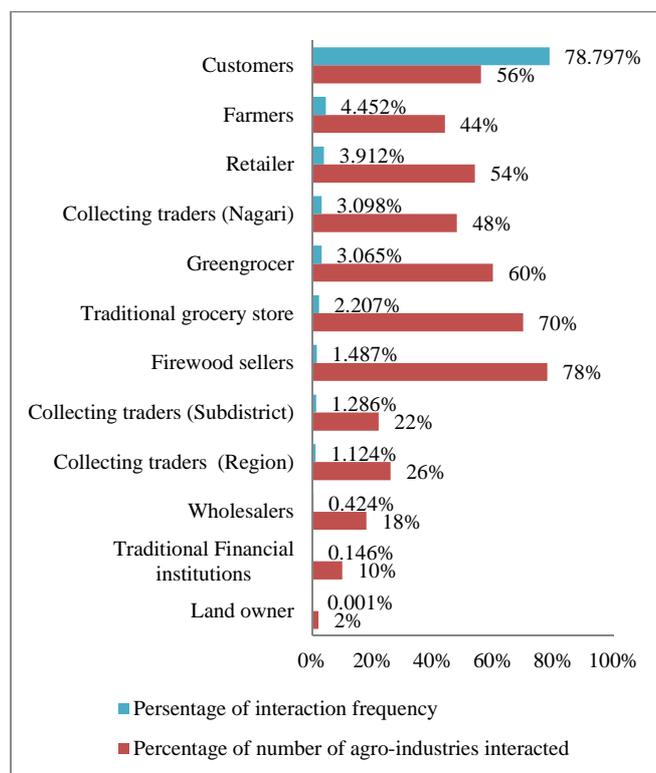


Fig. 3 Percentage of interaction frequency and number of agro-industries interacted with informal institutions

The interactions between agro-industries and greengrocer are in high frequency because they support the auxiliary material for making the cassava snack product. The interactions happen once or twice a week. The agro-industries have a concern about the fluctuation of the chili price. They should buy the chili even though the price is high since they need fresh chili to maintain the quality.

The agro-industries have a high frequency of interaction with collecting traders of the product. The *Nagari* and Sub District Traders were collecting twice a week, every Tuesday and Thursday. The Region Collecting Traders buy the product once a week. These traders buy to the agro-industries based on fluctuating demand of the market without the contract that mentions quantities of product buying. The condition of there is no certainty about demand from traders pushes the agro-industries hard to develop their business. The agro-industries also sell the product to the wholesaler directly once a week. Some expert suggested that the contract of raw material and marketing will reduce risk and product development in agro-industries [20], [44].

The agro-industries also have indirect relations with informal institutions. First, the agro-industries have no interaction directly with the seller of agricultural production facilities agro-industry. These sellers have a relationship with farmers in terms of purchasing fertilizers and production facilities for cassava cultivation activities.

Second, the agro-industries have no interaction directly with the farmer groups, but the Farmer Groups support the fertilizer procurement for cultivation activities. The farmers are more likely to sell their products independently to agro-industry without the involvement of the Farmer Groups.

Third, the agro-industries also have no direct interactions with KAN/The Customs Institution. It is because The Traditional Institution has a task to take care of land ownership status and the problem about it. The agro-industries have relations with landowners. The land is rent by farmers to produce cassava, and the land also rent by the industries for cassava production, production location, and place for retail. The landowner will contact The Traditional Institution if there is a land boundary dispute.

The agro-industries interact more with sellers in terms of supplying raw materials and auxiliary materials for production activities compared to the interacting of marketing their products. It is shown by the percentage of the number of agro-industries interacting is 44% -78% with raw material and auxiliary sellers, while the percentage of the number of agro-industries interacting with the collecting

traders to product marketing is 22% - 48%. The percentage of interaction frequency and the number of agro-industries interacted with informal institutions can be seen in Figure 3. The type of relationship between informal institutions and agro-industry is in the form of transactions. Transactions are relationships based on the exchange of goods or services between one actor and another actor [39]. The transactions create business relations with some institutions. Institutions related to the development of agroindustry include input traders, farmers, gatherers, consumers, and traditional financial institutions [25]. The relationship of informal institutions with agro-industry showed in Table 4.

Business relationships are carried out through land leasing, purchasing, selling, and lending activities. Land leasing is subject to farming activities and the location of production or sale of agro-industry products. Purchases are purchases of production facilities or raw materials (cassava) or production equipment or agro-industrial processed products. Sales are sales of cassava or agroindustry products. Besides, business relationships are also carried out through lending of funds.

TABLE IV.
THE RELATIONSHIP BETWEEN AGRO-INDUSTRY WITH INFORMAL INSTITUTIONS

No	Informal Institutions	Relations with Agro-industry		Relationship	Activity
		Direct	Indirect		
1.	Sellers of agricultural production facilities		√		
2.	Landowner	√		Business	Land leasing
3.	Farmers	√		Business	Purchasing
4.	Group Farmers		√		
5.	Greengrocer	√		Business	Purchasing
6.	Traditional grocery stores	√		Business	Purchasing
7.	Firewood sellers	√		Business	Purchasing
8.	Customers	√		Business	Selling
9.	Retailer	√		Business	Selling
10.	Collecting traders (Nagari)	√		Business	Purchasing, selling, and loan
11.	Collecting traders (Subdistrict)	√		Business	Selling
12.	Collecting traders (Region)	√		Business	Selling
13.	Wholesalers	√		Business	Selling
14.	Traditional Financial institutions	√		Business	Loan
15.	Customs Institutions		√		

Business relations between agro-industry and informal institutions occurs because of mutual need-oriented profit. Periods of interaction are daily with customers, weekly or monthly with traders, and yearly with landowners. Based on the table and description above, we can see the network structure of informal institutions with agro-industries in Figure 4.

The informal institutional network structure with agro-industry shows the highest links are with farmers and retails. It means that farmers and retails are institutions that have a dominant relationship in the development of agro-industry in Lima Puluh Kota District. This network structure shows that business relationships are more dominant than social relations between informal institutions with agro-industries and between informal institutions. However, this business

relationship is also supported by trust and ties between informal institutions with agro-industry or between informal institutions.

The network structure shows that social relations occur between landowners and farmers with traditional/custom institutions. This social relationship is carried out through mediation and consolidation in the problem solving of land boundary conflicts. This explains that the development of cassava agro-industry needs land for farming activities. Agro-industry activities and infrastructure development must pay attention to the interaction among KAN/The Customs Institutions with landowners, farmers, and the local government because the *Ninik Mamak* (Traditional Leader) as part of the traditional institutions knows the boundaries of the land in the area.

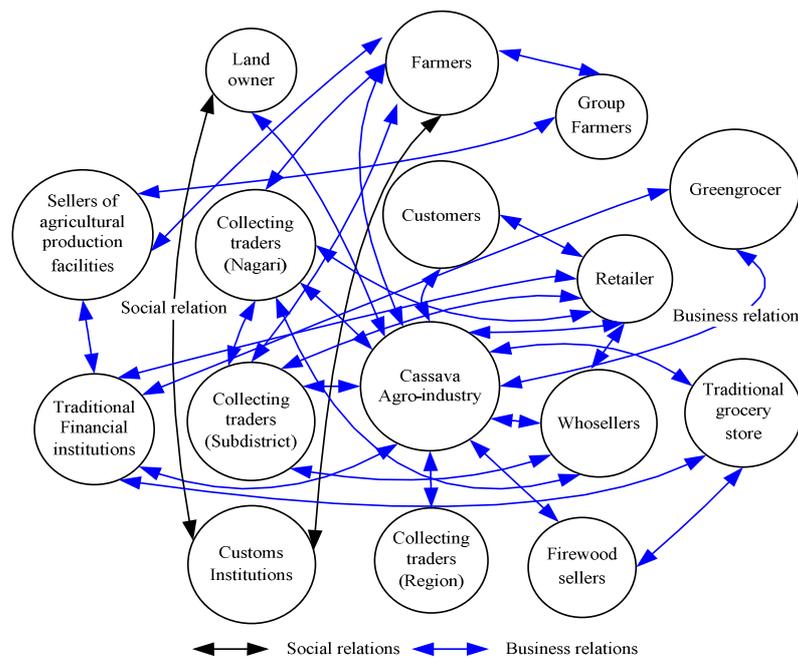


Fig. 4 Network structure of informal institution in the development of cassava agro-industry in Lima Puluh Kota District

IV. CONCLUSION

The formal and informal institutions interact with the agro-industry in varied activities. The frequency of agro-industry interactions with informal institutions is higher compared to interactions of the formal institutions. Formal institutions in the form of banking and finance do business relations, but the Local Government and University do social relations with agro-industry. Informal institutions do more business relations than social relations. The type of relations is communication, transaction, and instrumental.

The relationship between formal institutions in form of Local Government, SOEs, and ROEs are very important in coaching, services, and providing financial services. The formal institutions are done coaching, such as counseling, training, providing production equipment, and legalizing business. The relationship of informal institutions is very important to support every agro-industry activity, starting from the procurement of raw materials, auxiliary materials and production, and marketing products.

The formal and informal institutional network structure shows that the network is spread. The most links in the formal institutional network structure are with local government, while in the informal institutional network structure, the most links are with farmers and retailers.

The interactions to create a good relationship in coaching activities needs to synergize between formal institutions with informal institutions in the procurement of raw materials, auxiliary materials and production equipment, and product marketing. The agro-industry development must pay attention to the involvement of informal institutions because they have significant roles in the processing and marketing of agro-industrial products. The formal institutions should build their roles through business relations with agro-industries to ensure the continuous marketing of the product agro-industries.

This study has limitations, which only look at the relations of institutions that are within the geographical area of Lima Puluh Kota District. In the development of cassava agro-industry, there are other institutions outside the geographic area of the Lima Puluh Kota District that also have relationships such as sellers of production equipment for agro-industry, machinery and equipment workshops, other universities, provincial governments, and the central government.

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