NEW STRATEGIES TO STRENGTHEN COCOA AGRIBUSINESS INSTITUTION: EVIDENCE FROM MAJENE REGENCY, INDONESIA

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ABSTRACT

Indonesia, as one of the main cocoa producers, currently experiencing declining productivity trend due to various factors which can be handled with the collaboration of multi-stakeholders. Implementation of strategic programs by strengthening institutions is important to overcome these problems. The research aims to identify and analyze strategic programs as potential alternatives for institutional strengthening of cocoa agribusiness. The research employed Interpretative Structural Modeling (ISM) to simplify the set of strategic programs to form clear relationships in the form of diagraphs (autonomous, linkage, dependent, independent) and priority levels. The results show that of the 10 strategic programs for institutional strengthening of cocoa agribusiness, only one program is a key program, namely 'institution identification'. Then this key program is supported by other programs by considering their level and position in the diagraph. Next three important programs needed to strengthen cocoa agribusiness institution. They are expanding access to cocoa marketing, improving the quality of cocoa production, and increasing government awareness of cocoa commodity potential. The findings suggest the need to strengthen the role of institutions through institution identification and implement strategic programs such as coordination function analysis, marketing access expansion strategy, and product quality improvement in the cocoa agribusiness system.

Keywords: agriculture development; agriculture institutions; cocoa agribusiness; ISM

INTRODUCTION

Cocoa is one of Indonesia's mainstay plantation commodities. Its contribution to the national economy also plays a significant role. In addition, this sector can also provide employment and is the third largest source of foreign exchange from the plantation subsector after rubber and oil palm (Depparaba and Karim, 2019). However, national cocoa productivity is still unstable and fluctuates from time to time. The same thing also happens in West Sulawesi, which is the center of national cocoa production. To overcome this problem, the government has made various efforts through the policy of expansion of planting areas, export duty policy, and the National Movement to Increase Cocoa Production and Quality (Gernas Kakao) which was implemented in 25 provinces and lasted between 2009 and 2014 (Utami, 2020). The result of the movement was a rejuvenation of the cocoa commodity from being dominated by old and unproductive plants to young plants that are ready to increase production for decades in advance. However, the long-term results have not been seen to date since the end of Gernas Kakao (Amran et al., 2021; Bartholomius, 2013).

Cocoa production level on a national scale has experienced a continuous decline from 181,000 tons of production in 2018 to 161,000 tons in 2020. On a provincial scale, West Sulawesi as one of the production centers also experienced a decline from 71,064 tons in 2021 to an estimated production of 69,623 tons in 2022. The decline in production is largely due to the decline in production in Mamasa Regency. The production data on a district scale,

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especially in Majene District, has increased but not significant, from 8,128 tons in 2019 to 8,711 tons in 2022 (BPS, 2023). Nevertheless, the productivity level is still quite far from the ideal. Currently, cocoa productivity in Majene is 0.67 tons/hectare/year, while ideally, cocoa plants can produce 1 ton/hectare/year. The low productivity is caused by the inability and lack of motivation of farmers to perform farm maintenance tasks. This has become a major issue in the on-farm subsystem of cocoa commodity agribusiness.

Developing agribusiness is vital because the failure of enterprises in agribusiness impacts food security, and threatens social and economic stability (Adobor, 2020). Current condition are facing several problems such as low prices in farmer level. This is due to the characteristics of farmers as price takers in the cocoa trade chain due to their weak bargaining position (Fitriana et al., 2020). The lack of strong farmer institutions and the lack of support from other institutions in the form of training, provision and technical guidance on the use of technology, as well as the development of supporting infrastructure makes this condition even worse (Adobor, 2020). There are approximately 1,066 of farmer groups in Majene, West Sulawesi. However, only about 10% of these farmer organizations actually operate as farmer groups. This is due to the fact that the existing farmer groups are still relatively new, so they have not been able to optimally carry out their role as a platform for strengthening the capacity of farmers and institutions in the cocoa agribusiness which is the main focus of this research. Seeing these problems, it shows an indication of the need for research related to the performance and institutional strengthening of the cocoa stakeholders in Majene Regency.

Several studies have been conducted to formulate strategic programs to develop cocoa agribusiness around the world. The first challenge is investment, as most agricultural enterprises are often unprofitable, making them unattractive to investors, especially foreign investors (Mykola et al., 2019). Funding agribusiness projects also needs to pay attention to the components of sustainable agriculture. However, the increasing expenditure to promote sustainability along with the low profitability of the agricultural sector is the reason why investors are not interested in this sector (Efremenko et al., 2021). However, foreign investors contribute not only in cash but also in the form of the latest technology and mechanization (Finagina et al., 2021). The next hurdle is competition between agribusiness sectors, Chzhan et al. (2019) said that there are factors that drive competitiveness including the entry of new businesses in the market, market competitors (old players), threats from substitute goods, "market power" of buyers, and "market power" of suppliers. The competitiveness of agribusiness in some countries in Africa and India is still low, hence governments are undertaking capacity building of agribusiness actors through entrepreneurial skills while creating incentives and diversifying funding channels through private partnerships, public funds, and domestic resources (Babu & Shishodia, 2018; Singh, 2019). Countries such as Russia face agribusiness development challenges in the digital economy aspect and focus on information technology skills, management accounting, and digital technology-based agribusiness management analysis (Kundius & Pecuh, 2019).

Meanwhile in Indonesia, Ryadha (2022) found that productivity is a plantation problem and the low quality of cocoa beans has an impact on falling prices in the Polewali Mandar market. Increasing productivity and quality needs to be done by utilizing subsidies, micro credit program (KUR), and coaching from the government and private sector. Pandanan (2019) identified in his research that cocoa development policies and government programs such as input subsidies, opening a cocoa bean processing industry, ensuring labor availability, and expanding distribution areas are needed in strengthening the system of agribusiness. Arfah (2019) divided the recommendations into two parts, namely for smallholder plantations and state and private plantations. The government can implement a strategy to increase smallholder production in smallholder plantations by strengthening farmer groups and optimizing the role of cocoa farmer associations. As for strategies for state and private plantations, stakeholders need to focus on increasing production volume, promotion, and diversification of cocoa products with the aim of the export market. Sejati and Supriadi (2015) describe that farmer groups in Central Sulawesi do not have a strong bargaining position to establish business cooperation with plantation entrepreneurs or plantation product industries. Therefore, stakeholders need to seek institutional empowerment of farmer groups to increase access to all types of information such as technology, cultivation techniques, inputs,

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capital, and marketing, and benefit the community. In addition, the government also needs to encourage the active role of cooperative institutions so that they can play a role as lenders, suppliers of agricultural inputs, marketers of cocoa products, and as a link to the entire agribusiness system.

Some literatures have highlighted program and policy recommendations that can be implemented at multi-scale in various topographical areas around the world. Subsidy strategies and strengthening and activating the role of institutions are vital strategies for developing agribusiness systems based on previous findings. In addition, emphasizing production growth through investments that focus on agricultural sustainability and socioeconomic aspects is also a priority of this research because it will benefit all cocoa agribusiness stakeholders, especially farmers (Malorgio and Marangon, 2021). However, there is no specific research on strategic programs for institutions in the agribusiness system. This research fills the gap to provide a more in-depth and specific explanation on a broader scale case related to the role of institutions in agribusiness development by supporting agricultural sustainability. Therefore, this research aims to identify and analyze strategic programs as potential alternatives for institutional strengthening of cocoa agribusiness in Majene Regency.

MATERIAL AND METHODS

Based on the research problem formulation and the objectives to be achieved as stated earlier, this research uses a qualitative approach with the aim to understand a phenomenon in depth and then describe the phenomenon. The design type of this research is a case study because researchers explore a single unit or phenomenon that is limited by time and activity (program, event, process, institution, or social group) and collect detailed information using various data collection procedures over a long period of time (Creswell, 2009). This research type is descriptive which is intended to explain a social condition in this case agricultural institutions in a complex cocoa agribusiness system based on the results of interaction with experts. This research was conducted in Majene Regency, West Sulawesi (figure 1) from May to August 2023. The description expected in this research is a clear and systematic description of the structure and relationship between strategic program sub-elements. The instrument used in this research was a questionnaire in the form of a list of questions which were then developed.

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Figure 1. Map of Majene Regency, West Sulawesi

The data required (Table 1) includes determination of elements and sub-elements. The elements of "strategic program" are the element analyzed in this study. This element was determined on the basis of research objective and results of discussions with experts in the field of cocoa agribusiness from several agencies/institutions. The results of the initial research and discussions with the stakeholders resulted in 10 strategic program sub-elements. After determine the element, a series of questionnaires consist of 45 questions respectively. Next, determine a sample of experts, there are five experts referred to in this study which determined by purposive sampling technique based on the following characteristics according to the research objectives: (1) Having experience in the field of cocoa agribusiness, (2) Having a reputation, position, or authority in that field, (3) Willing to conduct in-depth interviews, and (4) Has strong influence and interest in the development of sugar cane commodities. The experts are the head of the extension sector, extension staff, and the head of the information methods section at the Agriculture, Livestock, and Plantation Service Office of Majene District, the Assistant for Government Affairs at the Regional Secretariat of Majene District, and academics at the University of West Sulawesi.

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Table 1: Data Structure and Properties

Data Structure		
Data	**Property**	**Function**
Data on strategic programs	The level of importance strategic programs based on quadrants: independent, linkage, dependent, autonomous.	To identify and determine the level structure and hierarchy of strategic programs to strengthen the institutions.
Elements		
Elements	**Sub-elements and Questions**	**Target**
Strategic Programs	10 sub-elements and 45 questions	Sub-elements as strategic program variables to strengthen the institutions.

This study uses an Interpretative Structural Modeling (ISM) analysis tool which functions to formulate a complex structure based on elements, formulate a hierarchy of relationships between sub-elements, and classify sub-elements into 4 quadrants (autonomous, dependent, linkage, and independent). According to (Saxena et al., 1992; Waller, 1980), ISM analysis is carried out in the following stages: (1) Identification of the set of elements; (2) Determine the contextual relationship between sub-elements; (3) Perform binary pairwise comparisons (e.g. "Does sub-element 1 affect sub-element 2"); (4) Develop a Structural Self-Interaction Matrix (SSIM) using the results of the experts' responses to the contextual relationships between sub-elements; (5) Convert SSIM to Initial Reachability Matrix (IRM) by replacing symbols V, A, X, O in the questionnaire with numbers 1 and 0; (6) Checking the matrix with the transitivity rule to get a matrix that complies with the transitivity rule, (7) The Final Matrix is then processed to get the Driver Power and Dependence (DP-D) values to produce a Directional Graph, which is a graph of related sub-elements directly and shows hierarchical levels and is classified into four quadrants.

The four quadrants in question are as follows: (i) weak driver-weak dependent variable (autonomous), the sub-elements contained in this quadrant are generally not related to the system or may have little relationship. Sub-elements are considered in autonomous sector if the DP value ≤ 0.5 and the D value ≤ 0.5; (ii) weak driver-strong dependent variable (dependent), the sub-elements in this position are not independent, means they are very dependent on the sub-elements above them. Sub-elements are included in this quadrant if the DP value ≤ 0.5 and the value $D > 0.5$; (iii) strong driver-strong dependent variable (linkage), the sub-elements in this group need to be studied carefully because they have an unstable relationship between sub-elements. Sub-elements enter sector (iii) if the DP value is > 0.5 and the D value is > 0.5; (iv) strong driver-weak dependent variable (independent), sub-elements in this quadrant are independent variables that have a major influence on other sub-elements. Sub-elements include in the independent sector if the DP value is > 0.5 and the D value is ≤ 0.5. ISM analysis is made based on processing data and information from experts to obtain a consistent matrix using predetermined procedures.

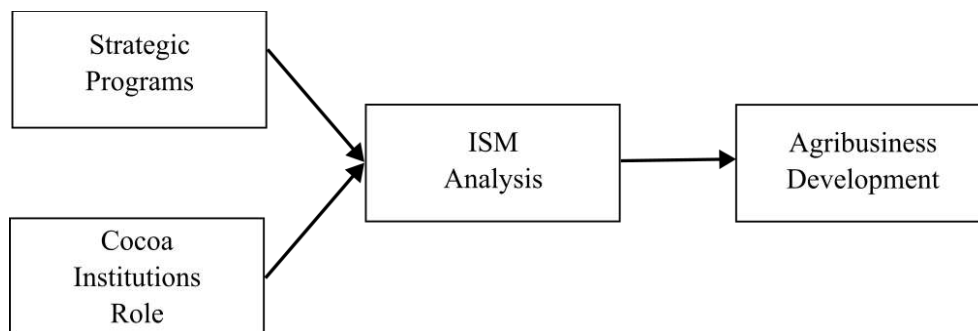**Figure 2:** Conceptual framework

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RESULTS AND DISCUSSION

Strategic Programs

Directional graph is one of the outputs of ISM that divides the 10 sub-elements of the strategic program to strengthen the institutions of cocoa agribusiness system in Majene Regency into four quadrants. Among the 10 sub-elements, all of them are divided into three quadrants, namely independent, linkage, and dependent. As for the strategic program assessment, there are no sub-elements in the autonomous quadrant, which means that each program is considered necessary in the system. It was found that four sub-elements are in the independent quadrant, including the sub-elements of identification of institutions (1), expand access to cocoa marketing (2), improve the quality of cocoa production (3), and increased government awareness of cocoa commodity potential. Programs in this quadrant are categorized as strategic programs that are considered more important and prioritized than other programs. This makes it one of the priority alternatives in cocoa agribusiness institutional development. The key program is the identification of institutions program because it is a program that has a driver power value of 10, meaning that this program is considered absolutely more important than all existing programs.
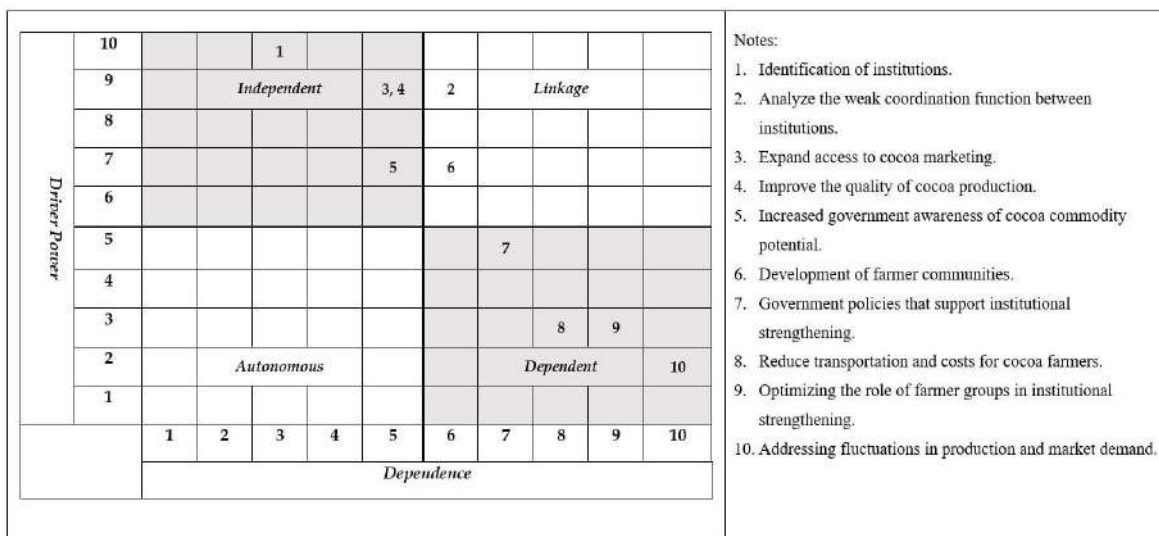

Figure 3: Strategic Program Diagraph

In the linkage quadrant there are two sub-elements, namely analyze the weak coordination function between institutions (2) and development of farmer communities (6). On the diagraph, it can be seen that the two programs are very close to programs number 3, 4, and 5 in the independent quadrant. This shows that even though they are in different quadrants, the relationship is still close and needs to be studied more carefully because they may have a major influence on programs in the independent quadrant. The last quadrant, dependent, is filled by four sub-elements, namely government policies that support institutional strengthening (7), reducing transportation and costs for cocoa farmers (8), optimizing the role of farmer groups in institutional strengthening (9), and addressing fluctuations in production and market demand (10). Despite the fact that these four programs are important, they are not given higher priority than other programs. These four programs could potentially become additional programs if the more prioritized programs have been realized. Because it has the lowest driver power, the addressing fluctuations in production and market demand program occupies the lowest position or level in this quadrant. This indicates that the program is not more prioritized than the previous program in the hierarchy.

Structuring Level

Based on the findings of this research, there are six levels of strategic programs for institutional strengthening of cocoa agribusiness system in Majene Regency, with level one program as the key strategic program. To provide an overview of these programs, an interpretation of the level structuring model shown in the figure below is conducted.
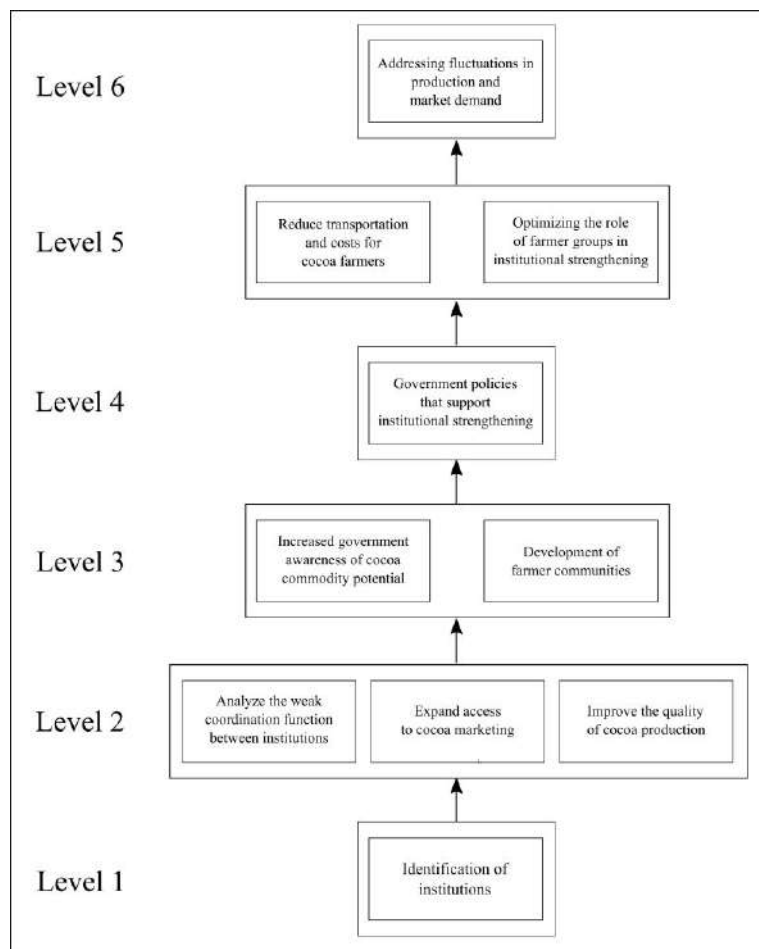
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Figure 4: Structure of Strategic Programs

At level 1, there is one key strategic program, namely "identification of institutions" involved in cocoa agribusiness. The urgency and importance of this program is because experts do not fully know what institutions are actually involved in cocoa agribusiness. The government itself has never identified, generally and specifically, what institutions are expected to play a role in cocoa agribusiness. Identifying institutions related to community development had contributed significantly in supplying inputs and lending funds to help disadvantaged resource farmers (Kimengsi et al., 2020; Oostendorp et al., 2019; Rusdin et al., 2021). Therefore, this identification program needs to be done in two stages. First, the government needs to conduct general identification by defining the role of each cocoa stakeholder in Majene and mapping them into agribusiness subsystems, namely upstream, on-farm, downstream, and supporting services (Wijaya et al., 2018). Second, in line with the objectives of this study, the government needs to focus on the linkage of roles and tasks between institutions in each agribusiness subsystem for institutional strengthening and cocoa productivity improvement. This is necessary for clarity in the implementation of other programs. The clarity means the coordination and synergy of programs to avoid overlapping programs between one and another (Nematollahi et al., 2021).

At level 2, there are three strategic programs to support institutional strengthening. The first strategic program is to analyze the weak coordination function between institutions in the system, especially in the production subsystem. The absence of identification of roles and functions of institutions as well as the absence of joint meetings of all cocoa stakeholders are the causes of weak coordination functions. The solution offered is to create an appropriate coordination model between stakeholders (farmer-company, farmer-government, farmer-extensionist, and all stakeholders) (Nematollahi et al., 2021). At the current production sub-system, the frequency

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of coordination between farmers and extension workers is one to two times a month in the form of visits by extension workers. At least 30 field extension workers in Majene have to reach and assist 1,066 farmer groups. This comparison certainly results in human resource and time constraints for the extension workers. These constraints need to be addressed considering the significant role of extension workers in institutional strengthening of cocoa agribusiness (Iskandar et al., 2020; Jumiyati, 2019). Therefore, activities to monitor the production process along with discussions and consultations can only take place in a few groups at most. This fact shows that coordination in the cocoa on-farm subsystem is still not sufficient and intense. Nevertheless, extension workers continue to carry out training in the form of field schools (SL) which are conducted one to two times a year with a focus on cocoa maintenance techniques, especially on cocoa pod borer pests, fruit rot disease, and mold on cocoa beans.

The second program at level 2 is a strategy to expand cocoa marketing access. Until now, cocoa marketing has been limited to the South and West Sulawesi markets. One of the causes is that the function and role of marketing institutions have not been optimized so that farmers only sell their products to intermediary traders. In addition, research by de Boer et al. (2019) states that farmers generally do not have complete market information and cannot reach export consumers directly. This is because the information is owned by middlemen who act as a link between farmers, processors and exporters. This is where institutional strengthening is needed so that institutions in the marketing subsystem can realize their role to identify potential markets, conduct social media marketing training, and assist the marketing process which in turn will increase farmers income (Yao et al., 2019; Zulkiflibasri et al., 2022). In addition, development efforts need to be made to ensure the availability of markets with stable cocoa prices for farmers and the existence of added value for cocoa products through post-harvest technology (Fitriana et al., 2020).

The next program that needs attention is the improvement of cocoa quality. Cocoa from Majene is not yet considered exportable to foreign markets because the grade does not meet the standards. Ariyanti and Suprapti (2018) found that the quality of cocoa beans from West Sulawesi and Southeast Sulawesi still did not meet national standards in terms of moisture content, moldy seed content, and microbiological contamination. Ariyanti (2017) also found the same thing in cocoa in the South Sulawesi region which also did not meet the national standards for cocoa beans. This means that this issue still needs to be improved, not only in Majene, but in various cocoa production centers on the island of Sulawesi.

Until now, cocoa is also still sold in the form of beans and is only sold in the South and West Sulawesi regions. Research by Raharto (2016) showed that the root cause of farmers' reluctance to carry out postharvest management of cocoa beans is due to their own knowledge constraint. Then coupled with a small price margin as an inhibiting factor to do fermentation. The solution offered is a model of farmer institutional empowerment through strengthening institutional synergy among stakeholders to build an understanding of the importance of fermentation. For this reason, relevant stakeholders such as the government, private sector, NGOs, and research institutions can facilitate education and training for farmers to implement good agricultural practices (GAP), select superior varieties, pest and disease management, and proper post-harvest management techniques. The hope is that these trainings can improve the grade of cocoa so that it can penetrate the national and even international markets.

At level 3, there are two strategic programs. The first program is to increase government awareness of the potential of cocoa commodities. Research by Adobor (2020) explains that institutional conditions play a dominant role in influencing the growth rate of agribusiness in developing countries. This program can be done through advocacy and extension by providing campaigns to the government and community about the potential and economic benefits of cocoa commodities. Olutegbe and Sanni (2021) also emphasized the importance of focusing on farmers' awareness that cocoa is a prospective commodity if cultivated properly. Stakeholders can start by conveying to farmers the economic (market acceptance of cocoa beans), environmental (farm sustainability), and health (exposure to pesticides and other chemicals) benefits to build farmer awareness of the production process and the potential of this commodity.

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The second program at level 3 is the development of farmer communities to play an active role in the cocoa agribusiness system. This program assists farmers in forming and utilizing farmer groups, provides farm business management training, and facilitates knowledge exchange among farmers. The focus of this program is on group activeness and intra-institution communication. This program is important to utilize the potential resources of 1,066 farmer groups, the majority of which are still new groups and have not run the group optimally. The program is expected to increase group awareness and the role which farmers should conduct as the main subject in the development of agribusiness systems. The government can also invest in youth organizations involved along the cocoa agribusiness supply chain by providing access to land, agricultural tools and machinery, processing, marketing, and most important is institutional strengthening (Mulema et al., 2021). This is aimed at ensuring regeneration and sustainability in the cocoa value chain. These results are supported by Kristin and James (2018) which states that in community development, the government and investors need to build social capital (trust, accountability, and shared value) between multi-stakeholders. Social capital is essential to build a shared commitment to sustainable agribusiness development (Syarifudin and Ishak, 2020).

At level 4, there is one strategic program, namely government policies that support institutional strengthening of cocoa agribusiness. This program encourages the government to design and implement policies that support the development of cocoa production sub-systems. Majene Regency already has several policies that focus on cocoa production. However, the policy on cocoa institutionalization has not been concretized. The authorized institution needs to analyze the institutional policy in the system. Research by Neilson et al., (2020) explains that policies basically depend on the intersection between the policies themselves and the institutional system in the region. Volkov et al. (2020) also suggested that the government needs to provide a consulting department to measure the effectiveness and efficiency of agribusiness policies, especially in investment of production sub-system. The establishment of the department can facilitate technical investment so that agricultural institutions benefit more from the results of technological innovation and mechanization. A good policy should be able to encourage the progress of the cocoa agribusiness system in Indonesia as the development of the rice milling industry. A strong cocoa institutional system accompanied by supportive policies can be a solid foundation in encouraging competitiveness in national and international markets.

Then at level 5, there are two strategic programs. The first program is the reduction of transport and financing costs for cocoa farmers. This program objective is to improves and builds transport infrastructure to reduce logistics costs for farmers (Hidayanto et al., 2016). Negi and Anand (2018) found that infrastructure is one of important factor that causes supply chain inefficiencies in agricultural supply chains. Stakeholders also need to start implementing agile supply chain management concepts that consider economic, social and environmental components (Syromyatnikov et al., 2020). In addition, through this program, partnerships can be established with financial institutions to provide easier access to financing for cocoa farmers. The second program at this level is optimizing the role of farmer groups in institutional strengthening. After defining the role and providing training to the institutions, it is important for the government and the private sector that establishes partnerships with farmer groups to continue to monitor and evaluate the groups in order to maintain their activeness in institutional strengthening (Scudder et al., 2022).

The program to increase cocoa production by addressing fluctuations in production and market demand is the last level of the structure. Specifically, the factor affecting fluctuations here is climate change. The lesson learned from climate-smart cocoa implemented in Ghana is that the success of large-scale innovations depends on the institutional system that includes regulations and the network of stakeholders where strategic programs are implemented (Schoneveld, 2022; van der Haar et al., 2023). Similarly, in coping with demand fluctuations (due to seasonal changes, changing preferences, price volatility), internally strong marketing institutions are expected to adapt to fluctuating conditions caused by external factors.

CONCLUSION

Institutional issues are complex to analyze, especially at the agribusiness system level. The research employed ISM method to identify programs that can be implemented to support institutional strengthening at the cocoa

agribusiness system. The results found that there are 10 programs arranged in six levels with the 'institution identification' program as the key program. First implication of this research is that the government need to identify, both generally and specifically, roles of every institutions involved in cocoa agribusiness and synchronize them. Second, the government should formulate policies, especially in production investment, which provide a supportive environment for cocoa agribusiness to develop. Lastly, All stakeholders have to develop a joint commitment to developing agribusiness through partnerships, training and intensive coordination. The result of this research can be a consideration for local government in designing policies to revitalize the role of institutions and potential strategic programs in cocoa agribusiness system in Majene Regency. Future research can conduct more in-depth research related to the effectiveness of strategic programs proposed as the output of this research and conduct a comparative study of programs in various cocoa production centers.

ACKNOWLEDGEMENT

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