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Research Article

Implementation Model of Agribusiness System in Strengthening Shallot Farmer Groups in Bali Province

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ABSTRACT

One of the leading agricultural commodities in Bali Province is shallots. The shallot commodity is very promising and has economic value for farmers. The development of shallot production in Bali Province has fluctuated due to the non-optimal implementation of the shallot agribusiness system in each farmer group. The purpose of this research is to analyse the factors that influence the agribusiness system and the strengthening of farmer groups and to design an agribusiness system model in strengthening shallot farmer groups. We conducted this research purposively in Bali Province. The total population in this study amounted to 892 people, and the sampling technique in this study used a proportional random sampling technique so that the total sample was 90 people from 36 shallot farmer groups in Bali Province.

The findings showed that the farming subsystem, the processing subsystem, the marketing subsystem, the production facilities procurement subsystem, and the supporting institutions subsystem are the ones that affect the agribusiness system. On the other hand, the agribusiness system is what affects the strengthening of shallot farmer groups. The establishment of an agribusiness system implementation model aims to strengthen shallot farmer groups in Bali Province through a professional extension approach. The role of the Bali Provincial Government is expected to help facilitate technology and market shallot farmer group products so that market prices are more stable and young farmers are willing to produce and process shallots into a packaged product.

Keywords: Implementation, Agribusiness System, Farmer Group Strengthening, Shallots.

1. INTRODUCTION

One of the leading agricultural commodities in Indonesia is shallots. The shallot commodity is very promising and has economic value for farmers. The development of horticultural areas is a major activity in increasing product competitiveness in order to face competition at home and abroad. For many years, the price fluctuation of the shallot commodity has significantly impacted the national inflation rate, serving as a backdrop to promote sustainable supply stability and enhance the welfare of farmers. Onion area development is designed by integrating various on-farm and off-farm activities to provide optimal results for farmers and the community (Directorate General of Horticulture, Ministry of Agriculture, 2020).

In Bali Province in 2023, there are six districts/cities that cultivate shallots, namely Tabanan Regency, Badung Regency, Bangli Regency, Karangasem Regency, Buleleng Regency, and Denpasar City. The shallot is a leading commodity in Bali Province because it is very useful in people's lives as a cooking ingredient. The development of shallots in Bali Province from 2018 to 2023 has fluctuated from the harvest area, production, and productivity. The highest harvest area of shallots in Bali Province was achieved in 2018, amounting to 1,718 ha. The highest production was achieved in 2023 at 35,224 tonnes, an increase of 3,731.6 tonnes from 2022 at 31,492.4 tonnes. The lowest production was achieved in 2020 at 14,207.3 tonnes, while the highest productivity was achieved in 2023 at 31.09 tonnes/ha, an increase of 6.47 tonnes/ha from 2022. Based on facts, the growth of shallot production across the country and in Bali Province has seen changes in harvest areas, production, and productivity. This is because the

shallot agribusiness system has not been implemented optimally in each farmer group. The relatively low quality of human resources among farmers and extension workers has hindered the ability of farmer group institutions to perform optimally, particularly in economic aspects (Government Agency Performance Accountability Report of the Bali Province Agriculture and Food Security Office, 2023).

Enhancing the output and efficiency of Bali's shallot farmers is crucial. The province is still having a lot of problems. Here are some of them: (1) growing shallots isn't ideal because it costs a lot and grows the same types of shallots; (2) there isn't enough technology to deal with pests and diseases; (3) processing and handling shallots after they've been picked isn't ideal; (4) prices change because onions from other countries come to Bali; (5) marketing isn't clear, so there isn't yet one door marketing; (6) there isn't enough money to finance shallot farming; (7) transportation and farm roads aren't good enough; and (8) advice on how to use new technology hasn't been put in place.

Farmers are the main producers in onion cultivation. With maximum effort, farmers can help stabilise the economy by playing an active role in agriculture and food security. But the problem is that, currently, the welfare of farmers is still low. The low welfare of farmers is due to the low added value of products they enjoy. Efforts made to overcome problems and strengthen shallot farmer groups need to be studied, and solutions and innovations in shallot farming need to be found, namely by developing and implementing an agribusiness system. The agribusiness system is all the business activities that happen in agriculture. They are all connected and depend on each other. The seven subsystems are: (1) the farming subsystem; (2) the production facilities procurement subsystem; (3) the processing subsystem; (4) the marketing subsystem; and (5) the supporting institutions subsystem (Suparta, 2005). According to Firdaus (2009), subsystem relationships are close and interdependent, so disruption to one subsystem can affect the whole subsystem. Therefore, understanding the relationship between these subsystems and the role of supporting institutions is one of the important objectives in agribusiness. Similarly, who are the actors in each subsystem and the technology used.

The existence of shallot farmer groups in Bali Province is still weak because it is caused by (1) the lack of active farmer group administrators; (2) group member meetings are rarely held; (3) not optimal in carrying out group regulations and norms; (4) business partnerships are still inadequate; (5) not yet able to create jobs; (6) not yet formed a savings and loan business; (7) analysis of farm income is still low; (8) human resource management is not optimal. The organisation does not have the best farmer groups, which means that buying inputs for production facilities and infrastructure, keeping them in good shape, processing products, and marketing them have not gone smoothly. Farmers have also not been able to get to agricultural information, which means that farmer groups are still not the best way for farmers to learn (Anantayu et al. 2009). The formation of farmer groups can help them solve problems they cannot solve alone and learn about issues related to their activities. Thus, this institution, at the farming community level, can be a forum for deliberation, discussion, and receiving counselling and training.

According to Hermanto and Swastika (2011), efforts to strengthen farmer groups are technically carried out by Field Agricultural Extension Workers (PPL). However, farmer group development assistance can also be carried out by PPLs who are experienced in community empowerment. In this case, the task of extension workers is to develop the participation, attitudes, knowledge, and skills of farmer groups and their members in achieving mutually agreed goals. Suradisastra (2008) asserts that farmer institutions, such as farmer groups, farmer group associations, and cooperatives, are integral components of social institutions that foster social interaction and drive agribusiness systems in rural regions. Organisations play a role in determining strategies in managing their organisations (Dananjaya et al., 2020).

Improvements in farmer institutions are necessary for the growth of agribusiness systems. These include institutions in the upstream sub-system or production facilities, on-farm or production sub-system institutions, downstream sub-system institutions, and supporting service sub-system institutions. The institution of shallot farmer groups is expected to be able to create a synergistic relationship with other sectors so that it can synergistically support the development of human resources so as to improve the welfare of shallot farmers and can develop the economy in Bali Province. Based on the explanation and problems presented above, it is necessary to establish an agribusiness system implementation model aimed at strengthening shallot farmer groups. This model is expected to be able to describe and simplify an agribusiness system so that the problems that exist in farmer groups can be overcome so as to strengthen shallot farmer groups in Bali Province.

2. RESEARCH METHODS

The research was conducted in Bali Province, which consists of six districts/cities, namely Tabanan Regency, Badung Regency, Bangli Regency, Karangasem Regency, Buleleng Regency, and Denpasar City. We selected the study's location using the purposive method, which involves intentionally determining research locations based on specific considerations. We selected districts/cities in Bali Province as research locations based on three key considerations: (1) their potential for shallot farming development; (2) their potential for implementation in 2023; and (3) their status as a superior commodity in the region.

The population in this study was purposively selected, namely farmers who implement shallot farming with the highest production in each sub-district in Bali Province in 2023. The total population in this study was 892 farmers spread across six districts/cities in Bali Province, namely Tabanan Regency, Badung Regency, Bangli Regency, Karangasem Regency, Buleleng Regency, and Denpasar City. This study employed a proportional random sampling technique, incorporating Slovin's theory, resulting in an overall sample size of 90 respondents from 36 different agricultural groups in Bali Province.

This study used both primary and secondary data, as well as qualitative and quantitative data. The types of data used were on the farming subsystem, the processing subsystem, the marketing subsystem, the supporting institutions subsystem, the agribusiness system, and the strengthening of farmer groups. The study employed observation techniques, interviews, literature studies, and documentation as data collection methods. Data analysis in this study used income analysis and variance-based structural equation modeling (Structural Equation Modeling—SEM) or component-based SEM, which is famously called partial least square (PLS).

3. RESULTS AND DISCUSSION

Overview of the Research Location

Bali Province is located between Java Island and Lombok Island, with the provincial capital being Denpasar. Bali Province consists of an island, Bali Island, and smaller islands around it, namely Nusa Penida Island, Nusa Lembongan Island, Nusa Ceningan Island, Serangan Island, and Menjangan Island. Geographically, Bali Province is located at the ordinate point position of 08°03'40"–08°50'48" South latitude and 114°25'53"–115°42'40" East longitude, which causes it to have a tropical climate with a total provincial area of 5,636.66 km².

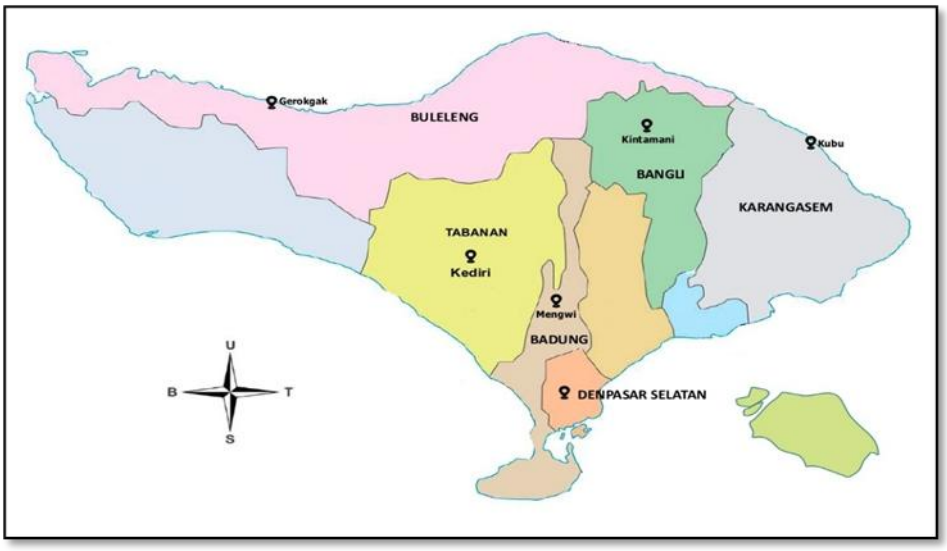

Figure 1 Research Location Map

The island of Bali is part of the Lesser Sunda Islands, 153 km long and 112 km wide, about 3.2 km from Java. The Bali region generally has a tropical maritime climate, which is influenced by seasonal winds. There is a dry season and a rainy season punctuated by a transition season. Climate change (natural cycles and rainfall) strongly influences Balinese production patterns. Eight regencies and one city, namely Jembrana, Tabanan, Badung, Gianyar, Klungkung, Bangli, Buleleng, Karangasem, and Denpasar City, divide Bali Province. The boundaries of Bali Province include the northern boundary—Bali Sea, the southern boundary—Indian Ocean, the western boundary—Bali Strait, and the eastern boundary—Lombok Strait. (BPS Bali Province, 2024).

Respondent characteristics

This study involved 90 respondents who were shallot farmers in Bali Province. The identity of respondents who took part in this study includes gender, age, education level, occupation, land area, and farming experience, which will be described as follows.

Based on the results of the study, most of the respondents were male, with a total of 87 people, or 96.67%. Among the respondents, 3 individuals, or 3.13%, were female. This condition shows that, in general, male respondents are more dominant in running shallot farms in Bali Province. Judging from the age characteristics, it shows that the average age of respondents is 46 years old. Most of the respondents were aged 18-64 years, as many as 86 people, or 89.58%, and the rest above the age of 64 years were 4 people (4.17%). This shows that, in general, the respondents are in the productive age group, which is the age where their ability to cultivate shallots will be more successful because there is still a large potential for labour ownership, and their work productivity can be increased even higher. According to Suarta et al. (2020), the age group is still young, which is an age where the ability to communicate is good because there is still a great willingness to innovate to improve performance.

The highest educational background of respondents is senior high school/vocational high school, as many as 62 people (68.89%), while the rest are junior high school and bachelor's degree, as many as 12 people (13.33%), and elementary school, as many as 4 people (4.44%). This condition shows that the level of education of respondents is generally sufficient to cultivate the market for shallots and is not an obstacle for them to innovate more successfully in shallot farming. The most respondents' main occupations in a row are farmers/livestock farmers as many as 71 people (78.89%), labourers as many as 10 people (11.11%), private employees as many as 7 people with a percentage of 7.78%, and civil servants as many as 2 people (2.22%). This condition shows that respondents as farmers will have a better chance of succeeding at shallot farming if they have experience farming and should be encouraged to use the agribusiness system in their farming activities.

The land area of shallot farmers based on Table 5.5 has an average land area of 0.52 ha. Farmers' cultivated land area in the range of 0.25-0.50 ha obtained the highest percentage of 34 people (37.78%), while the lowest cultivated land area was obtained with a land area range of 0.76-1.00 ha as many as four people (4.44%). This shows that the land area of shallot farmer groups needs to be developed again by opening new lands for shallot cultivation in order to increase production. Respondent farmers have an average shallot farming experience of 16.2 years. The highest range of experience is in the range of 16–20 years, as many as 29 people (32.22%), while the lowest is achieved in the range of 5–10 years of experience, as many as 11 people (12.22%). This condition shows that with the experience of shallot farming, it will be able to further increase production and wider marketing of shallots.

Factors Affecting Agribusiness Systems and Strengthening of Shallot Farmer Groups in Bali Province

In this study, there are a number of variables and indicators. The Production Facilities Procurement Subsystem (SPS) has five indicators: seeds (SPS_1), fertilisers (SPS_2), pesticides (SPS_3), irrigation systems (SPS_4), and drying places (SPS_5). The Farming Subsystem Variable (SUT) consists of four indicators, namely land processing (SUT_1), planting (SUT_2), maintenance (SUT_3), harvesting (SUT_4), and climate (SUT_5). The Processing Subsystem Variable (SPG) consists of three indicators, namely post-harvest (SPG_1), processing into seeds (SPG_2), and processing into fried onions (SPG_3). The Marketing Subsystem variable consists of four indicators, namely sales distribution (SPM_1), pricing (SPM_2), market information (SPM_3), and promotion (SPM_4).

Transportation (SLP_1), credit (SLP_2), extension institutions (SLP_3), and cooperatives (SLP_4) are the four variables that make up the subsystem supporting institutions (SLP) value. The agribusiness system variable (SAG) is what this study is looking at. It has four indicators: increasing farmer income (SAG4), improving farmer welfare (SAG_1), creating jobs (SAG_2), and increasing farmer creativity (SAG_3). There are eight indicators that make up the farmer group strengthening variable (PKT). These are group regulations (PKT_1), education and training (PKT_2), access to resources (PKT_3), strengthening cooperation networks (PKT_4), access to financing (PKT_5), strengthening technology (PKT_6), mentoring and monitoring (PKT_7), and business diversification (PKT_8). Figure 2 presents the results of the SEM PLS analysis.

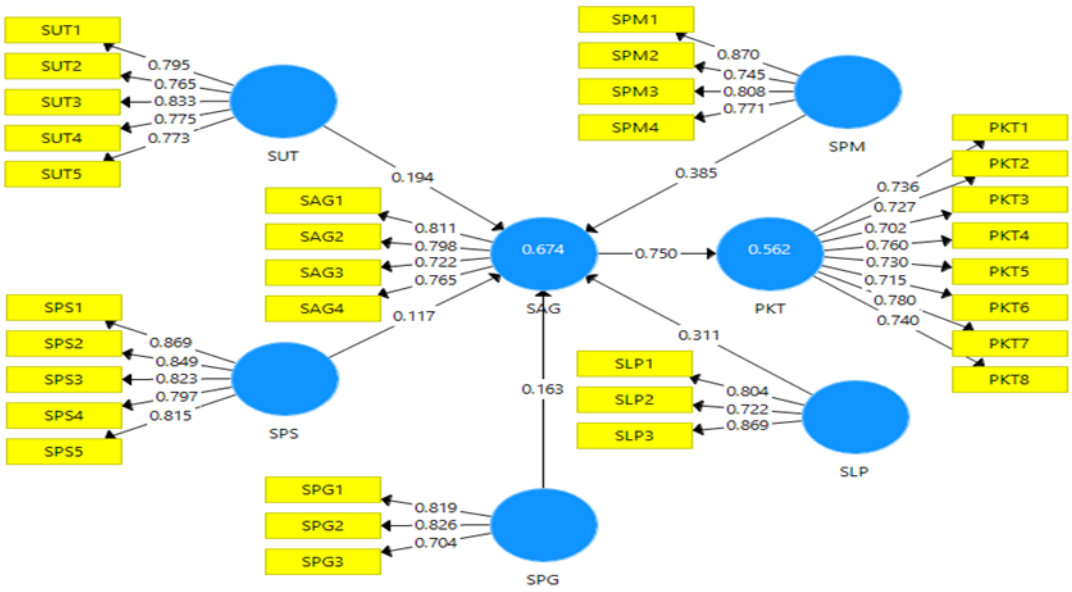

Figure 2 Structural Model of SEM PLS Agribusiness System in Strengthening Shallot Farmer Groups

Influence of Production Facilities Procurement Subsystem on Agribusiness System

It was found that the variable subsystem procurement of production facilities (SPS) had a big and positive impact on the agribusiness system (SAG). The positive path coefficient of 0.117 and a t-statistic of 2.031 (t-statistic > 1.98) clearly demonstrate this. The dominant indicator of production facility procurement is seed procurement. This shows that the shallot seeds used by farmer groups greatly affect the production results obtained because the quality of shallots is in accordance with the seeds used. In this case, the government seeks to assist farmers in procuring superior shallot seeds. All indicators in the production facilities procurement subsystem play an important role in supporting the successful implementation of the agribusiness system.

In this case, the government seeks to assist farmers in procuring superior shallot seeds. All indicators in the production facilities procurement subsystem play an important role in supporting the successful implementation of the agribusiness system. This is in accordance with research conducted by Munawarah et. al. (2024), which showed that if the means of production are used effectively and efficiently, production will increase. The large amount of farmer production will lead to a significant level of farmer income.

Influence of Farming Subsystem on Agribusiness System

Farming subsystem variables (SUT) proved to have a positive and significant effect on the agribusiness system (SAG). The positive path coefficient of 0.194 and a t-statistic of 2.529, both greater than 1.98, demonstrate this. Judging from the farming subsystem indicators, the most dominant indicator is maintenance. This shows that the maintenance of shallot farming is very important , from planting to harvesting. So those shallot farmer groups must continue to monitor the development of shallots. The successful implementation of the shallot agribusiness system in Bali Province is influenced by the five farming indicators. This is different from the research of Susanto et. al. (2023), which states that the application of the farming subsystem has no significant effect on income, so the increasing application of the farming subsystem will not have a real effect on income. Because the application of the farming subsystem is basically a cultivation technique in the field, the increase in the application of the farming subsystem will not have a real effect on production and income.

Effect of Processing Subsystem on Agribusiness System

Processing subsystem variables (SPG) proved to have a positive and significant effect on the agribusiness system (SAG). The positive path coefficient of 0.163 and a t-statistic of 2.738 (T-statistic > 1.98) demonstrate this. The most dominant indicator of the processing subsystem variable is the processing of shallots into seeds. This condition shows that when harvesting shallots, it is best to leave the shallots to be processed into seeds because the price of seeds is very high.

All indicators of the processing subsystem have an influence on the successful implementation of the shallot agribusiness system in Bali Province. Adnyana's research (2020) agrees with this. It says that advanced processing and post-harvest subsystems can help farmer groups in Bali Province's intercropping chili-tobacco agribusiness system. Post-harvest and advanced processing is an activity to improve the quality of agricultural products. After harvest, agricultural commodities undergo various actions or treatments until they reach the hands of consumers.

Effect of Marketing Subsystem on Agribusiness System

Marketing subsystem variables (SPM) proved to have a positive and significant effect on the agribusiness system (SAG). The positive path coefficient of 0.385 and a t-statistic of 3.851, both greater than 1.98, demonstrate this. The indicator of the most dominant marketing subsystem variable is sales distribution. This shows that the distribution of shallots to the target market is very decisive because shallot marketing must be right to whom it will be addressed so that the distribution of shallots is precisely on target and gets the appropriate price. The four indicators of the marketing subsystem are very influential in supporting the success of the agribusiness system. The marketing subsystem is the variable that has the highest influence in the shallot agribusiness system.

The marketing subsystem is the variable that has the highest influence in the shallot agribusiness system. This is in accordance with the opinion of Kotler (2002): price is the amount of money charged or charged for a product or service. Price plays a strategic role because there are factors that can strengthen marketing in the agribusiness system.

Influence of Supporting Institution Subsystem on Agribusiness System

Variable subsystem supporting institutions (SLP) proved to have a positive and significant effect on the agribusiness system (SAG). The positive path coefficient of 0.311 and a t-statistic of 4.187 (t-statistic > 1.98) clearly demonstrate this. The most dominant indicator of the supporting institution subsystem variable is the extension service. This shows that the role of extension institutions in shallot farming is to provide counselling, from planting to post-harvest.

The role of extension is crucial in implementing the shallot agribusiness system in Bali Province. According to research by Wardani and Anwarudin (2018), supporting service subsystems such as agricultural extension workers have a positive effect on strengthening farmer groups. The higher the performance of the instructor's role in facilitating the teaching and learning process, facilitating members in identifying problems and solving them, assisting in preparing activity plans, and realising activities, the higher the strengthening of the farmer group.

The Influence of the Agribusiness System on Strengthening Farmer Groups

Research has proven that the agribusiness system variable (SAG) significantly and positively strengthens farmer groups (PKT). The positive path coefficient of 0.750 and a t-statistic of 11.941 (t-statistic > 1.98) demonstrate this. The most dominant indicator of the agribusiness system variable is increasing farmer welfare. This shows that the implementation of an effective agribusiness system will result in farmer welfare so that this agribusiness system will be able to strengthen farmer groups.

This agrees with research by Subekti et. al. (2023). The togetherness of members in supporting group activities is a form of synergy between group members to improve the dynamics of farmer groups. Marketing is one of the social environments in agribusiness. An adequate social environment can support the fulfilment of the needs of farmers who are members of farmer groups. If a farmer's group can meet the needs of its members, it means that the group is considered independent.

Agribusiness System Implementation Model in Strengthening Shallot Farming Groups in Bali Province

The agribusiness system is a vast and intricate system that interacts with other systems within an economic system. When making a model, something is realistic if it includes the most important parts and problematic parts of the thing or system being shown. Conversely, we must operationalize the model, analyze it, and draw conclusions in relation to the studied phenomena. (Sitepu and Sebayang, 2019).

In the agribusiness system, the actors are agribusiness businesses, namely family farming, group businesses, small businesses, medium businesses, cooperative businesses, and corporate businesses, both in the downstream agribusiness subsystem, the on-farm subsystem, the upstream agribusiness subsystem, and in the service provider subsystem for agribusiness. One strategy for developing rural areas is to develop the region’s superior potential/commodities (Prihantiningrum, 2013). The challenge in implementing the shallot agribusiness system in

Bali Province stems from the fact that subsystems such as farming, processing, marketing, and supporting institutions remain in the deficient category.

One of the efforts to overcome agribusiness system problems is by providing "professional agribusiness system counseling." The characteristics of a professional extension agent are as follows: (a) knows a lot about agribusiness, (b) fully understands his or her position and role as an agribusiness instructor, (c) really knows everything there is to know about agribusiness, including technical production, agribusiness management, agribusiness system relationships, and business ethics (fairness, honesty, reasonableness, trust, and tenacity); (d) always aims for perfection by using integrated quality management in extension services; (e) is used to studying and working with full sincerity and thoroughness; and (f) is firm and steadfast, with a strong drive to get things done. (g) Be able to overcome capital difficulties in farmer-breeder businesses through core companies or other financial institutions, (h) be able to convince farmers that the extension material delivered will bring improvements in increasing production and productivity of their farming businesses, (i) be able to protect farmer-breeders from the possibility of total loss by seeking minimal maintenance compensation costs from the core company/partner, and (y) be sympathetic, honest, diligent, and disciplined in working, dynamic, and progressive in adapting to breeders (Suparta, 2001).

Professional extension workers are expert instructors in one of the fields of agricultural commodities. These extension workers are able to accompany farmers from cultivation to marketing. Professional agribusiness system instructors have two orientations, namely technology-orientated and market-orientated. Technology-orientated professional extension, namely extension workers who provide education to farmers on onion cultivation technology, pest and disease management, onion processing technology, and storage technology with cool storage, which is used when onion prices fall.

The government policy establishes a sub-terminal or main market for agribusiness in each sub-district through market-orientated professional extension, also known as field agricultural extension. So farmers market their onions directly to the wholesale market. This wholesale market must collaborate with regional companies whose aim is to buy shallots at prices above the break-even point. We will determine the product cost for shallots based on government policy to ensure farmers do not feel disadvantaged. We will form an inclusive business through a marketing chain, ensuring market continuity between farmers and regional companies. These professional extension workers also help find investors so that the agribusiness system activities run smoothly.

It is also possible for professional counseling to help create a successful agribusiness system if strong subsystems have already been set up. This can be seen in the four indicators: improving farmer welfare, creating jobs, improving farmer creativity, and raising income. Figure 3 illustrates the model of the Shallot agribusiness system.

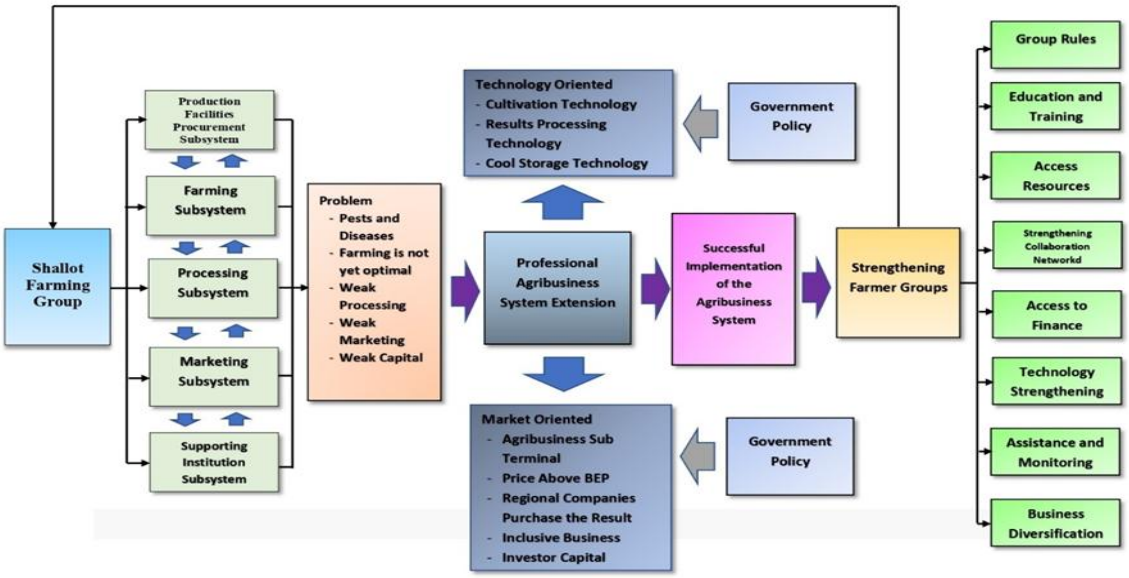

Figure 3 Implementation Model of Agribusiness System in Strengthening Shallot Farmer Groups in Bali Province

Extension agents will be increasingly able to apply the agribusiness system extension approach effectively if the instructors properly understand the agribusiness system extension material, namely what is needed to change the behaviour of farmers/breeders and other agribusiness actors into agribusiness behaviour with an industrial culture, as well as becoming more highly skilled in applying a variety of extension methods to extension targets appropriately and wisely (Suparta et. al., 2009).

Considering the complexity of the scope of agricultural development problems using an agribusiness system approach and the variety of extension targets that must be achieved as well as the need for quality industrial behaviour in the human resources of agribusiness system players, an "agribusiness system" extension approach is needed that places more emphasis on improving agribusiness management and agribusiness system relationships and which leads to increasing business efficiency and effectiveness at the on-farm level and its linkages with upstream off-farms and downstream off-farms (agribusiness systems). Purwanto et. al. (2007) assert that marketing "channelling" (partnerships) and access to affordable capital are crucial for strengthening group productive activities. The successful implementation of the agribusiness system will strengthen shallot farmer groups in Bali Province.

4. CONCLUSION

Factors that influence the agribusiness system are the production facilities procurement subsystem, farming subsystem, processing subsystem, marketing subsystem, and supporting institutions subsystem, while the factors that influence the strengthening of shallot farmer groups are the agribusiness system. Establishment of an agribusiness system implementation model for strengthening shallot farmer groups with a professional extension approach orientated towards cultivation and marketing technology in Bali Province.

Suggestion

1. It is hoped that all subsystems in the shallot agribusiness system can implement new technologies based on smart farming so that the younger generation can be interested in cultivating shallots in Bali Province.
2. The shallot processing subsystem needs to be improved with new machines or technology in processing shallots so that it can penetrate the modern market.
3. The role of the Bali provincial government is highly expected to help facilitate technology and market the products of shallot farmer groups so that market prices are more stable and young farmers are willing to produce and process shallots into a packaged product.

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