



The Effect of Farmer Participation in Agricultural Extension on Agribusiness Sustainability in Bogor, Indonesia

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<http://dx.doi.org/10.18415/ijmmu.v6i3.1028>

Abstract

Era of regional autonomy is marked by the transfer of agricultural extension management from the central government to local governments. That event does not immediately make the implementation of re-education work optimally. Nevertheless, the Bogor government has been trying to manage and organize extension in the hope of increasing the participation of farmers for the agribusiness sustainability. The research aims to analyze descriptively farmer participation and agribusiness sustainability and analyze the factors that influence agribusiness sustainability. The study was conducted in Bogor from July to November 2017. The study population is farmers who are members of farmer groups. Samples in this study are 93 people taken by using multi stage random sampling technique. The study variables consist of internal factors (X1) including age, education level, training, internship, agribusiness experience, perception and motivation. Further variables are external factors (X2), extension activities (X3), program factors (X4), participation of farmers (X5) and agribusiness sustainability (Y). Data were taken using questionnaire, and then, they were analyzed using descriptive statistics and multiple regression. The result showed that participation of farmers in extension activities is high (77.42%) and majority, they had the potential of agribusiness sustainability (87.09%). Factors affecting the agribusiness sustainability of farmers are training, internships, perceptions, motivation, extension activities and participation of farmers in extension activities.

Keywords: Participation; Sustainability; Agribusiness

Introduction

Regional autonomy with the principle of decentralization has brought the government closer to its people. The regional government has wide authority in governing its government on almost all aspects including the fields of agricultural and rural development and the provision of extension. In fields of development and rural, the issue that often arises is the high number of poverty in rural area which is the agricultural area that becomes domination of agriculture as a livelihood. Therefore, the implementation of agricultural extension in the era of regional autonomy strongly emphasizes community empowerment and

change the content of extension material from cultivation to agribusiness. It is expected that farmers who have been subsistence can change into a logical farmer. Similarly, the pattern of farming that was originally more on cultivation can change into agribusiness. In the final goal, this effort is to increase the income and welfare of farmers.

So far, indeed, poverty in Indonesia is still relatively large and larger in rural areas. Poverty in rural areas is caused by the imbalance of development between villages as agricultural producers with cities as centers of activity and economic growth. This imbalance has driven the flow of resources from rural to urban areas unbalanced. As a result, the number and percentage of the poor are more prevalent in rural areas than in urban areas. Poverty causes villagers to sacrifice anything for their sake of life, entrusts physical labor to produce profits for middlemen and receives wages that are not commensurate with the cost of labor.

Some countries have proven that empowering extension has been shown to reduce rural poverty (Ofuoku and Isife, 2009; Khatib *et al.*, 2013). This empowerment prioritizes participation of farmers in every activity and program (Ofuoku and Isife, 2009; Maryani *et al.*, 2017). Learning from this experience, the paradigm of agricultural and rural development in the era of regional autonomy provides the greatest attention to the participation of farmers in the implementation of agricultural extension.

In this empowering extension activity, participation of farmers is a pillar of extension success. Participation of farmers is the most crucial component in managing and preserving the program. Participation of farmers in empowerment activity is expected to always be encouraged, consistent and maintained. Mardikanto (2009) stated that the participation of farmers in the era of regional autonomy must at least meet the stages of planning, implementation and evaluation.

Positive community participation in interaction will lead to the creation of sustainable conditions as the main goal of empowerment which is a sign of steady food security. Sustainability is a targeted condition that should be achieved from empowerment (Ife, 2002). Considering that extension content has grown towards agribusiness, the sustainability of agribusiness becomes a proof for participation of farmers in the implementation of counseling. The objective of the study is to analyze descriptively farmer participation and agribusiness sustainability and analyze the factors that influence agribusiness sustainability.

Research Method

Study on participation of farmers in agricultural extension for agribusiness sustainability was conducted in Bogor regency, West Java. Time series of study was on July to November 2017. This study type is quantitative study with survey approach, that is a study conducted to obtain data from certain natural place (not artificial and the researchers collect data by distributing questionnaires and structured interviews). This survey research also obtains data to a number of representative individuals representing the population to obtain a certain number of values on a number of variables. Based on its purpose, this study is an exploratory research to answer whether a variable has relevance to other variables (Muljono, 2012).

Population in this study is member of farmer group in Bogor. Population number based on preliminary survey is 1468 people. In relation to the large number of individuals in the population, this study carried out sampling. Determination of sample in this study is conducted by using Slovin formula. Based on the formula with the error rate of 10%, it is obtained the number of samples of 93 people.

Consideration of the number of other samples is the time of series implementation of study and resource owned by researchers such as cost, energy and mind. The size of the sample also considers the diversity of individuals within the population.

Samples were chosen using multi stage random sampling technique. Sampling was conducted by several stages. The first stage was to select the working area of the Institute for Extension of Agriculture, Fisheries and Forestry (Balai Penyuluh Pertanian Perikanan dan Kehutanan, BP3K). Furthermore, from the working area of BP3K selected, the farmer group was selected and then the member of the farmer group was selected according to their portion.

The study variables consist of farmer internal factors, external factors, extension activities, program availability, participation and sustainability of agribusiness. Internal factors include age, formal education level, duration of training, internships, peasant experience, perception and motivation. External factors include government-backed farmers, farmer group support, farmer group association support, community support, and market support. Extension activities consist of extension intensity, extension methods, extension media, extension materials and extension performance. The availability of the program is a program managed by district, provincial and central governments associated with farmer groups. Participation of farmers is the involvement of farmers in extension activities both at the stage of planning, implementation and evaluation. Agribusiness sustainability is defined as the endurance of agribusiness based on economic, ecological and social elements.

The study instrument test includes validity test and the reliability test of the study instrument. The study instrument test was conducted on 30 respondents. Study instruments have been tested valid and reliable. Data in this study consist of primary data and secondary data. Primary data was obtained directly by the researchers through data collection using questionnaires. Secondary data on village monographs, village documents and conditions and combined farmer groups or farmer groups are taken by recording and copying.

Data processing techniques used in this study are descriptive statistical analysis techniques and multiple regression analysis. For the purposes of data analysis, the primary data, that is ordinal data, is transformed into interval data through the Method of Successive Intervals (MSI).

Result and Discussion

a. Characteristics of Respondent

Based on descriptive statistic analysis, age variable, education level, duration of agribusiness experience, perception and motivation toward agriculture, external factors, extension activity, program factors, participation of farmers and agribusiness sustainability are shown in Table 1.

Table 1. Distribution of Respondent Characteristic

Characteristics	Category	Freq.	(%)	Mean
Age	Young (≤ 35)	22	23.66	46.74
	Middle age ($> 35 - < 55$)	46	49.46	
	Elderly (≥ 55)	25	26.88	
Formal education	Elementary school	50	53.76	-
	Junior High School	16	17.20	
	Senior High School	23	24.73	
	Higher Education	4	4.30	
Agribusiness experience	< 11.5 years	73	78.49	7.75 years
	$11.5 - < 22$ years	14	15.05	
	$22 - < 32.5$ years	4	4.30	
	≥ 32.5 years	2	2.15	
Perception	Very Low	1	1.08	8.56
	Low	9	9.68	
	High	67	72.04	
	Very High	16	17.20	
Motivation	Very Low	0	-	21.08
	Low	1	1.08	
	High	79	84.95	
	Very High	13	13.98	
External factor	Very Low	2	2.15	45.05
	Low	20	21.51	
	High	49	52.69	
	Very High	22	23.66	
Extension activity	Very Low (< 17.5)	0	-	29.58
	Low ($17.5 - < 25$)	4	4.30	
	High ($25 - < 32.5$)	49	75.27	
	Very High (≥ 32.5)	22	20.43	
Program factor	Very Low (< 10.25)	1	1.08	16.41
	Low ($10.25 - < 13.5$)	3	3.23	
	High ($13.5 - < 16.75$)	55	59.14	
	Very High (≥ 16.75)	34	36.56	
Participation of farmers	Very Low (< 26.25)	0	-	43.15
	Low ($26.25 - < 37.5$)	10	10.75	
	High ($37.5 - < 48.75$)	72	77.42	
	Very High (≥ 48.75)	11	11.83	
Agribusiness sustainability potential	Decrease	2	2.15	-
	Stagnant	10	10.75	
	Continued	54	58.06	
	Really Continued	27	29.03	

Based on Table 1, it can be seen that the average age of farmers who become study respondents is in the middle category (46.74 years old). This condition is understandable considering most of respondents are in middle category (49.46%). Farmers in the middle category based on BPS classification

(2014) are in the age range of 35 to 55 years old. When compared between the age category of young (≤ 35 years old) with the age category of elderly (≥ 55), it is found that young farmers are less than elderly farmers. This finding is quite apprehensive because it shows the tendency of agricultural actors is decreasing in number. However, the portion of young farmers in Bogor in this study (23.66%) is still better than the national data which mentions the portion of young farmers is only 12.87% (BPS, 2014). The composition of young farmers is important to see how well the succession of farmers (Harniati and Anwarudin, 2018; Arwarudin and Haryanto, 2018, Wardani and Anwarudin, 2018).

The formal education level of most farmers (53.76%) is in category of elementary school. When associated with the compulsory nine-year education program, there are still many farmers who can not complete the program. However, there are also farmers who attend high school (24.73%) and higher education (4.3%).

On the average, farmers have run their business for 7.75 years, with variations ranging from 1 to 43 years. Most of farmers (78.49%) have low experience (less than 11.5 years). The business experience owned by the farmers can relate to the ability to run their business, because during the period of running the business, farmers will experience the learning process including learning how to overcome the problems faced. Havelock (1969) states, one's experience affects his tendency to require and be ready to accept new knowledge.

Farmers in Bogor Regency deserve good appreciation for their perceptions of agriculture in the high category. The results of this study differ from KRKP (2015) which states that farmers have a poor perception on agricultural business. Nevertheless, the results of this study support Dayat (2017) that farmers in Bogor have a high perception. The study also mentions that farmers have good perception to all agribusiness subsystems, either upstream, farming, downstream or supporting.

Motivation of farmers in agriculture business is high. This result is similar to the perception that has been previously reviewed. The result of this study is different from KRKP (2015) which states that farmers have low motivation in the field of agriculture. Nevertheless, the result of this study supports Anwarudin and Haryanto (2018) that farmers in Bogor have a high motivation. The reason given by farmers to the high motivation of farmers in Bogor is caused by good market support. Farmers experience ease in getting price and market information. Location of Bogor which is close to the capital so that the number of consumers is suspected to be the cause of the smooth sale of agricultural products and cause motivation in agriculture increases.

Extension activities in Bogor Regency are in high category. Indicators of extension activities in this study include intensity, methods, media and materials. All farmers who become the respondents of this study are incorporated into farmer groups who routinely carry out extension activities. Regular extension is held every two weeks and at least once a month in some other places. Extension workers often use extension methods in form of group approaches, but sometimes they also conduct individual approach through home visits. The media used by extension workers is quite diverse, such as flip maps, folders, leaflets and whiteboards.

Furthermore, on extension materials, extension workers have delivered materials according to the needs of farmers. The result of this study is in accordance with Dayat (2017) that based on observations and in-depth interviews, it is found that the extension material is delivered to almost all agribusiness subsystems from upstream to downstream. In the upstream subsystem, farmers suggest that extension can provide solutions in obtaining production facilities such as germs, seeds, fertilizers, and pesticides. In the farming subsystem, farmers agree that extension can solve problems, increase production, knowledge and skills and develop farming to be better and more profitable. In the downstream subsystem, farmers agree that extension is able to solve problem of agricultural product marketing. Furthermore, in supporting

subsystem, farmers agree that extension can provide information on how to get the capital of farming, group business and real needs of farmers. The implementation of the extension has been in accordance with the recommendation of Easwood *et al.* (2017) that extension plays a role in spreading innovation and technology so that farmers become more know and able to increase their productivity.

The result of this study indicates that agricultural extension implemented in this farming subsystem has been running well and meeting the expectations of farmers who become the target of extension. Based on the real conditions in the field, it was found that the high achievement of the indicators was caused by the close relationship between farmers in a farmer group. The routine extension activities are carried out independently within the farmer group. Between members of farmer groups also give each other feedback and solutions based on the experience of each member. Such conditions can facilitate activities so that extension can be implemented on an ongoing basis in order to increase the capacity of farmer group members as proposed by Anwarudin and Maryani (2017).

The average level of farmers' participation is at high criteria. Likewise, when viewed from the distribution of respondents, the portion of farmers' participation is greatest in the high category (77.42%), followed by very high category (11.83%) and low category (10.75%). The data shows that respondents are scattered at low to very high participation rates.

The result of this study shows that high participation of farmers on average is expected to have a positive potential in the learning process for farmers. The result of this study reinforces Charles's assertion (2011) that participation is an essential component of generating sustainability in the development process. The high participation of farmers is expected to affect the welfare of farmers as Khatib *et al.* (2013) argues that participation is a tool of empowering farmer community to improve the welfare of their life. Participation of a person is as an important element that can increase people's capacity to the importance of technology. Furthermore, it is explained also that participation is an internal activity of farmers as an appreciation and tool of empowerment to realize initiative, control and correction activities, financing effectiveness, accurate and relevant activities. Through participation in farmer groups according to Ofuoku and Isife (2009), there is a sense of mutual understanding among group members that is oriented to the focus of economic interests and safeguard the values, culture and strength of the group. Similarly, Jones *et al.* (2014), Hauser *et al.* (2016) and Anwarudin (2017) argued that the implementation of extension should optimize the participation of farmers to adopt innovation process more effectively.

The tendency of respondents' assessment on majority agribusiness sustainability is continued (58.06%) followed by really continued (29.03). Assessment of the agricultural sustainability is suitable to be appreciated given they have confidence and optimism on the business they run. However, there are farmers who have been pessimistic that their future agribusiness will be declined or stagnant.

b. Determinants Factors of Agribusiness Sustainability

Multiple regression statistical analysis has been used to look at the factors that influence the agribusiness sustainability potential. The factors are age, education level, training, internship, duration of farming, perception, motivation of external factors, extension activities, program factors and farmers' participation. The result of the analysis is presented in Table 2.

Table 2. Determinant factors of agribusiness sustainability potential

Description	Parameter	Value	. α	Decision
R square	R ²	0.440		
Constant	k	6.022	0.097	Meaningful
Age	ρYX_{11}	-0.190	0.510	Not influential
Education	ρYX_{12}	0.025	0.818	Not influential
Training	ρYX_{13}	0.640	0.093	Influential
Internship	ρYX_{14}	0.483	0.096	Influential
Duration of farming	ρYX_{15}	0.043	0.315	Not influential
Perception	ρYX_{16}	0.215	0.084	Influential
Motivation	ρYX_{17}	0.254	0.093	Influential
External factor	ρYX_2	0.035	0.463	Not influential
Extension activities	ρX_3	0.261	0.082	Influential
Program Factor	ρYX_4	0.223	0.164	Not influential
Participation of Farmers	ρYX_5	0.240	0.079	Influential

Based on Table 2, it is known that the factors that influence the potential of farmer agribusiness sustainability are training, internship, perception, motivation, extension activities and participation of farmers in extension activities. Several factors have no effect on participation i.e. age, education level, length of farming, external factors and program factors. Thus, the equation can be put forward as follows:

$$Y = 6.022 + 0.640X_{13} + 0.483X_{14} + 0.215X_{16} + 0.254X_{17} + 0.261X_3 + 0.240X_5$$

The study found that training and internship activities positively affect the potential for agribusiness sustainability. The more often the opportunity of farmers to attend training and internship lead to the potential for agribusiness sustainability is greater. Training is a planned learning process followed by farmers which is obtained out of formal school. Training for entrepreneurship coaching and mentoring can be performed with specific skills dimensions to address specific needs. This helps farmers to grow so as to expand their knowledge (Audet and Couteret, 2012). Training as an effort to increase the capacity of farmers to become entrepreneurs in a more general sense: decision making, change management, identification of new opportunities and networking skills (St-Jean and Audet, 2012; Cassidy and McGrath, 2015).

One of the training activities that has been followed by farmers is the utilization of agricultural information system. Sumardjo and Mulyandari (2011) argued that the benefits of agricultural information systems are increasing farmers' opportunities on market information and agricultural technology and accelerating the communication process in marketing and production processes, thereby improving communication networks and bargaining position of farmers. Intensity and utilization of information technology has become the dominant factor affecting the accessibility of farmers. Furthermore, Prawiranegara *et al.* (2015) mentioned that the use of information and communication technology has generated farmers' interest in agricultural content. Content in an IT-based agricultural information system can be categorized into five types, they are news, information on agricultural technology, market information, supporting information, and interactive. The development of an agricultural information system is designed to integrate information content in each institution, functionally managed, and presented in a comprehensive, up-to-date, and effective manner in one hand, supported by a two-step flow utilization strategy to support farmer empowerment (Sumardjo and Mulyandari, 2011).

The next internal factors that affect the farmers' agribusiness sustainability is the perception and motivation. The higher the perception and motivation of a farmer, the more increasing the potential of agribusiness sustainability. Based on interviews with respondents, information that good perception and motivation has raised farmers as members of other farmer groups interact with other farmer group members and other parties to find solutions to solve problems faced by farmers and improve its role

economically and socially. With the establishment of better relationships within the farmer group association causes the farmer to be able to determine their own destiny and reduce dependence on middlemen. This condition is in harmony with Minh *et al.* (2014) which suggests that farmer groups as a forum of cooperation can make farmers become stronger in an effort to increase profits and prevent losses. Thus, agricultural business becomes more profitable and has the competitiveness thus reducing the dependence on middlemen and making agribusiness business sustainable. This condition is also supported by Schmidt *et al.* (2015) that farmer institutions and collective action are often seen as key factors in increasing farmers' access to markets.

Extension activities that include intensity indicators, methods, media, materials and role of extension workers have a positive effect on farmers' agribusiness sustainability potential. Based on field findings, the government through extension workers and farmer groups develop entrepreneurial spirit by facilitating improvements in the ability to analyze market and business opportunities, improving the ability to analyze the potential of the region, increasing the ability to manage the farm business commercially and implementing savings and loan activities for venture capital. These activities can be a trigger for the growth of entrepreneurial spirit so as to contribute to the influence of extension activities on the farmers' agribusiness sustainability as Joose and Grubbstrom (2017) explain that economic growth and development can not be achieved without putting the program in an appropriate focus through empowerment that emphasizes entrepreneurial spirit. This explanation of entrepreneurship is also expressed by Hamilton *et al.* (2015) and Sippel (2016) that building entrepreneurial spirit is a preliminary process for sustainable business.

Table 2 shows that farmers' participation has a positive effect on farmers' agribusiness sustainability potential. The result of this study is consistent with the study of Ofuoku and Isife (2009), Agboola *et al.* (2015) and Hauser *et al.* (2016). Based on the respondents' information and the facts in the field, the extension workers have been trying to strengthen the farmers' groups and generate farmers' participation. Some activities that have been performed through facilitation of teaching and learning process, facilitation of task division among fellow members, facilitation of business cooperation with other farmer groups, extension and technology application training (materials, tools, ways) of farming, extension enhancing ability to analyze market and business opportunities, extension of improving the ability to analyze the potential of the region, extension of improving the ability to manage the farm business commercially, the activities of the preparation of work/activity plans, and encouragement for farmers' to be willing and able to implement savings and loan activities for business capital. Extension workers have also sought to generate farmer participation through volunteerism, involvement in decision-making/planning, involvement in activities, involvement in evaluation activities, involvement in utilization, and involvement in encouraging others to engage. Extension work is in cooperation with community leaders and farmer group members in strengthening farmers' groups and farmers' participation has been successful in influencing the sustainability of agribusiness.

Based on the results of analysis of study data through multiple regression analysis techniques that have been presented in Table 3, it is known that there are effects of several factors on the sustainability of agribusiness. The existence of these effects is also proved by the value of determination coefficient (R^2) by 0.44. This value means that the variables of training, internship, perception, motivation, extension activities and farmers' participation in extension activities together affect the potential of farmer agribusiness sustainability by 44% while the remaining 66% is explained by other factors out of this study.

According to Amekudzi *et al.* (2015), to meet sustainable development involves not only human resources but also other resources or other capitals including environmental capital, economic capital, technology, politics and social models. Thus, in context or capital, sustainable development can also be interpreted as the development of human resources and other capitals including the capacity of capital in

support and limited by existing carrying capacity. The concept of sustainable development also considers aspects of quality and quantity of human life or human well-being and land management (Bangun *et al.*, 2019). Adewole (2015) recommends that farmers should understand, absorb and manage effectively to achieve the desired growth and sustainable entrepreneurship development as follows. First, to the worker, the responsibilities to be made are fair wage payments, the provision of a safe working environment, creating opportunities for workers' representation, equal opportunities and available for training and promotion, regular capacity building opportunities, cordial relationships between management and employees and fair treatment of each worker. Second, treatments against competitors include fair competition, defensive strategies not to undermine competition, promote a healthy and profitable business climate, encourage responsible competition and at the field level be treated freely in and out.

Third, responsibilities to the consumer include quality of service at a reasonable price, avoid cruel or unethical practices, adequate product information for consumers, no defective products, respect for consumer preferences and avoid activities that could harm consumers. Fourth, responsibility to stakeholders is to disseminate accurate information about the state of the business, protect and ensure the security of invested capital, fair treatment for all stakeholder categories and ensure adequate return on invested capital. Fifth, the responsibilities to the environment include the conservation of natural resources, a commitment to the maintenance of an adequate natural ecosystem, prevent the accumulation of hazardous waste, minimize air, soil and water pollution and maintain a clean and safe environment. Sixth, the responsibilities to the government include official taxes/levies, support government activities, conduct research and development to increase community growth, contribute to government development programs, provide basic community needs and sponsor free government events and activities. Seventh, responsibilities for the community through maintaining good relations with the general public especially in the local area of operations, assisting in the provision of economic, social, and physical infrastructures as well as engaging in Corporate Social Responsibility (CSR) programs (Reyes and Fueth, 2016).

Conclusion

Study on the participation of farmers in agricultural extension for the sustainability of agribusiness in era of regional autonomy in Bogor has been performed with following conclusion. Participation of farmers in extension activity is high (77.42%) and majority had potential of agribusiness sustainability (87.09%). Factors that affect farmers' agribusiness sustainability are training, internships, perceptions, motivation, extension activities and participation of farmers in agricultural extension activities.

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