Innovation and Integration: The ways for sustainable development in Agricultural System (Case study in Ciwidey Women Farmer Group Business Unit)

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Abstract
The great potential of agricultural sector in Indonesia has encouraged the development of various business utilizing agricultural products as raw materials. Involving about 240.000 micro, small, and medium enterprises (SMEs) developed in West Java, utilizing agricultural commodities as the main raw materials in their business activities. The type of business is very diverse in terms of organizational aspect. Moreover, some types of business that can be identified are family business, cooperative business, and empowering business. Each type business has its own different management influencing its performance. Technology adoption process and its value have to be integrated toward sustainable agricultural business. Accordingly, this study aims to identify the business types, strategies and technologies adopted by a farming business in developing the sustainable agricultural business system. This study was conducted at Business Unit of Ciwidey Women Farmer Group (WFG), which is able to develop business in group and produced massively in agricultural products. The number of business joining in Ciwidey WFG is about thirty unit business. The research method used direct observation in the field and semi-structured interviews conducted to WFG running business activity based on agricultural commodity. Data were analyzed descriptively with the explanation of the real conditions encountered in the field. The results of this study shows that the business type of Ciwidey WFG is cooperative business running by WFG and Farmer Group (FG). The upstream-downstream integration of business activities has been performed by the cooperation between Ciwidey WFG and FG. Innovation consists of three areas: The use of technology in the form of infiltration and methods in cultivating the organic concept, the formation of institutions and assistance in its management, and the implementation of collective marketing.

Keywords: innovation, integration, agricultural system

1. Introduction

Most of agricultural products in traditional and modern markets are produced in rural areas, and almost 95% of rural areas become the major producers of agricultural products. The data from Central Bureau of Statistics explained that rural area has been facing various problem while their condition as a producer of agricultural commodity, as follows: the income level of rural areas has a worrying acceleration and low level of average education, affecting in social and welfare problems. These conditions indicating the great potential of agricultural products managed by farmers in the village has not been able to make a benefit for the economic condition of rural communities. Therefore, rural development efforts should be initiated by utilizing the great potential positively in relation to the economic conditions of rural communities; one of which is by developing business activities integrated with agricultural activities conducted in rural area.

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The village of Panundaan District, Ciwidey, having a collective agricultural business activities. The advantage of these collective business activities is given a progresif income not only for farmers who is cultivate a variety of agricultural product but also for people around the areas. It can be seen from the integrated business chain from upstream to downstream business activities conducted through several interconnection between Farmer, Retail, SME processed agricultural products, and consumers.

Panundaan Rural Women Farmer, a group of women villager in Panundaan, was established in 2011 carrying out activities focusing on coaching members in conducting business activities. It began in 2011 with only two people conducting business activities based on processed agricultural products. Along with the developments up to 2016, it has a total of 27 active members running businesses based on processed agricultural products and about 50 processed products have been successfully developed. The resulted product has been marketed in several cities and provinces so that Women Farmer Group (WFG) activity is capable of becoming a source of economic income for families in the village. WFG carries out its business activities in cooperation with a group of farmers of certain commodities as a supplier of raw materials required in the production process. Such condition makes Panundaan has a thriving economic activity. If These business activity concept can be adopted by other villages in west java or in Indonesia, improving the life quality in rural areas will be realized.

Nordman [1] explains that small and medium-sized enterprises (SMEs) in business networks has grown significantly during the last decades, partly due to increasingly complex innovation processes. Accordingly, this study examines how the process of the business chains today in Panundaan village, and map every innovation and change in every business process. The expected benefit of this research is to provide an overview of the occurrence of a business activity in the area of integrated village so that it can be adopted by other places that has similar potential characteristics.

2. Methods

This research was conducted by field observations and deep interview with every actor in the chain of Women Farmer Group (WFG) business and farmer groups. The methodology of this study was historical description analysis by using information obtained by interviews with the leader of KWT, the members of KWT, and the leader of FG.

3. Result and Discussion

3.1. Sustainable Agricultural System

Sustainable agricultural systems is a basic concept aiming at maintaining the sustainability of agricultural process. Sustainability is a challenge due to continuous process means that the process is always carried out and maintained. If the challenge is associated with the agricultural development but it does not adjust to the condition of the current progress, it will be gradually abandoned. It could be caused by the economic benefits of the crops not be able to secure the sustainability of farmers. The process of changing times accompanied with all its demands, requires farmers to be able to adapt, such as, in terms of getting a higher demand for quality agricultural products and keeping the party using the resulting product, and work in cooperation with the users of the product consistently.
Panundaan village is a village with good agricultural potential. Some of the commodities produced include hanjeli, mushroom, and various vegetables. In 2009, mushroom farmer groups was initiated by one person who becomes the leader in the farmer group now. The members reaches 20 farmers with a total daily production of 250 kg in 2016. The interesting fact is that there is an activity on the Farmer Group resulting derivative business activities as performed by a group of women farmers. Here is the overview of the relationship between elements in supporting sustainable agricultural system conducted by FG. Relationship diagram can be indicated by the following elements:

![Figure 1. FG Relationship Diagram](image)

Figure 1. FG Relationship Diagram

From the results of field observations, FG plays an important role in creating the conditions of sustainable agriculture. This is evident from the activities conducted. Mushroom farmer group is called *Komunitas Jamur Sejahtera* (KJS). At first, it consisted of only two people, and then continuously grows. The activities conducted are producing and fostering mushroom. If there is a crop failure, farmers will accompany the mushroom farmers in a sustainable manner through discussions-informal discussions-, visit members of FG, supply the mushrooms as the raw material in the production of various derivatives mushrooms of SMEs run by WFG, and fulfill the needs of the mushrooms for wholesalers or retailers. Business activity supporting sustainable agriculture in the village is the role undertaken by the FG and WFG. Here are the activities performed to maintain the sustainability of farming conducted by WFG:

![Figure 2. The Activity of Women Farmer Group (WFG)](image)
The WFG activity above shows the activity of assistance to WFG members in running the business, including training the manufacture of various processed foods, packaging, and new product innovation. In addition, there are other mentoring activities i.e. Programs designed for collective project such as Eco-Tourism program. This program is integrated with Edu-tourism program in Panundaan. Activities carried out include introducing and training for various products derived from the processing of agricultural raw materials such as flour produced from various commodities such as ginger, hanjeli, various leaves, etc. Ecotourism activities are designed through the package. A product such as packet processing generated by SME A will get a product as a gift. Participants were divided into groups to be placed on each SME of WFG member before introduced and trained in the process of making the product.

Activities undertaken through eco-tourism program make integrated business system systemically. There are two additional values obtained such as : Sharing knowledge about SMEs with participants of eco-tourism program as a means of marketing products produced by SMEs. This program will integrate both producers and consumers. This program must be able to provide more opportunities to transfer knowledge in the form of experience that can be done by the owner of SMEs despite of lower educational strata. This program also make an advantage for WFG members such as increasing their communication skill, leading them to innovate continuously, encouraging them to learn a new method or technique in producing product, driven by the trigger of their obligations in the process of training conducted for program participants. The program is simple but has a derivative effect to upgrade the managerial skills and the innovation process of SMEs.

3.2. Innovation in Business Activity

The concept of rural development by Haeruman (2007) as an interaction between the potential of rural communities and encouragement from the outside to accelerate rural development. It means that there are two fundamental things affecting development, namely the potential and the encouragement from the outside (the needs of outsiders who will become potential consumers). Developing rural areas is inseparable with the process of infiltration from the outside in the form of knowledge, ideas, and new ordinances of outsiders involving in the system which then leads to positive impact on the system. Upstream activity is an activity carried out by farmers and mushroom farmer groups while downstream activities is like WFG activities. The process of innovation and diffusion is described in historical process as follows:

According to Rogers (2003), an innovation is an idea, practice, or object that is perceived new by an individual or population. The newness of an innovation should be expressed in term of knowledge, persuasion, or decision to adopt. It shows that innovation is not merely about the existence of new technology adopted. In spite of the types of innovation, every innovations contains a certain degree of novelty since it is important for several reasons. Significant innovations affect the innovation performance of organizations (Pragojo & Sohal, 2006). Novelty concerns the technological distance from older to current competing innovations.

In line with the explanation above, the diagram explains the process of diffusion and innovation made by Farmer group (FG) and women farmer groups (WFG) in the Panundaan village, Ciwidey.
3.3. Technology Innovation in Production Process

The innovation process begins with the application of simple technologies and organic process of mushroom cultivation. Some of mushroom cultivation organic results are used by WFG to be processed into food derived products while others are sold to the market retailer. Diffusion and innovation processes organic concept that was originally applied to the FG was later adopted by the WFG. Processing of products that do not use chemical fertilizers and chemical pesticides make quality mushrooms to excel. The innovation deals with organic system. Innovation is characterized by a knowledge or ordinances changing and providing additional value for the adopted products resulted. Teh process means the production process of various products with organic concept namely without using materials preservatives or chemicals. In case of SMEs, the application of organic concept includes the innovation process due to the changes in the production process.

In addition, other innovations are done by implementing rotation in cropping systems, supported by continuously harvesting, throughout the year, and suppressing the excess causing a decline in the price of mushrooms. FG gives business knowledge and training on how to set the cropping pattern in order to harvest throughout the year without undermining market prices. The implementation of the method is simple, but gives a systemic impact on the continuity of business activities.

3.4. Institutional Innovation

The innovation process is also done by the FG to develop an institution of farmer group, namely Komunitas Jamur Sejahtera. This community was founded not on the basis of the government program, but mushroom farmers requiring an institution covering their business activity. Therefore, its management is based on the empowerment and volunteerism that is inherent in every activity, such as the assisting
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farmers having problems in the cultivation process, direct assistance, directing and rectifying procedural errors or technical issues, and ensuring farmers do every stage of cultivation correctly. This process is done voluntarily by operators of Mushroom FG. The division’s duties and roles within the institution, the behavior of FG leadership and the character of Mushroom FG leader, encourage the realization of sustainable agricultural business system in Mushroom FG in Panundaan.

WFG adopts institutional processes performed by mushroom FG, preceded by their initiators in production activity on various derivative products made from agricultural products, such as hanjeli and mushroom. The activity of training and mentoring such as producing raw materials to be used further in the production processes of various derivatives, and training the production of various products to their members. In addition, the leader of WFG organizes their knowledge sharing processes alternately, for example by sending members of difference events when there are training opportunities, and then having them share the knowledge gained from the training with all members.

3.5. Collective Market Innovation

Another innovation applied in mushroom FG is the implementation of a collective marketing system by fair trade system. The collective marketing approach is generally applied for the business system that empowers people or other businesses that able to maintain the sustainability of business activities collectively. Fair trade system aims to make farmers avoid losses and get a favorable sale price. the value applied to this innovation is that all FG members gain the market and selling prices are high so that it is expected such a management system capable of prospering FG members.

Collective market has the advantage of reaching the market and broader needs. Collective marketing also provide a challenge to FG to produce quality products with the quality standard. Therefore, the control and mentoring process among members continue to run on an ongoing basis as a result of market demands.

4. Conclusion
a. Creating a sustainable agricultural system could be done by integrating each subsystem, such as developing a cooperation between farmers and actors in its derivative businesses.
b. The integration process must be accompanied by an innovation in the process due to the innovation maintains the sustainability.
c. In this case, innovation is defined in three ways consisting of using the method, the manner, and appropriate technology in a new way; making an institution including houses and continuing advocacy programs; and creating collective marketing in the market of the products produced.

5. References