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Benefits of farmers' cooperative to rice farming activity: case of Subak's cooperative in Guama, Tabanan District, Bali province

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Benefits of farmers' cooperative to rice farming activity: case of Subak's cooperative in Guama, Tabanan District, Bali province

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Abstract. Food security is one of the issues in the countries including Indonesia. The increased productivity should be taken by farmers through the application of technologies recommended. Technologies practices could be managed under the farmers' cooperative, such as *subak's* cooperative in Bali. The purpose of the study is to describe the farmers' participation in supporting cooperative activities. Cooperative could be a fundamental tool or a pillar of agricultural development to attain food security at farmer level. Farmers as members of cooperative have high participation in supporting cooperative to make products or business activities. *Subak's* cooperative of Guama could respond to the market demand for production (certified seed) and the needs of farmers on agricultural inputs. Farmers get benefit from the business activity of cooperative in the forms of inputs supply (fertilizer, pesticide, etc.), credit or loan provision; and collective marketing. Cooperative has been successful in providing a profit share to members aside from support the food security through the increased productivity.

1. Introduction

The agricultural sector has been significantly playing a great role in the economic development of Indonesia as happening in other developing countries. Food security, however, has been becoming a big issue for the countries since the productivity and quality of rice could not meet the demand of population growth. Also, most of the rural people who cultivate rice farming are still relatively poor and more than one billion people worldwide suffer from food insecurity. Therefore, the state should be able to increase the land and rice productivity through the application of technology, supporting policies and access to finance [1].

The increase of rice production is not merely dependent on the technologies but also the institution managed the application of technologies and best practices on rice farming. One of the rural or agricultural institutions is farmers' cooperative. Cooperatives could be a fundamental tool to achieve food security at the farmer level [2]. Co-operatives are the best institutional intervention for attaining food security in any country. Apparently, the existence of cooperative is not only in the developing countries but also in developed countries, such as United States of America, Canada, Australia, European countries and Socialist country like China, wherein it has a significant role in attaining food self-sufficiency [3]. Farmers' cooperative is contributable to agricultural development in the country [4]. Besides, the farmers' cooperatives are expected to be able to respond to the demand of agro-inputs



and marketing of produces. The agricultural cooperatives, hence, could make an important contribution to food security in the countries, including Indonesia.

Case of Bali province, Indonesia, agricultural development has not been separated to the existence of *subak* as a traditional irrigation system. All the rice farming in Bali is managed by *subak* system. Some problems have been encountered by *subak* affecting the productivity and quality of rice. Aside from land conversion, the economic aspect is also being a big issue for the farmers as members of *subak*, such as getting agro-inputs, the cost for land preparation and others. Government has introduced and developed the *subak*'s cooperative to cope with the issue to support the achievement of food security. Aims of this study are to portrait the structure *subak*'s cooperative in terms of agribusiness, and to describe the benefits of *subak*'s cooperative for farmers in attaining food security.

2. Subak of Guama prior to the cooperative establishment

Subak of Guama is located in Tabanan regency, Bali Province (see Figure 1). The size area of *subak* is 179 ha, in which its main source of irrigation water is from the Weir of Cangi constructed on the River of Sungai by the government through the Ministry of Public Works. This weir does not irrigate *Subak* of Guama only, but also other *subaks*, namely: (i) *Subak Pacung Babakan*; (ii) *Subak Cangi Selatan*; (iii) *Subak Apit Jurang*; (iv) *Subak Uma Dalem*; (v) *Subak Bulan*; and (vi) *Subak Lepud*. The members of *Subak* of Guama is 544 farmers scattered into six sub-subaks, locally called *tempek*. These sub-subaks are: (i) *Kekeran Desa*; (ii) *Pekilen*; (iii) *Manik Gunung*; (iv) *Kekeran Carik*; (v) *Blusung*; and (vi) *Guama*.

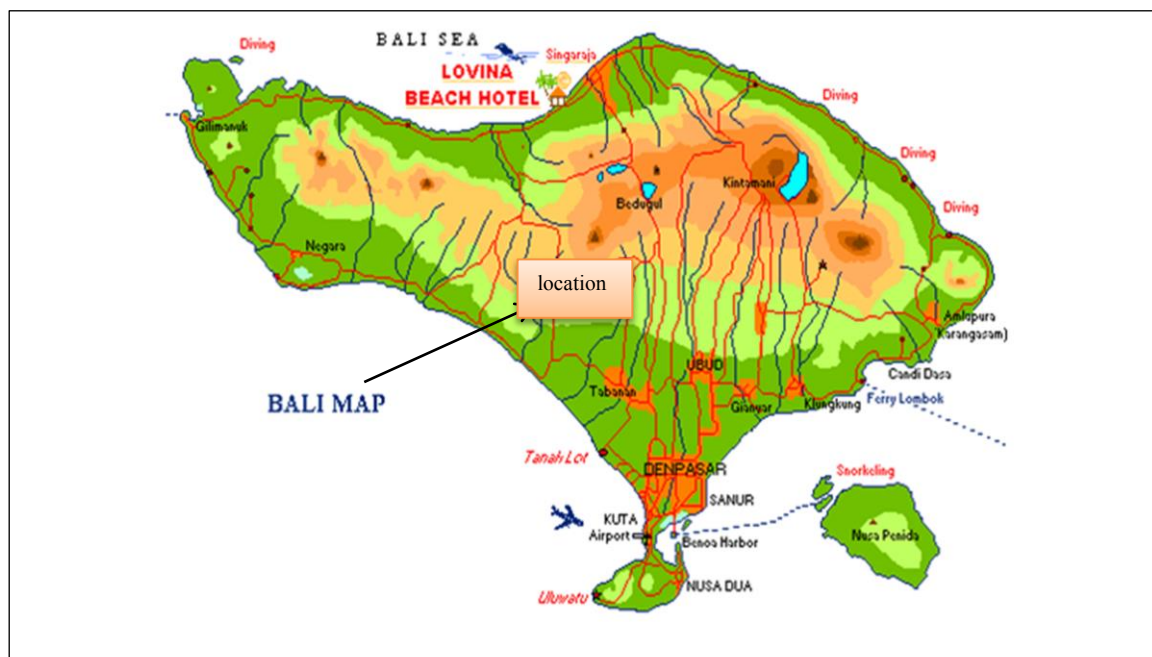


Figure 1. Location of Guama subak

Similar to other *subaks* in Bali, the *Subak* of Guama has a social-agricultural-religious nature. Previously, the main activities of *subak* focused on the social and cultural aspects of agriculture and irrigation on rice farming and other secondary crops on the rice fields. These activities were based on its philosophy called the *Tri Hita Karana* or three causes for happiness [5, 6]. *Tri Hita Karana* constitutes a concept referring to the harmonious relationships among the three components. The components are related to the harmonious relationship between farmer and the God with the religious activities (*parhyangan*), between farmers and social environment (*pawongan*), and between farmers and environmental-territorial (*palemahan*).

The harmonious relationship between the farmers and God is clearly shown in the activities of ritual activities performed by farmers. *Subak* has some temples for this ritual activities, such as temples situated near the weir (usually located outside the area of *subak*), within the *subak* area, and others. The ritual activities are conducted at the levels of the individual farmer, *subak* and inter-*subaks* as well [7, 8]. At least there are 15 kinds of ritual ceremonies performed by the individual farmer during the rice farming period. These ritual ceremonies have started from getting water, land preparation until harvesting time. *Subak* has defined the period of when the farmers start to prepare the land and transplant rice following the best day based on the local calendar. The intensive ritual activities within *subak* system have created a closed relationship among the farmers in their daily life. The ritual activities in rice farming within *subak* is being a glue of the social interaction among the farmers.

In this study, the harmony in the relationship among farmers, and between farmers and the outsiders (extension agents from government) was reflected in the activities on irrigation operation and maintenance and rehabilitation, the activities on farming and irrigation, the activities on agricultural extension, the activity on *subak* meetings (monthly meeting and incidental meeting), the activities on ritual ceremonies as cited above. The members of *subak* always worked together to clean the canal and maintain the facilities of irrigation. In term of irrigation, *Subak* of Guama had defined the water borrowing system. Among the members are allowed to borrow water for irrigating rice field. The process of water borrowing is very simple. A farmer who want to borrow water directly talked with another farmer telling about when he would borrow water. After he got approval, he could close or block the gate of water (inlet at the division structure) by using stone or other materials to irrigate water to his rice field.

Monthly meeting of *subak* was held every month (a month equals to 35 days based on the Hindu calendar). The subject matters discussed in the meetings were about agricultural technologies, problems, money lending, planting schedule, and others. In the monthly meetings, the agricultural extension agent (from the Agriculture Office) usually came to deliver new information relating to production technologies.

3. Cooperative in Subak of Guama

Subak as an irrigation system is an organization of farmers which distributes and allocates irrigation water to members' rice fields under the internal regulations, locally called *awig-awig*. Under the *awig-awig*, the allocation of irrigation water is not strictly based on the technical measurement, but it is based on the consensus and long experiences among the members. The allotment of water is strongly related to the obligation of members to the activities for the operation and maintenance of irrigation facilities, and contribution of labour and cash money. The most different thing of *subak* is the performances of ritual ceremonies at the level of *subak* and inter-*subaks* and individual member. Based on the Bali Government Regulations (No. 9/2012), *subak* is expected to have some functions, as follows: (i) to assist the government in promoting agricultural development; (ii) to implement best ways of water distribution and allocation under the government's regulation; (iii) to foster and preserve the values of religion and traditional customs of Bali as well as maintaining the unity of members through the harmonious and consensus concepts; (iv) to establish, maintain, develop irrigation infrastructure at the *subak* level; (v) to develop capability of *subak*'s to increase productivity, incomes and welfare of farmers; and (vi) to preserve the area and its environment in the context of sustainable agriculture.

In responding the economic pressure in rice farming, *subak* has been initiated to establish a farmers' cooperative with several units. One of the *subaks* which has cooperative is *Subak* of Guama located in Tabanan regency, Bali Province. The cooperative has been formed since 2003 under the initiative of *Balai Pengkajian Teknologi Penelitian*, Bali (The Government Agency of Agricultural Research, Bali). This *subak*'s cooperative is aimed at making agribusiness activities based on its social capital [5]. The main objective of farmers' cooperative establishment is to ensure the members of *subak* to receive agro-inputs at a proper time in line with the planting schedule defined in order that

farmers could ensure the improvement of rice productivity and quality. The organizational structure of *subak*'s cooperative is shown in Figure 2.

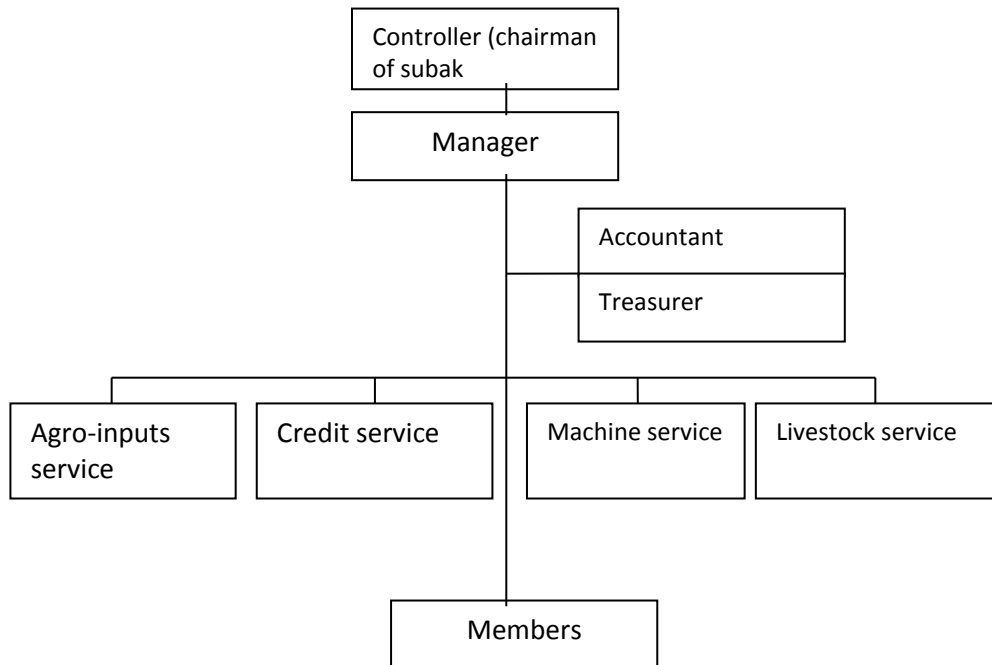


Figure 2. The organizational structure of cooperative

As shown in Figure 2, economic activities of cooperative are practically managed by the particular unit, such as credit services, agro-input services and machine services. Each unit has managed the program to give proper services to members in line with the needs of them. Structuring of cooperative was agreed by members of cooperative and *subak* as the owner of cooperative and also based on the government regulation. The cooperative gives farmers the opportunity to actively participate in the process of decision-making at the stages of the cooperative's operation. In making a business plan, for instance, members are invited to involve in the discussions. At the implementation stage, all farmers have the right to monitor and control the performance management board.

It is noteworthy that the inter-related between *subak* and cooperative in the operation of cooperative constitutes a combination of modern and traditional management. Structure of cooperative is under the national law as a legalized institution. In the other side, the chairman of *subak* is acting as a controller of the cooperative. In this context, *subak* institution functions as a "law umbrella" for the cooperative. The *awig-awig* of *subak* has also prevailed in the management of the cooperative. It means that the sanction of *subak* is used by the cooperative, too. Its consequence is farmer might be afraid to break the rules of because he will be fined not only by the regulation of cooperatives but also by the *awig-awig* of *subak*. Thus, it might ensure the proper management of cooperative and attain the objectives, such as increasing productivity and quality of rice, and income as well.

4. Farmers' participation in the cooperative

The establishment of *subak*'s cooperative initiated by the government (The Agency of Research and Development, Bali province) was addressed to support the improved rice productivity and increased income of farmers and their families. Achievement of this improvement should be done through agro-inputs provision from cooperative due to these are very important needs of farmers in their rice farming. Due to all members of *subak* are members of cooperative established, they have sense of

responsibility and sense of belonging to cooperative based on mutual trust among the members. The members have already known each other and also have close relationship contributing to a good performance of cooperative under the existing social norms within *subak*. Similar to *subak* system, the cooperative formed has also been democratically controlled by members since there is an annual assembly meeting in order to discuss the management of cooperative and make an action plan for the following year. The manager of *subak*'s cooperative was appointed and agreed by members. Similar to other cooperatives in developing countries as cited by FAO, there are seven principles of cooperative should be practised, as follows: (i) voluntary and open membership; (ii) democratic member control; (iii) member economic participation; (iv) autonomy and independence; (v) education, training and information; (vi) cooperation among cooperatives; (vii) concern for the community.

Based on the interview to the management board and samples of farmers, it has found several functions of *subak*'s cooperative. These are: (i) providing of agro-input; (ii) providing loan or credit; (iii) giving service on the agricultural machine; and (iv) giving service on livestock cultivation.

In *Subak* of Guama, cooperative's members have been intensively active in the activities of cooperative by participating in the meetings relating to decision making on planting schedule and planning of agricultural inputs needs for rice farming. The manager and chairman of *subak* give information about the appropriate uses of fertilizer, pesticide and other inputs to members for the next planting.

The farmers' needs of agricultural inputs are identified based on the land size and recorded into the particular form. The function of the collective purchase of agricultural inputs could be clearly done by the cooperative. Members get benefits in this mechanism since they would return or repay the agricultural inputs after the harvesting period. Cooperative make an economic incentive for the members (farmers) relating to agro-input due to the mechanism of it contribute to the more efficient cost of farmers and more effective in agricultural production. Through the cooperative, farmers as member could solve problems on prices of inputs used for farming.

In identifying these needs, cooperative is accompanied by the agricultural extension worker while giving explanation about the best practices on rice farming to members. The extension worker should ensure the farmers to apply recommended technologies to have high productivity of rice through the proper fertilizers use and pest and disease control aside from irrigating. Therefore, *subak*'s cooperative gives benefit to farmers as members to get agricultural extension before planting. This extension is very useful for the farmers to acknowledge agricultural practices information on the application of agro-inputs.

The *subak*'s cooperative of Guama could have economic activities supporting members' needs on rice farming system and another work, such as the supply of agricultural inputs, joint production and seeds marketing. The cooperative could play a role as a practical tool for collective action (buying agro-inputs and selling seeds) which makes the decreased burden of farmers on inputs cost and increase bargaining power in selling seed [9, 10]. Cooperative has a function as a means of attaining goals of farmers' common interests in terms of productivity and quality of rice [11]. Farmers get benefit in making collective planting of similar variety and pest and disease control management. Under the management of cooperative and *subak*, farmers must follow the regulations defined relating to cropping pattern, planting schedule, rice variety selection and others.

In Guama cooperative, the government firstly assisted to provide the budget for the economic activities. These activities are defined through the meeting of cooperative members and the staff of government. The main purpose of the economic activities is to increase the income of farmers as members of cooperative through the improved management of rice farming, livestock, and support of non-farming activity. Kinds of economic activities which were conducted by cooperative are as follows (see Table 1).

1. Integrated Rice Management Activity (Integrated Crops Management). In these activity, the cooperative allocated budget for the member as much as IDR.98,000,000
2. Integrated rice-livestock Activity (Crops-Livestock System) with the budget allocated were IDR 663,500,000

3. Activities strengthening working capital for member (women) through the loan provision with the budget of IDR 81,700,000.00.

Tabel 1. Economic activities in the cooperative

No	Activities	Budget allocated (IDR)	Interest rate of loan (%)	Duraion of loan (month)
1	Integrated Rice Management	98,000,000	1/month	4
2	Integrated Rice-Livestock	663,500,000	1/month	24
3	Strengthening working capital	81,700,000	1/month	12
Total		843,200,000		

In the business activities of integrated crop management, the cooperative distributed agro inputs (seed, fertilizers, pesticides) to the members based on the size area of rice field cultivated. The values of these inputs are calculated as a credit or loan which should be returned after the harvest. Based on the regulation of cooperative, the interest rate of loan is 1%/month within 4 months. In the provision of the agro inputs, the cooperative has a partnership with the company which supplied inputs such as fertilizer, namely PT Setiatani and PT Pupuk Kaltim. Meanwhile, suppliers of pesticides, herbicides and fungicides were PT Syngenta, BASF, Bayer and others. The cooperative has a function to channelling agro inputs from the supplier (the agro inputs companies) to the members.

As a consensus of cooperative and *subak* on collective marketing, members planted rice in order to produce certified seed of rice. The provincial government (Agency for Control and Certification of Seed) conduct the training and control the process of producing certified seed. The cooperative builds a partnership with several companies such as PT Sang Hyang Sri, PT Subur Chemistry to sell certified seed with the proper price. Cooperative should make good packaging of seeds by using the plastic bag with the logo of the cooperative. The consumers of seed produced by *subak* and sold by cooperative are farmers in Bali (some regencies) and even to outside Bali. Cooperative gains much more benefit for this business, and thus farmers get share profit every year from cooperative.

In the system integration business activities of rice with cattle, it had been realized in the form of loans cattle to the members, wherein each farmer could get credit as much as Rp. 3,000,000 for buying cattle with 1% interest in a payback period of 2 years. Another business credit (savings and loan) was organized with the assistance of working capital to the strengthening of women farmers such as: (i) business coconut oil; (ii) the business of pigs; (iii) a loom; (iv) business carving; and (v) trading businesses. This indicates that farmers as a member already got economic benefit from cooperative which was used for supporting agricultural activity.

5. Conclusion

In order to increase of rice production is needed the improvement of farmers organization such as cooperative to manage members and technologies available. Cooperative could be a fundamental tool or a pillar of agricultural development to attain food security at farmer level. One of the farmers' organization is *subak* that could be established cooperative to respond to the market demand of production and needs of farmers on agro-inputs. Cooperative has been an important contribution to food security in Bali as shown by the existence of *subak*'s cooperative, Guama.

Subak's cooperative of Guama provides economic benefit for members in term of inputs supply (fertilizer, pesticide, etc.), credit with soft interest; and collective marketing of certified seed. Aside from supporting food security through the increased productivity, farmers as members also gain profit share from the cooperative every year due to they actively participate in using the services of cooperative.

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