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# Strengthening Social Capital for Agricultural Development: Lessons from Guama, Bali, Indonesia

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## ABSTRACT

*Agriculture plays a significant role in the economic development of Indonesia. In Bali province, the government has been implementing agricultural development programs through subaks, which are customary communities that manage the traditional irrigation system. However, subaks now face some problems due to low farmers' income from paddy farming. This paper describes the social capital performance of the subak system and attempts to identify ways to strengthen the social capital for agricultural development. The study selected the subak of Guama as its site because the government implemented a pilot project on agribusiness development in this subak in 2002. Key informants and samples were drawn during the survey and observation for data collection. Data were analyzed using descriptive methods.*

*Results showed that social capital within the subak system consisted of mutual trust, social norms, and social networking. The three elements run simultaneously for the agricultural, irrigation, and agribusiness activities, including ritual ceremonies within the subak system. The social capital in the subak system for agricultural development, particularly rice farming, can be strengthened by: (1) conducting intensive extension and training activities using participatory approaches; (2) providing economic stimulants to encourage farmers to sustain their agribusiness activities; and (3) facilitating partnership activities between the subak and other agribusiness institutions.*

**Keywords:** Social capital, agribusiness, cooperative, participatory, subak

**JEL Classification:** Q13, Q25

## INTRODUCTION

Agriculture continues to play a significant role in the economic development of Indonesia. It provides employment and food to both rural and urban populations. In Bali province, the government has been implementing its agricultural development programs through the subaks. A subak is a customary community that manages the traditional irrigation system. Nowadays, subaks face some problems due to low farmers' income from paddy farming. The low income is mainly caused by limited purchasing power, lack of, and limited access to resources (Ashok, Fisseha, and Carmen 2004). To facilitate agricultural development, the Indonesian government established Village Unit Cooperatives in the early 1970s. The cooperatives were integrated later into the Mass Guidance Program for achieving self-sufficiency in rice (Suradisastira 2006). The cooperatives provide agricultural inputs (seeds, fertilizers, pesticide) and credit to members (farmers) as well as rice processing and marketing services. Similar to other cooperatives in developing countries, however, the growth of cooperatives in Indonesia has not been well enough to sustain their activities. Bhuyan (2007) opines that the failure of cooperative is caused by negative attitude of members due to unclear communication between members and management, or lack of educational attainment. and operating matter. Zarafshani et al. (2010) found that the agricultural production cooperative in Iran has been unsuccessful in achieving the members' goals because of weak coordination among farmers, little support from government, high prices of inputs, low financial power of farmers, among others. Other reasons for failure of cooperatives are low participation of members, lack of capital and management skill, lack of control, disloyalty of members due to ignorance, lack of training, and conflict among members (Ortmann and King 2007; Thomas and Martha 2011).

In Indonesia, particularly in Bali province, the government, aware of the failure of the Village Unit Cooperative, encouraged subaks to become agricultural cooperatives. The expectation is that the subak can motivate its members to participation in the cooperative. Since agricultural cooperatives operate in the context of rural communities, they are subject to the norms and values of social inclusion and solidarity.

This agricultural cooperative project selected as its pilot site the subak of Guama, which is located within three villages in Tabanan district, the center of rice farming in Bali. The cooperative is called KUAT Guama (Koperasi Usaha Agribisnis Terpadu or Integrated Agribusiness Cooperative). Its initial activities included integrated crop management, crop-livestock system, and small credit for households. These were aimed at increasing the productivity and income of farmers. The experience of other countries has been that agricultural cooperatives established by the government become unsustainable after a couple years of operation (Aref 2011). Related to this, this study sought to describe the performance of social capital in a subak system and to examine ways of strengthening such social capital for sustainable agricultural development.

## REVIEW OF LITERATURE

### **Subak and Social Capital**

In general, the main functions of irrigation organizations (water users associations) are to distribute irrigation water, mobilize resources, operate and maintain irrigation facilities, and manage conflicts (Coward 1980). The subak is a well-known traditional irrigation system in Bali, Indonesia; it has rituals from water fetching to harvesting, which are part of the Balinese culture (Sutawan 1996). It is a customary institution,

which is a form of social capital for managing collective resources since it provides structure and develops trust and norms of reciprocity for cooperation and coordinated actions (Dahal and Krishna 2008).

Social capital is an important resource for agricultural cooperatives. It is “the norms and networks that enable people to act collectively” (Putnam 1993). Regarded as a feature of social organizations, it includes social networks, norms or informal values, and trust that facilitate coordination and cooperation for mutual benefit (Putnam 1993; Fukuyama 1995). Trust is defined as the expectation about the actions of others that have a bearing on one’s own choice of actions (Carrol 2001). Gittel and Vidal (1998) made two categories of social capital: bonding and bridging. Fafchamps and Bart (2001) posit that social networks enable traders to reduce transaction cost under a situation of imperfect information and then have higher margins.

### **Sustainability of Farmers’ Cooperatives**

The Indonesian Law on Cooperatives (No.25/1992) indicates the following functions of cooperatives: (1) to develop potential and capacities of members in particular and the community in general in order to improve their welfare, (2) to actively take part in enriching the quality of the community’s life, and (3) to strengthen the local economy to support the national economy. Furthermore, it clearly recognizes the following principles of cooperatives: (1) open and voluntary membership, (2) democratic management, (3) proportional returns to each member, and (4) self-help institution. The above-mentioned functions and principles are intended to ensure the sustainability of cooperatives.

A cooperative is meant to “embody the values of self-help, self-responsibility, democracy, equality, equity, and solidarity. In the tradition of their founders, cooperative

members believe in the ethical values of honesty, openness, social responsibility, and caring for others” (ICA 2005, para 1). These are part of the social capital of small institutions. The general activities of agricultural cooperative are marketing and providing farm supplies and services (Ortmann and King 2007), including insurance, contract work, accountancy, and farm relief (Bigman 2002). However, most agricultural cooperatives have been found to have relatively small businesses with low margin.

Agricultural cooperatives have important roles in the rural economy and social organizations. They provide farmers with production inputs, such as fertilizers, seeds, and chemical substances (Aref 2011); minimizes the transaction costs in getting loans; and provide better access to information (Motiram and Vakulabharanam 2007). Barton (1986) clearly states that the primary purpose of a cooperative is to gain economic benefit for its members.

The sustainability of local institution requires the participation of its members (Uphoff 2000; Korten 1992). Participation is important for the success of collective actions, such as in the management of irrigation and forestry as natural resources (Sutawan 1996; Hobley 1996). It means involving people in decision-making processes and in implementing and evaluating programs, as well as sharing in the benefits of development programs (Cohen and Prusak 2001). Local people would participate in a program if they see that their needs could be fulfilled (Shah and Baporikar 2012). This promotes their sense of belonging and responsibility toward the program or institution (Munasib and Jeffrey 2011). Similarly, the sustainability of a cooperative could be seen in the extent of participation by the members to sustain the cooperative’s activities.

## METHODOLOGY

This study was conducted in the subak of Guama, Tabanan district, Bali, Indonesia. It gathered data from 70 farmers out of 544 members of the cooperative and its management officers through semi-structured interviews and a questionnaire. It used proportional random sampling to select the farmers. The survey was done in April to August 2012.

The indicators of social capital consist of trust, social norms, and social networking. Trust was measured in terms of mutual trust among members; mutual trust between members and management boards; and members' trust toward the economic activities within the subak. Collected data were analyzed using qualitative methods. The indicators were measured using a five-point Likert scale, with 1 being "not too expected" and 5 being "very expected." The total score was converted to percent and categorized as very high, high, moderate, low, and very low. The interval of categories was formulated by:

$$i = \frac{\text{max.percentage} - \text{min.percentage}}{\text{no.of categories}} = \frac{100 - 20}{5} = 16$$

Based on the formula, Table 1 presents the measurement categories of the social capital indicators.

## RESULTS AND DISCUSSION

### General Description of the Research Site

The subak of Guama, covering 172 hectares of rice land, is situated in Tabanan regency, Bali, Indonesia. Tabanan is a center for paddy growing in Bali. The subak gets its irrigation water from Cangi weir, which provides water to seven other subaks. The subak can be easily reached by public and private vehicles, which makes it a good potential for developing an agribusiness cooperative because the cost of bringing in agricultural inputs to the area and selling produce outside the subak area would not be high. Like the other subaks in Bali, the subak of Guama is divided into sub-subaks (called *tempek*), namely: Manik Gunung, Pekilen, Kekeran Desa, Kekeran Carik, Belusung, and Guama. The subak is composed of 544 farmers. The average rice farm is relatively small—about 0.32 hectares per farmer.

### Characteristics of Cooperative Members

The farmers in the subak have relatively small farms, ranging from 0.26 to 0.56 ha, or an average of 0.32 ha (Table 2), which they usually inherited from their parents. This situation is similar to other parts of Indonesia. Research indicates that a small-scale rice farming system

**Table 1. Measurement categories of the social capital indicators: trust, social norms, and social networking**

Category	Score (%)
Very high	> 84–100
High	> 68–84
Moderate	> 52–68
Low	> 36–52
Very low	≤ 20–36

(less than 0.35 ha) is economically inefficient (e.g., Chand, Lakshmi, and Aruna 2011; Sial, Shahd, and Sheikh 2012). Small farm sizes is a major barrier to the improvement of Indonesian farmers' income.

On the average, the farmers were approximately 48 years old. They are still relatively productive persons and can work on rice fields larger than what they own. They have low educational attainment but are open to supporting extension and training activities, particularly in agricultural innovations such as agribusiness, conducted by government field workers.

Indonesia's educational system is composed of six years of elementary school, three years of junior high school, and another three years of senior high school. The formal educational background of the farmers is relatively low (9.77 years), equivalent only to junior high school graduates. Less than half (44.29%) of them completed senior high school. As a consequence, the extension agents need to have particular techniques or methods of extension so that the farmers would be able to understand the information being disseminated.

The small size of farmlands has pushed farmers to have other jobs so the household could have more income. All the farmers in

the research site also go into livestock farming (mostly cattle and swine) for additional income. They integrate the livestock farms into their crops. Cattle and swine are important to farmers because these are regarded as savings.

Some farmers work as hired labor for off-farm jobs (e.g., construction worker, local retailer of the daily needs of the community), teacher, or employee at nongovernment offices. Most farmers (88.64%) are landowners, the rest are sharecroppers. In the research site, the land cultivation arrangements between the landowners and the sharecroppers are not covered by legal contracts. Arrangements are based on trust only, even though this might be prone to conflicts.

### Performance of the Subak Cooperative

The subak of Guama used to be the site of an agribusiness project by the government through the Agency of Research and Development for Agriculture-Bali. This subak had been provided intensive extension services and training in agricultural practices, management, entrepreneurship, and agribusiness. It was later developed into a cooperative to manage the agribusiness activities within the subak. The cooperative, called Koperasi Usaha

**Table 2. Characteristics of the subak of Guama members**

Feature	Average	Range
Paddy land (ha)	0.34	0.2–.56
Age (year)	48	36–56
Educational background (year)	9.77	6–12
Family size (person)	5.06	3–7
< 15 years	1.36	0–3
15–64 years	3.10	2–6
> 64 years	0.6	0–2
Status of farmers (person)		
Landowner (%)	88.64	
Sharecropper (%)	11.36	

Agribisnis Terpadu (KUAT) Subak Guama, was established on 1 April 2002. However, it was legalized only on 14 August 2003, after the government (Cooperative Service) issued its legal documents with reference number 22/BH/DISKOP/VIII/2003. The cooperative's management remained under the control of the subak of Guama. The subak chairman has full control and supervision of the cooperative's management (Sedana 2013).

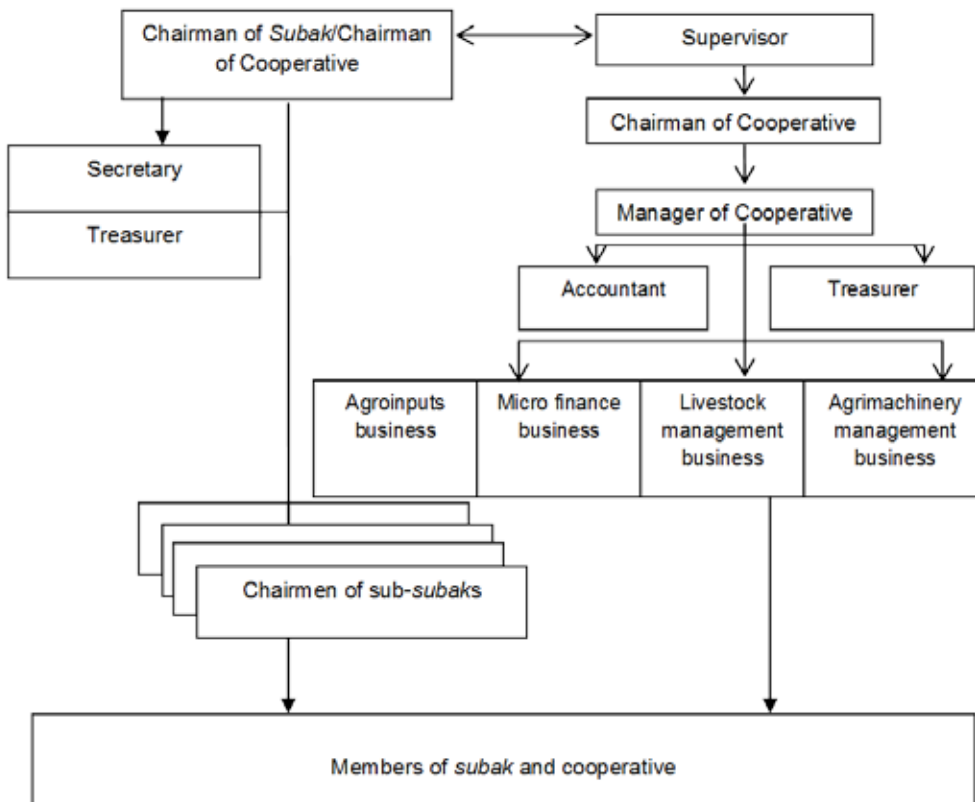
The cooperative manages the productive assets and capital granted by the Agency of Research and Development for Agriculture-Bali. It encourages the subak members to use the cooperative's services, particularly microcredit, agricultural inputs provision, livestock management, and agricultural machine management. These activities are directly overseen by the manager, who is selected by the

subak cooperative members. The organizational structure of the cooperative and the relationship between the subak and cooperative are shown in Figure 1.

As indicated above, the subak chair is also the cooperative's chair. The agribusiness activities within the subak are professionally managed by a manager, with assistance from the secretary, treasurer, and other officers. The operations of the cooperative are guided by internal regulations set by the members within the framework of the national law on cooperatives.

To start the cooperative's agribusiness activities, the Agency of Research and Development for Agriculture-Bali gave the cooperative a fund grant in 2002 through the government's Project on Integrated Farming Development. The grant was for the following

**Figure 1. Organizational structure of the cooperative in subak of Guama**



activities: (a) integrated crops management, (b) crops-livestock system, and (c) home industry credit. The cooperative also went into rice seed production under the supervision of the subak and some government institutions, particularly Rice Seed Certification Agency, Bali Province, and Agency of Research and Development for Agriculture-Bali. The subak was responsible for identifying the farmers who will participate in the program, while the government institutions took charge of the technical aspects of rice seed production. The cooperative was also responsible for packaging the seeds before selling them to an agricultural firm owned by the government (PT Pertani) and other retailers.

### Social Capital within the Subak Cooperative

#### Trust

Trust is the expectation about the actions of others that have a bearing on one's own choice of actions (Carrol 2001). In this study, trust was measured in terms of mutual trust among the members of the cooperative and between its members and management boards. The cooperative scored 84.02 percent, on the average, indicating that generally high trust exists. Most (72.86%) members indicated having "very high" trust (Table 3). The members of the cooperative had mutual trust due to Tri Hita Karana (traditional philosophy for life in Bali, which essentially means harmony among

people, harmony with God, and harmony with nature), which calls for harmony in running rice-farming activities.

The high level of trust in the cooperative indicates that the farmers and management board have good confidence in what they do and have a positive expectation that others would do the same thing. As a traditional irrigation system, the subak organizes its members to have unity. They trust each other regarding the distribution and allocation of water to their respective rice fields. It is noted that the canal has no permanent gates or other security structure for controlling the flow of irrigation water. This indicates the high level of trust that the members have for each other. Their sense of trust is strongly influenced by their belief in God, which is reflected in the irrigation and farming rituals they undertake. This trust had made it easy for the subak members to agree with the plan to establish the subak cooperative. Likewise, the management board trusted the members to support the new cooperative. The members agreed to have a new management board for the subak cooperative, to be headed as well by the subak chair (Figure 1). They highly trust the management board to carry out well the irrigation, farming, and economic activities, especially in distributing and returning loans, as well as in managing the cooperative's finances.

**Table 3. Outcome of measurement of farmers' trust, social norms, and social networking**

Category	Trust		Social norm		Social networking	
	No.	(%)	No.	(%)	No.	(%)
Very high	51	72.86	54	77.14	26	37.14
High	19	27.14	16	22.86	35	50.00
Moderate	0	0	0	0.00	9	12.86
Low	0	0	0	0.00	0	0
Very low	0	0	0	0.00	0	0
Total	70	100	70	100	70	100

Source: Primary data



### **Social Norms**

Social norms are specific actions that people regard as proper or improper and correct or incorrect, and are potentially rewarded or penalized. In the subak system, internal regulations significantly influence the members' behavior as regards irrigation, farming, and economic activities. These include water distribution and allocation, cropping pattern, cropping schedule, rituals, meetings, credit/loan mechanisms, membership, and management tasks. The subak members voluntarily abide by the *awig-awig* (social norms). However, the government has issued a new regulation requiring the subaks in Bali to register their respective *awig-awig* for legalization, hence, the *awig-awig* are now institutionalized rules. The subak carry out social sanctions to members who do not abide by the *awig-awig*, such as stopping the allocation of irrigation water or isolation by the other members. These social sanctions deter farmers from going against the social norms. In irrigation, for instance, members must follow the regulations on water distribution and allocation and collective actions to rehabilitate, operate and maintain the irrigation facilities. In a farming system, the members are expected to follow the seed variety to be planted, planting schedule, cropping patterns, as well as the rituals and other agreements reached during subak meetings.

In this study, social norms as a component of social capital were measured in terms of knowledge, attitude of members toward the internal regulations of the subak and cooperative, and strength of the internal regulations to govern members and make them abide with the norms. Social norms within the subak cooperative scored 85.34 percent, on the average, indicating that they have a very strong influence on the members. Most (77.14 %) members gave a "very strong" score (Table 3). The results imply that the social norms of the subak serve as a strong guide to the members

and management board in the conduct of any activity under the subak system. They also show that the members continue to acknowledge the subak's values in their social interactions.

### **Social Networking**

Social networking is regarded as the ties made by people as they interact to achieve shared purposes. In this study, social networking comprises interactions among members, between members and the subak board, between members and the cooperative's board, and between members and outsiders. The results of the survey conducted on 70 cooperative members show that the members scored high in social networking, averaging 79.04 percent. Half of the respondents had "high interaction," 37.14 percent had "very high interaction," and 12.86 percent had "moderate interaction" (Table 3). The farmers expected to gain benefits from their interactions, especially for their agricultural activities in that their network could serve as a channel of information and venue for informal and formal discussions. The study found that the farmers are intensively involved with each other since they live near each other and have social relationships. The interactions take place in the community hall, coffee shop, neighbor's house, and other places.

Interactions between the members and boards of the subak and cooperative are very useful in disseminating information coming from different sources inside and outside the subak. They enable a two-way communication among the members and the boards of the subak and cooperative, about agricultural innovation and the need for agricultural inputs. The interactions cited above are driven by the local values of the subak and village. In addition, the subak and cooperative have internal regulations, agreed on through a consensus among the members, which strengthen the interactions and ties among the members and management boards. The interaction among

members and management boards with outsiders (e.g., agricultural extension agents) may have significant impact, particularly in terms of access to information and technology.

In sum, the interactions among the farmers as members of the subak as well as between the farmers and the management board are based on mutual trust and guided by the social norms of the subak and cooperative. In this study, social capital served as a social bond—a social glue—for the members and management board as they run the agribusiness activities, in addition to the agricultural, irrigation, and social activities, including rituals.

### **Ways to Strengthen Social Capital for Agricultural Development**

Research and the experience of Guama subak show that agricultural development can be sustained by conducting intensive extension and training activities using participatory approaches, providing economic stimulants to encourage farmers to continue their agribusiness undertakings, and facilitating collaborative activities between subaks and agribusiness institutions.

#### ***Conduct of Intensive Extension and Training***

Even though mutual trust within the subak of Guama is already high, it still needs to be increased so that its agricultural programs may be sustained. This could be done through intensive extension and training of farmers. The capacity-building activities should use participatory approaches to actively involve the farmers in agribusiness development. Aside from agricultural practices, the extension and training activities should cover management skills and personality development for those who run the subak and cooperative.

As a component of social capital, mutual trust plays a significant role in ensuring that the members and the subak and cooperative

management boards support the agricultural development programs. Mutual trust also strengthens social networking among the farmers, management boards, and external institutions (e.g., agricultural extension offices). Transparency in management of the subak cooperative encourages the subak members to join the cooperative. Meaning to say, mutual trust is a collective energy, ensuring the sustainability of the subak and cooperative.

#### ***Provision of Economic Stimulants***

Agribusiness is a new paradigm of agricultural development introduced to the subak system. It needs financial capital for activities like agricultural input provision and microcredit. As such, economic stimulants (seed money) are important to start and motivate agribusiness activities in the subak system. This, of course, should be followed by intensive facilitation so that the subak could have a good understanding of the program and carry out activities to improve farm productivity and increase the income of the subak and its members. The experience of the subak of Guama shows that the seed money for the cooperative, provided by the government, could be used properly for agribusiness activities, such as integrated crop management, crop-livestock system, and microcredit. The management boards of the subak and cooperative have received much encouragement from the government staff, especially for their unity in implementing the activities of the cooperative. The government staff had facilitated the meetings and discussions among the members and management boards of the subak and cooperative to define their internal regulations.

#### ***Facilitating Partnership***

An agribusiness system consists of interrelated subsystems, such as farm inputs provision and distribution, on-farm activities,

and processing and marketing, among others. Given these complex activities, implementing agribusiness activities within the subak system requires the help of external parties. In the case of farm inputs (fertilizers and pesticides), for instance, the subak cooperative could not produce the inputs by itself, so it has to establish a partnership with a distributor of farm inputs. The agricultural extension workers facilitated the cooperative's partnership with PT Pertani (an agricultural enterprise). Because of this partnership, the cooperative obtained the authority to retail fertilizers to farmers within the subak of Guama. Rice seed production is one of the business activities run by the subak cooperative under the supervision of three government institutions—Rice Seed Certification Agency, Bali Province, and Agency of Research and Development for Agriculture-Bali. To produce the seeds, the cooperative invited farmers (upon the subak's recommendation) to join the program. The farmers showed willingness to participate in this program so they could obtain a higher price for their rice in the form of seed.

### CONCLUSION

The high level of mutual trust, respect for social norms, and social networking existing in the subak of Guama have facilitated the members' participation in the agribusiness activities of its cooperative. Such social capital should be strengthened so that the agribusiness activities could be sustained and bring in higher income for the members and the subak itself.

Some ways for strengthening social capital include: conducting intensive extension and training activities using participatory approaches, providing economic stimulants to encourage farmers to sustain the agribusiness program, and facilitating collaborative activities between the subak and agribusiness institutions. These strategies should be conducted in

synergy with the government to motivate the members and management boards of the subak and its cooperative to improve its agribusiness activities.

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