TOWARDS A SUSTAINABLE TRADITIONAL IRRIGATION SYSTEM IN BALI THROUGH AGRIBUSINESS APPROACH[1]

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ABSTRACT

Traditional irrigation system in Bali is called a *subak* which has been established since thousands ago. The existence of *subak*(s) has presently played a great role in supporting agricultural development on rice field. Cultural aspect on *subak* has become a buffer for Balinese culture as an interesting factor for supporting tourism development. As an international tourism destination, the growth of economic development brought about some problems on *subak* system, such as water uses competition and land (rice field) conversion. This paper is addressed to describe problems faced by *subak*, and formulate agribusiness works to sustain traditional irrigation system.

Competition in using water has been felt by *subak* since the irrigation water source was also extracted by the other sectors for domestic water and industry uses. Water availability has become scarce for irrigation, thus cropping intensity is decrease. Land conversion is also difficult to control as the high need of land for housing, physical infrastructure and industry in line with economic development. Aside from this, the youth might not have good interest to work on rice farming with some reasons, such as relative low income, high risk, income gained after harvest (take relative long time). They then go to non-agriculture work in urban area as a daily worker and others. Economic incentive needed by farmers and their family should be available for keeping them to work on rice field farming. Agribusiness is one of the approaches to sustain their farming on rice field. This approach might be done by defining a business model for the actors involved within the business model, such as farmers and *subak*, company (as a partner) and local bank (as a supporting partner). These actors must have interrelated partnership in implementing market system under the business model defined in order that they could gain proportionally benefit and profit.

Key words: subak, irrigation, agribusiness, economic incentive, and business model

I. INTRODUCTION

Agricultural development constitutes a main sector in economic development for the developing countries which generates food, employment and income (Johnston and Mellor, 1961; Ranis et al 1990; Delgado et al, 1994; Timmer, 1995; Holcer, et al., 2013). Most of population's food is still dependent on the production from the small holder farmers (Stanton, 2000). Implementation of agricultural development, particularly on rice farming in Bali province, Indonesia, has been conducted by farmers' organization called *subak*. It is a widely known

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'traditional' irrigation management institution for rice cultivation in Bali which has been established since thousands ago (Roth, 2011; Sedana, 2012; and Roth and Sedana, 2015). The existence of *subak*(s), therefore, has still significantly played a great role in supporting agricultural development on rice field (Sedana, et al, 2012). Aside from this, cultural aspect on *subak* has become a buffer for Balinese culture as an interesting factor for supporting tourism development.

As an international tourism destination, the growth of economic development brought about some problems on *subak* system, such as water uses competition and land (rice field) conversion. Competition in using water has been felt by *subak* since the irrigation water source was also extracted by the other sectors for domestic water and industry uses. Water availability has become scarce for irrigation, thus cropping intensity is decrease. Land conversion is also difficult to control as the high need of land for housing, physical infrastructure and industry in line with economic development.

In fact, the youth in Bali might not have good interest anymore to work on rice farming with some reasons, such as relative low income, high risk, income gained after harvest (take relative long time). Cumulative reasons found in rice farming have pushed farmers and the youth strive to work on non-agriculture job in urban area as a daily worker and others. Even, some of farmers as members of subak should sell their own rice field since the income gained is relatively low, thus also make land conversion. Higher rate of land conversion will threat the existence of subak as shown in Denpasar city, in which three *subak*s was disappeared during a decade of 1993-2003 (Sedana, et al. 2003). This paper is addressed to formulate agribusiness works to sustain traditional irrigation system.

II. AGRIBUSINESS APPROACH FOR SUSTAINING TRADITIONAL IRRIGATION SYSTEM

2.1. *Subak* system

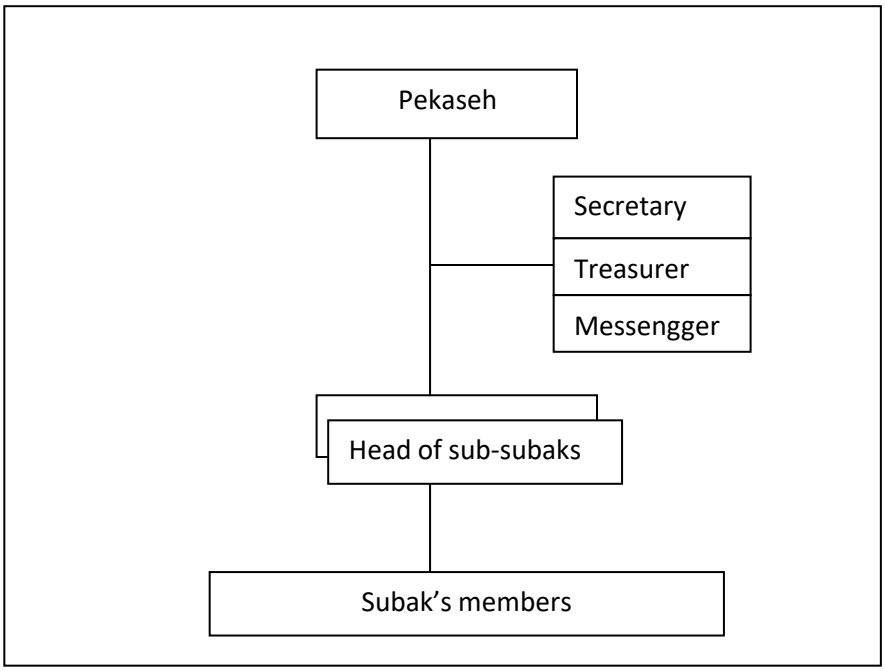
Susanto, et al (1999) cited that *subak* is water user association in Bali which has some characteristics in the relation to irrigation, agriculture and culture. *Subak* has a complete independence from the village administration because of its autonomy with the rule and regulations where the members are subject to comply. Culturally, the activities of *subak* are strongly related to socio-cultural life of the Balinese Hindu society. The affiliation factors of *subak*s' members are water and temple. In general, *subak* has five functions, namely: (i) to equitably distribute and allocate irrigation water to the members, (ii) to conduct operation and maintenance of irrigation system, (iii) to create fund raising; (iv) to manage conflicts among members, and (v) to perform ritual activities. The latest function--ritual activity is done based on the phases of rice growth starting from getting water, land preparation, seedlings, transplanting till harvesting. For the *subak*, ritual ceremony is a power for farming and irrigation activities on rice field.

Management of *subak* is very simple which is chaired by a head of *subak*, called pekaseh elected democratically by all members. *Pekaseh* is assisted by secretary and treasurer in implementing administration aspects. In the larger size of *subak*, there might be elected a head of sub-*subak* coordinating the activities in each sub-*subak*. The organizational structure of *subak* is show in Figure 1.

In the implementation of agricultural development program, government agents always coordinate with *pekaseh* in order to make easier and faster for disseminating innovation. The

application of new practices on rice farming will be effective through *subak* system. *Subak* will make a decision under the *subak* meeting in the relation to selection of variety, cropping pattern, planting schedule and others. Introduction of commercial farm has been developed by the extension agents in order that farmers might have higher income gained from rice farming. The higher income could be an incentive for farmers to intensively work on their rice filed. Thus, land conversion might be control or minimized.

Figure 1
Organizational structure of *subak*



2.2. Agribusiness and model business

Agribusiness is defined as "the sum total of all operations involved in the manufacture and distribution of farm supplies; production operations of the farm; and the storage, processing, and distribution of farm commodities made from them" (Davis and Goldberg, 1957,). Agribusiness could be seen from various ways dependent on the view of point. It might talk about agro-industrialization (Boehlje 1999; Cook and Chaddad 2000), or value chains (Lazzarini, Chaddad, and Cook, 2001). Based on definition cited, agribusiness emphasizes the interdependence concept of various sub-system within the agribusiness itself, starting from supplying agro inputs, on farm, processing and marketing or distributing produces (Soekartawi, 2005).

Economic incentive needed by farmers and their family should be available for keeping them to work on rice field farming. Agribusiness is one of the approaches to sustain their farming on rice field. This approach might be done by defining a business model for the actors involved within the business model, such as farmers and *subak*, company (as a partner) and local bank (as a supporting partner). These actors must have interrelated partnership in implementing market system under the business model defined in order that they could gain proportionally benefit and profit. The assumption is private sector (companies) would be preferred to work with

organized farmers (*subak*) rather than individuals. The business model might be a guide for the actors to sustain economic activities.

In this model, *subak* should be organized to improve the quality and quantity of rice production as a crucial to the sustainability. *Subak* cooperatives establishment is very important in making greater role in the value chain within a business model. In case of *Subak* Guama (in Tabanan regency, Bali province), *subak* formed cooperative which has some economic activities (Sedana, 2013). The activities are producing rice seed, micro credit, integrated crop management, crop livestock system, providing agro-inputs and others. Cooperative formed could assist useful linkages between smallholders and other actors in the value chain. Referring the business model, farmers could have easier access to finance and information or technologies about good agricultural practices. Aside from this, it could make stronger bargaining power in selling produce. It looks that there is a structural transformation in the rice farming development. There is a sustainable change from subsistence to a productive orientation that allows farmers to take part in the market.

Cooperative gets agro inputs from the companies, such as fertilizer, pesticide and other small equipment needed by farmers for their rice farming activities. There is a contract between cooperative and company for retailing agro inputs. Based on package of technology, farmers get agro input in line with the land size. Payment of inputs could be done after harvesting. In running agribusiness activities, subak still employ its bylaws, called *awig-awig* to control farmers and management board. Even though cooperative runs it activity under the modern management, traditional management of *subak* is still there.

Learning from agribusiness activities carried out by *Subak* of Guama through cooperative, *subak* could get benefit from the profit gained by cooperative. There is a consensus that the profit of cooperative must be shared to *subak*, especially for social and ritual activities (Sedana, 2013). This benefit is very useful for farmers as *subak*s' member since they might not contribute cash money for such social and ritual activities. At the individual farmer level, all farmers get services from cooperative in form of loan and technical assistance on agricultural rice farming. Improved technologies applied by farmers bring about higher productivity and income.

Having good business model with the proportional economic profit for each actors will ensure the sustainable partnership among them in the rice farming business. Specifically at the farmer level, the farmers might still have good interest to work on their rice fields, thus they might not sell the land.

III. CLOSING REMARKS

Bali as an international tourism destination and the growth of economic development brought about some problems on *subak* system, especially land (rice field) conversion. Higher rate of land conversion will threat the existence of *subak*. Meanwhile, cultural aspect on *subak* has become a buffer for Balinese culture as an interesting factor for supporting tourism development. The youth might reluctant to work in rice farming because of low income.

Therefore, it should be created an economic incentive needed by farmers and their family in order that they keep working on rice field farming. Agribusiness is one of the approaches to sustain their farming on rice field through defining a business model for the actors involved within the business model, such as farmers and *subak*, company (as a partner) and local bank (as a supporting partner). These actors must have interrelated partnership in implementing market

system under the business model defined in order that they could gain proportionally benefit and profit.

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