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*Edited by Paola de Salvo and Manuel Vagstad
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Rural Development on the Agricultural Institution Basis: Case of the Agricultural Development in Bali Province, Indonesia

Gede Sedana

Abstract

Presently, agricultural sector has great role in supporting and accelerating economic development in the developing countries. Development of agriculture is always related to the rural development since it is an integral part to rural economic development. Therefore, the agricultural and rural development should be designed to increase the productivity of land, crops, and human resources in order to improve the welfare of rural village. The implementation of agricultural and rural development should be done by involving the rural institutions. Several problems have still found in the agricultural and rural development that should be properly managed by considering various aspects. In Bali Province, the implementation of agricultural and rural development can be conducted to develop tourism, industry, environment, and other economic activities. The agro-tourism, agro-industry, integrated farming system (system of crops and livestock) and village-owned enterprises could be developed as a response of the rural development.

Keywords: Agriculture, development, rural, productivity, tourism

1. Introduction

In the developing countries, agricultural sector is still very important to support and accelerate the economic development [1]. Most of the agricultural areas are located in rural areas. So that it is often identified that rural development is also agricultural development. Natural resources and human resources in rural areas have great potential to be developed in the agricultural sector. Land and water are the main natural resources in rural areas and are used for farm management by rural residents who mostly work in the agricultural sector. Therefore, the management of natural and human resources is the key to success in the realization of the goals of agricultural and rural development. Of course, this success needs to be supported by various government policies and other related institutions that are able to encourage the available human resources in rural areas.

The introduction and development of both physical and non-physical technologies are also being the important components in agricultural and rural development. Most of the economic development in developing countries has agricultural and rural development designed to increase the productivity of land and human

resources in order to improve the lives of their people. Rural development is an integral part of economic development in Indonesia which aims to improve the social and economic welfare of citizens, particularly those who are relatively poor. Conceptually, rural development is planned and implemented in a comprehensive and multidimensional manner by the government together with rural communities. The rural development plan can include aspects of agriculture, rural industries, tourism, household handicrafts and small industries, and infrastructure development that support socio-economic activities. In addition, rural development also includes community services and facilities, human resource development in rural areas. The agricultural sector clearly cannot stand alone because it has strong links with the manufacturing sector, service industry and other sectors. Thus, the progress of the agricultural sector is influenced by various policies from the non-agricultural sector.

Presently, agricultural development in the developing countries, including in Indonesia has significant role in the economic development which produces food, provides employment and generates income especially for rural development [2, 3]. Agricultural development that is currently being carried out has not shown maximum results due to various factors. Several research results indicate that the limited mastery and use of agricultural technology has resulted in relatively low productivity [4, 5]. The intended agricultural technology is the application of seeds, seeds, fertilizers, pesticides, plant and livestock cultivation and post-harvest methods. Apart from low productivity, the products produced by farmers are also of low quality. As a consequence of this condition, they get an inadequate price level for the products they produce. Another influencing factor is the relatively narrow ownership of agricultural land. Narrow land is considered inefficient in commercial and professional rice farm management. Some of the issues that often occur in Indonesia including Bali province regarding agricultural and rural development are poverty, technology and others as presented in **Table 1**.

Agricultural and rural development in Indonesia includes various aspects of life and the environment. This development not only involves the ministry of agriculture but also other relevant ministries, such as the Ministry of Villages, the Ministry of Public Works, the Ministry of Tourism, the Ministry of Transportation and others. Therefore, there is a need for synergy and coordination between ministries in order to realize the goals of agricultural and rural development. Bali is one of 34 provinces in Indonesia still rely on the agricultural sector in economic development in addition to the tourism sector. It is hoped that the high rate of tourism development growth will not destroy the existence of the agricultural sector in Bali. The farming culture is one of the pillars of Balinese culture which is also a tourist attraction. Therefore, it is necessary to have various alternative efforts to develop agriculture and rural areas in order to improve community welfare and reduce rural poverty.

In general, the agricultural and rural development in Bali province can be carried out by taking into account the aspects of tourism, industry, environment, and small-scale economy at the village level. Bali is a small island which has been acknowledged as the tourism island in Indonesia. Its location can be seen in the **Figure 1**. Development related to tourism will be described by presenting the development of agro-tourism in rural areas. In the industrial aspect, agricultural and rural development can be carried out through agro-industrial development. The environment aspect relates to the integrated farming system, such as the integrated system of crops and livestock carried out in the farm area. Meanwhile, the formation and development of village-owned enterprises is a part of development that deals with the economic aspect on a small scale.

| Rural issues | Agricultural issues |
|--|--|
| 1. Poverty | 1. Poverty |
| 2. Unemployment | 2. Low productivity |
| 3. Disparity of income | 3. Limited quality of human resources |
| 4. Limited access to information, | 4. Limited agricultural technology |
| 5. Communication and technology | 5. Lack of capital |
| 6. Limited access to physical infrastructure | 6. Limited infrastructure to support agriculture development |
| 7. Low capacity of rural people | 7. Market of agricultural product |
| 8. Lack of investment | 8. Failure of harvest (pest and disease attack, climate) |
| | 9. Land conversion |
| | 10. High tax of agricultural land |

Source: Analysis of secondary literatures, 2020.

Table 1.
 Rural and agricultural development issues.



Figure 1.
 Location of Bali Island. Source: peta indonesia peta indonesia 2015 peta indonesia vector peta 2 bp - Peta Indonesia Full HD (jackofftocoek.blogspot.com).

2. Agricultural and rural development through Agro-tourism

Bali as an international tourism destination provides great opportunities for the development of the agricultural sector with regard to tourism good and services. The potential of the agricultural sector in Bali is a beautiful terraced rice field landscape, attractive farming culture, coffee plantation areas, flower garden areas, horticultural areas and various other commodities. Agriculture-based tourism activities are agro-tourism and ecotourism. One of the most famous agro-tourism areas is the Jatiluwih area in Tabanan Regency, which is in a mountainous area. This area is a world cultural heritage given by UNESCO in 2012. In Bali, irrigation management in rice fields is fully carried out by *subak* as a farmer organization. *Subak* is also a traditional irrigation system in Bali which has a philosophy called *tri hita karana* [6–8]. The three components are based on the harmonious relationship, namely the relationship between farmers and God (*parhyangan*), the relationship between farmers and other farmers (*pawongan*), and the relationship between farmers and their environment (*palemahan*). This *subak* philosophy serves as a guideline for members and administrators of the *subak* in managing rice farming and other crops farming on the rice field [9, 10].

In an effort to support rural development through agricultural activities, it is necessary to strengthen and intensify *subaks* activities in rural areas regarding economic business. Strengthening the *subak* includes the provision of irrigation infrastructure, provision of agricultural inputs and agricultural tools or machines, agricultural extension and training on good agricultural practices, post-harvest processing, and good manufacture practices, and marketing of agricultural products. These activities and the potential of *subak* area and culture could support the establishment and development of agro-tourism in the rural area.

Agro-tourism development can be an option in rural development because most of the area is for agricultural activities. Agro-tourism means a business that combines agricultural activities with tourism, where tourists can gain farming experience according to existing farming. In addition, agro-tourism is also expected to provide additional income for farmers from agricultural activities enjoyed by tourists. The agro-tourism is any activity in which a visitor to the farm or other agricultural setting contemplates the farm landscape or participates in an agricultural process for recreation or leisure purposes [11]. Or in other words, agro-tourism is a tourist travel activity that uses agriculture as an attraction, such as landscape, land topography, types of plants, agricultural products, agricultural culture and other social activities. Agro-tourism can be said to be agriculture-based tourism because its activities are oriented to agricultural aspects, and can also be identified with agricultural tourism in rural areas.

The potential for developing agro-tourism in rural areas across Bali is very varied. Rice fields with their agricultural culture, such as the management of traditional irrigation systems, provide specific attraction for tourists. A very famous agro-tourism area in Bali's rice fields is Jatiluwih agro-tourism. In this area, tourists can enjoy terraced rice fields which are located in a mountainous area or at the foot of Mount Batukaru, Tabanan Regency (see **Figure 2**).

Apart from the terraced rice fields, the Jatiluwih Agro-tourism area has also been recognized by UNESCO as a world cultural heritage since 2012. The designation of *subaks* in the Jatiluwih area as a world cultural heritage was carried out under the label of Cultural Landscape of Bali Province: the Subak System as a Manifestation of the Tri Hita Karana Philosophy. As cited above, *tri hita karana* is a Hindu philosophy which is being a social capital for the *subak*. *Tri hita karana* has become a binding for all members and administrators of the *subak* in carrying out activities related to agriculture, irrigation and other social activities. The recognition as cultural heritage has significantly contributed to the agro-tourism development in Jatiluwih area. The beautiful rice field landscape becomes more famous in the world after the recognition. This is indicated by the number of tourists had been increased since 2011 to 2018, that is, 45,774 persons to 277,973 persons (see **Table 2**).

Seeing **Table 2**, it is informed that the international visitor is bigger than the domestic one every year. This means that agro-tourism of Jatiluwih has been known well in the world. This is real big potential to be developed by the *subaks*, village and local government (at the district and provincial levels).

In this area, there are 14 *subaks* covering an area of around 2,472 ha. In an effort to preserve cultural heritage and at the same time improve the welfare of rural farmers, several efforts are required at the *subak* and village levels based on the potential of natural resources and human resources as well as farming culture. The concept that should be implemented for making better agro-tourism development in the Jatiluwih area are concerned the attraction, accessibility, amenities and ancillary. As an attraction aspect, the beautiful landscape of *subaks* should be kept by the farmers by applying good agricultural practices while sustaining the farming culture. The visitors could enjoy the landscape of terraced rice field and learn how to plant, land cultivation by using cattle, and other farming activities. They could also have good interaction with the local farmers while walking around the terraced rice field.



Figure 2.
 Jatiluwih agro-tourism. Source: Documentation of Sedana, 2020.

| No | Year | Visitor (person) | | Total (person) | Increased (person) | Increased (%) |
|----|------|------------------|---------------|----------------|--------------------|---------------|
| | | Domestic | International | | | |
| 1 | 2010 | 161 | 39,807 | 39,968 | - | - |
| 2 | 2011 | 326 | 45,448 | 45,774 | 5,806 | 14.53 |
| 3 | 2012 | 1,653 | 62,197 | 63,850 | 18,076 | 39.49 |
| 4 | 2013 | 5,607 | 95,958 | 101,565 | 37,715 | 59.07 |
| 5 | 2014 | 17,470 | 147,574 | 165,144 | 63,579 | 62.6 |
| 6 | 2015 | 21,429 | 142,937 | 164,366 | -778 | -0.47 |
| 7 | 2016 | 24,241 | 185,268 | 213,509 | 49,143 | 29.9 |
| 8 | 2017 | 39,505 | 211,288 | 250,973 | 37,646 | 17.55 |
| 9 | 2018 | 49,380 | 227,804 | 277,973 | 26,216 | 10.45 |

Source: Management Board of Jatiluwih Tourism Destination, 2019.

Table 2.
 Number of visitors to Agro-tourism of Jatiluwih.

Another specific activity offered by *subaks* relating to agro-tourism is ritual ceremonies as one of the cultural landscapes. In a rice planting season, there is 15 kinds of ritual ceremonies performed by the *subak*. It is started from the ritual ceremony for irrigation water fetching which is carried out in the temple near the weir/dam. The latest ritual ceremony is in the event of post-harvest activity that is keeping rice at the granary. These ritual ceremonies could be attracted the visitors to know and learn about the procession and functions. In the relation to ritual ceremonies, there are many temples scattered in the area of *subak* which belong to individual farmer as well as *subak* (see **Figure 3**). The role of women is very important for the ritual ceremonies' activities performed at the *subak* level. They prepare offering together by using local materials gained from their farm, such as fruit, banana leaf, flowers, coconut and other agricultural products. These ritual ceremonies could be an attraction for the visitors.



Figure 3.
One of the temples in Jatiluwih area. Source: Documentation of Sedana, 2020.

Accessibility to the Jatiluwih agro-tourism area is relatively good by using transportation modes according to the standard needs of tourists. However, some sections of the road are narrow in size due to their location in the mountainous area. Small vehicles can be used to make it easier to enter the agro-tourism area. In addition, the availability of the internet network is also very good to facilitate communication for tourists.

Other facilities that are also well available to tourists are health facilities, clean water, electricity, and financial transactions. The local government together with the village has built networks and installations so that tourists do not have difficulty obtaining services. Local residents also provide lodging services for tourists in the form of villas, and home stays. Therefore, the community can get additional income from non-agricultural activities. Another service available in the agro-tourism area is traditional culinary delight which is one of the main attractions for tourists.

3. Building agro-industry in driving rural industrialization

In the agribusiness system, agro-industry is one of the sub-systems which together with other sub-systems form the agribusiness system. The agribusiness system consists of the input sub-system (upstream agro-industry), farming (agriculture), output (downstream agro-industry), marketing and support. Thus the discussion about agro-industry cannot be separated from the development of agribusiness as a whole. Agro-industrial development in Indonesia is a must in order to lead to an agricultural-based industrial society. This is due to the fact that the majority of rural communities depend on the agricultural sector, there is an imbalance between cities and villages, so that urbanization is quite high and income levels are low, and unemployment is still high.

On the other hand, activities in the agricultural sector (on farm) are currently a source of income for most rural communities, but have not been able to provide a decent life because the added value of on-farm activities is very small. This is due, among others, to the inability of agricultural products to respond to changing demands of today's consumers who demand high quality, continuity of supply, on time delivery, and competitive prices. Processing of agricultural products is still very limited because farmers sell them in the form of raw materials.

Agro-industrial development will be able to increase added value through processed products and improve the quality of its products. Furthermore, this condition can increase the demand for agricultural products, thereby increasing production, prices for agricultural products and farmers' income. The development of the agricultural sector will increase the demand for the upstream agro-industry sector, the marketing sector and the supporting sectors (finance, insurance, consulting and education). Thus the development of the agro-industry sector has a large multiplier effect.

Development of agro-industry is expected to drive rural industrialization on the basis of agriculture. For instance, fermented coffee processing industry in the villages within Bali province has several roles in supporting rural development. This processing industry is able to transform a comparative advantage into a competitive advantage of coffee production. The industry could provide value added which in turn strengthens the competitiveness of Bali agribusiness product. Apart from coffee, Bali has several superior commodities, namely cocoa, cloves, vanilla, oranges, cashews, mangosteen, snake fruit, grapes and food products. The private sector and government should more intensively involve in the investment on the agro-industry. Development of rural industry also gives contribution to create larger market of agricultural products. Having industry in the village, it could have a local raw material produced by the agricultural sector. This means that there is a mutually beneficial and mutually beneficial relationship between the agricultural and industrial sectors, both in the upstream and downstream industries. Or in other words, rural development will increasingly grow with the industrial sector as the driving force and support the growth of rural economy.

Infrastructure development program is needed to support agro-industrial development in the village and inter villages. Transportation conditions in rural areas in Indonesia including in Bali should be well constructed and connected to the other areas. The distance between villages is relatively far and difficult to reach each other so that accessibility is low. The availability of physical infrastructure is one of the important components in developing agriculture and rural areas. The rural infrastructure intended is the transportation infrastructure (roads) that connect to the centers of city, sub-districts, and villages, reach the agricultural production centers and other locations of economic activity. Good transportation conditions are one of the main requirements in developing agriculture. Roads in the village and which are connected to the sub-district and city centers provide easy accessibility and smooth transportation of input and product for farmers, other market actors and non-farmer community members in mobility activities within the village and between villages.

Transportation can function as an opening to the isolation of an area, especially villages located in mountainous areas. Therefore, transportation has benefits as a stimulant for development in rural areas and agriculture because it accelerates both economic and non-economic activities in rural areas and between villages, and also increases efficiency in terms of costs, time and labor. Therefore, the government, both at the local and central levels, must guarantee that there is good infrastructure to encourage agricultural and rural development.

Communication networks are also an important part of developing agriculture and rural areas. The people can take advantage of this communication network to obtain important knowledge and information regarding economic and non-economic activities. In addition, the development of electricity and drinking water installation must also be carried out by the government to meet the basic needs of the community. The electricity network also provides opportunities for community members to develop economic businesses such as small industries and other services.

4. Integrated system of crops and livestock

Since 2008, the local government in Bali has been introduced and implemented the program integrating between crops and livestock, called *Simantri*. There is about 1,000 groups of farmers has been established to run this program. *Simantri* is an effort of the Bali Provincial government in agricultural development by developing a pilot model in accelerating technology transfer to rural communities. This also integrates agricultural sector activities with supporting sectors both vertically and horizontally according to the potential of each region. The main concept in this system is the optimization of the use of existing local resources. In this program, development of the agricultural sector is directed to become the center of Bali cattle breeding which is the Bali germplasm of Bali should be one of the leading national livestock. With the existence of cattle breeding centers spread across eight districts and one city in Bali Province, it is hoped that Bali cattle can be preserved and developed. Therefore, this program is fully expected to develop organic agricultural development in Bali province.

Even in 2019, organic agriculture is not solely aimed at the agricultural sector, such as building sustainable agriculture, but is also directed at realizing sustainable development. Therefore, the policy of the Bali Provincial government together with the legislature provides a breath of fresh air to restore the spirit of development based on local wisdom, which is currently being implemented through the vision of the Governor of Bali, namely *nangun sat kertih loka Bali* (developing Bali through the purification of environment). This policy is the Bali Provincial Regulation Number 8 of 2019 concerning the Organic Agriculture System. The stipulation of this regulation is a measure to control the excessive use of synthetic (chemical) agricultural inputs, such as fertilizers and drugs (pesticides) since the introduction of the Green Revolution in the 1960s.

Economically, the green revolution has had a significant impact on increasing production, especially rice and rice. However, it turns out that the success of this increase in production must be paid for by damage to environmental conditions, such as degradation of soil and land fertility functions, polluted water, air pollution which ultimately has a negative impact on human health and other living things, such as biodiversity that live in agricultural ecosystems. The balance and availability of nutrients in the soil and the life of microorganisms are also disrupted which results in decreased productivity of land and plants. Excessive use of chemical pesticides and that is not wise to the environment also damages ecosystems in agricultural areas and its surroundings. Unfortunately, the animals that functioned as pest predators and environmental controllers that initially lived in agricultural areas died and did not develop, thus triggering pest and disease attacks for plants.

Through the *Simantri*, introduced technological innovation is oriented to produce organic agricultural products with a techno-ecological agriculture approach. Integration activities that are being carried out are also oriented towards zero waste agriculture and produce 4 F (food, feed, fertilizer, and fuel). Its main activity is to integrate plant and livestock cultivation, where plant waste is processed for animal feed and feed reserves during the dry season and livestock waste (manure, urine) is processed into biogas, bio-urine, organic fertilizers and bio-pesticides. The organic agriculture, especially the use of organic fertilizer is addressed to reconstruct the physical soil structure in the agricultural land.

In order to accelerate the development of organic agriculture, the regulation on organic agriculture systems has been needs to be socialized intensively by the government and supported by universities and other institutions in order to provide information, knowledge and understanding to farmers and the general public

regarding organic agriculture itself, both in terms of benefits, methods of manufacture, methods of use and other aspects, especially environment and health, including economic aspects. The understanding of farmers and the community should be encouraged by changing their perceptions and attitudes so that they are willing and able to implement it. Thus, farmers can slowly reduce their dependence on fertilizers and drugs used in their farming management.

The application of this regional regulation is one of the movements towards back to nature but still provides the potential for increasing agricultural production. The campaign on back to nature is one way to convince farmers and also provide education for consumers or people who consume organic products. The reduction of imports of agricultural products can also be controlled through organic farming campaigns. Food and environmental health insurance through the application of this organic farming system will be enjoyed by producer farmers and their families and society in general. Therefore, through consumer education, it is expected that they will have a higher willingness to pay (willingness to pay). This willingness to pay is also a trigger for producers to increase willingness to produce organic product. The development of a strong reciprocal relationship between producer farmers and consumers requires intervention from the government, namely through subsidy or incentive policies, especially for producer farmers. These incentives can be in the form of subsidized agricultural inputs (seeds, seeds, fertilizers, and medicines), product certification, and technical assistance for agricultural cultivation to obtain quality products other than high productivity. Through this intervention, it is hoped that the implementation of regional regulations on organic farming systems can be realized optimally.

If this organic farming system can be implemented, the goal of establishing a regional regulation can be achieved, such as providing guarantees for the supply of agricultural products, especially food that is safe for the health of producers and consumers and does not damage the environment, providing assurance and protection to the community from the circulation of Organic Agricultural Products that do not meet requirements maintain the ecosystem so that it can play a role in environmental conservation. This means that the realization of the Governor's vision can also be supported through the application of organic agriculture which is able to create a harmonious relationship between humans and the environment (both human and natural), as part of the *tri hita karana* philosophy. The improved physical environment could support the agricultural productivity and enhance the income of farmers.

5. Establishment of village-owned enterprises

Village development can be increased through developing the potential of the village economy to become a joint forum for rural communities to develop themselves and their environment independently and in participatory ways. In an effort to accelerate economic growth in villages where most of the people are farmers, the formation of business entities at the village level is urgently needed.

Village-Owned Enterprise, hereinafter referred to as VOE, is a business entity whose entire or most of the capital is owned by the village through direct participation originating from separated village assets in order to manage assets, services, and other businesses for the maximum welfare of the village community. In Bali province, there are 545 VOEs out of 636 villages in Bali which have been developed by the villages through the initiative of local government. The establishment of VOE is intended as an effort to accommodate all activities in the economic sector and or public services managed by the village or inter-villages cooperation. This VOE has

objectives to: (i) improve the village economy; (ii) optimize village assets to be useful for villagers' welfare; (iii) increase community efforts in managing the economic potential of the village; (iv) develop business cooperation plans between villages or with third parties; (v) create market opportunities and networks that support community public service needs; (vi) create jobs for the villagers; (vii) improve community welfare through improved public services, growth and even distribution of the village economy; and (viii) increase the revenue or income of the village.

In many villages, the VOE has run a simple social business that provides public services (serving) to the community by obtaining financial benefits. The business units within the VOE have utilized local resources and appropriate technology, including: village drinking water; village electricity business; food storage; and local resources and other appropriate technology. The VOE has also conducted a rental business (renting) goods to serve the needs of the village community and is aimed at obtaining village income. In this rental business, it has been run the activities, such as means of transportation; party utensils; meeting hall; shop house; land owned by VOE; and other rental items. Besides, the VOE has also run an intermediary business (brokering) that provides services to residents. These business activities include: electricity payment services; drinking water payment services; and village market to market products produced by the community. In term of agricultural sector, this VOE has the business unit that produces and trades certain goods to meet community needs and is marketed on a broader market scale. These include ice small factory; agricultural product; agricultural inputs; agricultural tools and equipment.

In some villages, the VOE has run a financial business that meets the needs of micro-scale businesses run by village economic entrepreneurs. This financial business unit provides access to credit and borrowing that is easily accessible by the village community. Even, the village tourism, eco-tourism and agro-tourism have also run by the VOE.

Based on the survey in some villages in Bali regarding the VOE, it is found that there are five benefits of establishing VOE as follows: (i) commercial; (ii) public service; (iii) economic; (iv) social and culture; and (v) politic. As a commercial institution, VOE is able to open up wider space for the community to increase income and also open jobs for rural communities. The youths who have the potential will find employment in the village thereby reducing urbanization. The VOE is not only engaged in business, but it also has an interest in meeting the needs of the community through its contribution in the field of social services. For example, it provides scholarships to the children of poor household.

VOE also could be a stimulus in driving the economy in rural areas due to the various economic activities run. The economic profit of VOE has been distributed and allocated for the economic village development and other social and cultural development. The economic benefits of VOE can also reduce the cost burden or contribution of villagers to development in the village. In term of political aspect, VOE which is established in a participatory manner, become a forum for interest groups in the village. Agreements regarding the type of business, the percentage of profit sharing, and the issuance of a Village Regulation constitute one of the indirect benefits of the existence of VOE. The good management of VOE might give inheritance to future generations who will continue village development. This means that the VOE could have positive impact to alleviate the poverty within rural area.

6. Conclusion

Agricultural development is integral part to rural economic development which needs to be integrated. Several problems that occur in agricultural and rural

development need to be handled by considering various dimensions. The rural institutions should be involved in the implementation of agricultural and rural development. In case of Bali Province, the agricultural and rural development can be addressed to develop tourism, industry, environment, and economic activities. These could be in the forms of development of agro-tourism, agro-industry, integrated farming system (system of crops and livestock) and village-owned enterprises. The improved agricultural and rural development has accelerated the growth of rural economy, thus decrease the poverty.

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Author details

Gede Sedana
Dwijendra University, Bali, Indonesia

*Address all correspondence to: gedesedana@gmail.com

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