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Preserving the Existence of Subak in Bali: The Role of Social, Cultural, and Economic Agencies

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Abstract

This study focuses on the existence of *Subak* in Bali as a form of agricultural local wisdom that needs preserving and protecting. This study was conducted in Jatiluwih *Subak* in Tabanan Regency – Bali as an icon of the World Cultural Heritage. The analysis relied on the mixed-method approach, with 94 farmers as the research respondents. Findings from this study demonstrate that only some farmers understood *Subak*'s status as the World Cultural Heritage. In addition, most of them did not plan to sell their agricultural lands because those lands were inherited from their ancestors that need preserving and inheriting their offspring. *Subak*, as a customary institution, plays a dominant role socially, culturally, and economically in preserving well-functioning *Subak*. However, the government's supports are still crucial in preserving *Subak* to remain as a World Cultural Heritage.

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1. Research Background

Productive agricultural land is an irreplaceable natural resource (Paster, 2004). However, an increase in population with the need for housing and various supporting facilities is increasingly threatening the existence of productive land, which causes land-use change in all areas. The rapid conversion of rice fields in Bali, as a result of development, threatens the existence of agricultural land as well as farmer organizations and institutions, especially the existence of the *Subak* as a customary institution. As a customary law community, *Subak* has socio-agrarian-religious characteristics, which is a farmer association that manages irrigation water in rice fields, based on the philosophical concept of *Tri Hita Karana* (Windia *et al.*, 2005). The existence of subak as a local wisdom in the agricultural sector is closely related to the existence of agricultural land. The survival of the agricultural sector means that the subak institution and the *Subak* landscape are one of the main tourist attractions. Maintaining Subak means maintaining agricultural traditions that have been passed down from generation to generation, coupled with the status of Subak as a world cultural heritage.

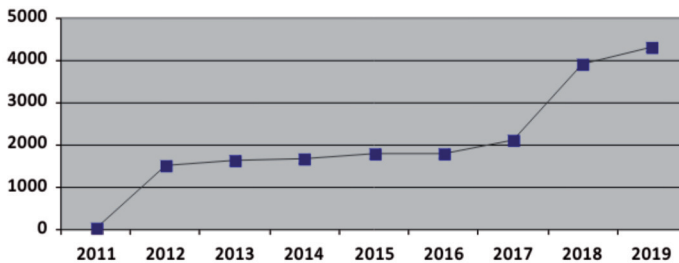
Bali as one of the provinces in Indonesia with the largest tourism sector also has the potential in agriculture which is no less competitive with other provinces. Agricultural productivity in Bali reaches almost 6 tons per hectare of milled dry unpulled rice or *gabah kering giling* (GKG). However, data from the Central Statistics Agency or *Badan Pusat Statistik* (BPS) from 2013 to 2018 shows that rice production in Bali has decreased from 882,092 tons to around 650,245 tons per year 2018. This decrease was accompanied by a decrease in harvested area, which in other words decreased the area of agricultural land in Bali. Furthermore, also from BPS data in 2013, the area of agricultural land was recorded at 81,165 hectares, then in 2017 it was 78,626 hectares and according to data from the Bali Province Agriculture and Food Crops Office that the conversion of rice fields in Bali reached an average of 419.76 hectares (0.51%) per year.

The Central Bureau of Statistics of Bali Province or *Badan Pusat Statistik Provinsi Bali* (BPS, 2020) shows that there has been a change of land function to non-agriculture in nine districts/cities in Bali Province amounting to 915 ha from 2016 to 2017 followed by a reduction in 138 *subak* in the same period. *Subak* is a traditional organization with unique cohesive and coercive binding power at different level of hierarchy (Suradisastra *et al.*, 2002). *Subak* as customary institution regulates *subak*; the complexes of rice fields obtaining water from one branch of a conduit or “joining waters” (Birkelbach, 1973). The retention of the amount of agricultural land will have an impact on the sustainability of the *subak*. Conversely, the reduction in agricultural land area as a result of land conversion will also have an impact

on the increasingly threatened existence of *Subak* and the joining water irrigation system in Bali farming as a form of local agricultural wisdom in Bali Province.

Even though *Subak* in Bali Province has been designated a World Cultural Heritage (WCH) site, special attention is needed to the sustainability of the *subak*. The existence of hotels and restaurants that take advantage of the *subak* landscapes further adds to the threat of its sustainability. The construction of hotels and restaurants occurs almost every year in strategic locations in Bali as shown by the following data.

Figure 1 - The Number of Starred Hotels in Bali Province, 2011-2019



Note:

X (Ordinate): Years

Y (Axis): The Number of Star Hotels

The number of star hotels has increased every year in line with the increasing number of tourist visits. The demand for an increase in tourism-supporting facilities and infrastructure increasingly threatens the existence of productive agricultural land with *Subak* organizations in it. The tourism sector, which is more promising than agriculture, will increasingly threaten the existence of *subak*. This is proven by the depletion of young people who work in the agricultural sector (Susilowati, 2016). Although it has high cultural value, economic factors will eliminate the existence of *subak* in Balinese agriculture. Economic encouragement will always be the reason for the formation of an ecotourism which sometimes changes or even removes the original value of a tourist attraction and tourism objects in Bali (Vogt, 2014).

Research conducted by Marzuki (2011); Wanda George (2010); Yang, H.C, (2010); and Lee (2011) concluded that gradually, tourism development will increasingly erode the indigenous culture of the community. Tourists prefer places and attractions that have historical and cultural value. The continuity of a WCH can be maintained if the people who are supported by interested parties have high enthusiasm to maintain their cultural heritage. Likewise,

the *subak* landscape in Bali will last for all time if agriculture in Bali can be sustained as inherited as long as it is getting more attention from citizen and government.

The sustainability of *Subak* institution and *subak* irrigation system can be maintained and protected if the agricultural sector in Bali is revisited and rebuilt. Moreover, the agricultural sector in Bali Province has local wisdom values that should be preserved. *Subak* as a community with local wisdom that has even been recognized by the world is increasingly under threat along with the shrinking amount of productive land in Bali as a result of land conversion. Therefore, this study aims to: 1) determine the extent to which farmers care and understand about the status of *Subak* as a WCH by maintaining their agricultural land and 2) to analyze the correlation between the role of *Subak* customary institutions as a mean to maintain the existence of subak socially, culturally and economically.

2. Literature Review

Local wisdom is a cultural value that is used to regulate the order of people's lives wisely. Local wisdom is a form of knowledge, belief, understanding and insight as well as customs and habits in ecological communities (Indrawardana, 2013). Local wisdom becomes important and useful only when local people inherit this knowledge system and accept it as a part of their life. So, when the community accepts local wisdom, it is then referred to as local culture. This local culture then becomes the identity of a community that can be used as a strength to achieve the builder's current goals (Kuasa *et al.*, 2015). It is hoped that local wisdom can become the basis for the sustainability of the agricultural sector. Local wisdom is believed to be able to increase the value of productivity with social capital as part of it (Fatmasari, Waridin & Kurnia, 2020). Even though they are considered to be less prosperous economically, but as a characteristic in people's lives, the agricultural sector should be maintained. Apart from maintaining the balance of nature and the environment, the existence of the agricultural sector will also be a source of food security (Rahayu *et al.*, 2019). Although, increasing productivity does not only depend on the performance of farmers, but will be highly supported by government policies, and other related parties such as microfinance institutions and communities such as the Subak institution in Bali.

Institutions have an important role in development. The belief that institutions can be a source of economic efficiency and prosperity has been accepted by most economists, even the most liberal. In historical studies the roots of institutional theory have actually been started a long time ago, especially by institutional experts from the US (American institutealist

tradition) such as Thorstein Veblen, Wesley Mitchell, John R. Commons, and Clarence Aires. Besides that, there are also those attached to classical economists such as Adam Smith and John Stuart Mill; Karl Marx and other Marxians, as well as neoclassical figures in particular Marshall. The former tradition, known as “Old institutional economics”, while the latter is generally seen as a continuation and extension of the institutional elements found in classical, neoclassical and Austrian schools of economics, called New Institutional Economics (Yustika, 2008). The majority of qualitative and quantitative studies related to the role of institutions/institutions in the development process find a strong positive correlation between quality and institutional performance on the one hand and development outcomes on the other. The survey shows that the three main themes of economic analysis, such as transaction costs, property rights and collective action, can effectively address issues that remain enigmatic when analyzed using conventional approaches (Khan & Saghir, 2008).

Subak is a form of local wisdom in the agricultural sector in Bali which is based on *Tri Hita Karana* (Niswanti *et al.*, 2016). Where the agricultural sector cannot be separated from the life of its people (Pemprov Bali, 2012). The existence of *Subak* in Bali is regulated and based on the Bali Provincial Regulation No. 2/DPRD/1972 regarding Regional Irrigation. *Subak* is defined as a socio-agrarian religious customary community which has historically been established since time immemorial and continues to develop as an organization of land rulers in the field of water management and other rice fields (Jansing, Mahichi and Dasanayake, 2020). The form of local wisdom from *Subak* is the *Tri Hita Karana* concept which consists of the relationship humans and God (*Parahyangan*), the between human relationship (*Pawongan*) and the human relationship with nature and the environment (*Palemahan*). Apart from being the local wisdom of the agricultural sector, the *Subak* landscape that is inseparable from the *Subak* customary institution in Bali is one of the Common Pool Resources (CPR) natural resources whose use is open to anyone, so efforts are needed to protect and preserve its existence along with its status as WCH.

CPR or shared resources are natural resources and artificial resources that are used collectively. Included in this category of shared resources are water sources, added, irrigation, agricultural landscapes, pastoral fields, lakes, and forests (Ostrom, 2008). Infrastructure such as transportation, communication, and energy are also classified as a CPR pattern that aims to serve the community (Kunneke & Finger, 2009). Even today, knowledge, information data, and internet access are also classified as CPR (Ostrom & Hess, 2007). Often people think that shared resources can be used according to their wants and needs regardless of the consequences that will arise afterward. This then tends to cause the use of natural resources to quickly run out, and even

destroying reserves. In other words, the mistake of the term shared resources causes excessive depletion (Suparmoko, 2008).

In fact, the management of CPR often encountered problems. Overuse, free riders, difficulty in collective action and the non-excludable nature of CPR make it difficult to properly manage this common resource. The fact that CPR in this world is very large and varies in its use and users, so there will not be an institutional design that suits the various existing CPRs. However, according to Ostrom (2008) a good performance for an institutional design in handling CPR must: 1) involve resource users' participation in policy making by the government or institution; 2) encourage the government to create regulations that are easy to monitor and supervise in their implementation; 3) make the rules enforceable; 4) take a leap in regulating and implementing a sanction mechanism by violators; 5) put adjudication as if it is available at low cost; 6) hold monitoring institutions with accountable officials; 7) collaborate institutions that regulate CPR are made in hierarchical levels according to their function; and 8) allow the pass as there is a procedure that allows for revision of regulations.

However, as previously explained, resources in large numbers, having high complexity, and sensitivity to externalities require an institutional design that is not only hierarchical but interrelated. The effectiveness of institutions in regulating CPR is currently designed by calculating it economically. Besides that, it compares with other subregions. This is intended to allow communication between policy makers and coordination about the institutions adopted in designing an institution to regulate CPR. Although observations so far show that there has been a tendency for users to control themselves in the use of natural resources which constitute CPR, such as waters, fisheries and agricultural resources for centuries, for Indonesia, the tendency to reduce rice fields, especially in Java, continues. and there have been no effective policy steps or actions taken by local communities to control the conversion and land-use change of these rice fields through proper policy (Pasandaran, 2006).

3. Research Methodology

3.1. Research Location

The research focus on the *Subak* Jatiluwih Landscape. The *Subak* Jatiluwih Landscape area is one of the *Subak* Landscape which has become an icon of the WCH. Jatiluwih is located at the foot of Mount Batukaru, Penebel District, Tabanan Regency, Bali Province, Indonesia. The focus of research was on the existence of *Subak* in Bali as a form of local wisdom in the agricultural sector that must be maintained and extended.

3.2. *Data, Population and Samples*

The population in this study were farmers with the qualification as the members of each *Subak* institution divided into seven (7) *subak* landscape areas. A total of 94 farmers were chosen as research respondents to answer the questionnaire. This research uses primary and secondary data. Collecting data and information required for analysis is carried out by: 1) a documentation study, which is aimed at obtaining secondary data held by related agencies; 2) field observation, which is in the form of observation or direct observation of the area which is the research location; and 3) interview technique, where this technique is carried out if the data or information as input material is not contained in secondary data. Primary data is obtained through questionnaires to respondents, while secondary data comes from data published by related agencies and communities. Primary data in this study include the socio-economic characteristics of the respondents, in this case farmers, and their perceptions and concerns about the status of *Subak* as a world cultural heritage. Meanwhile, secondary data from agencies includes an overview of the amount of agricultural land obtained from the BPS Bali Province. The mixed methods approach, is based on a combination of quantitative and qualitative approaches (Creswell, 2009), is used as an analysis to answer the problem so that relevant conclusions can be obtained in accordance with the research objectives.

3.3. *Qualitative Research Approach*

This research uses a qualitative approach. The snowballing sample approach was used to obtain informants in the interview. Qualitatively, the results of the interviews were analyzed using Atlas.ti software to find out the reasons for farmers to maintain agricultural land and farmers' exceptions in maintaining the existence of *Subak* as perseverance of local wisdom in the agricultural sector in Bali.

3.4. *Quantitative Research Approach*

Quantitatively, the data obtained through questionnaires were analyzed descriptively. Descriptive statistics is an analytical method used to solve problems related to the measurement of quantity (number and data) (Ardiansyah and Susilowati, 2019). This method is explained using a descriptive statistical approach which is used to explain the profile of respondents so as to produce the socioeconomic characteristics of the respondents and the respondents' perceptions of the existence of *Subak*. Descriptive analysis here is a description of the frequency value and standard deviation of the data to be able to describe the real conditions in the field.

The correlation between the social, cultural, and economic roles of Subak institutions on farmers' perceptions of maintaining the existence of Subak was analyzed by using SPSS version 22 software.

4. Results and Discussion

4.1. Social and Economy Characteristics of Respondents

The research questionnaire was submitted to 94 farmers in Subak Jatiluwih, Tabanan Regency, Bali Province, Indonesia. Jatiluwih Village is geographically located at an altitude of 500-750 meters above sea level. Jatiluwih Village has a rainfall of 2,500 mm per year and has temperatures between 26-29°C. *Subak* Jatiluwih Landscape is an icon of Bali's agricultural landscape as a WCH with extraordinary natural scenery (Philander & Barnhill, 2012). Agriculture in Jatiluwih is not only traditional in its pure sense with the aim of rice production, but also becomes an ecotourism area that attracts tourists to visit to enjoy views of the *subak* cultural landscape and also learn related to traditional Balinese agriculture. The characteristics of the respondents in this study are described in Table 1.

Table 1 - Characteristics of Respondents

No	Variable	Criteria	Frequency	
			n	%
1.	Age of Respondent	30-40 years old	28	29
		41-50 years old	22	23
		51-60 years old	30	32
		> 60 years old	14	16
2.	Formal Education	Did not attend school	4	4
		Did not graduate from primary school	5	5
		Primary school	37	40
		Junior high school	20	21
		Senior high school	28	30
3.	Number of Dependents	≤ 2 people	70	74
		3-5 people	17	18
		> 5 people	7	8
4.	Average Wage	< 2 million rupiah	39	41
		2-3 million rupiah	49	52
		> 3 million rupiah	6	7

Source: Data collected from the research, 2019.

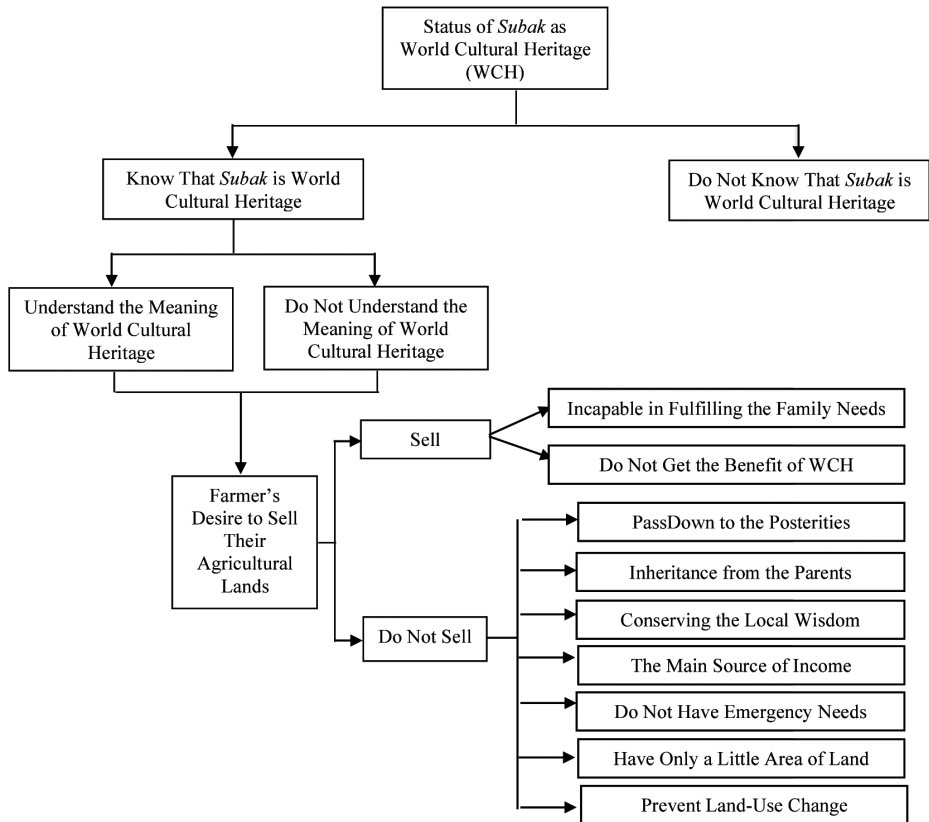
Table 1 shows the characteristics of the research respondents. The majority of farmers are under 60 years of age, where as many as 32 percent of farmers are in the age range of 51-60 years and only 14 percent are over 60-year-old. Most of the formal education they have completed is primary school graduates (it is amounted to 40%) and senior high school (as much as 30% from total respondents). For the number of dependents, the average farmer has 2 dependents (as much as 74%) and only 8% of the farmers bear more than 5 people in their hood. Meanwhile, on average, the average wage or income they get per month only from agricultural activities is between 2-3 million rupiah (52%) and only 7% earn more than 3 million rupiah. This value can only be used to meet daily needs, so that most of the farmer's wives also work to help meet their needs other than clothing, food and shelter.

4.2. Farmer's Awareness of the Status of Subak as World Cultural Heritage

The development of the tourism sector should be followed by the development of other supporting sectors, especially the agricultural sector. Efforts to empower the agricultural sector as a supporter of the tourism sector should continue to be improved with a more integrated empowerment pattern. As an economic sector that is full of uncertainty, farmers in Jatiluwih Village are faced with a dilemma to survive or give up their agricultural land. In fact, the status of wch has not been accompanied by a welfare program for farmers to survive in the agricultural sector. Despite the economic pressure and environmental changes, most farmers still hopes to survive with agricultural activities agricultural activities. They also hope that their agricultural land will be maintained for generations. The desire of farmers to sell agricultural land and their understanding of the status of *Subak* as wch is shown in Figure 2.

Figure 2 shows a summary of the tabulated data in the form of flowchart questions related to farmers' understanding of the status of *Subak* as a wch and the desire whether the farmers want to sell their agricultural land or not. The results show that the farmers in Jatiluwih Village know the status of *Subak* as a wch, but not all understand the meaning of wch itself. Of the total respondents, only three farmers have the desire to sell their agricultural land because their income from farming is not able to meet their daily needs. In in-depth interviews, farmers who chose to sell agricultural land described:

Figure 2 - Flowchart of Farmer's Awareness to have Desire in Selling Agricultural Lands and Farmer's Knowledge of Subak as WCH



“Berapa, sih, penghasilan petani. Kebutuhan banyak. Tidak bisa mengandalkan ini saja. Anak-anak juga maunya sekolah. Siapa yang mau nerusin jadi petani. Kalau dijual kan bisa untuk sekolahkan anak. Biar mereka bisa jadi pegawai.” – 1 (ID)

“How much does the farmer earn? Family needs are a lot. We can't rely on the farm alone. Children also want to go to school for better education. Who wants to continue being a farmer? If it is sold, it can be used for sending children to school. So they can become public or private employees at the office.” – 1 (EN)

The majority of farmers do not want to sell their agricultural land. Most of them argued that the land they owned was inherited from their parents who wanted to be passed on to their children and grandchildren. Some others argue that farming is their main job and the income from these activities has been able to meet their daily needs. There are even those who argue that the

lack of land they own makes them reluctant to sell the land. As stated by Sumatra:

“Dapat tanah warisan sedikit. Masa mau di jual. Kalau ada rejeki malah kepingin beli lagi. Jadi nanti biasa dikasikan ke anak cucu. Walaupun anak cucu jadi pegawai tapi kan bisa suruh orang lain untuk garapnya. Jadi tidak di jual lah, sayang tanahnya.” – 2 (ID)

“We got a small inherited land and we don’t want to sell it. If there is luck, we even want to buy other land again. So later our land is usually given to the posterities. Even though the children and grandchildren become employees, they can ask other people to work on the farm. Yes, it is not for sale and we will keep owning the land.” – 2 (EN)

In Balinese culture there is the terminology of *tetamian/cecatu* or it is called inheritance of the land from ancestors to posterities. *Tetamian/cecatu* is an ancestral heritage that is not only seen from the material side, but also the concept of inheritance as the value of the ancestors that is used and must be maintained for the continuity of the next generation. Therefore, farmers defend their agricultural land more in the belief that the rice fields they own are *tetamian/cecatu* or ancestral cultural heritage that must be maintained and preserved. As stated by Guru Sueden, one of the elders in the *Subak* Jatiluwih area who revealed:

“Mewariskan ilmu, apalagi ilmu tentang pertanian ini ke anak muda memang susah. Tapi harus tetap diajarkan. Sama seperti sebuah kebiasaan. Seperti menyuapkan sarana upacara, belajar dari mana? Kita bisa karena diajarkan dan dibiasakan. Seharuskan tidak masalah menurunkan pengetahuan terkait Subak ke generasi muda. Tidak harus meminta mereka menjadi petani, tetapi mereka harus tau nilai apa yang terkandung dalam pertanian tradisional tersebut. Dan yang terpenting mereka harus paham, sesuatu yang diberikan secara turun temurun atau warisan pantang untuk dijual.” – 3 (ID)

*“Passing on knowledge, especially about agriculture to young people, is indeed difficult. But it must be taught. Just like a habit. Like providing for ceremonial means, where do you learn from? We understand because we are taught and conditioned. There should be no problem passing knowledge related to *Subak* to the younger generation. They don’t have to ask them to become farmers, but they must know what value is contained in traditional agriculture. And most importantly they must understand, something that is given from generation to generation or inherited never to be sold.”* – 3 (EN)

The opinions of respondents show that there is a great need for our agreement and consistency in suggesting the younger generation about the obligation to preserve culture, especially the *subak*. They were not forcing the younger generation to farm, but making the younger generation aware

of the importance of agricultural values in Bali so that its sustainability will be maintained from generation to generation. This is not only for Balinese agriculture, but also for all local beliefs in Indonesia, considering that Indonesia is an archipelago with a diverse ethnic group and different customs and traditions.

4.3. *The Role of Social, Cultural and Economic Aspects to Maintain the Existence of Subak as World Cultural Heritage*

As a customary institution that is held based on local wisdom that regulates the agricultural sector, *subak* has its own regulations known as *awig-awig*. This rules must be followed and obeyed by all *Subak* members. The role of *Subak* customary institutions will be discussed from the social, cultural and economic aspects which is explained in Table 2.

The social role of *Subak* customary institutions is quite good, with an average score of 4.2. The role of this *Subak* customary institutions is also very important in conducting socialization so that farmers have an understanding of the regulations (*awig-awig*) related to appliance rules, have an understanding of the strictness of *awig-awig* about *Subak* customary institutions, and have an understanding of the existence of social sanctions in *Subak* customary institutions. In general, the farming community views that the *Subak* customary institutions has an important and very important role in disseminating the regulations and the rules (*awig-awig*), the strict aspects of *awig-awig*, as well as socializing social sanctions or penalties if the peasants who are members of the *Subak* violate the established rules. Farmers see that the social role of *Subak* customary institutions is important and very vigilant in providing an understanding of various rules (*awig-awig*) and encouraging the farming community to remain as farmers. Thus, it can be said that the social role of *Subak* customary institutions will greatly support the existence of the *Subak* Jatiluwih area as a WCH.

The role of the culture of the *Subak* customary institutions that was responded by farmers from the four questions asked was responded quite well as indicated by the average indicator score of 4.07. This means that the cultural role of *Subak* customary institutions related to the existence of these institutions has been responded quite well. Thus, it can be said that the role of traditional institutions so that farmers maintain the *subak* culture as local wisdom of traditional institutions has been responded very well by farmers to maintain the existence of the agricultural culture. It can be said that the *Subak* customary institutions have an important role in the efforts made to maintain the existence of Jatiluwih Village as a WCH area.

Table 2 - Perception Scores on Social, Cultural and Economic Aspect of Customary Institutions in Subak

Indicator	Mean*	Deviation Standard	
Social Aspect	Understanding of regulations (<i>awig-awig</i>)	4.22	0.57
	Understanding of social penalty	4.29	0.54
	Karmic impulse (<i>karma</i>) or the desire to planting rice	4.20	0.52
	The urge of being farmer	4.27	0.57
Cultural Aspect	Maintaining and conserving custom and culture through farm products	4.11	0.54
	Preserving the harmonious environment between farmers	4.00	0.43
	Preserving the harmony of relationship between farmers and other karmic impulses (<i>karma</i>) to support the existence of customary institutions in maintaining the irrigation system of farming (<i>Subak</i>)	4.10	0.55
Economic Aspect	Understanding the importance of physical development	4.23	0.45
	Understanding the importance of <i>punia</i> fund (good and holy giving as one of the Dharma values in Hinduism) in physical development	4.23	0.42
	Understanding the importance of <i>punia</i> in <i>Subak</i> as customary institution during religious activities	4.26	0.51
	Understanding the role of farming yields distribution	4.14	0.62
	Understanding the role of capital loan assistance	4.13	0.64
	Understanding the role of expense in religious ceremonial activities	3.77	0.77

* Perception Scores on Social, Cultural and Economic Aspect of Customary Institution in Subak (Using 5 point Likert scale) (1 = strongly disagree and 5 = strongly agree).

Source: Primary data collected from the research, 2019.

Perceptions of farmer respondents on statement items related to the economic role of *Subak* customary institutions ranged from good to very good with an average score of 4.13. This means that farmer respondents perceive that physical development activities, *punia* activities for physical development and *punia* related to religious activities carried out by farmers in *Subak* institutions are very important to be carried out. *Punia* fund is good and holy giving as one of the Dharma values in Hinduism. Thus, it can be said that *Subak* customary

institutions have a very strategic economic role in the efforts made to maintain the consistency of the Subak as an organization that regulates the distribution of water needed by farmers. The higher the role of this *Subak* customary institutions is for providing support to their regular daily activities, especially farmers, to be involved in physical development, punish activities, and religious activities related to the preservation of this *Subak* institution, then this *Subak* customary institutions can support the existence of Jatiluwih as a WCH area.

The correlation between the social, cultural and economic roles of *Subak* institutions on farmers' perceptions of maintaining the existence of *Subak* is shown in Table 3.

Table 3 - Correlation Between the Roles of Customary Institution and the Existence of Subak

Variable	Pearson Correlation	Sig*
Social Aspect	0.714	0.000
Culture Aspect	0.780	0.000
Economy Aspect	0.978	0.000

* Correlation is significant at the 0.01 level (2-tailed).

Source: Data from SPSS output, 2020.

The results of the correlation analysis show that both the social, cultural and economic aspects have positive impact after the correlation with farmers' perceptions in maintaining the existence of the *Subak* were determined. The social role of *Subak* customary institutions has a correlation value of 71.4%, the role of correlated culture is 78% and the highest correlation value is through the role of the economy which is 97.8%. This shows that, the existence of *Subak* customary institutions both socially, culturally and economically will greatly influence the desire of farmers to maintain their agricultural land, which means that it will further increase the existence of *Subak* customary institutions in Balinese agriculture. This is also in line with the results of the previous qualitative approach which show that although economic factors will be the main driver for the conversion of agricultural land functions, the value of local wisdom will always be the reason for maintaining Balinese agriculture.

4.4. Discussion

The social, cultural and economic aspects in between roles of *Subak* customary institutions can be seen in their efforts to encourage their citizens

especially farmers to remain consistent in planting rice and of course remain to stay as farmers for their occupation. The role of this *Subak* customary institutions is also very important in conducting socialization so that farmers have an understanding of the regulations (*awig-awig*) related to *Subak* customary institutions, have an understanding of the strictness of *awig-awig* about *Subak*, and have an understanding of the existence of social sanctions in *Subak*. In general, the farming community views that the subak customary institution has an important and very important role in disseminating the regulations, strict, as well as socializing social sanctions if the peasants who are members of the subak violate the established rules.

Staying in one sector to improve the economy will always lead to a decline in other fields as in equilibrium of sectors. Although the progress of one sector will advance other sectors, the negative impact of these conditions will always exist. Like the development of the tourism sector in Bali, which is the foundation of the community's economy level of regional wage, even the highest source of regional income plays a role in the progress of the trade, transportation sector, even has a significant impact on the development of Small and Medium Enterprises (SMEs) in a local or regional area such as Tabanan (Yuliarmi *et al.*, 2012). However, the progress of the tourism sector has gradually had an unfavorable impact on the environment, even affecting the socio-cultural conditions of the community of certain region.

The research on the impact of tourism on the behavior of local communities was carried out by Marzuki (2011) which took place on the island of Langkawi, Malaysia. His research concludes that the development of tourism in Langkawi contributes to local communities, especially from an economic standpoint, by increasing employment and infrastructure development, and even expanding opportunities for local people in entrepreneurship. However, the research also revealed that the development of tourism also raises social and environmental costs that are higher than the resulting economic benefits.

Research related to the protection of agricultural land was carried out in Sweden. This research is based on concerns about food sovereignty, where most agricultural land is very easy to convert into housing. The results show that the existence of agricultural laws in Sweden reflects an ambivalent discourse about preserving agricultural land. The government views land use for other functions as more important than agriculture. The current Swedish government system is built on the belief that the relevant institutions will make satisfactory decisions regarding land and water use. In this condition, community cultivation is needed to prevent land conversion. This relates to the power of the community to protect agricultural land from conversion to other uses of applied lands (Slätmo, 2017).

As a form of local wisdom in the agricultural sector, the existence of *Subak* customary institution and *subak* irrigation system in farming should be maintained, preserved and protected for its sustainability. The decreasing area of land is an indication of the increasingly threatened *Subak* customary institution and the existence of the *subak* landscape. Research related to the sustainability of *Subak* activities based on the *Tri Hita Karana* concept was carried out by Arnawa (2011). This study aims to analyze the sustainability of *subak* seen from its activities based on *Tri Hita Karana*, to analyze the influence of the two *Tri Hita Karana* elements related to *Subak* customary institution and *subak* sustainability, and to analyze *Subak* solutions to overcome the problems faced today by the farmers. The results of the study concluded that the activities of the *Subak* were still quite sustainable, the *subak* that had not undergone land-use change were more sustainable than those that had changed the function of land. *Tri Hita Karana* elements, namely *parahyangan*, *pawongan* and *palemahan* as explained before having a significant influence on the preservation of *subak*. Conflict resolution can be resolved with the concept of “*parasparos selunglung sebayantaka sarpanaya*” which means that all good or bad and light or heavy should be borne together.

Evidence related to the decreasing area of agricultural land in Bali was carried out by Lanya *et al.* (2015). The research aims to map and determine land use and land use change in Bali Province from 2002 to 2013. The results show that of the total *subak* area in Bali Province, 53% of the total area is the core *subak* that needs to be continuously preserved, 40.31% of the area is a buffer zone that requires special attention for its utilization, and the rest is an area that can be converted to other functions because its benefits are no longer for the agricultural sector. The results of the analysis also state that there is a decline in the use of agricultural land for housing and for non-agricultural purposes every year.

The low interest of the Balinese youth in agriculture will also be one of the causes for the loss of *Subak* in the future. The current generation knows the existence of *Subak* but does not understand the meaning and values contained in it. Even though the application of local wisdom values will be very helpful in maintaining and preserving local culture and customs (Yuliana, Sriyati & Sanjaya, 2017). An educational research and *Subak* concluded that, most teachers and students in Bali have limited knowledge regarding *Subak* even though they consider it important to maintain a culture in agriculture (Surata & Vipriyanti, 2018). So that it is necessary to add cultural values, especially *Subak* values in education in Bali to maintain the cultural values that are owned from generation to generation.

5. Conclusions and Suggestions

Based on the results of our analysis, we conclude that only some farmers understand the status of *Subak* as a World Cultural Heritage (WCH). The majority of farmers do not want to sell their agricultural land on the grounds that agricultural land is *tetamian/cecatu* or ancestral heritage that must be preserved and passed on. *Subak* customary institutions play a dominant role both socially, culturally and economically. This is indicated by the positive correlation value between the social, cultural and economic roles of traditional institutions on farmers' perceptions of maintaining the existence of *subak* as local wisdom in the agricultural sector in Bali.

Nevertheless. The absence of a clear clause in the *Subak* regulations related to land-use change, land sales and land conversion to non-agricultural makes it easier for *Subak* members to sell their agricultural land. Therefore, adding a clause that regulates the procedures and sanctions in the form of social penalties or interventions that can be imposed on land owners who sell their agricultural land for non-agricultural activities is needed. In this regard, support from the government in efforts to conserve *subak* so that it remains a WCH is also very much needed to perform properly.

When the world is currently facing the threat of Covid-19 which has a huge impact on Bali tourism, we need to revisit the *subak* regulations so that farmers can continue to preserve the farming. The conditions that paralyzed tourism and the economic downturn had quite an impact on the agricultural sector, especially in relation to the supply chain for agricultural products, which normally were distributed quite a lot to hotels and restaurants. For this reason, in addition to focusing on maintaining the existence of *subak* from tourism growth, interested parties should also be able to formulate mitigation strategies, especially for the supply chain of agricultural products, so as to be able to anticipate uncertain conditions in the tourism sector, either due to disasters or outbreaks such as what is happening today.

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