Household Income Structure and Strategy among Farmers In *Subak* Jatiluwih

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	Abstract
Keywords: Income Strategy; Income Structure; Subak Jatiluwih.	The establishment of subak as A World Cultural Heritage significantly affected the income source among the farmer around the Subak Jatiluwih area. The farmer household income that had entirely relied on the agricultural sector, after the establishment, slowly shifted to the non-agricultural sector because of the higher income produced. This study aimed to know the social-economic characteristic, household income structure, and household income strategy among farmers in the Subak Jatiluwih area. This study conducted in Subak Jatiluwih, Penebel District, Tabanan Regency, and enrolled 40 farmers as the study participant. A quantitative and descriptive analysis employed to analyze the study data. The result showed that the social-economic characteristic of the farmer household in Subak Jatiluwih supported by working-age population with the mean age of 49, primary occupation as a farmer, accompanied by secondary occupation (37.5%), high educational background, and long duration of the farming experience (16-35%). The landowner status also significantly affected these characteristics. Most participants was a landowner and had 0.42 ha of farming land. The income strategy applied by the participants were intensification (70%), extensification (35%), dual-income (100%), and migration (40%). On-farm, off-farm, and non-farm sectors contributed to the household income structure, with non-farm sectors as the highest contributor (49.58%). We suggest the farmer household using an adequate income strategy. A system necessarily to design and implement to improve the farmer household skill in producing high-quality agricultural products.

INTRODUCTION

Dharmawan in Budiarto et al. (2017) stated that household source of income was diverse (multiple sources of livelihood). A household could not only depend on a particular type of work in meeting their daily need. Zakaria et al. (2020) classified income sources into three categories: income that originated from the agricultural sector (on-farm), income that came from the payment as farmworkers, and income that came from non-agricultural sectors (non-farm). Azzahra (2015) also elaborated that income from the agricultural sector is usually inconsistent. Hence the other sources of income also required to make a living. The high risk and challenges of agribusiness urged farmers to took different occupations in improving their household income.

According to Sri Widari (2015), the number of tourist visits in Balinese traditional Water Control System (Subak) of Jatiluwih significantly increase after the establishment of subak as the World Cultural Heritage. The significant growth in tourist visits did not only directly influencing the community income, but also the income of members of subak. The number of income obtained due to the broader chance of employment during that time also increasing. The farmer household income that had entirely relied on the agricultural sector, after the establishment, slowly shifted to the non-agricultural sector because of the higher income produced.

Income strategy is a group of actions done to improve the amount of income on the household scale. Dharmawan (2007) stated that income strategy is an action done by an individual or group to make a living. Furthermore, Dharmawan in Sahidu (2012) explained that rural communities depended on the agricultural sector and non-farm sector for their household income. Scoones in P. Tulak (2009) then classified income strategy into three groups: (1) agricultural intensification or extensification, (2) diversification, and (3) spatial manipulation or migration. Every household picks a different strategy to improve their income that closely associated with the household resources.

The novelty of this study was the evaluations of the social-economic characteristic of the farmer household, the income structure, and income strategy. This study aimed to: 1) to know the social-economic characteristic of the farmer's household in Subak Jatiluwih, 2) to identify the farmer's household income strategy and the implementation of the strategy when dealing with financial issues, and 3) to analyze the household income structure among the farmer in Subak Jatiluwih.

RESEARCH METHODS

This study was conducted in *Subak* Jatiluwih, Penebel District, Tabanan Regency, from June to September 2020. *Subak* Jatiluwih selected as the study location by the purposive sampling technique due to several considerations: (1) considered as a tourism destination with *Subak* Jatiluwih as the tourism site central, (2) the majority of the

household income around *Subak* Jatiluwih that originated from their primary occupation as farmer, and (3) the major contribution of the non-agricultural sector on the household income.

Primary data was collected from the participant by interview sessions guided by a questionnaire. The secondary data employed in this study collected from previous studies or books related to the study topics. The study population was the member of the *Subak* Jatiluwih and the farmer in the area of the *subak*. A simple random sampling technique, a method of sample selection done without acknowledging the population strata, applied to select the study participant (Sumartono, 2018). Through the Slovin technique, 40 farmers were chosen to participate in this study.

The variables in this study consisted of income structure and income strategy. Income total according to income source, income strategy according to income source manipulation, diversification, and migration were the indicators applied in the study. Variables were defined to assure adequate discussion of the study result. The variable of income structure defined as the level of income produced by a household through the activity on the on-farm, off-farm, or non-farm sector. Income strategy defined as all types of activities done by the participant, identified by arranging the income strategy type from the most frequent to rarest strategy, hence the total of strategies applied in the household able to be recognized (Salatalohy, 2019).

The data analysis method applied to respond to each study aims is elaborated as follows:

1. The analysis of the first study aim (to know the social-economic characteristic of the farmer's household)
   The first study aim answered by the descriptive analysis involving a simple tabulation method to describe the social-economic characteristic among the farmer. The household social-economic characteristic identified in this study were: (1) age, (2) primary occupation and secondary occupation, (3) educational background, (4) the duration of the farming experience, (5) land ownership status.
2. The analysis of the second study aim (to identify the farmer's household income strategy and the implementation of the strategy when dealing with financial issues)
   The second study aim was also answered through the descriptive analysis. The family member who played the primary role in providing income in a household were being listed. The income strategy that had found based on this information then arranged from the most frequent to the rarest strategy.
3. The analysis of the third study aim (to analyze the household income structure among the farmer)
   The third aim of the study answered through the quantitative descriptive analysis. This type of analysis had conducted by Fridayanti & Dharmawan (2015) by calculating the mean of the household income in a year from the primary and secondary occupations. These total incomes then classified according to the income structure: on-farm, off-farm, and non-farm sector.

RESULT AND DISCUSSION
Social-Economic Characteristic of the Farmer Household

Participant's social-economic characteristic in this study elaborated through the age, primary occupation, secondary occupation, educational background, farming

experience duration, and land status ownership. These characteristics shows in Table 1.

Table 1. Participant's Social Economic Characteristic

No	Participant's Characteristic	Number (Person)	Percentage (%)
	Age (Years)		
1	15-64	40	100
	Total	40	100
	Primary Occupation		
2	Farmer	40	100
	Total	40	100
	Secondary Occupation		
3	Merchant/Entrepreneur	5	12.5
4	Farmworker	6	15
5	Livestock worker	3	7.5
6	Construction Worker	1	2.5
7	None	25	62.5
	Total	40	100
	Educational Background		
8	Elementary School	8	20
9	Junior High School	12	30
10	Senior High School	18	45
11	University	2	5
	Total	40	100
	Farming Experience (Years)		
12	1-15 years old	14	35
13	16-35 years old	26	65
	Total	40	100
	Land Ownership Status		
14	Landowner	40	100
15	Tenant farmer/Sharecropper	12	30

Source: Primary Data (processed), 2020

Table 1. reveals that the participants aged between 33 to 64 years old, with a mean age of 49 years old. Budi Kusumo et al. (2008), in their study, stated that the population of people with the age of 15 to 64 years old considered a working-age population. Furthermore, a study conducted by Andy Cahyono et al. (2006) about the social-economic characteristic of pine gum tappers found that farmers in working-age group tended to be more productive, and it will affect their income eventually. Table 1 also shows that all participant's primary occupation was a farmer. Only 37.5% of them had

a secondary occupation. These findings were similar to a study done by Budi Kusumo et al. (2008) that found educational background associated with diverse types of occupation in a particular area.

The educational background of the participants was relatively high. There were 18 participants (45%) and 12 participants (30%) who were graduated from senior high school and junior high school, respectively. Roni Afrizal et al. (2017) stated that the low level of farmer educational background would require proper training or workshops. This training would help them in building skills and understanding of appropriate technology applications. On the other side, this training also need an adequate level of knowledge and proper educational background. Sixty-five percent of participants have been engaging in farming activity for 16-35 years. A study done by Istianah et al. (2015) about the social-economic characteristic of the farmer, found that longer farming duration shaped better cultivation techniques and more productive farming activities. These situations would affect their production volume and income.

The most participant in this study was a landowner, while 12 participants were tenant farmer or sharecropper. The average size of the landowner's land was approximately 0.42 ha, while tenant farmer or sharecropper worked in a 0.65 ha land. The cultivated land size of the farmer as the landowner was relatively small due to the small size of the land. This finding was parallel with a study conducted by Husaini (2012) that investigated the social-economic characteristic of farmer household in Barito Kuala Regency. They found that a farmer who was a landowner with relatively small land managed to rent other lands with the profit-sharing system to cultivate a particular variety of agricultural commodities. This action is commonly motivated by the urgency to meet their household need. Tenant farmers or sharecroppers increase their household income by working in the non-agricultural field. Their family member (wife or husband) was also found participating in non-agricultural works. On other hand, the big or moderate types of farmers do non-agricultural works to save more profits. These profits then invested for non-agricultural activities (Puspa in Budi Kusumo et al., 2008).

Farmer Household Income Strategy in *Subak* Jatiluwih

Income strategy is defined as an action done to maintain and make a way of living. There were some types of income strategies identified in *Subak* Jatiluwih, in which the implementation of the income strategy originated from the income sources (on-farm, off-farm, and non-farm). In this study, the income strategy classified into three types: agriculture income source manipulation (agriculture intensification and extensification), dual-income pattern or income diversification, and spatial manipulation or migration as elaborated by Scoones in Sahidu (2012). The number of the income strategy in a household calculated by counting the number of the family member who done the income strategy and and arranging the type of income strategy in a specific order. The implementation of household income strategy among the farmer in *Subak* Jatiluwih shows in Figure 1.
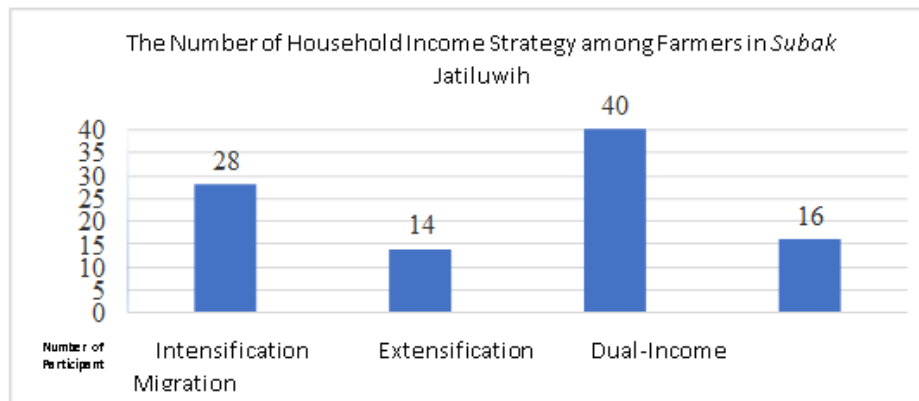
Figure 1. The Number of Household Income Strategy among the Farmers in *Subak* Jatiluwih
Source: Primary data (processed), 2020

According to Figure 1, the most frequent and rarest income strategy implemented by farmer households in *Subak* Jatiluwih was dual-income and extensification, respectively. This finding was contrary to a study done by Budiyanti (2018) on the sugar cane farmer population in Jenar Village. This study revealed that the rarest income strategy implemented by the farmer was migration due to their low skill and limited financial capability. However, a study done by Harahap (2018) on the oil palm farmer population found similar findings with the current study. They stated that oil palm farmers also implemented an income strategy to meet their needs. In the current study, we found that the most frequent strategy chosen by the farmer in *Subak* Jatiluwih was the dual-income.

Agricultural intensification concept adopted by the current study limited to the extra-worker component. Extra-workers could be recruited from family members or temporary/freelance farming workers. Agricultural extensification defined as an activity done to extend the farming land by working on other's land. There were 12 farmers identified as tenant farmers in this study. The extensification strategy usually chosen by the farmer with the smaller size of land. It was also common for the farmer to do extensification strategy only for adding extra household income. Parallel with this study, Turasih in Sugiharto et al. (2016) also stated that the larger size of cultivated land triggered secure feelings among the farmer. They did not feel the urgency to work on the other land because of the proper income produced by their own land. Contraty with this situation, farmers with a smaller land size usually had various types of income strategies to gain extra income.

In this study, the farmer applied the dual-income strategy through working in more than one workplace, such as also works as a livestock worker. Participation of their family member also in adding extra income to their household by working as merchants, employees, etc. also considered as part of the dual-income strategy. These multiple strategies mainly applied to adding more household income to the family. This strategy was common in *Subak* Jatiluwih. Farmers tended to work in non-agricultural sectors /and make their family members participate in adding extra household income. A study by Sumartono (2018) conducted on the oil palm farmer group in Penarik Village, Penarik District, Mukomuko Regency found that the motive for implementing the dual-

income strategy was the insufficient number of income produced by the primary occupation. They worked in other fields in order to meet their everyday needs.

The migration strategy in this study only confined to the circular type of migration. We found that a family member with no permanent job usually took a circular migration to make extra income in their family. They were found to be migrated from rural to urban areas. Tridakusumah et al. (2015) also investigated the household income strategy in Pangumbahan Village. They found that the migration of a family member in a household provided a broader chance of financial security and viewed as a chance to develop another source of income. Some locals also applied the migration income strategy through working as a housemaid in foreign countries.

Farmer Household Income Structure in *Subak* Jatiluwih

Income structure was the total of income earned from each income source: on-farm, off-farm, or non-farm sources. The household income structure in *Subak* Jatiluwih also divided into these income sources. The household income structure among the farmer in this study shows in Table 2 below.

Table 2. Agricultural Business Net Income Mean among Farmer in *Subak* Jatiluwih per Year

Revenue		
Cash Revenue:		
Total of Rice Sale	IDR 39,079,350	
Total of Revenue		IDR 39,079,350
Cost of Cash Variable		
Cost of Cash Variable:		
Non-Family Member Worker Payment	IDR 11,581,238	
Seed Purchasing Cost	IDR 321,360	
Fertilizer Purchasing Cost	IDR 1,168,000	
Maintenance and Restoration Cost	IDR 1,236,000	
Cost of Cash Variable Total		IDR 14,306,598
Cost of Fixed Cash		
Land Tax	IDR 1,000,000	
Cost of Fixed Cash Total		IDR 1,000,000
Cost of Non-Cash Variable		
Worker from Family Member	IDR 3,894,671	
Owned-Produce Seed	IDR 321,360	
Cost of Non-Cash Variable Total		IDR 4,216,031
Cost of Depreciation		IDR 195,590
Net Income		IDR 19,361,131

Source: Primary data (processed), 2020

On-farm income in this study originated from the revenue from each season (two growing seasons) reduced with the total cost in a year (two growing seasons). Table 2 shows that the net income mean for the agricultural commodity among the farmer in *Subak* Jatiluwih per year (two growing seasons) was IDR 19,361,131. No contribution system done in *Subak* Jatiluwih. Aids in the agricultural sector around *Subak* Jatiluwih only provided by Jatiluwih Tourist Destination in organic fertilizer form as much as 500 kg/ha. The on-farm income

source plays as a significant source of farmer income. Hence, this sector claimed as the central economic sector among the participant. A study done by Zakaria et al. (2020) supported this finding. They investigated household income among cassava farmers. The majority of the farmer in this study relied on the agricultural sector income to meet their daily need when many populations shifted to work in the non-agricultural sector. The off-farm income among the farmer in *Subak* Jatiluwih presents in Table 3.

Table 3. Mean of the Off-Farm Income among the Farmer in *Subak* Jatiluwih per Year

No	Occupation	Income (IDR)	Percentage (%)
1	Farmworker	3,147,058	58.8
2	Livestock Worker	1,893,529	41.2
	Total	**5,040,588**	**100**

Source: Primary Data (processed), 2020

Table 3 shows that the off-farm income mean per year was IDR 5,040,588. This income originated from their secondary occupation as farmworker (10 participants) and livestock worker (7 participants). Farmers preferred the on-farm sector to the off-farm sector because of the higher total income produced by the on-farm sector. These findings were similar to a study conducted by Salatalohy (2019). which found farmer household income that dominated by on-farm sector fancied non-farm sectors as their secondary occupation to add extra income. The income total from the non-farm sectors reveals in Table 4.

Table 4. Mean of the Non-Farm Income among the Farmer in *Subak* Jatiluwih per Year

No	Occupation	Income (IDR)	Percentage (%)
1	Merchant/Entrepreneur	14,760,000	45
2	Working in Private Sector	4,447,500	30
3	Construction Worker	2,190,000	12.5
4	Others	2,602,500	12.5
	Total	**24,000,000**	**100**

Source: Primary data (processed), 2020

Non-farm sectors had been a way of living strategy among farmers in *Subak* Jatiluwih. Table 4 shows that mean income from the non-farm sector was reaching IDR 24,000,000. This income originated from their occupation as merchant/entrepreneur, private sector employee, construction worker, and other types of non-farm works. The highest mean of non-farm income found in merchant/entrepreneur occupation. It contributed IDR 14,760,000 to the household income mean in a year. Non-farm sectors were being their secondary occupation after the farming works. However, it produced higher income in comparison with the on-farm sector in general. These findings implied that the non-farm sector also required consideration in the agricultural business. Edy S & Widjojoko (2001) also elaborated that the non-farm sector contributed the highest income in farmer households. However, a study by Kiem and Franks (2003) showed

contrary results. They found that the highest amount of income originated from the on-farm sector activities. Nevertheless, the participant in their study also did job diversification to strengthen their household economic stability.

The total income in a household is the overall income gained from all sources of income employed in a household. In this study, the total income calculated by adding the total income from the on-farm, off-farm, and non-farm source together. Those sectors contributed as a source of income for the farmer to make a living every day. The mean total income of the on-farm, off-farm, and non-farm sectors was IDR 19,361,131, IDR 5,040,588, and IDR 24,000,000, respectively. The mean total income in each year was reaching IDR 48,401,719. Findings in this study showed that the household income did not only produce by the head of the family. Other family members who were working in the same or different sectors also contributed to the household income. These facts indicated that all members of a family could equally contribute in adding extra household income.

This study found that the mean total income of the husband, wife, and other working family members was IDR 12,157,395/year, IDR 21,034,324/year, and 15,210,000/year, respectively. The husband or head of the family's income originated from their works as a farmer (landowner or tenant farmer), farmworker, livestock worker, or merchant/entrepreneur. The wife's income produced from their occupation as a farmer (landowner), farmworker, livestock worker, merchant/entrepreneur, private sector employee, and teacher (permanent teacher or teacher with working contract). Other working family member's income originated from their occupation as security, private sector employee, and merchant/entrepreneur. This result also showed that the wife's income was higher than the husband's and other working family member's. A study conducted by Lestari et al. (2019) found that housewives' income from on-farm sectors was higher than non-farm sector's.

CONCLUSION

According to the study result and discussion section, the social-economic characteristic of the farmer in *Subak* Jatiluwih associated with productive age with the primary occupation as a farmer, high educational background, and long duration of farming experience. The landowner status also significantly affected this characteristic. The dominant household income strategy found was dual-income. It considered an approach that provided the highest income because made collaboration between both income sectors is possible. The household income structure of the farmer consisted of the on-farm, off-farm, and non-farm sectors. Non-farm and off-farm sectors produced the highest and lowest income that contribute to the household income, respectively.

RECOMMENDATION

We suggest improving the farmer household income strategy adequately and sufficiently, especially in the asset and income capital utilization. Intensification strategy (technology utilization) found to be rarely applied by the farmer group in Subak Jatiluwih. We also recommend employing this strategy to enhance the farmer household income. A collaboration between Subak Jatiluwih as a tourism destination with the local stakeholders also essential in improving the farmer's knowledge and skill about agricultural harvesting and commodity management.

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