# Factors of Influencing Household Production and Welfare of Corn Farmers: Gerokgak District, Buleleng Regency

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**Abstract**

This study aims to analyze (1) the effect of land area, cost of production, the number of working hours and labor to the production of corn farmers and on the welfare of farm households in Gerokgak District of Buleleng Regency (2) whether the production of corn farmers mediate land area, cost of production, the number of hours worked and labor for the welfare of corn farmers in Gerokgak District of Buleleng Regency. This research was conducted in fourteen villages in the Gerokgak District of Buleleng Regency, Bali Province. Bali has a dry rainfed land which has great potential to be cultivated into productive land, Gerokgak one of the Districts in Bali Province has the widest dry land planted with corn as a commodity suitable for dry land, but every year it decreases production thus affecting welfare. The method used in this research is descriptive quantitative. The population in this study were corn farmers in Gerokgak District, Buleleng Regency. The data analysis technique in this study uses the Path. The sample in this study was ninety-one using a purposive sampling technique for total sampling taken from all villages in Gerokgak District. The research conclusions: (1) variables land area, production costs, and labor have a positive and significant effect on farmer production variables, (2) variable number of working hours has a negative and significant effect on farmer production variables and (3) production costs negatively and no significant effect on the welfare of corn farmers (4) the number of working hours has a positive and insignificant effect on the welfare of corn farmers (5) labor has a positive and significant effect on the welfare of corn farmers, and (6) farmer production has a positive and significant effect on welfare of corn farmers.

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## 1. Introduction

Economic development in Indonesia dominated by the agricultural sector. Agriculture is the activity of utilizing biological resources carried out by humans to produce food, industrial raw materials or energy sources and activities aimed at managing their environment. The use of land for agricultural activities is very important. This sector provides food for the majority of the population, provides employment for almost the entire existing labor force, produces raw materials, raw materials, and becomes a source of foreign exchange income for the country. People who work in this sector generally have low productivity. According to Law No.11 of 2009, Social Welfare is the condition of fulfilling the material, spiritual and social needs of citizens in order to live properly and be able to develop themselves, so that they can carry out their social functions. The fulfillment of material, spiritual and social needs can be seen from fulfilling basic needs such as clothing, food, home, education, and health.

Table 1
Number of poor population (thousand peoples) according to regency/city
in Bali province year 2012-2017

| No. | District / City | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-----|-----------------|------|------|------|------|------|------|
| 1. | Jembrana | 15.30 | 14.92 | 15.80 | 15.83 | 14.53 | 14.78 |
| 2. | Tabanan | 21.00 | 22.49 | 24.40 | 24.05 | 21.90 | 21.66 |
| 3. | Badung | 12.51 | 14.55 | 15.40 | 14.40 | 12.91 | 13.16 |
| 4. | Gianyar | 22.63 | 20.80 | 22.50 | 22.89 | 22.13 | 22.42 |
| 5. | Klungkung | 9.30 | 12.21 | 12.30 | 12.11 | 11.21 | 11.15 |
| 6. | Bangli | 9.90 | 12:00 | 1:00 | 12.74 | 11.66 | 11.76 |
| 7. | Karangasem | 22.68 | 27.85 | 29.70 | 30.33 | 27.12 | 27.02 |
| 8. | Buleleng | 32.96 | 40.32 | 43.70 | 43.43 | 37.55 | 37.48 |
| 9. | Denpasar | 12.66 | 17.63 | 19.20 | 20.94 | 19.17 | 20.70 |
|  | Bali | 158.95 | 182.77 | 196.00 | 196.71 | 178.18 | 180.13 |

Source: Central Bureau of Statistic Bali Province 2018

Table 1 shows that the number of poverty in Buleleng Regency is high compared to the District/Regency in Bali Province. Although from year to year there has been decreased in the number of poverty, Buleleng Regency is in the top position in the highest number of poor people in 2017 with a total of 37,480 peoples or 6.61 percent. The second position is Karangasem regency with poor population 27,020 peoples or 5.79 percent. This proves that there are still a large number of poor people in Buleleng Regency. Based on data from the Central Bureau of Statistics Bali Province's GRDP agricultural sector in 2013 accounted for 6.57 percent, in 2014 amounted to 6.70 percent, in 2015 amounted to 6.92 percent, in 2016 amounted to 7.11 percent, and in 2017 amounted to 7.30 percent. Its role in the agricultural sector is around 25 to 34 percent in the last ten years. The agricultural sector has absorbed 43 percent of the workforce in the Province of Bali.

Table 2
Total Factors of Corn Plant Production in the Year 2012-2017
In Gerokgak District

| No. | Production Factor | Year | | | | | |
|-----|-------------------|------|------|------|------|------|------|
|  |  | 2012 | 2013 | 2014 | 2015 | 2016 | 201 7 |
| 1 | Planted area (ha) | 5.368 | 5.410 | 5.410 | 5.410 | 5.170 | 5168 |
| 2 | Harvest area (ha) | 7.006 | 5,200 | 4,874 | 4,660 | 4,589 | 5657 |
| 3 | Production (tons) | 253 | 156 | 158 | 155 | 190,1 | 272 |
| 4 | Average production (tons / are) | 0.04 | 0.03 | 0.3 | 0.46 | 0.62 | 0.48 |

Source: Central Bureau of Statistic, Buleleng Regency 2018

Table 2 shows that the production of corn during the last five years has fluctuated from 2012 until 2017. In 2012 the acreage of 5,368 ha, experienced a slight increase to 5,410 in 2013, 2014 decreased to 5277 ha, But seen from the extensive harvests for the past five years have always decreased, in 2012 the harvested area of 7,006 ha, in 2013

covering an area of 5,200 continued to decline until 2014 to an area of 4,879 ha, in 2015 an area of 4,660 ha, and 2016 covering an area of 4,589 ha. In terms of commodity corn production also fluctuated from the year 2012-2017, an end run p is caused by several factors such as land area, production costs, labor and working hours of farmers.

Table 3
Harvest Crops Area in Gerokgak Subdistrict Year 2012-2017

| No. | Plant Type | Year/ton | | | | | |
|-----|-----------|------|------|------|------|------|------|
|     |           | 2012 | 201 3 | 201 4 | 201 5 | 201 6 | 2017 |
| 1 | Soy | - | - | - | - | 5 | 5 |
| 2 | Green beans | 11 | 13 | 16 | 16 | 16 | 16 |
| 3 | Corn | 7.006 | 5,200 | 4,874 | 4,660 | 4,589 | 5657 |
| 4 | Peanuts | 488 | 476 | 505 | 409 | 401 | 403 |

Source: Central Bureau of Statistic, Buleleng Regency 2018

Table 3 shows that secondary crops harvested area in the corn category during the last five years from 2012-2017 has always decreased. This indicates that there is a problem with the production of corn which occurs in Gerokgak District, Buleleng Regency. Corn plants as a farming business whose entrepreneurs are carried out intensively by farmers to get maximum results. However, there are still many obstacles faced by farmers. The problems in the agricultural economy include a wide distance between expenditure and income receipts in agriculture, because the income received by farmers is only for each harvest season, even though expenditure must be spent every day. Agricultural finance is also a poor constraint for farmers and is involved in debt. Population pressure and agriculture, where population growth is not proportional to the amount of agricultural production (Mubyarto, 1993).

In the context of the theory of production in relation to agriculture, important factors in the management of production resources are natural factors (land), capital, and labor, besides management factors. The intended capital includes costs for purchasing fertilizers, pesticides, and seeds (Mubyarto, 1989). Soekartawi (1990), states that the factors that influence production are: such as production costs, prices, labor costs, education level, income level, availability of credit institutions, uncertainty and so on. Therefore, in this research, the factors of land use, capital, seeds, fertilizers and labor used are factors that can influence corn production.

In accordance with the research conducted by Yusuf et al., (2014), it was stated that the area of land affected the production of corn because agricultural land is a determinant of agricultural commodity production factors (Rahim & Retno, 2007). Which means that more and more agricultural land for corn can be planted so that production will increase. Increased food production will increase recipients of farmers who will also increase farmers' income. In line with Nababan (2009) states the land area has a positive effect on the income of corn farmers and Harwati et al., (2015), shows that land area has a very significant effect on farmer income. The land area has a significant effect on the variable level of welfare of corn farmers in the District of Tigabinaga (Sebayang, 2017). Based on some abstracted literature and previous empirical studies, this study focused on examining the effect of land area, production costs, a number of hours worked, and labor on farmer production and welfare of household corn farmers in Gerokgak District, Buleleng Regency.

*Literature Review*

*a) Farmer*

According to Rodjak (2006), farmers as an element of farming hold an important role in the maintenance of plants or livestock in order to grow properly, he acts as the farmer manager. Farmers as managers of farming mean that they must take various decisions in utilizing land owned or rented from other farmers for the welfare of their families. Farmers referred to in this case are people who grow crops or raise livestock with the aim of obtaining life from these activities.

*b) Public welfare*

According to Prabawa (1998), well-being is often interpreted broadly as prosperity, happiness, and the quality of human life both at the individual or family and community level. Prosperous conditions can be demonstrated by the ability to seek family resources to meet the needs of goods and services that are considered important in family life. Thus prosperity is the fulfillment of all the needs of both goods and services in meeting family needs.

Nationally there are measurements of family welfare, measurements made by the Central Bureau of Statistics. According to (Central Bureau of Statistics, 2013), to measure the level of welfare and can be seen from eight indicators including: 1) income, 2) household needs, 3) health, 4) security, 5) housing, 6) love of work, 7 ) family and social relations, and 8) education. According to BPS (2012), explained that the level of household welfare can be measured from the level of income compared to the minimum requirement for a decent life. Given the importance of socio-economic changes in terms of income, Evers (1982), mentioned that income is a result obtained by the community in fulfilling their daily needs or all revenues, both in the form of money and goods, obtained from other parties or themselves.

*c) Land area*

According to Mubyarto (2001), that land as one of the production factors which is a factory of agricultural products that have a considerable contribution to farming. The size of production from farming is influenced by the narrow area of land used. The ownership of agricultural land on the island of Bali, which is quite extensive, especially in Gerokgak Subdistrict, although the area tends to encourage farmers to rent or cultivate land owned by others so that income from the agricultural sector is able to provide a decent livelihood, because there is no possibility to further expand arable land by opening the forest, so that the layers of people who have narrow land or no land at all are getting bigger. The extent of arable land tenure consists of private property or other people's property (hiring or talking), and can also belong to another person (Werner, 1983).

*d) Production cost*

Working capital is essentially a continuous number in managing a business that bridges the expenditure to obtain materials or services with the time of receipt of sales. It is a condition for the success of the business, especially for small businesses. Working capital is very closely related in order to calculate working capital requirements. Calculation of different working capital will lead to the calculation of different working capital requirements (Ahmad, 2005).

*e) Working hours outpouring*

Exploitation of working hours is the amount of work time used by respondents and families in one business so that they can provide results in the form of income. The outpouring of labor consists of the outlay of the work time of the respondent and his family (wife and children). The various types of work carried out by farmers and their families will have an impact on the amount of income they receive, and this amount of income will affect the outpouring of farm laborers for their work, as stated by Daniel *et al.*, (2014), that the outpouring of farm laborers on rubber farming and non-agricultural enterprises significantly influence family income, The amount of working hours devoted to one business will generate income.

*f) Labor*

Labor is an important factor in farming, especially family workforce and family members. If it can still be done by the family workers themselves, there is no need to pay for external labor, so the level of efficiency that is incurred is able to provide a very significant income for the farmer's family (Suratiyah, 2008). Labor is a production factor that is important and needs to be addressed in the production process in sufficient quantities not only seen from the availability of labor but also the quality and type of workforce that must also be considered. The amount of labor wages is determined by the market mechanism, gender (the quality of the workforce and the age of the workforce.

*g) Production*

Production is the process of converting the input into output so that the value of the item increases. The input may consist of goods or services used in the process production and outputs are goods and services produced in a production process (Fauzi 2007). Production is a process of utilization of the resources that have been prepared, which is expected to realize better results than all the sacrifices that have been given and when viewed in economic terms the notion of production is a process of utilization of all the resources that you have available to achieve results that guarantee the quality and the quantity, well managed so that it is a commodity that can be traded.

*Research Concept*

Based on the literature review presented in the previous section, a research concept was developed that would be tested for its relationship through this research. Farmer's production and welfare of corn farmer's household are

influenced by four factors, namely, land area, production costs, number of hours worked, and labor. *Exogenous* latent variables in this study are a land area, production costs, number of hours worked, and labor. *Endogenous* variables are the welfare of corn farmer households. The *intervening* variable is the production of farmers. The research concept model constructed in this study is presented in Figure 1.
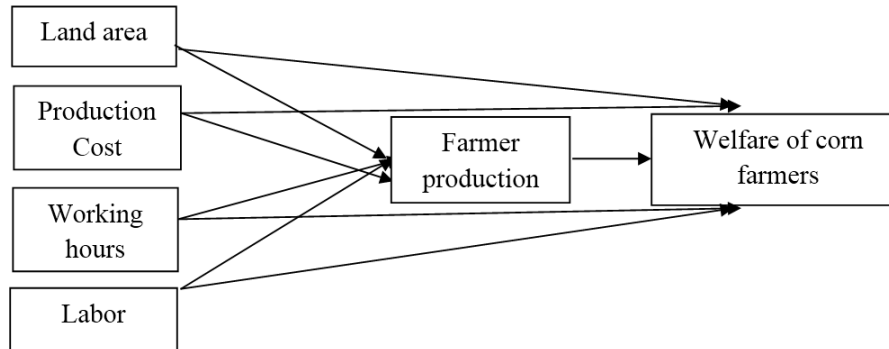


Figure 1. Research Concept

*Hypothesis*

Based on the conceptual framework and research concept above the hypothesis is made as follows:
1) Land area, production costs, number of hours worked, and labor have positive and negative effects on farmers' production
2) Land area, production costs, number of hours worked, and labor has positive and negative effects on the welfare of household corn farmers in Gerokgak District, Buleleng Regency.
3) Farmer production has a positive and negative effect on the welfare of household corn farmers in Gerokgak District, Buleleng Regency.
4) Production of farmers mediates land area, production costs, number of hours worked, and labor to the welfare of household corn farmers in Gerokgak District, Buleleng Regency.

## 2. Materials and Methods

The design of this study uses a quantitative approach because the main data is analyzed or used in the form of quantitative data. In addition, the analysis technique used to determine land area, production costs, number of hours of work and labor to farmer income and welfare of corn farmers in Gerokgak District, Buleleng Regency is inferencing statistics, namely *path analysis*. In this study, the population is all corn farmers in Gerokgak District, Buleleng Regency, which amount to 1002 farmers. The sampling technique in this study uses a *simple random sampling* method so that samples can be representative of the population *(representative)*. A sample calculation is as follows:

$$n \leq \frac{N}{Nd^2 + 1} \tag{1}$$

$$n \geq \frac{1002}{1002\,(0,01)+1}$$

$$n \geq 90,92 = 91$$

Information:
n = Number of samples
N = Total population
d = tolerance limit

The number of samples taken in this study was ninety-one corn farmers. The number of samples from each village varies, so the sampling technique is *proportional random sampling,* as in Table 4.

Table 4
Number of Study Samples

| No. | Village / Village | Sample (people) |
|---|---|---|
| 1 | Sumber Klampok | 8 |
| 2 | Pejarakan | 8 |
| 3 | Sumber Kima | 7 |
| 4 | Pemuteran | 8 |
| 5 | Banyu Poh | 5 |
| 6 | Penyabangan | 6 |
| 7 | Musi | 6 |
| 8 | Sangga Langit | 6 |
| 9 | Gerokgak | 7 |
| 10 | Patas | 7 |
| 11 | Pengulon | 5 |
| 12 | Tinga-tinga | 5 |
| 13 | Celukan Bawang | 5 |
| 14 | Tukada Sumaga | 8 |
| | Number of Samples | 91 |

Source: Primary Data processed, 2018

## 3. Results and Discussions

Table 5 shows that there are two dependent variables in this study, farmer production (Y1) and the welfare of corn farmers (Y2).

Table 5
Results Evaluation Model Validity

| No. | Dependent Variable | Independent Variables | R Square |
|---|---|---|---|
| 1 | (Y1) | X1, X2, X3, X4 | 0.789 |
| 2 | (Y2) | X1, X2, X3, X4 | 0.129 |
| | | Y1 | |

Source: Data processed, 2018

Regarding the two dependent variables, the farmer's production variable gives a value of 0.789, which means that the influence of the independent variable on the dependent variable is 78.9 percent. While the variable welfare of corn farmers (Y2) gives a value of 0.129, the number implies that the influence of the independent variable on the dependent variable is 12.9 percent.
The total determination coefficient of the structural equation from this research model is calculated as follows:

$R^2_m = 1 - (0.459)^2 (0.933)^2$
$R^2_m = 1 - (0,211) (0,870)$
$R^2_m = 1 - 0.184$
$R^2_m = 0.816$

The total determination coefficient of 0.816 means that 81.6 percent of the variables used can be explained by the model formed, while the remaining 18.4 percent is explained by other variables outside the model formed. Direct influence between variable constructs can be seen from the results of the data processed by the value of *the path coefficients* which displayed in Table 6. Explained that the area of land has a positive and significant effect on farmer production, production costs have a positive and significant effect on farmer production, the number of working hours has a negative and significant effect on farmers 'production, labor has a positive and significant effect on farmers' production.

The area of land has a negative and significant effect on the welfare of household corn farmers, production costs negatively and not significantly affect the welfare of household corn farmers, the number of working hours has a positive and not significant effect on the welfare of household corn farmers, labor has a positive and significant effect on welfare Corn farmer households, Production of farmers has a positive and significant effect on the welfare of corn farmer households.

Table 6
*Path Coefficient*

| Relationship Variable | Coefficient Standard | Standard Error | P-value | Information |
|---|---|---|---|---|
| X1 -> Y1 | 0.783 | 2,045 | 0,000 | Significant |
| X2 -> Y1 | 0.713 | 0,000 | 0.077 | Significant |
| X3 -> Y1 | -0,093 | 8,341 | 0.076 | Significant |
| X4 -> Y1 | 0.113 | 26,766 | 0.031 | Significant |
| X1 -> Y2 | -0.427 | 0.058 | 0.067 | Significant |
| X2 -> Y2 | -0,212 | 0,000 | 0.187 | Not significant |
| X3 -> Y2 | 0.141 | 0.160 | 0.192 | Not significant |
| X4 -> Y2 | 0.233 | 0.518 | 0.036 | Significant |
| Y1 -> Y2 | 0.665 | 0.002 | 0.004 | Significant |

Source: Data processed, 2018

Information:
X1 is the land area
X2 is the production cost
X3 is the number of working hours
X4 is labor
Y1 is farmers' production
Y2 is the welfare of corn farmers

The results of the tests conducted indicate that the land area factor has a positive and significant effect on farmer production. This means that the higher the land area will increase farmers' production right. The results of the tests carried out indicate that the production cost factor has a positive and significant effect on farmer production. This means that the greater the production costs used, the production of farmers will increase.

The results of the tests conducted indicate that the factor of the number of working hours has a negative and significant effect on farmer production. This shows that the higher the number of hours worked, the lower the production of farmers. The results of the tests conducted show that labor factors have a positive and significant effect on farmer production. This means that if the number of workers increases the amount of production of farmers will increase.

The test results show that the land area has a negative and significant effect on the welfare of corn farmers in Gerokgak District, Buleleng Regency. This shows that the more land area, the welfare of corn farmers in Gerokgak District, Buleleng Regency will decline. The test results show that the production cost factor has a negative and no significant effect on the welfare of corn farmers in Gerokgak District, Buleleng Regency. This shows that production costs do not affect the welfare of corn farmers in Gerokgak Subdistrict, Buleleng Regency.

The test results showed that the number of working hours had a positive and not significant effect on the welfare of corn farmers in Gerokgak District, Buleleng Regency. This shows that the higher the number of working hours, the welfare of corn farmers will decrease as well as vice versa, the lower the number of hours worked, the more prosperous corn farmers. The test results show that labor factors have a positive and significant effect on the welfare of corn farmers in Gerokgak District, Buleleng Regency. This shows that the more labor the welfare of corn farmers will increase.

The test results show that farmers' production factors have a positive and significant effect on the welfare of corn farmers in Gerokgak District, Buleleng Regency. This means that if the number of farmers' production increases, welfare will also increase. The research results and data analysis shows that among factors of land area, production costs, number of hours worked, and labor, the ability to mediate farmers' production factors towards the welfare of

corn farmers in Gerokgak District, Buleleng Regency is only for labor factors. While the relationship between the land, the cost of production, the number of hours of work for the welfare of corn farmers do not mediate the production of farmers. The ability of the number of products to mediate shows that to increase the income of corn farmers by increasing the number of workers.

## 4. Conclusion

Land area, production costs, and labor have a positive and significant effect on farmer production, while the number of working hours has a negative and significant effect on farmer production. Land area, labor, and farmer's production have a positive and significant effect on the welfare of corn farmers in Gerokgak District, Buleleng Regency, while production costs and a number of working hours do not significantly influence the welfare of household corn farmers in Gerokgak District, Buleleng Regency. The farmers' production mediates the relationship between labor to the welfare of household corn farmers in Gerokgak District, Buleleng Regency, while the relationship between land area, production costs, and the number of working hours on the welfare of household corn farmers in Gerokgak District, Buleleng Regency is not mediated by farmer production.

There needs to be coordination between farmers and agricultural extension workers so that production can be maximized to improve the welfare of corn farmer households in Gerokgak District. There needs to be a program from the local government for integrated pest control which will help the farmers in controlling the attack of corn pests. Farmers are expected to be able to adopt the knowledge or knowledge provided by extension agents in order to increase farming production. Farmers should also try activities on outside corn farming and in outside the agricultural sector, to increase income so that farmers can meet their household needs. For further research, it is better to use other mediating variables that are more influential in mediating between independent and dependent variables, such as farmers' income, or others.

*Statement of authorship*
The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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