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Factors Affecting the Allocation of Working Time for Corn Farmers in Gorontalo District

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Article Info	ABSTRACT
	The aim of this research is to find out the potential time of labor of corn farmers used for productive activities by corn farmers. Examine the factors that influence the allocation of farmer working time to corn farming. This research is quantitative research. The data source in this study is secondary data in the form of primary data from the distribution of questionnaires to corn farmers. The data analysis technique used is multiple regression analysis. The results of this study indicate that the potential time of labor in the family on productive activities in the agricultural sector is more dominated by male labor, which is an average of 617.35 HKSP, the results of the parsial test found that the variable land area, wage level and education significantly influence the allocation farmer working time on corn farming. While for skills, type of workforce and land management/technology systems have no significant effect.

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1.   INTRODUCTION

Corn is one of the food commodities that is still widely consumed by some people in Indonesia, especially people in Gorontalo Province. Apart from that, corn is also one of the small and medium industrial commodities, especially widely used to meet the need for animal feed, especially purebred chickens. As well as real contributors

Gross Domestic Product, which generates state income, also absorbs farmers' labor, as well as the main source of household income, provides feed ingredients and bio-energy and plays a role in efforts to reduce greenhouse gas emissions. Even though there are relatively fewer forms of local food processing compared to the existing potential, this is mainly related to the tastes of the local population. The agricultural sector is one of the important sectors in national economic development, to realize economic independence by mobilizing strategic sectors of the domestic economy, where the two strategic action programs launched are building food sovereignty based on people's agribusiness and building energy sovereignty based on national interests.

The amount of time farmers' work only depends on the status of the work carried out by the farmers themselves. There are several types of activities that require a lot of and continuous work time from farmers, but on the other hand there are also types of activities that require a limited amount of work time. According to Sumarsono, (2009) that increasing income tends to reduce working hours (income effect). With an increase in economic status (increase in income) a person tends to increase their consumption and will enjoy more of their free time. This means they have reduced working hours for this purpose.

The allocation of working time certainly cannot be separated from various factors, according to

Sumaryanto (2008), who stated that the allocation of working time from farming households is influenced by economic and non-economic factors. Factors that have a real influence on the supply of labor to corn farming are influenced by the area of cultivated or own land, real wage levels, non-farming income, cultivation status, institutional factors of employment relations and agro ecosystem conditions. Meanwhile, the allocation of household work time to the non-agricultural sector is influenced by the level of wages for non-agricultural activities and net income from the agricultural sector. In this case, researchers focus on land area, workers' wages, skills, education and type of workforce. Because in the research area there is a vast expanse of land, the level of labor wages is very minimal, the skills of farmers are very limited, the education of farmers on average only reaches elementary school, and the type of labor uses workers from outside the family.

Labor is an important factor in determining the success of farmers in implementing their farming business. Labor is a major production factor, because this factor determines the position of the farmer in his farming business, meaning that the farmer in his farming business does not only contribute labor, but is the leader of the farming business who manages the overall production organization. Technology has an important role in corn farming. Based on the description above, one of the problems faced by farming in the corn farming sub-sector is how farmers have sufficient and effective work time allocation for corn farming in Gorontalo Regency. This is a challenge for farmers and informal workers in the corn farming subsector, especially in Gorontalo Regency, there are choices or preferences as well as other employment opportunities outside of corn farming which provide sufficient wage guarantees for workers so that it is found in several locations or areas of corn fields in Gorontalo Regency that workers are used from outside Gorontalo Regency. The problem is regarding factors in the allocation of work time for corn farmers and the composition of labor within the family and outside the family as well as how labor costs in corn farming improve the household economy of corn farmers in Gorontalo Regency will be studied in more depth.

2.   RESEARCH METHODS

This research is quantitative research. The data source in this research is secondary data in the form of primary data from distributing questionnaires to corn farmers. The data analysis technique used is multiple regression analysis.

3.   RESULTS AND DISCUSSION

Based on table 16, the average allocation of working time for farmers in corn farming in the Gorontalo district, from the research results, it can be seen that the amount of working time for each activity is different. Cultivating the land in one planting season for labor within the family is 719.31 HKSP, and labor outside the family is 885.03 HKSP. The investment invested by workers within the family was 297.08 HKSP and labor outside the family was 1,615.93 HKSP. In fertilization activities, the time devoted by workers within the family was 329.14 HKSP and the time devoted by workers outside the family was 536.28 HKSP. In maintenance activities, the time allocated by workers within the family is 773.13 HKSP and by workers outside the family is 279.77 HKSP. In harvesting activities, the time allocated by workers within the family is 1,515.29 HKSP and by workers outside the family is 6,145.49 HKSP. In the post-harvest cob drying activity, the time allocated by workers within the family is 746.14 HKSP and by workers outside the family is 379.26 HKSP. In the post-harvest activity of corn shelling, the time allocated by workers within the family is 147.20 HKSP and by workers outside the family is 837.02 HKSP. In post-harvest seed drying activities, the time allocated by workers within the family is 380.86 HKSP and by workers outside the family is 153.44 HKSP. The time allocated by workers in the family for corn transport activities is 43.89 HKSP and workers outside the family is 303.20 HKSP. Based on this data it can be seen that farmers allocated 4,955.04 days of work time within the family for corn farming activities, while outside the family it was 11,135.42 days. This means that looking at the data, there is a greater allocation of time to work outside the family.

3.1 Classical Assumption Testing

The classical assumption test is an analysis carried out to assess whether in an Ordinary Least Square (OLS) linear regression model there are classical assumption problems. The data used in this research is primary data with a cross section approach so that the classical assumptions that must be met are normality, multicollinearity, heteroscedasticity and autocorrelation. The results of testing the classical assumptions are described as follows:

3.2.1 Normality test

The residual normality test aims to test whether in the regression model the related variables and the independent variables both have a normal distribution or not. A good regression model has a normal or close to normal residual distribution. Normality testing can also be identified using the Normal Probility Plot method which compares the cumulative distribution of the actual data with the cumulative distribution of the normal distribution. The NormalProbility Plot results are presented in the following figure:

Normal P-P Plot of Regression Standardized Residual
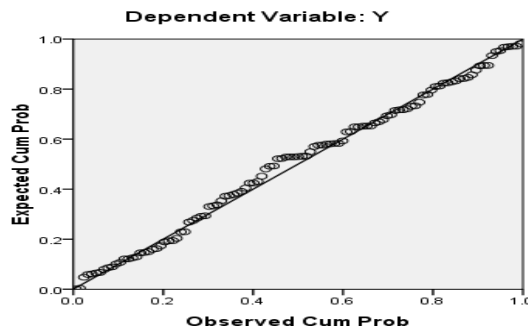
Source: SPSS data, 2019
Figure 1. Graph of Normal Probability Plot Test Results

Based on this image, it can be seen that the data (points) are spread around the diagonal line and follow the direction of the diagonal line. By following the basic decision making above, it can be concluded that the data in this regression model meets the assumption of data normality.

3.2.2 Multicollinearity Test

This multicollinearity test is carried out to determine the existence of a definite linear relationship between several or all of the independent variables that explain the regression model. To determine whether there is multicollinearity, you can also look at the VIF (Variance Inflation Factor) value, namely: if VIF <10, then it can be interpreted as no There is multicollinearity in the study:

Tabel 1. Multicollinearity Testing

No	Variable	VIF	Conclusion
1	Land area	2.030	Non Multicollinearity
2	Labor Wages	1.189	Non Multicollinearity
3	Skills	1.020	Non Multicollinearity
4	Education	1.036	Non Multicollinearity
5	Types of Labor	2.033	Non Multicollinearity
6	Tech Dummy	1.096	Non Multicollinearity

Source: SPSS data, 2019

Based on table 1, it can be seen that the multicollinearity free regression model is because the VIF of the independent variable is <10, namely the land area variable is 2.030, the labor wage variable is 1.189, the skills variable is 1.020, the farmer education variable is 1.036, the variable and type of labor is 2.033, so that in this study, there was no multicollinearity in the regression.

3.2.3 Heteroscedasticity Test

The heteroskedasticity test is a test that aims to test whether in a regression there is a difference in variance from the existing residual data. The method used in this test is graphical plot analysis between the predicted value of the dependent variable (ZPRDCH) and the residual (SRESID). Figure 4.1 below is the result of data processing (Scatterplot) to test heteroscedasticity:

Based on Figure 2 above, it can be seen that (2) the points are spread randomly and are spread both above and below zero on the Y axis. Therefore, it can be concluded that the regression model does not have heteroscedasticity.

Scatterplot

3.2.4 Autocorrelation Test

The autocorrelation test in a model aims to determine whether there is a correlation between confounding variables in a certain period and previous variables. Autocorrelation can be detected using the Durbin Witson value with the criteria if: 1) A D-W number below -2 means there is positive autocorrelation, 2) A D-W number between -2 and + 2 means there is no autocorrelation, 3) A D-W number above + 2 means there is negative autocorrelation.

Table 2. Model Summary[b]

Model	R	R Square	Adjusted RSquare	Std. Error of the Estimate	Durbin-Watson
1	.851[a]	.724	.708	.159	1.833

SPSS 2019 Data Source

Based on table 2 above, it can be seen that the Durbin-Watson value is 1.833, so it can be concluded that there is no autocorrelation because the Durbin-Watson value is between -2 and +2.

3.3 Factors that Influence Farmers' Work Time Allocation in Corn Farming

Testing of the factors that influence farmers' work time allocation in corn farming was carried out using a multiple regression test. Multiple regression test is a test carried out to look for factors where factor X is more than 1 variable. With this analysis, the most dominant factors that influence farmers' work time allocation in corn farming can be identified.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.883	.250		15.536	.000
Land area	.078	.016	.363	4.941	.000
Wage Levels	.409	.036	.644	11.451	.000
Skills	-7.145	.001	-.002	-.048	.962
Education	-.038	.017	-.122	-2.315	.023
Types of Labor	-1.139	.000	-.004	-.056	.956
Dummy (Technology)	-.019	.020	-.050	-.923	.358

SPSS 2019 Data Source

Based on the results of the analysis using the SPSS program above, the following regression model was obtained:

$$Y = 3.883 + 078X_1 + 409X_2 + -7.145X_3 + -038X_4 + -1.139X_5 + -019D + e$$

Based on the results of the multiple regression analysis above, the interpretation is as follows:

Constant of 3.883 ($\alpha = 3.883$), This value is a constant value of working time spent on corn farming in the Gorontalo Regency area if there is an influence of land area, labor wages, skills, farmer education, type of labor and processing system (dummy). The positive coefficient results show the importance of land area, labor wages, skills, farmer education, type of labor and technology (dummy) in increasing the amount of working time in corn farming in the Gorontalo Regency area.

Regression coefficient X1 0.078 ($\beta1 = 0.078$), The regression coefficient for the land area variable shows that for every increase in the land area variable of 1 Ha, the amount of working time in corn farming in the Gorontalo Regency area will increase by 0.078 units provided that the other independent variables are constant (cateris paribus).

Regression coefficient X2 0.409 ($\beta2 = 0.409$), The regression coefficient for the labor wage variable shows that for every 1% increase in the labor wage variable, the amount of working time in corn farming in the Gorontalo Regency area will increase by 0.409 units provided that the other independent variables are

constant (cateris paribus).

Regression coefficient X3 -7.145 ($\beta 3$ = -7.145). The regression coefficient for the skill variable shows that for every increase in the skill variable of 1 unit, the amount of working time in corn farming in the Gorontalo Regency area will decrease by -7,145 units provided that the other independent variables are constant (cateris paribus)

Regression coefficient X4 -0.038 ($\beta 4$ = -0.038). The regression coefficient for the education variable shows that for every increase in the education variable of 1 unit, the amount of working time in corn farming in the Gorontalo Regency area will decrease by -0.038 units provided that the other independent variables are constant (cateris paribus).

Regression coefficient X5 -1.139 ($\beta 4$ = -1.139). The regression coefficient for the variable type of labor shows that for every increase in the variable type of labor by 1 unit, the amount of working time in corn farming in the Gorontalo Regency area will decrease by -1,139 units provided that the other independent variables are in a constant state (cateris paribus)

Dummy regression coefficient -0.019 (D = -0.019). The regression coefficient for the processing system/technology variable (dummy) shows that the existence of land processing, both modern and traditional processing, will increase the amount of working time from various processes of corn farming activities in the Gorontalo Regency area, provided that the other independent variables are in a constant state (cateris paribus).

Based on the results of the regression analysis above, to determine the ability of the independent variable to explain the dependent variable, the next test is the coefficient of determination test. The R2 test is used to determine the magnitude of the influence of the independent variable on the dependent variable in this research. The magnitude of the influence of land area, labor wages, skills, type of labor and processing system/technology on the amount of working time in corn farming in the Gorontalo Regency area is known from the coefficient results. determination (R2) as follows:

Tabel 4. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.851[a]	.724	.708	.159	1.833

SPSS 2019 Data Source

Based on the table above, the adjusted coefficient of determination R2 is 0.708. This value means that 70.8% of the amount of working time spent on corn farming in the Gorontalo Regency area can be explained by land area, labor wages, skills, farmer education, type of labor and dummy processing system/technology in the area.

Gorontalo Regency. Meanwhile, 29.2% is explained by other factors outside the model. Other factors outside the production function model that are thought to also have an impact on the amount of working time in corn farming are the level of land fertility and the influence of climate and weather.

After knowing how much ability the independent variable has in explaining the dependent variable, the next step is to measure the significance of the influence of the independent variable simultaneously using the Simultaneous Test (F test). The F test is used to test regression coefficients together to test models that influence the relationship between the independent variable and the dependent variable. Testing the significance of the regression equation to be obtained is carried out using the F test. Test simultaneously (F Test) between the independent variables, in this case between land area (X1), labor wages (X2), skills (X3), farmer education (X4), type of labor (X5), Technology Dummy (D) and allocation of working time in corn farming (Y). The results of the analysis together based on the results of the analysis with the help of the SPSS Version 16.00 program obtained the following results:

Based on the results of the analysis, the Fcount value is 45,367 with a probability value of 0.000 because the probability value is smaller than 0.05, the Fcount value obtained is significant and H0 is accepted while H1 is rejected so it can be said that there is a positive and significant influence between land area (X1), labor wages (X2), skills (X3), farmer education (X4), type of labor (X5) and processing/technology systems (D) together on the allocation of working time in corn farming in the Gorontalo Regency Area (Y).

3.4 The influence of land area on the amount of working time in corn farming in the Gorontalo Regency area

Based on the analysis, the elasticity of land area is 0.078 and has a positive effect on the amount of working time in corn farming in the Gorontalo Regency area, meaning that if there is an increase in the land area variable, the amount of working time in corn farming in the Gorontalo Regency area will increase by 0.078 units with a factor of others are considered fixed (cateris paribus). Positive production elasticity

indicates that the land area is in a rational area because land area can increase the amount of working time in corn farming in the Gorontalo Regency area. Then, based on the t-test value, the t-count value for land area was obtained at 4,941, the significance value of land area (0.000) was smaller than the probability value of 0.05. So it can be concluded that land area has a significant effect on the allocation of working time in corn farming in the Gorontalo Regency area. The results of this research are in line with the results of research from Fabri Saputra, et al (2018) which concluded that land area has a significant effect on income. Therefore, it has a direct effect Land area has a positive and significant effect on income, while the indirect effect of land area on farmer income through farmer production also has a significant effect, so farmer production as a mediating variable is called partial mediation.

3.5 The influence of labor wage levels on the amount of working time in corn farming in the Gorontalo Regency area

Based on the analysis, the elasticity of the labor wage level is 0.409 and has a positive effect on the amount of working time in corn farming in the Gorontalo Regency area, meaning that if there is an addition to the variable level of labor wages, the amount of working time in corn farming in the Gorontalo Regency area will increase by 0.409 units with other factors considered constant (cateris paribus). Positive production elasticity indicates that the level of labor wages is in a rational area because labor wages can increase the amount of working time in corn farming in the region.

Gorontalo Regency. Then, based on the t-test value, the t-calculated value for the labor wage rate is 11,451, which has a significance value for the labor wage rate (0.000) which is smaller than the probability value of 0.05. So it can be concluded that the level of labor wages has a significant effect on the allocation of working time in corn farming in the Gorontalo Regency area. This means that with each increase in the area of land worked on, more work time is allocated, while a higher level of wages is also given.

The results of this research are in line with the research results of Rizal (2017) which explains that the level of labor wages has a positive effect on the amount of working time in rice farming. Negative production elasticity indicates that labor wages are in the rational area because labor wages can reduce the amount of time working in rice farming in Gorontalo City. Then based on the t-test value, the t-calculated value of labor wages was obtained at -6.616, the significance value of labor wages (0.000) was smaller than the probability value of 0.05. So it can be concluded that

Labor wages have a significant effect on the amount of working time in lowland rice farming in Gorontalo City.

3.6 The influence of skills on the amount of working time in corn farming in the Gorontalo Regency area

Based on the analysis, the elasticity of skills is -7,145 and has a negative effect on the amount of working time in corn farming in the Gorontalo Regency area, meaning that if there is an addition to the skill variable, the amount of working time in corn farming in the Gorontalo Regency area will decrease by -7,145 units with a factor of others are considered fixed (cateris paribus). Negative production elasticity indicates that skills are in a rational area because skills can increase the amount of working time in corn farming in the Gorontalo Regency area. Then, based on the t-test value, the t-calculated skill value is -0.048, which is a significant skill value (0.962) greater than the probability value of 0.05. So it can be concluded that skills do not have a significant effect on the amount of working time in corn farming in the Gorontalo Regency area.

3.7 The influence of farmer education on the amount of working time in corn farming in the Gorontalo Regency area

Based on the analysis, the elasticity of farmer education is 0.038 and has a negative effect on the amount of working time in corn farming in the Gorontalo Regency area, meaning that if there is an addition to the farmer education variable, the amount of working time in corn farming in the Gorontalo Regency area will decrease by -0.038 units with other factors considered constant (cateris paribus). Negative production elasticity indicates that farmer education is in the rational area. Then, based on the t-test value, the t-calculated value of farmer education is -2.315, which is a significant value for farmer education of (0.023) which is smaller than the probability value of 0.05. So it can be concluded that farmer education has a significant effect on the amount of working time in corn farming in the Gorontalo Regency area because farmer education can increase the amount of working time in corn farming in the Gorontalo Regency area.

The results of this research are in line with the results of research by Norfahmi et al (2017).

explains that the level of education has a real influence on the amount of household work in rice farming. This means that there is a connection between education and the amount of household work in farming. The higher the level of education, the greater the amount of household work on farming. It is hoped that a high level of education will make it easier for household members to absorb new innovations in an effort to increase farming productivity and household income.

3.8 The influence of labor type on the amount of working time in corn farming in the Gorontalo Regency area

Based on the analysis, it is obtained that the elasticity of the type of labor is 1,139 and has a negative effect on the amount of working time in farming corn in the Gorontalo Regency area, meaning that if there is an addition to the labor type variable, the amount of working time in corn farming in the Gorontalo Regency area will decrease by -1,139 units with other factors considered constant (cateris paribus). Negative production elasticity indicates that the type of labor is in a rational area because this type of labor can increase the amount of working time in corn farming in the Gorontalo Regency area. Then, based on the t-test value, the t-count value for type of labor was obtained at 0.956, the significance value of land area (0.956) was greater than the probability value of 0.05. So it can be concluded that the type of labor does not have a significant effect on the amount of working time in corn farming in the Gorontalo Regency area.

3.9 The influence of processing systems/technology on the amount of working time in corn farming in the Gorontalo Regency area

Based on the analysis, it was found that the elasticity of the processing system/technology was -0.019 and had a negative effect on the amount of working time in corn farming in the Gorontalo Regency area, meaning that if there was an addition to the farmer's processing system/technology variable, the amount of working time in corn farming in the Gorontalo Regency area would decrease. a decrease of -0.019 units with other factors considered constant (cateris paribus). Negative production elasticity indicates that the processing system/technology is in a rational area because the processing system/technology of farmers can increase the amount of working time in corn farming in the Gorontalo Regency area. Then, based on the t-test value, the t-calculated value of the farmer's processing system/technology was -0.923, which is a significant value of the processing system/technology (0.358) greater than the probability value of 0.05. So it can be concluded that the processing system/technology does not have a significant effect on the amount of working time in corn farming in the Gorontalo Regency area.

4. CONCLUSION

Potential labor time in the family for productive activities in the agricultural sector, namely male labor on average is 617.35 HKSP, female labor on average is 63.64, and child labor on average is 6.55. Meanwhile, the potential for family work time in activities outside the agricultural sector is more dominant for female workers, namely 156.76 HOK.

Based on the results of simultaneous testing, the variables of land area, wage level, farmer skills, education, type of labor, and processing system/technology together have a positive and significant effect on the amount of working time in corn farming in the Gorontalo Regency area. Meanwhile, partial test results found that the variables of land area, wage level and education had a significant effect on farmers' work time allocation in corn farming.

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