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ANALYSIS OF HOUSEHOLD'S POVERTY STATUS IN ACEH 2018

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ABSTRACT. No poverty is the first goal of the United Nations Sustainable Development Goals. Based on Law Number 11 of 2006, Aceh Province Government receives a Special Autonomy Fund as compensation for achieving a peace agreement between Aceh Province and the Indonesian Government. This Special Autonomy Fund is valid for 20 years from 2008-2027, which is aimed at poverty alleviation. However, Aceh Province is still the 6th highest percentage of the poor province in Indonesia and the highest in Sumatra in 2018. Thus, this study aims to analyze the demographic, social, and economic variables that affect the poverty status of households in Aceh Province in 2018. The result of the research using ordinal logistic regression indicates that the age, the education level, and the working hours of the head of the household negatively affect the poverty status of the household, while the number of the household member has a positive effect on household poverty status. Households with a female head of household and working in the agricultural sector tend to be poorer.

Keywords: Aceh; ordinal logistic regression; poverty

ANALISIS KEMISKINAN RUMAH TANGGA DI PROVINSI ACEH TAHUN 2018

ABSTRAK. Program pengentasan kemiskinan merupakan tujuan nomor satu dari Tujuan Pembangunan Berkelanjutan (*Sustainable Development Goals*) PBB. Berdasarkan Undang-undang Nomor 11 Tahun 2006, Pemerintah Provinsi Aceh mendapatkan Dana Otonomi Khusus sebagai kompensasi atas tercapainya kesepakatan damai antara Provinsi Aceh dan Pemerintah Indonesia. Dana Alokasi Khusus ini berlaku selama 20 tahun sejak 2008-2027 yang ditujukan untuk pengentasan kemiskinan. Namun Provinsi Aceh masih merupakan provinsi dengan persentase penduduk miskin tertinggi ke-6 di Indonesia dan merupakan yang tertinggi di Pulau Sumatera pada tahun 2018. Dengan demikian, penelitian ini bertujuan untuk menganalisis karakteristik demografi, sosial, dan ekonomi yang memengaruhi status kemiskinan rumah tangga di Provinsi Aceh tahun 2018. Hasil penelitian dengan menggunakan metode regresi logistik ordinal menunjukkan bahwa variabel umur kepala rumah tangga (KRT), tingkat pendidikan KRT dan jam kerja KRT berpengaruh negatif terhadap status kemiskinan rumah tangga. Sedangkan jumlah ART berpengaruh positif terhadap status kemiskinan rumah tangga. Rumah tangga dengan KRT berjenis kelamin perempuan dan KRT yang bekerja pada sektor pertanian cenderung untuk lebih miskin.

Kata kunci: Aceh; regresi logistik ordinal; kemiskinan

INTRODUCTION

Poverty is a problem that always exists in every country, especially in developing countries. Even the poverty alleviation program is the first goal of the UN Sustainable Development Goals. Based on the 1945 Constitution, article 27, paragraph 2 states, "Every citizen has the right to work and a decent living for humanity," which can be interpreted that the Indonesian people have the right to live properly.

Aceh Province is the 6th highest percentage of poor in Indonesia and also the highest on Sumatera Island in 2018 (BPS, 2018). Poverty in Aceh in 2018 reached 15.97% which is also a province in western region of Indonesia with the highest poverty rate. According to Law No. 11 of 2006, the Government of Aceh receives a Special Autonomy Fund as compensation for achieving a peace agreement between Aceh Province and the Government of Indonesia. The Government of Aceh's Special Autonomy Fund will last for 20 years from 2008 to 2027. The Government of Aceh Province is projected to receive one hundred sixty-three trillion rupiahs for 20 years (Center for Regional Financial Development, 2015). One of the objectives of the Aceh Government's Special Autonomy Fund is poverty alleviation, so that it is expected that with these funds, poverty conditions in Aceh Province will improve.

Badan Pusat Statistik noted that in 2017 the Gross regional domestic product (GDRP) growth rate according to Aceh Province spending increased by 4.19% from the previous year. Aceh's general inflation rate in 2017 increased to 4.86 percent from 3.95 percent in 2016. GRDP growth rates and inflation in Aceh Province showed normal figures.

According to Faturrochman and Molo (1994), proper human resources can improve welfare and reduce poverty. The Human Development Index (HDI) of Aceh Province is at number 4 from 10 provinces in Sumatra Island in 2017 (BPS, 2018). Viewed from the dimension of education, Aceh is a province with a high school

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enrollment rate in the Gross Enrollment Ratio (GER) at the College, reaching 45.73%, higher than GER of West Sumatera (43.53%) and GER of Bengkulu Province (41.52%) in 2017 (BPS, 2018). Besides, Aceh Province's Expected Years of Schooling (EYS) were also the highest on Sumatra Island in 2017 (14.13 years) (BPS, 2018).

With well educated-human resources, stable conditions in the macroeconomy, and the Government of Aceh Special Autonomy Fund, poverty is still a severe problem in this province. For this reason, researchers are interested in seeing the conditions of poverty in Aceh Province from a micro perspective, namely at the level of household poverty.

In a household, the head of the household who has a good education will have high productivity. Kaplale (2012) says that education will indirectly affect one's mindset, in this case, namely, the head of the household. So the higher the level of education, the higher the motivation to achieve a certain income. It can be concluded that the higher the education of the head of the household, the higher the family's chances of escaping poverty. And with the increasingly high level of education, the head of the household can increasingly choose the type of work that can meet their needs.

A large number of household members will cause the amount of income that must be obtained to meet the necessities of life—conversely, the less ART, the fewer needs that must be met. So households with little ART will be more prosperous than households with many ART (World Bank, 2005).

Each job gives a different salary and can be in different forms. According to the BPS concept, the type of work/position is the type of work a person does or is assigned to someone while working or who is temporarily not working. Butar-Butar (2008), in his research, explained that the type of head of household's work, which was divided into two types, namely agriculture, and non-agriculture, would significantly influence the poverty status of a household living in rural areas.

According to Akpan et al. (2016), the sex of the household head has an important role in determining the poverty status of households in agricultural households. In addition, in the Miftahuddin study (2018), it was concluded that households with female heads of households were more likely to be poor than men. That is because there are limitations of a woman in working, especially in the field of non-employees (manual labor).

Someone older will get more experience at work than someone younger. With so much experience gained, it will affect the income at work. So, age at the head of the household has a significant influence on poverty (Sekhampu, 2013).

Several previous studies related to variables affecting household poverty have been carried out, such as the research of Sekhampu (2013), which concluded that household size, age, and employment status of household head significantly affected poor status. The age and occupational status of the household head reduce the poor, while the size of the household is associated with an increase in the probability of becoming poor. Zulfakar (2006) concluded that the level of education of the household head, the work status of the household head, and the number of household members affect the poverty profile of households in Banten Province. Nopriansyah et al. (2015) concluded that the village's classification, the gender of the household head, education of household head, occupation of household head, number of household members, and business credit assistance affected household poverty in Jambi Province. This study aims to determine the demographic, social, and economic variables that affect household poverty status in Aceh Province in 2018.

METHOD

This study uses Core Susenas data and the Household Consumption/Expenditure Module in 2018. The number of households selected and used in this study is 11,462 households in Aceh Province. The response variable is the household poverty status. Household poverty status is calculated by comparing the average per capita household expenditure per month with the urban poverty line (Rp. 486,338) and rural areas (Rp. 454,740) in Aceh Province in 2018. In calculating poverty in Indonesia, BPS uses the concept of the basic need approach. The basic need in question is the need for food and non-food. Where the minimum limit of the combination of the two will produce a poverty line that will be used to determine the poverty status of the household or can be called household poverty. Households are said to be poor if per capita expenditure falls below the poverty line. The household poverty status category is based on BPS poverty calculations in Indonesia Macro Poverty Calculation and

Analysis in 2018, as described in Table 1.

Table 1. Determination of Household Poverty Status

Category	Poverty Status by GK*
Extremely Poor	Expenditure<= 0,8*GK
Poor	0,8*GK <Expenditure<= GK
Almost Poor	GK <Expenditure<= 1,2*GK
Vulnerable Poor	1,2*GK <Expenditure<= 1,6*GK
Not Poor	Expenditure> 1,6*GK

Note: GK= Poverty Line Source: BPS

The analytical method used in this study is ordinal logistic regression. Ordinal logistic regression involves response variables with more than two categories. It has levels between these categories and independent variables of the nominal, ordinal, interval, or ratio scales (Agresti, 2002).

The logistic regression models formed in this study are:

$$ln\frac{P(Y=1)}{P(Y>1)} = \alpha_1 + \beta_1 X_1 + \beta_2 D_2 + \beta_3 D_{31} + \beta_4 D_{32} + \beta_5 D_{41} + \beta_6 D_{42} + \beta_7 D_{43} + \beta_8 D_{44} + \beta_9 D_{51} + \beta_{10} D_{52} + \beta_{11} D_{53} + \beta_{12} D_{54}$$

$$ln\frac{P(Y\leq 2)}{P(Y>2)} = \alpha_2 + \beta_1 X_1 + \beta_2 D_2 + \beta_3 D_{31} + \beta_4 D_{32} + \beta_5 D_{41} + \beta_6 D_{42} + \beta_7 D_{43} + \beta_8 D_{44} + \beta_9 D_{51} + \beta_{10} D_{52} + \beta_{11} D_{53} + \beta_{12} D_{54}$$

$$ln\frac{P(Y\leq 3)}{P(Y>3)} = \alpha_3 + \beta_1 X_1 + \beta_2 D_2 + \beta_3 D_{31} + \beta_4 D_{32} + \beta_5 D_{41} + \beta_6 D_{42} + \beta_7 D_{43} + \beta_8 D_{44} + \beta_9 D_{51} + \beta_{10} D_{52} + \beta_{11} D_{53} + \beta_{12} D_{54}$$

$$ln\frac{P(Y\leq 4)}{P(Y=5)} = \alpha_4 + \beta_1 X_1 + \beta_2 D_2 + \beta_3 D_{31} + \beta_4 D_{32} + \beta_5 D_{41} + \beta_6 D_{42} + \beta_7 D_{43} + \beta_8 D_{44} + \beta_9 D_{51} + \beta_{10} D_{52} + \beta_{11} D_{53} + \beta_{12} D_{54}$$

The explanation of each variable is in Table 2.

The model used in this analysis is the cumulative logit model. This model required an assumption that must be fulfilled: the slope parameter estimates produced an equal value for each logit equation.

The steps taken after defining a variable are estimating parameters. Having obtained a cumulative logit function, then test whether the model meets the assumption of parallel lines to find out whether the model can be used. This assumption tests whether the slopes of the models are the same for each different response variable category. In other words, the correlation between the explanatory variables with the response variable does not change for each category, as well as parameter estimation does not change for different cut-offs (Kleinbaum and Klein, 2010).

In ordinal logistic regression, this test tests the equality of different categories and decides whether the assumption is valid or not. If this assumption does not apply, then the interpretation of the results will be erroneous. Therefore, to find the best results, alternative models can be used instead of ordinal logistic regression models with cumulative logit functions.

Table 2. The variables used in the research

Variable	Symbol	Category
Poverty Levels	Y	1= Extremely Poor
		2= Poor
		3= Almost Poor
		4= Vulnerable Poor
		5= Not Poor*)
Age of the household head	X_1	-
Gender of the household head	D_2	1= Female
		2= Male*)
Occupation of the household head	D_{31}	1= Not working
	D_{32}	2= Agriculture
		3=Non-Agriculture*)
Number of the household member	D_{41}	1= >Four
	D_{42}	2= Four
	D_{43}	3= Three
	D_{44}	4= Two
		5= One*)
Education of the household head	D_{51}	1= Not graduate from elementary school
	D_{52}	2= Elementary school/ equivalent
	D_{53}	3= Middle school/ equivalent
	D_{54}	4= High school/ equivalent
		5= More than high school*)

*)reference category

The null hypothesis tested for testing parallel line assumptions is for all categories of response variables, the regression coefficient of the same explanatory variable has equal value. The test statistic used is as follows.

$$G = -2\log\left[\frac{L_0}{L_1}\right] \sim \chi^2_{p(j-2)} \quad (1)$$

where:

L_0 = the model using the same parameters for each Y category.

L_1 = the model using the separate parameters for each Y category.

The null hypothesis will be rejected if the test statistic valueor. The expected outcome of this test is failed to reject the null hypothesis.

Failure to reject the null hypothesis can be interpreted assuming parallel lines are met, and the cumulative logit model can be used.

Furthermore, the suitability test of the model (goodness-of-fit test) is performed. This test is used to determine the compatibility between models generated with the data analyzed. Based on Hosmer and Lemeshow (2000), the model suitability test is performed using Pearson Chi-Square statistics. The null hypothesis in this study is there is no difference between observed and predicted from the model with the following test statistic.

$$X^2 = \sum_{j=1}^{J} r\left(y_j, \hat{\pi}_j\right)^2 \sim \chi^2_{J-(p+1)} \quad (2)$$

$$r\left(y_j, \hat{\pi}_j\right) = \frac{\left(y_j - m_j \hat{\pi}_j\right)}{\sqrt{m_j \hat{\pi}_j \left(1 - \hat{\pi}_j\right)}}$$

where:

j = the number of observations with different characteristics of x

m_j = the number of observations on observations that have characteristics x_j

$\hat{\pi}_j = \frac{e^{\hat{g}(x_j)}}{1 + e^{\hat{g}(x_j)}}$ = probability of y=1 on observation with characteristic x_j

If $X^2 > X^2_{\alpha,J-(p+1)}$ or $p-value < 0{,}05$, then reject the null hypothesis. Rejecting the null hypothesis can be interpreted that with a significance level of α, the model does not fit the analyzed data. So the result we expect is to fail to reject the null hypothesis.

Testing parameters simultaneously used to determine whether there are at least one of the explanatory variables that influence the response variable. Testing parameters simultaneously can use the model Chi-Square test or also called a likelihood ratio test with test statistic G (Hosmer and Lemeshow, 2000). The null hypothesis in the test parameters simultaneously is $\beta_1 = \beta_2 = \cdots = \beta_p = 0$ (all explanatory variables do not affect the response variable) with the test statistics as follows:

$$G = -2 \log\left[\frac{L_0}{L_1}\right] \sim \chi^2_p \quad (3)$$

where:

L_0 = maximum likelihood function without the explanatory variables

L_1 = maximum likelihood function with all the explanatory variables.

If $G > \chi^2_{\alpha,p}$ or $p\text{-}value < \alpha$, then the decision is to reject the null hypothesis. The expected result of this test is to reject the null hypothesis. Reject the null hypothesis can be interpreted that at the significance level of α, there are at least one of the explanatory variables that affect the response variable.

Then, to determine what variables significantly affect the response variable (poverty status) do a partial test (Hosmer, Lemeshow, and Sturdivant, 2013). Partial parameter testing is performed by the Wald test (Hosmer and Lemeshow, 2000) with the null hypothesis is H_0: $\beta_k = 0$ (the k-explanatory variable does not affect the response variable). The test statistic in the partial parameter testing is the Wald statistic with the following formula.

$$W_k = \left[\frac{\widehat{\beta_k}}{se\left(\widehat{\beta_k}\right)}\right]^2 \sim \chi^2_1 \quad (4)$$

where:

$\widehat{\beta_k}$ = estimated value of the k-th explanatory variable parameters

$se\left(\widehat{\beta_k}\right)$ = standard error value of the estimated parameter of the k-th explanatory variable

Parameter β_k is significantly affect poverty status if $W_k > X^2_{0,05;,1}$ or $p\text{-}value < 0{,}05$.

RESULTS AND DISCUSSION

General Description of Household Characteristics According to Poverty Status

The Household Poverty Status

Aceh Province is the province with the highest percentage of the poor population on the island of Sumatra and is the sixth highest in Indonesia in 2017 (BPS, 2018). Based on the 2018 Susenas data (Figure 1), it is estimated that there are 61.2% of households in Aceh Province in 2018 which are categorized as non-poor households. Then there were 19.6% and 7.4% of households with the status of vulnerable poor and almost-poor. In contrast, 7.8% and 4% of the total households in Aceh Province are still poor and very poor. Households with the status of almost poor and vulnerable poor households could potentially be a case of economic turmoil (Joseph, 2018).

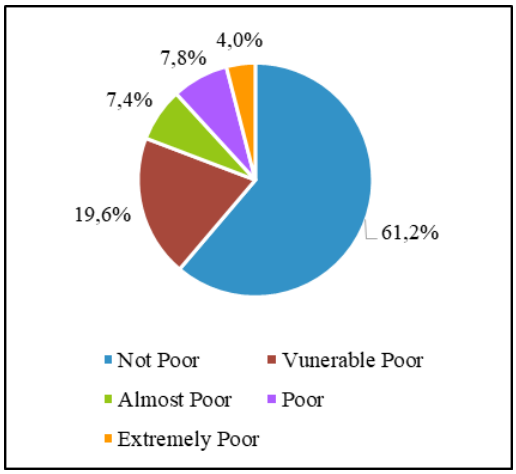

Figure 1. Percentage of household poverty status
Source: SUSENAS 2018, processed.

The Age of the Household Head

The age of the household head for each household has an average of 48-49 years. At that age, generally, the household head has gained considerable experience in working, and physical condition is optimized so that they can work. However, there are differences in the average age of male and female household heads, where male household heads have an average age of 46-47 years, while female household heads have an average age of 55-56 years. This is in line with Putri & Setiawina (2013) which states that someone with a more productive age will tend to get more income than a non-productive age. This is because with the productive age, a person physically has a greater opportunity to produce goods and services.

Table 3. Crosstable between poverty status and explanatory variables

Household characteristic		Poverty Status				
		Not Poor	Vunerable Poor	Almost Poor	Poor	Extremely Poor
Gender	Male	61,10%	19,61%	7,50%	7,93%	3,86%
	Female	61,39%	19,52%	7,06%	7,28%	4,75%
Occupation of household head	Not work	61,56%	17,26%	7,33%	9,46%	4,40%
	Agriculture	47,79%	24,59%	10,67%	10,77%	6,19%
	Non agriculture	64,19%	18,87%	6,67%	6,80%	3,48%
Household member	One	83,05%	10,20%	2,95%	2,33%	1,47%
	Two	75,65%	14,60%	4,12%	3,90%	1,73%
	Three	73,60%	15,59%	4,51%	4,64%	1,65%
	Four	60,65%	21,65%	7,08%	7,32%	3,30%
	More than four	45,54%	23,86%	11,20%	12,25%	7,14%
Education of household heads	More than high school	90,28%	6,63%	1,64%	1,03%	0,43%
	High school/ Equivalent	69,95%	16,66%	6,43%	4,95%	2,02%
	Middle school/ Equivalent	57,04%	22,27%	7,68%	8,59%	4,42%
	Elementary school/Equivalent	51,69%	23,71%	9,05%	10,19%	5,35%
	Not graduate from elementary school	51,18%	22,12%	9,17%	11,08%	6,45%

Source: SUSENAS 2018, processed.

Gender of the Household Head

The gender of the household head is dominated by men (79.6%). This condition is indeed natural in Indonesia, given the patriarchal concept used in Indonesia, which makes men as the ones responsible for economic matters and decision-making in the household.

The female household head can occur due to several things: when her husband has died, when her husband has divorced, or when the woman lives alone. Of these three conditions, the highest number of female head households who had died by their husbands was 75%. While the female head of households divorced by the husband was 12.7% and those who were not married were 5.5%. However, it turns out there are 6.8% of women

who become household heads even though they still have a husband. This is mostly due to the woman's husband looking for work elsewhere (migrating) with a percentage of 83.75%, while the other 16.25% still lives with her husband.

Households with the female head of household have limitations in employment, especially in a job that requires a lot of stamina and strength. This is in line with Miftahuddin (2018) where households with female heads of household are more likely to be poor than males. This is because there are limitations for a woman to work, especially if she is not an employee (blue collar workers). Therefore, there are up to 38% of the female head of households who are unemployed. Given the average age of female head of household is 55-56 years. Whereas 44% of the female head of households work in the informal sector and 18% work in the formal sector.

Although 38% of the female head of households are unemployed, the distribution of household poverty status according to the sex of the head of the household has a similar pattern. This could be because households with the female head of household had a small household burden. After all, households with the female head of households with one or two household members accounted for 47%, while households with the male head of households only had 12%.

Based on Table 3, there is no difference in the percentage of household poverty status according to the gender of households, reaching 1% in each poverty status. The most significant difference is in extremely poor households with a difference of 0.9% witch households with female household heads are higher (4.8%) compared to men (3.9%).

Occupation of the household head

The main source of household income comes from the occupation of household members. The head of the household, as the person responsible for household needs, naturally has a job to meet those needs. However, there are still 13.10% of household heads who do not work. It will have an impact on fulfilling household needs.

From 86.91% of household heads who have jobs, there are 70.55% of household heads who work in the non-agricultural sector, and 16.36% work in the agricultural sector. Based on these data, the agricultural sector is no longer the main employment sector for the household head in Aceh Province. When the agricultural sector is no longer the main sector in employment, this is a good condition because, according to Todaro (2006), poor households usually have a basic livelihood as farmers.

The least the household head who works in agriculture, it is expected to reduce poverty levels. However, the household head who worked in the informal sector (54.60%) is still more than the formal sector (45.40%) who worked in the non-agricultural sector.

Based on Table 3, the percentage of household heads who do not work and those who work in the non-agricultural sector have a similar pattern. In contrast, the percentage of household heads who work in the agricultural sector has a different pattern than the percentage of non-poor households. Ideally, household heads who work in agriculture have better conditions than household heads who do not work.

Number of household members

There are 35.90% of households that have more than 4 members. This condition can have a good impact if the household members in it have a job, thereby reducing the burden on the household in meeting needs. Conversely, if there are only one or two members in a household who have a job, the burden of the household in meeting the needs will be large, so that it will make the household tend to be poor. A large number of households (household members > 4) must be a concern of the government in promoting the Family Planning program. In addition, Todaro (2006) also found that large and low-income families will increase poverty opportunities.

There are 25.39% of households with 4 household members; 19.53% of households with 3 household members; 12.07% of households with 2 household members, and 7.10% of households 1 household member. Then from Table 3, the percentage of non-poor households is greater for households with 1 household member (83.05%). Then for vulnerable, poor, almost poor, and very poor households, the percentage increases for each increase in the number of household members. It shows that the more household members, the poorer the household will be.

Level of education of household heads

Education is the main qualification for getting a job. The head of the household with a high education will get a job with a high income so as to improve household welfare. In addition, KRT with higher education will also have wiser thinking in making decisions.

There are 25.93% and 10.14% of household heads who have a high school education and more in Aceh Province. However, there are 63.93% of household heads who do not run the 12-year

compulsory government program (19.21% do not graduate from elementary school; 27.56% of elementary school graduates and 17.16% of middle school graduates), and 46.77% of them do not even graduate from high school/equivalent. The household head with less than middle school education indicated will have difficulty in getting a job, especially formal employment. The percentage of the household head with less than middle school education who work in the agricultural sector is reaching 20.7% and those who do not work are reaching 15.7%.

The percentage of education to poverty status seen in Table 3 shows a different pattern in the household head who has a high school education or equivalent. The percentage of non-poor households reached 90.28% for the household head who educated more than high school. There are still households in vulnerable poor and less with the household heads with high school education and more. This is because there is a household head who does not work by 8% and work in the agricultural sector by 9.7%. Then the percentage of non-poor households reached 69.95% for the household head with high school/equivalent education. The household head with middle school education/equivalent, elementary school/equivalent, and not graduate from elementary school have a similar pattern. It is due to many jobs require at least a high school education. So household heads with less than a high school education have difficulty in obtaining a job. This is in line with Nasir et al (2008) who found that A household with a low-educated head of household will tend to be poor than those with higher education. This is because high education will make a person able to master quality factors of production.

The Variables that Affect Household Poverty Status

In establishing an ordinal logistic regression model, there are parallel line assumptions. If this assumption is fulfilled, then the cumulative logit model can be used. Testing the parallel lines assumption produces a chi-square value of 46.867 with 36 degrees of freedom and a p-value of 0.237. P-value greater than α (5%) gives the decision fails to reject the null hypothesis so that it can be concluded that with a significance level of 5%, the assumption of parallel lines is fulfilled, and the cumulative logit model can be used.

A model suitability test is performed using the Pearson Chi-Square test statistic. The test is used to determine the suitability of the ordinal logistic regression model formed in explaining household poverty status. The suitability test of the model results in a chi-Square value of 13391.504 and a p-value of 0.577. Thus the ordinal logistic regression model is appropriate to explain the status of household poverty.

From the results of simultaneous parameter testing, the Chi-Square value is 2214,167 with the degree of freedom is 12, and a p-value is 0,000. A p-value of less than α (5%) provides a decision to reject the null hypothesis. It can be concluded that with a significance level of 5%, there is at least one explanatory variable that affects household poverty status.

Based on the partial test in Table 4, it can be concluded that all explanatory variables proposed in this study affect the household poverty status with a significance level of 5%. The logit equation is shown in equation (5) - (8). By fulfilling parallel lines, the slope of all equations is equal.

The ordinal logistic regression model to explain the status of household poverty is:

$$ln\frac{\hat{P}(Y=1)}{\hat{P}(Y>1)} = -6{,}298 - 0{,}016X_1 + 0{,}289D_2 + 0{,}361D_{31} + 0{,}475D_{32} + 2{,}312D_{41} + 1{,}609D_{42} + 0{,}940D_{43} + 0{,}700D_{44} + 2{,}575D_{51} + 2{,}287D_{52} + 1{,}962D_{53} + 1{,}407D_{54} \quad (5)$$

$$ln\frac{\hat{P}(Y\leq 2)}{\hat{P}(Y>2)} = -5{,}076 - 0{,}016X_1 + 0{,}289D_2 + 0{,}361D_{31} + 0{,}475D_{32} + 2{,}312D_{41} + 1{,}609D_{42} + 0{,}940D_{43} + 0{,}700D_{44} + 2{,}575D_{51} + 2{,}287D_{52} + 1{,}962D_{53} + 1{,}407D_{54} \quad (6)$$

$$ln\frac{\hat{P}(Y\leq 3)}{\hat{P}(Y>3)} = -4{,}445 - 0{,}016X_1 + 0{,}289D_2 + 0{,}361D_{31} + 0{,}475D_{32} + 2\grave{}{,}312D_{41} + 1{,}609D_{42} + 0{,}940D_{43} + 0{,}700D_{44} + 2{,}575D_{51} + 2{,}287D_{52} + 1{,}962D_{53} + 1{,}407D_{54} \quad (7)$$

$$ln\frac{\hat{P}(Y\leq 4)}{\hat{P}(Y=5)} = -3{,}308 - 0{,}016X_1 + 0{,}289D_2 + 0{,}361D_{31} + 0{,}475D_{32} + 2{,}312D_{41} + 1{,}609D_{42} + 0{,}940D_{43} + 0{,}700D_{44} + 2{,}575D_{51} + 2{,}287D_{52} + 1{,}962D_{53} + 1{,}407D_{54} \quad (8)$$

Interpretation of the Odds Ratios for Each Variable that Affect Household Poverty Status

Age of household head

The result shows that the older the household head is, the lower the household's tendency to be poorer. It because of getting older, the household heads will have the experience, especially in terms of work; they can produce maximum output in his work. The result is following the

proposed research hypothesis. Even though the research hypothesis is proven, the household's age variable on household poverty status is not too significant, where the tendency of households to be poorer every additional one year of household head's age is 0.982 times. In addition, the result of this study is also in line with the research conducted by Sekhampu (2013), which states that increasing the age of the household head can reduce the likelihood of households being poor.

Table 4. Parameter estimation results

	Variable	Parameter estimates$(\widehat{\alpha},\widehat{\beta})$	*p-value*	*Odds Ratio*
		Intercept		
Poverty status	Extremely poor(α_1)	-6,298	0,000	-
	Poor(α_2)	-5,076	0,000	-
	Almost poor(α_3)	-4,445	0,000	-
	Vulnerable poor(α_4)	-3,308	0,000	-
	Not poor	0^b	-	-
		Slope		
Age(X_1)		-0,016	0,000	0,984
Gender	Female(D_2)	0,289	0,000	1,335
	Male	0^b	-	-
Occupation	Not work(D_{31})	0,361	0,000	1,435
	Agriculture(D_{32})	0,416	0,000	1,516
	Non-agriculture	0^b	-	-
Household member	>4(D_{41})	2,312	0,000	10,095
	4 (D_{42})	1,609	0,000	4,998
	3 (D_{43})	0,940	0,000	2,560
	2 (D_{44})	0,700	0,000	2,014
	1	0^b	-	-
Education	Not graduate from elementary school (D_{51})	2,575	0,000	13,131
	Elementary school/equivalent (D_{52})	2,287	0,000	9,845
	Middle school/equivalent (D_{53})	1,962	0,000	7,114
	High school/equivalent (D_{54})	1,407	0,000	4,084
	More than high school	0^b	-	-

Note: 0^b is the reference category Source: Processed by researchers

Gender of the Household Head

The result shows that the gender of the household head affects household poverty status. Households with female household heads tend to be poorer than male ones. The result of this study is in line with Nopriansyah et al. (2015) and Miftahuddin (2018) concluded that households with female household heads are more likely to be poor.

Households with female households heads are 1,335 times more likely to be poorer than households with the male. The male household head has a more productive age than females. So that male household heads can earn a higher income at their jobs. In addition, it is known that the agricultural sector of the male household head has a smaller percentage (17%) compared to females (28%).

Occupation of the Household Head

The result shows that the household heads who do not work will tend to be poorer by 1,434 than those who work in the non-agricultural sector. However, household heads who do not work tend to be less poor by 1,057 times than those who work in the agricultural sector. Based on data exploration, because household heads who are not working are elderly with an average age of 62-63 years. The Ministry of Health (2013)

states that older people whose work indicates that the elderly are still able to work productively. On the other hand, it is also due to the economic burden borne by the elderly, forcing him to continue working. BPS (2017) states that 43% of the elderly work in the lowest 40% of the economy in Indonesia. It indicates that the economic condition of households with elderly household heads in Aceh Province is good enough so that the elderly do not need to work anymore. Or in other words, households with elderly household heads are well-established households.

Households with a household head who work in agriculture 1,516 times tend to be poorer than households with a household head who worked in the non-agricultural sector. The household head who works in the agricultural sector will depend on the season, so the income is uncertain. In addition, based on data exploration, it is known that the head of households who are both poor and very poor who work in the agricultural sector work as laborers and free workers because they do not have their land to work, which reaches 22%. The household also has a large household burden because it is dominated by households with more than 4 people (58.8%).

This result follows Butar-Butar (2008), which concludes that the household heads who work in the agriculture sector tend to be poorer. In addition, Nopriansyah et al. (2015) also find that poor households have household heads who work in the agricultural sector.

Member of household

The result shows that the more household members, the higher the tendency for households to be poorer. The number of household members affects household poverty status. Households with more than four people tend to 10.095 times to be poor than households with 1 household member. Then households with four, three, and two household members, respectively, have a tendency of 5, 4, and 2 times to be poorer compared to households with one person.

This result is in line with Sa'diyah and Arianti (2012) where the number of household members has a negative effect on poverty approached by income. Sekhampu (2013) also concludes that household size increases the likelihood of households to be poor. Zamhari et al. (2015) find that the number of household members significantly impacts poverty.

The education level of the household head

The result shows that the higher the household head's education level, the smaller the tendency for households to be poorer. Households with a household head not graduating from elementary school, graduating from elementary school, and graduating from middle school tend up to 13, 10, and 7 times to be poorer compared to households with household heads with more than high school education, whereas households with a household head with a high school education are four times more likely to be poorer than households with a household head with higher education. It shows the importance of household head education in overcoming household poverty in Aceh Province. The government is expected to improve education through a 12-year compulsory education program so that the people of Aceh have at least a high school education.

The result of this study is in line with research conducted by Nopriansyah et al. (2015), which concludes that education has a negative effect on poverty. In addition, Todaro (2008) also states that there is a positive correlation between education level and income. With high income, the possibility of households to become poor will decrease. This is also in line with Kaplale (2012) who found that education will indirectly affect a person's mindset, where the higher the level of education, the higher the motivation to achieve a certain income.

Example

There is a household with a 43-year-old male head of household with middle school education and work as a farmer and live with his wife and have one child. The house has the opportunity to be non-poor, vulnerable, poor, almost poor, poor, and very poor, as shown in Table 5.

Table 5. Summary of probability for being poor

Poverty status	$ln\frac{P(Y\leq J-1)}{P(Y=J)}$	$\frac{P(Y\leq J-1)}{P(Y=J)}$	$P(Y\leq j \mid x)$	$\pi_j(x)$
Extremely poor	-3,668	0,026	0,025	0,025
Poor	-2,446	0,087	0,080	0,055
Almost poor	-1,815	0,163	0,140	0,060
Vulnarable poor	-0,678	0,508	0,337	0,197
Not poor	-	-	1,000	0,663

Source: Processed by researchers

Households with the characteristics as above have the opportunity to become very poor households by 0.025; poor of 0.055; almost poor at 0.060; vulnerable poor by 0.197 and not poor by 0.663. So that these households have the greatest

opportunity to become non-poor households.
where:

$$\frac{P(Y\leq J-1)}{P(Y=J)} = Exp\left(ln\left(\frac{P(Y\leq J-1)}{P(Y=J)}\right)\right)$$

$$P(Y \leq j|x) = \frac{P(Y\leq j|x)}{1-P(Y\leq j|x)} = \pi_1(x) + \cdots + \pi_j(x)$$

$\pi_j(x)$ = household probability for being poor for each poverty level.

CONCLUSION

Based on the research, it can be concluded as follows:

1. Households in all poverty status have an average head of household aged 48-49 years. The percentage of non-poor and very poor households mostly has female household heads, whereas poor, almost poor, and vulnerable poor households have male household heads. The percentage of households that are very poor, poor, and almost poor, most of them have a household head which has not graduated from elementary school, while vulnerable households have household heads with elementary school/equivalent education and non-poor households have household heads with more than high school education. The percentage of very poor households, poor, almost poor, and vulnerable poor has the number of household members more than 4 people and works in the agricultural sector. In contrast, the percentage of non-poor households is higher in households that have one household member and work in the non-agricultural sector.
2. The variables that significantly affect household poverty status in Aceh province are the age of the household head, the gender of the household head, member of the household, the education of household head, and the occupation of the household head.
3. The households that have the younger household heads, females, do not graduate from elementary school, work in the agricultural sector, and have more than four household members have a greater tendency to be poorer.

Based on the study results, it is known that households with low educated heads of households and households with more than four household members tend to be poor. Thus the recommendations of this research are the Aceh government is expected to increase the degree of education of the Acehnese people and reactivate the family planning program.

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