Entrepreneurship factor’s affecting the youth decision to continue their family farm

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Abstract. The entrepreneurial spirit that gives birth to an interest in entrepreneurship is very important to be recognized. In-depth analysis of the characteristics of entrepreneurs will make it easier to find the teaching patterns needed to give birth to young entrepreneurs who continue farming. Thus, this study wants to analyze the factors of entrepreneurship that affect the interests of the children of farmers who are studying in agricultural colleges to continue farming owned by their parents. This study is a survey study using quantitative data. The location of the study was conducted in Indonesia. The study sample is expected to reach 200 respondents. Data analysis uses logistic regression. The risk taking, organizing, leading and hard work variables significantly influence the decision to engage in or not interested in continuing farming. The other three variables are exploiting opportunity, patient and influencing other found not to significantly influence the decision to be interested or not in continuing farming.

1. Introduction

Farming is a high-risk occupation [1]. This risk turns out to be more severe for farmers in developing countries [2]. Farmers in Indonesia’s face risks in the production process due to unfavorable weather or disturbing organisms. Before conducting the production process farmers also faced other risks when using debt for production capital. After the production process, in the post-harvest period, farmers face the risk of erratic selling prices. When carrying out the production process farmers faced other risks, namely health risks due to using pesticides or other diseases caused by farming.

Adoption of appropriate agricultural technology can actually reduce the risk of agriculture in developing countries [3], but the technology used tends to be low. The use of modern agricultural inputs and tested agricultural practices are rarely carried out resulting in low quality and quantity production. This will lead to a higher risk. The image of the agricultural sector in Indonesia is not very interesting. Farming work is considered to be a work of bone work and dirty hands due to mud but with low income. This is proven by data that shows that most of Indonesia's poor population are from farmers. Based on data from the Indonesian Statistics the largest number of poor people is in the villages of 15.15 million people in March 2019 and mostly work as farmers.

According to [4] agricultural policy made by the government in Indonesia prioritizes increasing agricultural production and tends to neglect the welfare of its producers (farmers). The added value
cultivated by farmers is more often enjoyed by other parties in the production and marketing chain of agricultural products. This is what is meant by not taking sides with farmers.

Banking in Indonesia is also often considered to be impartial to farmers. As a formal legal intermediary institution, national banking has great potential to support agricultural finance. However, what happened was lending from the national banking sector to the agricultural sector was still very small, namely below six percent [5]. The reasons for this are high financing risks, stringent requirements for credit application, micro-scale business management and limited banking competence in agriculture.

The overall situation has led to the lack of interest among young people in trying to farm in Indonesia. This situation is rather worrying because according to [6], in February 2017, the number of workers in the agricultural sector was 36.96 million people, experiencing a decrease of 29.2% in a year in February 2018. Besides decreasing, the composition of workers in the agricultural sector is also inhabited by workers with old age. Workers aged 60 years and over have doubled compared to workers aged 15 to 24 years in 2018. After analyzing data for previous years (Agricultural Census 2003-2013) also concluded that agricultural labor dominated by old age workers, 40 years and over. Thus, the workforce in the agricultural sector is not only decreasing but aging [7].

Agricultural laborers who are aging, demands the regeneration of farmers. Young people should be invited to understand that agricultural business is a very profitable business in addition to high risk. Farmers’ children are the closest people who are expected to be able to replace their parents who have understood the ins and outs of farming. Their parents are entrepreneurs who have built farms and take risks from investing land, money, agricultural equipment, plants, livestock and others. Fall and build and profit and loss has been passed by these entrepreneurs in order to continue to produce food for all Indonesian people. Thus, only with an entrepreneurial spirit too, the younger generation of peasants’ children will be willing continue their family farming.

The entrepreneurial spirit that gives birth to an interest in entrepreneurship is very important to be recognized. In-depth analysis of the characteristics of entrepreneurs will make it easier to find the teaching patterns needed to give birth to young entrepreneurs who continue farming. Thus, this study wants to analyze the factors of entrepreneurship that affect the interests of the children of farmers who are studying in agricultural colleges to continue farming owned by their parents.

2. Materials and Methods

2.1 Location and sample
This study is a survey study using quantitative data. The data used are primary data directly obtained from respondents. So, this study uses a questionnaire to obtain quantitative data, which is then processed and analyzed to be reported as a result of the study.

In accordance with the objectives of the study, the location of the study was conducted in Indonesia. The questionnaire was distributed online hoping to get a response from all agricultural students in Indonesia. In addition to the questionnaire made in the form of a google form, the use of social media via mobile phones also helped spread the questionnaire in an effort to direct the filling to spread in many places in Indonesia.

The study population was all Indonesian agricultural students. This population is narrowed further with the aim of the study which requires the respondent to be a child of a farmer in any agricultural field. Respondents who are not farmers’ children will immediately fail to fill out the questionnaire because there are requirements for filling in the types of parental plants, land area and parental income from farming.

The study sample is expected to reach 200 respondents. This relates to the analytical method used in the study. The questionnaire will continue to be opened until the number of respondents reaches the desired target, and the distribution of respondents considered to be representative of regions in Indonesia. The first questionnaire uploaded was in May 2019 and in the first week of August 2019, the number of respondents had reached 200 people.
2.2 Data analysis

After the data obtained is collected, the data is sorted. Data sorting is intended to remove data that cannot be used, for example, because of duplication (sent twice) or many that are not filled. After obtaining data that can be used, the data analysis is performed. Data analysis uses logistic regression.

Logistic regression or logistic model or sometimes called logit model, analyzes the relationship between categorical dependent variables, and estimates the probability of occurrence of an event by fitting data to a logistic curve [8]. What distinguishes a logistic regression model from the linear regression model is that the outcome variable in logistic regression is binary or dichotomous [9]. Since logistic regression calculates the probability of an event occurring over the probability of an event not occurring, the impact of independent variables is usually explained in terms of odds. If \( \pi \) is the probability of the event occurring and not occurring is \( (1-\pi) \), then the corresponding odds is a value given by \( \pi/(1-\pi) \). The logistic regression solution to this problem is to transform the odds using the natural logarithm [10]. The model of the natural log odds as a linear function of the explanatory variable:

\[
\text{logit}(y) = \ln \left( \frac{\pi(x)}{1-\pi(x)} \right) = \alpha + \beta X
\]

(1)

Taking the antilog of that equation on both sides, one can derive an equation for the prediction of the probability of the occurrence of interested outcome as

\[
\pi(x) = \frac{\exp(g(x))}{1 + \exp(g(x))} = \frac{e^{\alpha + \beta x}}{1 + e^{\alpha + \beta x}}
\]

(2)

Model used in this study is:

\[
g(x) = \ln \left( \frac{\pi(x)}{1-\pi(x)} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7
\]

(3)

With:

- \( \pi(x) \) = student intention ( \( \pi(x) = 1 \) intend to continue farming dan \( \pi(x) = 0 \) if no intention to continue their parents farm)
- \( \frac{\pi(x)}{1-\pi(x)} \) = Odds Ratio
- \( X_1 \) = Exploiting opportunity
- \( X_2 \) = Hard work
- \( X_3 \) = Patient
- \( X_4 \) = Taking risk
- \( X_5 \) = Influencing other
- \( X_6 \) = Organizing
- \( X_7 \) = Leading

3. Results and discussion

3.1 Sample description and representation
Based on the data tabulation results in early August 2019 there were 220 respondents who participated in this study. Respondents were students from 33 universities stretching from Manokwari to Banda Aceh. Based on Table 1, it appears that there are students representing from almost every island in Indonesia. Thus, although not very perfect, this study can approach the conditions in Indonesia.

**Table 1.** Origin of respondent universities

| No. | University                                      | Number of Respondents | Percent |
|-----|------------------------------------------------|------------------------|---------|
| 1   | AKN Banyuasin Palembang                        | 2                      | .9      |
| 2   | Andalas Padang                                 | 3                      | 1.4     |
| 3   | Delihsuda Medan                                | 1                      | .5      |
| 4   | IPB Bogor                                      | 3                      | 1.4     |
| 5   | Malikulsaleh, Lhokseumawe, Aceh                | 5                      | 2.3     |
| 6   | Pertanian Hassanuddin Makassar                 | 1                      | .5      |
| 7   | Pertanian Taman Siswa Padang                   | 1                      | .5      |
| 8   | Pertanian UB Malang                            | 2                      | .9      |
| 9   | Pertanian Universitas Islam Makassar           | 2                      | .9      |
| 10  | Pertanian USU                                  | 51                     | 23.1    |
| 11  | Polbangtan Goa                                | 3                      | 1.4     |
| 12  | Polbangtan Manokwari                          | 3                      | 1.4     |
| 13  | Polbangtan Medan                              | 63                     | 28.5    |
| 14  | Poltek Kelapa Sawit Sari Citra Widya, Bekasi, Jabar | 1                      | .5      |
| 15  | PPD Polinda Banyuasin Palembang               | 3                      | 1.4     |
| 16  | STIPAP Medan                                  | 10                     | 4.5     |
| 17  | Syiah Kuala, Banda Aceh                       | 10                     | 4.5     |
| 18  | Udayana Bali                                  | 12                     | 5.4     |
| 19  | UGM Yogyakarta                                | 2                      | .9      |
| 20  | UIN Aceh                                      | 1                      | .5      |
| 21  | UISU Medan                                    | 1                      | .5      |
| 22  | UMN Medan                                     | 1                      | .5      |
| 23  | UNDIP Semarang                                | 1                      | .5      |
| 24  | Univ Wiralodira Indramayu                     | 1                      | .5      |
| 25  | Universitas Bandar Lampung                    | 5                      | 2.3     |
| 26  | Universitas Islam Riau                        | 2                      | .9      |
| 27  | Universitas Lancang Kuning Pekan Baru         | 1                      | .5      |
| 28  | Universitas Mataram                            | 10                     | 4.5     |
| 29  | Universitas Muhammadiyah Palembang            | 3                      | 1.4     |
| 30  | Universitas Muhammadiyah Tanah Grogot Kaltim  | 7                      | 3.2     |
| 31  | Universitas Palangkaraya                      | 3                      | 1.4     |
| 32  | Universitas Samudra Langsa, Aceh              | 1                      | .5      |
| 33  | Universitas Sriwijaya Palembang               | 5                      | 2.3     |
|     | **Total**                                      | **220**                | **100.0**|

Furthermore, the age distribution of respondents is presented in Table 2. The table shows that most respondents were 20 years old. The largest age range is between 19 to 23 years. There are also students who are 27 years old, namely students who are taking master's education.
Table 2. The age of respondents

| No. | Age | Number of Respondents | Percent |
|-----|-----|------------------------|---------|
| 1   | 18  | 5                      | 2.3     |
| 2   | 19  | 38                     | 17.2    |
| 3   | 20  | 44                     | 19.9    |
| 4   | 21  | 34                     | 15.4    |
| 5   | 22  | 38                     | 17.2    |
| 6   | 23  | 23                     | 10.4    |
| 7   | 24  | 8                      | 3.6     |
| 8   | 25  | 16                     | 7.2     |
| 9   | 26  | 7                      | 3.2     |
| 10  | 27  | 7                      | 3.6     |
| Total|     | 220                    | 100.0   |

Table 3. presents the sex of the respondent. It appears that the number of male respondents is almost the same as female respondents. There are more male respondents than female respondents.

Table 3. Gender of the respondents

| Gender | Frequency | Percent |
|--------|-----------|---------|
| Male   | 112       | 0.509   |
| Female | 108       | 0.491   |
| Total  | 220       | 100.0   |

In addition to the respondent's demographic conditions, data on the intention of respondents to continue or not continue farming will also be described descriptively. The table regarding the description of the respondents' interests is presented in Table 4. Based on the data in the table it appears that most respondents are interested in continuing family farming. More than 80 percent of respondents expressed an interest in continuing their family farming.

Table 4. Respondent intention to continue their parents farm

| Intention | Number of Respondent | Percent |
|-----------|----------------------|---------|
| No intention | 41                | 18.6    |
| Intend    | 179                 | 81.4    |
| Total     | 220                 | 100.0   |

3.2 Evaluations of the logistic regression model

Before presenting the model produced by logistic regression, the soundness of the logistic regression model is checked. There are several tests commonly used to examine this, namely overall model evaluation, goodness-of-fit statistics and statistical tests of individual predictors.

3.2.1 Overall model evaluation.

According to [10], a logistic model is said to provide a better fit to the data if it demonstrates an improvement over the intercept-only model (also called the null model). An intercept-only model serves as a good baseline because it contains no predictors. Consequently, according to this model, all
observations would be predicted to belong in the largest outcome category. An improvement over this baseline is examined by using inferential statistical tests the likelihood ratio. The G Statistic test or Likelihood Ratio Test:

\[
G = -2 \ln \left( \frac{\frac{n_1}{n} \left( \frac{n_2}{n} \right)^{n_0}}{\prod_{i=1}^{n} \delta_i^{y_i} (1 - \delta_i)^{1-y_i}} \right)
\]  

(4)

Where:

- \( n_0 \) = number of observations categorized as \( y = 0 \)
- \( n_1 \) = number of observations categorized as \( y = 1 \)
- \( n \) = number of observations

The G statistic follow the chi-square distribution, so to obtain a decision, a comparison is made with \( X^2 \) table value, with degree of freedom (df) = \( k-1 \), \( k \) is the number of predictor variable. Rejection criteria (reject \( H_0 \)) if the value of \( G > X^2_{(a;df)} \) or if P-value < \( \alpha \), then the independent variable simultaneously has a significant effect on the dependent variable. The results of the G statistical test are presented in Table 5.

**Table 5. The result of G likelihood Statistic**

| Step | Initial -2 Log Likelihood | -2 Log likelihood | \( X^2 (0.05;6) \) |
|------|---------------------------|-------------------|------------------|
| 9    | 211,599                   | 56,483            | 155,116          | 12,59158724 |

The table shows that the difference value of -2 Log likelihood is greater than the Chi-Square value of alpha five percent and degree of freedom six. Thus, a logistic model is said to provide a better fit to the data because it demonstrates an improvement over the intercept-only model (also called the null model).

### 3.2 Goodness-of-fit statistics

According to [10] Goodness-of-fit statistics assess the fit of a logistic model against actual outcomes. The inferential goodness-of-fit test is the Hosmer-Lemeshow (H-L) test. The Hosmer Lemeshow statistic test formulated as [9].

\[
\tilde{C} (Hosmer – Lemeshow) = \sum_{k=1}^{g} \frac{(O_k - n_k \tilde{\delta}_k)^2}{n - k \tilde{\delta}_k (1 - \tilde{\delta}_k)}
\]

(5)

where:

- \( g \) = Number of group (category combination dalam model serentak)
- \( n_k \) = Number of observations in the k-group
- \( \tilde{\delta}_k \) = \( \tilde{\delta}_k = \sum_{j=1}^{ck} \frac{m_j \tilde{p}(x_j)}{n_{yk}} \), the mean of probability estimation with \( m_j \) is the number of subjects with \( Ck \) as the combination of predictor.

The result of this test yielded an insignificant value (\( p = 0.117 \)), suggesting that the model was fit to the data well. In other words, the null hypothesis of a good model fit to data was tenable.

### 3.3 Statistical tests of individual predictors

In logistic regression, the significance of individual predictors coefficients is tested using the Wald chi-square statistic. The Wald chi-square statistic:
where:
\[ SE(\hat{a}_i) = \sqrt{\delta^2(\hat{a}_i)} \]

Critical area (reject H0): Reject H0 if \( W > X_2(\alpha;db) \), the value of \( X_2(\alpha;db) \) can be obtained from chi-square table or \( p \)-value < \( \alpha \), which means that it can be concluded that the independent variable is partially significant with the dependent variable. The results of the Wald test are presented in Table 6.

### Table 6. The results of Wald Test

| Variable                | B    | S.E.  | Wald | Df | Sig. |
|-------------------------|------|-------|------|----|------|
| Exploiting opportunity  | .414 | .753  | .302 | 1  | .583 |
| Hard work               | 1.398| .697  | 4.027| 1  | .045 |
| Patient                 | .621 | .624  | .991 | 1  | .319 |
| Risk Taking             | 2.381| .948  | 6.307| 1  | .012 |
| Influencing Other       | .018 | .624  | .001 | 1  | .977 |
| Organizing              | .883 | .418  | 4.468| 1  | .035 |
| Leading                 | .764 | .367  | 4.343| 1  | .037 |
| Constant                | -8.657| 2.523| 11.773| 1  | .001 |

Based on the table, it can be seen that from the seven entrepreneurial characteristic variables used in this study, only four variables influenced the decision to be interested or not in continuing farming. The four variables are risk taking, organizing, leading and hard work. The other three variables exploiting opportunity, patient and other influencing were found not significantly to influence the decision to be interested or not to continue farming.

The first important factor in the results of this study that determines the selection of interests to continue farming is risk taking. This is understandable because according to [11] uncertainty and risks are typical features of agricultural production, which significantly lower production levels and causes major losses. For Indonesia, this condition is exacerbated by a bad image, the impartiality of the government and banks as sources of capital. Thus, it is not surprising that the selection of interests in farming for young people is based on risk considerations as the main consideration.

The second and third significant factors are organizing and leading. Both functions are prominent in the organization. Farming in Indonesia is always characterized by a small-scale family business. Farmers often play a dual role as managers and workers. According to [12] the ability to organize and lead is very important in farming. This explains why these two variables have a significant effect in determining interest in continuing farming. However, the variable ability to influence others is considered not significant because according to [13], farmers engaged in entrepreneurial activities tend to prefer their own resource base, typically related to family and kinship where farmers test new opportunities, with small scale "experiments" not outside the organization. So, the ability to influence is not considered to be important.

Another variable that was found to significantly influence interest in continuing farming was hard work. For an entrepreneur hard work is very important, especially in the agricultural sector. Without the hard work of farming which is a business with various forms of risk will not succeed [14]. Thus the ability to work hard is considered important in deciding whether to be interested or not in the venture.
Exploiting the opportunity is a variable that is considered important as the characteristics of entrepreneurship, but this is not the case in this study. Actually, this can be understood considering the respondents are children of farmers. As stated by [15], family farms are passed on through from father to son. This selection process creates communities lacking heterogeneity with a strong tension toward conformity. The presence of other generations in the farm, in combination with a conservative mentality, does not particularly stimulate change and innovative thinking, so that it is not considered as an effort to take advantage of opportunities. So, this variable is considered not to affect that choice.

Business in agriculture has historically not always been entrepreneurial. Previously, this business tended to how to achieve maximum production and efficiency. According to [16] entrepreneurship in agriculture is about proactive. This causes the attitude of patience to be unaffected in the decision to be interested or not in farming.

4. Conclusions
The risk taking, organizing, leading and hard work variables significantly influence the decision to engage in or not interested in continuing farming. The other three variables are exploiting opportunity, patient and influencing other found not to significantly influence the decision to be interested or not in continuing farming.

5. Suggestion
1. There is a need to disseminate information about farming in Indonesia that is not always unprofitable, dirty work or associated with the poor
2. It is important to disseminate entrepreneurial thinking patterns among children in their farm
3. Management training is needed for farm management.

6. References
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