

Effect of Entrepreneurship Learning Courses with Entrepreneurship Career Options on Students of UT

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Abstract—Unemployment is a strategic problem in Indonesia. The number of unemployed in Indonesia reached 7:24 million (CBS, 2014), therefore we need a national movement to improve the entrepreneurial spirit of the society. The government launched the National Entrepreneurship Movement on February 2, 2011 in Jakarta. The main focus of the government is trying to provide jobs for the unemployed. In 2009 fiscal year, the Government through the Directorate General of Higher Education, Ministry of National Education has launched the Student Entrepreneurial Program (PMW) to be implemented and developed by universities. Seeing that the importance of the entrepreneurial spirit is developed or even born among students, the researchers are interested in doing research to see how the role of entrepreneurship courses in fostering the entrepreneurial spirit among students. The analytical method used is a binary logistic regression. From the analysis, states that personality is the dominant factor affecting the interest in entrepreneurship among students not because the learning of entrepreneurship courses.

Keywords: *courses, entrepreneurship, entrepreneurial spirit, students*

I. INTRODUCTION

Entrepreneurship education is growing in the past few years, ranging from basic elementary school to the highest level. It is evident from entrepreneurship courses in many colleges made as a compulsory subject that must be taken by each student. The college has a strategic role in preparing educated workforce through the development of entrepreneurship education.

The development of entrepreneurship education in universities is a quantum in preparing graduates as educated workforce who has the spirit, mindset, and the character of an entrepreneur. Graduates with entrepreneurial spirit will have a creative and innovative power to seek opportunities and take risks.

Entrepreneurial education will give scholars to have strong mental and moral character, spirit of independence, and a tenacious attitude, adequate knowledge and skills, and to be able to face global competition. In-depth study on how the implementation of entrepreneurship needs to be done to support this. Based on the Central Bureau of Statistics (BPS)

until February 2014, open unemployment reached 7,24 million. Employment up to February 2014 was still dominated by low-educated working population i.e. SD and below as many as 55.3 million people (46.80 percent) and junior high schools as many as 21.1 million (17.82 percent). Educated working population only have 12.0 million people including 3.1 million people (2.65 per cent) Diploma and as many as 8.8 million people (7.49 percent) University educated.

According to Alma [1], college graduates who are equipped with education and idealism, is expected to evolve into a pioneer of entrepreneurship and not be a college graduate looking for work, but should create jobs. Considering the important role of universities in creating entrepreneur, the study of the effectiveness of entrepreneurship courses is important.

II. METHODS

A. Population

The population of this research are UT students who participated in an online tutorial entrepreneurship courses as many as 780 respondents.

B. Sample

From the questionnaire distributed in each entrepreneurship tutorial online class, only 133 students gave answers.

C. Method of Data Collection

Methods of data collection in this study is a survey method using a questionnaire.

D. Sampling Techniques

Techniques used in the sampling is non-probability sampling, considering that the questionnaire distributed during the tutorials online, so that every student has the opportunity to fill out a questionnaire.

E. Data Analysis Method

Binary logistic regression has been widely used as a tool of analysis modeling when the response variable (Y) is binary [2]. The term binary refers to the use of two numbers 0 and 1 to

replace the two categories of the response variable. Examples of the response variable in question is the success (success-failure), of agreement (agree-disagree), the desire to buy (yes - no), and many more. In this study, students are given the option of yes-no's interest in entrepreneurship after taking entrepreneurship courses.

Estimation of logistic regression model coefficients can not be done with the least squares method (ordinary least squares) as well as the assumption of linear regression for a foul homogeneity manner. The maximum likelihood method (maximum likelihood) may be one of the alternatives that can be used.

F. Binary Logistic Regression

If p_i represents the chance of individual i to have a value of $Y = 1$, then the logistic regression model with k independent variables can be written as:

$$\text{logit}(p_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \dots\dots\dots(1)$$

$$\text{with } \text{logit}(p) = \log\left(\frac{p}{1-p}\right).$$

Logistic regression model is a linear model between $\text{logit}(p)$ with explanatory variables X . as in linear regression, we can get the values of the intercept and the slope of the model. But unlike in the case with linear regression which can use the least squares method (least squares method) in determining the alleged β_0 and β_i , $i = 1, 2, \dots, K$. Statistically, the method assumes that the value is constant error variance (homogeneous). Whereas in the case of binary logistic regression, the value of Y follows the Bernoulli distribution, the variance is a function of p . Certainly on the data we have p value varies depending on the explanatory variable X . Because the p -value is varied, then the variance is homogeneous. Weighted least squares approach can solve this problem. So, the iteratively reweighted squares (IRLS) technique can be used as a selection method other than the method of maximum likelihood (ML) to predict the parameter in logistic regression model.

Note that for a simple model with a single independent variable

$$\begin{aligned} \log(p/(1-p)) &= \beta_0 + \beta_1 X \\ p/(1-p) &= \exp(\beta_0 + \beta_1 X) \\ p &= \exp(\beta_0 + \beta_1 X) - p \exp(\beta_0 + \beta_1 X) \\ p(1 + \exp(\beta_0 + \beta_1 X)) &= \exp(\beta_0 + \beta_1 X) \\ \text{So } p &= \exp(\beta_0 + \beta_1 X) / (1 + \exp(\beta_0 + \beta_1 X)) \end{aligned}$$

In other words, binary logistic regression model can be written as:

$$P(Y=1) = p_i = \frac{e^{\beta_0 + \beta_1 X}}{1 + e^{\beta_0 + \beta_1 X}}$$

Subsequently, coefficient β is allegedly using maximum likelihood method. It can simply be stated that this method seeks coefficient that maximizes the likelihood function. With the value of Y that is binary, we can use Bernoulli as the distribution of variable Y so that the likelihood function will be formed.

$$L = \prod_{i=1}^n p_i^{y_i} (1-p_i)^{1-y_i} \text{ dengan } p_i = \frac{e^{\beta_0 + \beta_1 X}}{1 + e^{\beta_0 + \beta_1 X}}$$

It is clear that the value of β determines the value of the likelihood function. Computationally, working with the multiplication operator is less fun than a summation. Logarithm transformations can be used to change the multiplication into a sum, and then the likelihood function is replaced with a log function-likelihood. Note that the logarithmic function is monotonously rising, so if the log-likelihood reach the maximum so does the likelihood function. Thus, the form of the maximized function is:

$$LL = \log(L) = \sum_{i=1}^n \log p_i^{y_i} (1-p_i)^{1-y_i} = \sum_{i=1}^n y_i \log p_i + (1-y_i) \log(1-p_i)$$

Estimator for coefficients β is obtained as a solution to the problem of maximizing LL . Testing the role of the independent variable, X , in the model can be done using a likelihood ratio test with formula

$$G = 2 \log \left[\frac{\text{likelihood without independent variable}}{\text{likelihood with independent variable}} \right]$$

G-test statistic is used to test the role of explanatory variables in the model at the same time [2] with the hypothesis:

$$H_0 : = \beta_1 = \beta_2 = \dots = \beta_k = 0$$

$$H_1 : \text{at least one } \beta \text{ are not equal to } 0$$

If H_0 is correct, this G-statistic follows the distribution χ^2 with degree of freedom k .

III. RESULTS

A. Summary Model

TABLE I. SUMMARY MODEL

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	64,444a	,222	,426

Estimation terminated at iteration number 7 because parameter estimates changed by less than ,001. Source: The results of data processing, 2015.

Referring to the Summary Model table output, it is known that the value of Cox and Snell R Square is 0.222, Nagelkerke R Square is 0.426. Interpretation as well as the value of R square on linear regression, which amounted to 42.6% (e.g. at Nagelkerke) diversity of the dependent variable values is able to be explained by the independent variable, while the

remaining 57.4% is explained by other variables outside the model.

B. Hosmer and Lemeshow Test

TABLE II. HOSMER AND LEMESHOW TEST

Step	Chi-square	df	Sig.
1	9,549	8	,298

Source: The results of data processing, 2015.

Referring to the Hosmer and Lemeshow table output, it is known that the significance value (Sig.) Chi-Square is 0.298 > 0.05. Thus, the interpretation is the model estimation results have been worthy (fit) to use.

C. Classification Table

TABLE III. CLASSIFICATION TABLE

Observed			Predicted		
			Entrepreneurship interest		Percentage Correct
			Yes	No	
Step 1	Entrepreneurship interest	Yes	116	1	99,1
		No	10	6	37,5
Overall Percentage					91,7

a. The cut value is ,500

Source: The results of data processing, 2015.

Referring to the Classification Table output, the value of the interest of entrepreneur's outcome prediction (predicted) with the actual value (observed) can be compared. Overall amounted to 91.7% of the data has been observed can be predicted accurately by the model's estimation. If the value of prediction accuracy is greater or getting closer to an accuracy of 100%, then it indicates the better estimation results of the model.

D. Variabel in the Equation

TABLE IV. VARIABLES IN THE EQUATION

Step 1 ^a		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
	x1	,037	,076	,243	1	,622	1,038	,895	1,204
	x2	-,162	,040	16,465	1	,000	,851	,787	,920
	x3	,133	,098	1,840	1	,175	1,143	,942	1,385
	x4	,007	,069	,011	1	,916	1,007	,881	1,152
	Const	8,101	4,159	3,795	1	,051	3298,122		

^a. Variable(s) entered on step 1: x1, x2, x3, x4.
Source: The results of data processing, 2015.

Referring to the Variables in the equation table output, it is known that the variables that have the Sig <0.05 was Personalities (X2). Thus, the factors that affect interest in entrepreneurship is Personality. B coefficient values for Personality variable is -0.162 with Exp (β) of 0.851. Due to coding the entrepreneurial interest is (1 = interest; 2 = no interest), then the value of the coefficient of -0.162 may be

interpreted growing (good) one's personality then it will have the potential to further interest in entrepreneurship, with a value of 0.851 times the odds are more interested in every increase of 1 times the value of personality.

Full binary logistic regression models with variables that have no effect in the model still included are as follows:

$$\ln \frac{\pi}{1-\pi} = 8,101 + 0,037 X1 -0,162 X2 + 0,133 X3 + 0,007 X4$$

E. Casewise List

TABLE V. CASEWISE LIST

Case	Selected Status ^a	Observed	Predicted	Predicted Group	Temporary Variable	
		Entrepreneurship interest			Resid	ZResid
8	S	T**	,081	Y	,919	3,361
17	S	T**	,095	Y	,905	3,092
26	S	T**	,057	Y	,943	4,072
52	S	T**	,073	Y	,927	3,576
66	S	T**	,050	Y	,950	4,374
92	S	T**	,132	Y	,868	2,569
119	S	T**	,081	Y	,919	3,375

^b. S = Selected, U = Unselected cases, and ** = Misclassified cases.
^c. Cases with studentized residuals greater than 2,000 are listed.
Source: The results of data processing, 2015.

Referring to the Casewise List table output, it can be known that there are 7 respondents which estimation model predict incorrectly, namely respondent numbers 8, 17, 26, 52, 66, and 119. How to understand, for example respondent number 8 is predicted "Yes / Interests", but the actual condition is "No / No Interest".

IV. CONCLUSION AND SUGGESTION

A. Conclusion

The results of this study concluded that the factors that most influence the interest in entrepreneurship in students is not the personality factor of entrepreneurship courses itself.

B. Suggestion

The effectiveness of entrepreneurial learning should be improved, so that these lessons can boost or motivate students to entrepreneurship. Curriculum development in entrepreneurship courses also need to be reviewed, so that when students take courses in entrepreneurship, not just theory that are obtained, but cultivate the entrepreneurial spirit among students is also very important, this can be done by giving practices in entrepreneurship or bring in experts on entrepreneurship.

Effective entrepreneurship education are not enough by only giving entrepreneurship courses in the curriculum held each college. More serious attention on the implementation of entrepreneurial learning process charged on several relevant subjects need to be done. Besides, management

commitment in achieving college graduates who have the entrepreneurial spirit in incorporating entrepreneurship in the curriculum load used should be pursued.

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