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ANALYSIS OF FACTORS INFLUENCING ENTREPRENEURIAL INTENTION THROUGH A STRUCTURAL EQUATION MODELING – PARTIAL LEAST SQUARES (SEM-PLS) APPROACH

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Abstract

Structural Equation Modeling (SEM) is a multivariate statistical analysis method capable of simultaneously examining relationships between variables within a single, complex model. Partial Least Squares (PLS) is one approach to SEM, developed as an alternative to covariance-based SEM (CB-SEM), with the advantage of overcoming sample size limitations and data distribution assumptions. SEM-PLS is prediction-oriented, aiming to maximize explained variance (R^2), making it suitable for exploratory research. This study aims to analyze the influence of entrepreneurial education, social support, and campus environment on the entrepreneurial intentions of students in the Faculty of Mathematics and Natural Sciences (FMIPA), University of Lampung. The analysis results show that all indicators have loading factor values above 0.5, thus meeting the convergent validity criteria. The resulting structural model is $\eta = 0.268 \xi_1 + 0.258 \xi_2 + 0.392 \xi_3$ which indicates that all exogenous variables have a positive effect on entrepreneurial intention. The campus environment variable has the most dominant influence with a coefficient of 0.392, followed by entrepreneurial education at 0.268, and social support at 0.258.

Keywords: Entrepreneurial Education, Social Support, Campus Environment, Entrepreneurial Intention, SEM-PLS.

1. INTRODUCTION

In the context of independent education, the government is encouraging the integration of entrepreneurship into the higher education curriculum to prepare a young generation that is independent and capable of creating new economic value [1]. Universities play an important role in developing an

entrepreneurial mindset so that students are able to respond to future opportunities and challenges [2]. Structural Equation Modeling (SEM) is a method that integrates regression analysis and factor analysis [3], making it possible to examine the linear relationship between observable variables (indicators) and

variables that cannot be directly measured (latent variables) [4]. Partial Least Squares (PLS) aims to maximize the explained variance of the dependent variable by optimizing the R^2 value [5]. The SEM-PLS approach was chosen because it is able to analyze the relationship between variables comprehensively and simultaneously. The entrepreneurial education variable is measured through students' perceptions of the effectiveness of entrepreneurship learning, including understanding business concepts, practical experience, opportunity identification skills [6], and the quality of materials and training [7]. The social support variable is measured through family support, peers [8], and academic encouragement [9], while the campus environment includes perceptions of entrepreneurial facilities, innovative culture, the role of lecturers, and opportunities to participate in business support activities [10]. Entrepreneurial intention reflects the seriousness [11], commitment, and desire of students to start a business in the future [12]. The causal relationship between the three exogenous variables and the endogenous variable of entrepreneurial intention can be tested simultaneously, so that it can be seen how much relative influence each factor has in shaping students' entrepreneurial intentions. The use of SEM-PLS provides a strong empirical basis for understanding how these three main factors contribute to the formation of entrepreneurial intention of students of the Faculty of Mathematics and Natural Sciences.

2. LITERATURE REVIEW

2.1 Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) is a technique that can simultaneously examine the dependent relationship between measured variables and latent variables as well as the relationship between latent variables. The SEM technique combines two multivariate techniques, namely factor analysis and regression analysis, to model structural and measurement relationships in one integrated analytical framework [13]. SEM is able to handle various errors through the equations contained in the measurement model. The key parameter in the SEM measurement model equation is the factor loading, which relates the latent variable to the related indicators.

2.2 Variables in Structural Equation Modeling (SEM)

In Structural Equation Modeling (SEM), there are two main types of variables, namely:

a) Latent variables

Latent variables are divided into two, namely endogenous latent variables (η) and exogenous latent variables (ξ). Endogenous latent variables are dependent variables [14]. These variables are explained by exogenous latent variables through their causal effects. Exogenous latent variables, on the other hand, are defined as variables that are not affected by other latent variables but only influence endogenous latent variables.

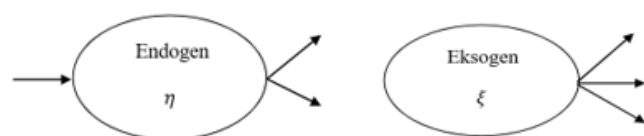


Figure 1. Endogenous and Exogenous Variables

b) Observed variables

Variables obtained through various data collection methods such as surveys.



Figure 2. Observed variable

2.3 Equation Model in SEM

Measurement and structural equation models in Structural Equation Modeling (SEM) can be formulated as follows:

1) Measurement Model

The measurement model shows the relationship between latent variables and indicator variables directly. Measurement models are divided into 2 types, namely as follows:

a) Reflective measurement model

In the reflective model, latent variables are considered the causes of their indicators, meaning that changes in the variable will cause changes in all indicators.

The reflective model formula can be written as follows:

$$x_i = \lambda_i \xi + \delta_i$$

$$y_i = \lambda_i \eta + \varepsilon_i$$

b) Formative measurement model

In the formative model, indicators are the causes or formers of latent variables, which means that changes in the indicators will cause changes in the variables.

The formative model can be written as follows:

$$\xi = \sum_{i=1}^p w_i x_i + \delta$$

$$\eta = \sum_{i=1}^p w_i y_i + \varepsilon$$

2) Structural Model

The structural model shows the relationship between latent variables based on substantive theory.

The general model of the inner model is as follows:

$$\eta = B\eta + \Gamma\xi + \zeta$$

3. METHODOLOGY

This research data is primary data obtained through a survey of students at the Faculty of Mathematics and Natural Sciences, University of Lampung, regarding the influence of entrepreneurial education, social support, and campus environment on entrepreneurial intention. The sample size was 285 students, with 57 respondents from each study program. The research instrument was a Google Form questionnaire compiled based on the indicators of each variable and measured using a four-point Likert scale consisting of 1 being very unsuitable, 2 being unsuitable, 3 being suitable, and 4 being very suitable.

The research method in this study uses SMARTPLS software by carrying out the following stages:

a) Descriptive Statistical Analysis

Research data was collected through a survey, then the data obtained was analyzed using descriptive statistics to provide a general overview of the characteristics of respondents and the distribution of answers for each research indicator [16].

b) Designing the SEM-PLS model

The SEM-PLS model design in this research can be written in the following equation:

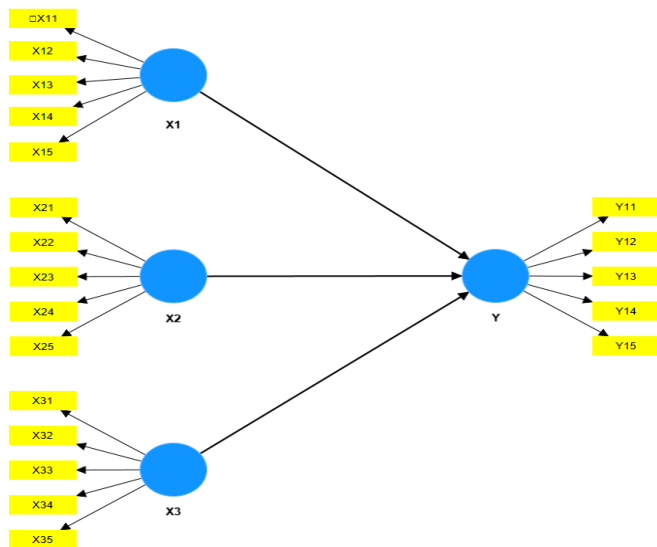


Figure 3. Illustration of the Structural and Measurement Model Path Diagram

Measurement model

$$X_1 = \lambda_{X1a}X_{1a} + \delta_1, \text{ where } a = 1, 2, \dots, 5$$

$$X_2 = \lambda_{X2b}X_{2b} + \delta_2, \text{ where } b = 1, 2, \dots, 5$$

$$X_3 = \lambda_{X3c}X_{3c} + \delta_3, \text{ where } c = 1, 2, \dots, 5$$

$$Y = \lambda_{Yi}Y_i + \varepsilon_i, \text{ where } i = 1, 2, \dots, 5.$$

So, it can be written as follows:

$$\xi = \lambda_{Xi}X_i + \delta_i, \text{ where } i = 1, 2, \text{ dan } 3.$$

Structural model:

$$\eta = y_{11}\xi_1 + y_{12}\xi_2 + y_{13}\xi_3 + \zeta$$

- c) Identify the model by conducting path analysis by looking at the loading factors.
- d) Perform model parameter estimation using the Partial Least Squares algorithm.
- e) Hypothesis testing is carried out using the bootstrapping procedure to obtain the t-statistic and p-value.
- f) Forming the best model used in research.
- g) Evaluating the overall model fit test includes evaluating the measurement model and the structural model.
- h) Making interpretations of the models resulting from SEM-PLS analysis.

4 RESULT AND DISCUSSION

4.1 Descriptive Analysis

The descriptive analysis results show that the majority of respondents were female (214 people) and male (75%), while 71

respondents (25%). The respondents came from five departments in the Faculty of Mathematics and Natural Sciences (FMIPA): Biology, Chemistry, Mathematics, Computer Science, and Physics, with an even proportion of 20% each, or 57 respondents per department. Based on the class, respondents were dominated by students from the class of 2023, amounting to 130 people (46%), followed by the class of 2022, amounting to 85 people (30%), and the class of 2024, amounting to 70 people (24%), thus showing a fairly balanced representation from various classes.

4.2 Parameter Estimation Using the Structural Equation Modeling Partial Least Squares (SEM-PLS) Method

a) Measurement model

The measurement model equation can be written as follows:

Entrepreneurial Education

$$\xi_1 = 0.592 X_{11} + 0.791 X_{12} + 0.808 X_{13} + 0.819 X_{14} + 0.776 X_{15}$$

Social Support

$$\xi_2 = 0.726 X_{21} + 0.730 X_{22} + 0.775 X_{23} + 0.765 X_{24} + 0.791 X_{25}$$

Campus Environment (ξ_3)

$$\xi_3 = 0.709 X_{31} + 0.812 X_{32} + 0.781 X_{33} + 0.850 X_{34} + 0.830 X_{35}$$

Entrepreneurial Intention

$$\eta = 0.816 Y_{11} + 0.800 Y_{12} + 0.809 Y_{13} + 0.809 Y_{14} + 0.782 Y_{15}$$

b) Structural Model

The structural model equation can be written as follows:

$$\eta = 0.268 \xi_1 + 0.258 \xi_2 + 0.392 \xi_3$$

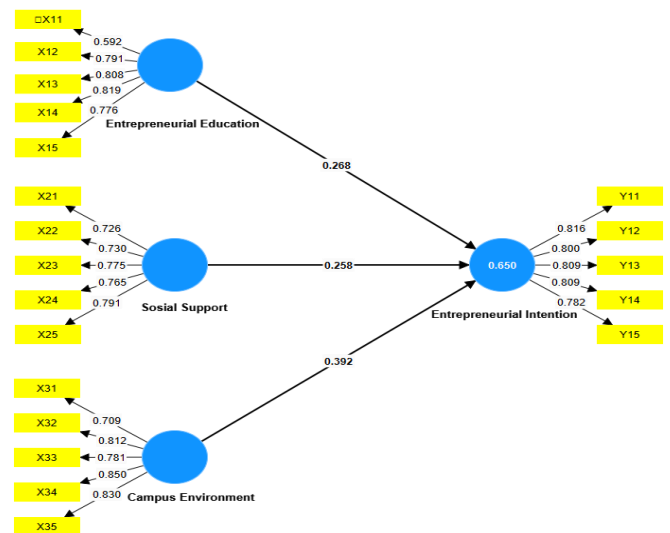


Figure 4. Best Model Path Diagram

The formation of the best SEM model in this study begins with designing a conceptual model based on theoretical foundations, followed by the stage of identifying the model design through path analysis. This stage focuses on the loading factor values and the relationship between the indicators and the measured latent variables. Indicators with high loading factor values indicate a strong contribution in explaining the latent construct, while low values indicate a weak contribution. A loading factor value >0.5 is considered significant in representing the latent variable. Next,

parameter estimation is carried out to obtain coefficient values that describe the relationship between variables, and ends with model evaluation.

4.3 Hypothesis Testing

- 1) Entrepreneurial Education (ξ_1) towards Entrepreneurial Intention (η)

$H_0 : y_{11} = 0$ (there is no influence of Entrepreneurial Education on Entrepreneurial Intention)

$H_1 : y_{11} \neq 0$ (There is an influence of Entrepreneurial Education on Entrepreneurial Intention).

- 2) Social Support (ξ_2) towards Entrepreneurial Intention (η)

$H_0 : y_{12} = 0$ (there is no influence of Social Support on Entrepreneurial Intention)

$H_1 : y_{12} \neq 0$ (There is an influence of Social Support on Entrepreneurial Intention).

- 3) Campus Environment (ξ_3) towards Entrepreneurial Intention (η)

$H_0 : y_{13} = 0$ (there is no influence of Campus Environment on Entrepreneurial Intention)

$H_1 : y_{13} \neq 0$ (There is an influence of Campus Environment on Entrepreneurial Intention).

Table 3. Bootstrap Resampling t_{test} Testing

	Original sample	Sample mean	Standard deviation	T statistics	P values
$X_1 \rightarrow Y$	0.268	0.266	0.057	4.735	0.000
$X_2 \rightarrow Y$	0.258	0.261	0.058	4.432	0.000
$X_3 \rightarrow Y$	0.392	0.393	0.054	7.224	0.000

Based on the table above, the variables Entrepreneurial Education, Social Support, and Campus Environment have a p-value <0.05, which means that the three variables are significant and have a positive effect on the Entrepreneurial Intention variable.

4.4 Evaluation of Overall Model Fit Test

- a) Evaluation of Measurement Model

1. Construct validity and reliability

Table 4. Construct validity and reliability values

	Average variance extracted (AVE)	Cronbach's alpha	Composite reliability
Entrepreneurial Education	0.580	0.817	0.872
Social Support	0.574	0.815	0.871
Campus Environment	0.637	0.856	0.897
Entrepreneurial Intention	0.645	0.863	0.901

Based on the table above, all latent variables in this study have met the convergent validity criteria, as each has an AVE value <0.50. The results of the reliability test through the Cronbach's alpha and Composite reliability values for all variables in this study showed values >0.70, thus it can be stated that they have a good level of internal consistency.

2. Discriminant validity (Fornell-Lacker Criterion)

The Fornell-Larcker test can be calculated using the square root of the AVE. If the square root of the AVE for a variable is greater than the correlation between the other variables, then the variable has good discriminancy, indicating that the measurement model is valid in distinguishing between different variables.

Table 5. Fornell-Larcker Value

	Campus Environment	Entrepreneurial Education	Entrepreneurial Intention	Social Support
Campus Environment	0.798			
Entrepreneurial Education	0.647	0.762		
Entrepreneurial Intention	0.737	0.684	0.803	
Social Support	0.664	0.630	0.687	0.758

- b) Structural Model Evaluation

1. Collinearity Testing

A collinearity test using a VIF value <5 indicates that there are no multicollinearity problems between the latent variables.

Table 6. Collinearity Test Value

	Entrepreneurial Intention
Entrepreneurial Education	1.963
Social Support	2.041
Campus Environment	2.115

2. Coefficient of Determination (R^2)

The R^2 value ranges from 0 to 1, where a higher value indicates a better model in explaining the variance[18]. The Entrepreneurial Intention variable has an R-square value of 0.650 and an adjusted R-square of 0.646. The R-square value of 0.650 indicates that 65.0% of the variation in the Entrepreneurial Intention variable can be explained by the exogenous latent variables in the model, namely Entrepreneurial Education, Social Support, and Campus Environment, while the remaining 35.0% is explained by other factors outside the research model.

3. Prediction Relevance (Q^2)

The Entrepreneurial Intention variable has a Q^2 value of 0.641. A Q^2 value > 0 indicates that the model has strong predictive relevance, meaning that the exogenous variables in the model, namely Entrepreneurial Education, Social Support, and Campus Environment, are able to predict the endogenous variable Entrepreneurial Intention very well.

4. Effect Size (f^2)

An f^2 value of 0.02 indicates a small effect, 0.15 a moderate effect, and 0.35 a large effect in the structural model. Entrepreneurial Education has a moderate effect, while Social Support has a small effect on Entrepreneurial Intention. Meanwhile, Campus Environment has a stronger influence than other variables in explaining variations in Entrepreneurial Intention.

Table 9. Effect Size Test Results

	Entrepreneurial Intention
Entrepreneurial Education	0.104
Social Support	0.093
Campus Environment	0.208

5. Model Fit Testing

Model fit testing was used to assess the overall suitability of the model developed and the data in this study. Several tests used are presented in the following table:

Table 10. Model Fit Test Value

Parameter	Rule of Thumb	Estimated model	Suitability Level
SRMR	< 0.10	0.069	Good fit
d_ULS	> 0.05	0.992	Good fit
d_G	> 0.05	0.363	Good fit
Chi-square	$X^2 \text{ statistik} \leq X^2 \text{ tabel}$	595.352 > 31.410	not significant
NFI	Mendekati 1	0.810	Good fit
GoF	0.1 (GOF kecil), 0.25 (GOF moderat), 0.36 (GOF kuat)	0.629	Good fit

In general, the test results indicate that the model has a good level of fit, as most of the goodness-of-fit criteria have been met. Although the Chi-square value does not meet the criteria, the model is still suitable for use in the analysis.

5 CONCLUSION

The results of the structural model analysis indicate that entrepreneurial education, social support, and the campus environment simultaneously have a positive influence on the entrepreneurial intention of students at the Faculty of Mathematics and Natural Sciences, University of Lampung. Among these three variables, the campus environment has the most dominant influence with a path coefficient of 0.392, followed by entrepreneurial education at 0.268 and social support at 0.258. This indicates that a supportive campus environment, such as facilities, academic culture, and entrepreneurship programs, plays the strongest role in encouraging students' entrepreneurial intentions, although entrepreneurship education and social support also make significant contributions to shaping students' readiness and motivation for entrepreneurship.

Meanwhile, the results of the measurement model indicate that all indicators have loading factor values that meet validity criteria, effectively representing their latent variables. Therefore, the

constructed model adequately explains the relationships between variables and can be used to accurately analyze the influence of the three factors.

REFERENCES

- Boubker, O., Arroud, M., & Ouajdouni, A. (2021). Entrepreneurship Education Versus Management Student's Entrepreneurial Intentions a PLS-SEM Approach. *The International Journal of Management Education*, 19(1), 1 – 12.
- Kusumojanto, D. D., Wibowo, A., Kustiandi, J., & Narmaditya, B. S. (2021). Do Entrepreneurship Education and Environment Promote Students' Entrepreneurial Intention? The Role of Entrepreneurial Attitude. *Cogent Education*, 8(1), 1 – 17.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3th Edition)*. Sage Publications.
- Rosak-Szyrocka, J., & Tiwari, S. (2023). Structural Equation Modeling (SEM) to Test Sustainable Development in University 4.0 in the Ultra-Smart Society Era. *Sustainability*, 15(23), 1 – 15.
- Demir, S., & Usak, M. (2025). Analyzing the Implementation of PLS-SEM in Educational Technology Research: A Review of the Past 10 Years. *Sage Journals*, 15(1), 1 – 23.
- Branca, E., Vanderstraeten, J., Slabbinck, H., & Maes, I. M. R. (2025). The impact of entrepreneurial education on key entrepreneurial competencies: A systematic review of learning strategies and tools. *The International Journal of Management Education*, 23(2), 101144.
- Dinh, T. T. H., & Bonner, A. (2023). Exploring the Relationships Between Health Literacy, Social Support, Self-Efficacy and Self Management in Adults with Multiple Chronic Diseases. *BMC Health Services Research*, 23(1), 1-10.
- Navarro, A. M., Martin, F. V., & Garrido, J. A. M. (2023). Impact of Effectual Propensity on Entrepreneurial Intention. *Journal of Business Research*, 157(1), 1 – 19.
- Lestari, E. D. (2022). Mediating role of entrepreneurial passion between social support and students' entrepreneurial intentions among Indonesian college students. *Journal of Business and Social Review in Emerging Economies*, 8(3), 625-635.
- Gieure, C., Espinosa, M. D.B., & Dobon, S. R. (2020). The Entrepreneurial Process the Link Between Intentions and Behavior. *Journal of Business Research*, 112(5), 541 – 548.
- Nguyen, C. Q., Nguyen, A. M. T., & Le, L. B. (2022). Using Partial Least Squares Structural Equation Modeling (PLS-SEM) to Assess the Effects of Entrepreneurial Education on Engineering Students's Entrepreneurial Intention. *Cogent Education*, 9(1), 1 – 14.
- Hoang, G., Le, T. T. T., Tran, A. K. T., & Du, T. (2020). Entrepreneurship Education and Entrepreneurial Intentions of University Students in Vietnam: the Mediating Roles of Self-Efficacy and Learning Orientation. *Emerald Insight*, 40(9), 1 – 19.
- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M.,

- Diamantopoulos, A., Straub, D. W., ... & Calantone, R. J. (2014). Common Beliefs and Reality About Partial Least Squares: Comments on Rönkkö & Evermann. SSRN.
14. Kline, R. B. (2023). Principles and Practice of Structural Equation Modelling (5th Edition). Guilford Press.
 15. Sarstedt, M., Hair, J. F., Ringle, C. M., Thiele, K. O., & Gudergan, S. P. (2016). Estimation issues with PLS and CBSEM: Where the bias lies. *Journal of Business Research*, 69(10), 3998 – 4010.
 16. Cooksey, R. W. (2020). Illustrating Statistical Procedures: Finding Meaning in Quantitative Data. Springer, Singapore.
 17. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th Edition). Cengage Learning.
 18. Ringle, C. M., Sarstedt, M., Mitchell, R., & Gudergan, S. P. (2020). Partial Least Squares Structural Equation Modeling in HRM research. *International Journal of Human Resource Management*, 31(12), 1617 - 1643.