Original Research Article

Teaching Factory and Entrepreneurship Education with Product Innovation as a Moderating Variable Affect Entrepreneurial Interest

ABSTRACT

Aims: This study aims to examine the relationship between Teaching Factory and Entrepreneurship Education and the impact of product innovation as a moderating variable on entrepreneurial interest.
Study design: This study uses a quantitative research design.
Place and Duration of Study: The study population involved all students of Grades XI and XII of State Vocational High School in Banyuwangi Regency with the Teaching Factory learning system. This study used a sample of 250 students selected through a purposive sampling approach,
Methodology: The research instrument used in this study is a questionnaire or survey using a Likert measuring scale, namely an interval scale of 1-5, strongly disagree, disagree, neutral, agree and strongly agree. Data analysis in this study used the Partial Least Squares (PLS) technique to analyze data and apply with SmartPLS version 3.
Results: All variables are valid and reliable, and there is no multicollinearity in the model. The results concluded that there is a positive relationship between Teaching Factory, Entrepreneurship Education, Product Innovation, and Entrepreneurial Interest.
Conclusion: Teaching Factory and Entrepreneurship Education can be effective instruments in fostering entrepreneurial interest among vocational students and can be used as a foundation for developing similar programs in various educational contexts. dan wilayah.

Keywords: Teaching Factory, Entrepreneurship Education, Product Innovation

1. INTRODUCTION

The lack of interest in starting a business or entrepreneurship, especially among the younger generation, is a problem faced by Indonesians. Data shows that the proportion of entrepreneurs in Indonesia is less than 4% of the total population, and only about 9 million people from the population are engaged in entrepreneurial activities. Unemployment is a pressing challenge, with 8.40 million people registered as openly unemployed as of February 2022. More specifically, Vocational High School graduates contribute the highest to the number of unemployed, at around 10.84% of the total. Banyuwangi, known as a tourist city, faced fluctuations in its unemployment rate from 2020 to 2022. Although fluctuating, the unemployment rate went up in 2021 to 5.42% before dropping to 5.26% in 2022. Coupled with the change in TPAK in the same year, from 72.32% in 2021 to 72.00% in 2022 (Romadhona, 2022) the unemployment problem in Banyuwangi shows its complexity. One particular challenge for the Vocational High School graduates is the lack of experience, skills and insights that make them hesitant to start their own business. Despite being active in the commercial or industrial world, they still need to be encouraged to develop an entrepreneurial mindset to create jobs. Factors such as entrepreneurial understanding, self-

Comment [H1]: I suggest the title: Teaching Factory, Entrepreneurship Education and Entrepreneurial Interest: Moderating Effect of Product Innovation

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Comment [H4]: Study design, place and duration of study should be incorporated in the methodology

Comment [H5]: What of the moderation part, need to show whether the PI moderate or not

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efficacy, and family environmental support have been shown to affect a person's entrepreneurial interest.

In an effort to increase students' entrepreneurial interest, intensive implementation of entrepreneurship education and encouragement to improve self-confidence are key. In addition, Teaching Factory (TF), as an innovation in technical education, can facilitate knowledge exchange between business and education. The active role of industry in TF is crucial to ensure the quality of vocational education outcomes. Product innovation and creativity also emerge as important elements in stimulating entrepreneurial interest. Entrepreneurship teachers with competence, vision and innovation are needed to create an adequate academic foundation. In addition, the role of the National Entrepreneurship Movement, announced in 2011, attempts to boost economic growth by developing entrepreneurial interest among young people. The importance of product innovation is also emphasized as a key element in business sustainability. The application of product innovation through entrepreneurship education and TF in Vocational High Schools is expected to create interest in entrepreneurship, preparing students to become innovative and successful entrepreneurs in the future (Prianto et al., 2020).

Based on the explanation above, increasing entrepreneurial interest in State Vocational Schools with product innovation is produced through entrepreneurship education lessons and teaching factory learning models. Thus, the authors will raise "Teaching Factory and Entrepreneurship Education with Product Innovation as a Moderating Variable Affect Entrepreneurial Interest."

2.MATERIAL AND METHODS / EXPERIMENTAL DETAILS / METHODOLOGY

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This research applies a quantitative approach with an explanatory type (Explanatory Research) to investigate phenomena involving social activities methodically, actually, and precisely. (Creswell & Báez, 2020)Explains that quantitative methods use data collection that can be measured in numerical form and apply mathematical models and statistical techniques for data analysis. In this study, survey methodology is used with the aim of documenting facts and data related to the effect of the Teaching Factory on the entrepreneurial interest of vocational students in Banyuwangi Regency. After that, the information collected will be tested using the SPSS application. The framework of this research is:

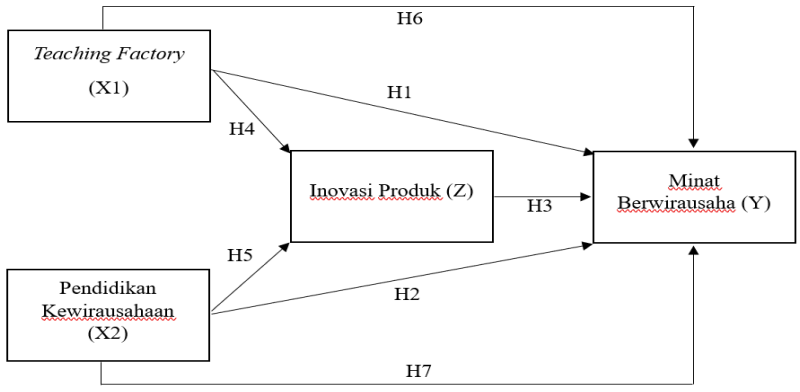

Figure 1. Thinking Framework

Comment [H8]: This research framework is indicating mediation, while your research is moderation. Change the framework to moderation

The research population involved all students in Grades XI and XII of State Vocational High Schools in Banyuwangi Regency with the Teaching Factory learning system. This study used a sample of 250 students selected through a purposive sampling approach, where certain criteria were the basis for selecting the sample. The data collection instrument used is a questionnaire (questionnaire), which is arranged in the form of Google Forms. The Likert Scale method was used to assess respondents' responses to statements or items in the questionnaire. The Slovin formula, which has a 5% margin of error, was applied to calculate the number of samples collected as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Description:

n: Sample size taken

N: Total population

e: margin of error (0.01 - 0.1)2,

The instruments applied in this investigation are as follows:

a. Questionnaire (Angket)

The researcher provided a list of written questions in the form of a questionnaire to participants via Google Forms. As a general rule, the Likert Scale approach was used as a method to assess responses to this research questionnaire. Where, the Likert scale starts from a value of 1 to 5 to indicate whether the respondent agrees with the statement or statement item. The following is a lattice of questionnaire questions in this study.

Table 1 Questionnaire/Research Instruments

Variable	Indicator	Questions Item		Scala Likert				
				1	2	3	4	5
Teaching Factory,(Wahjusaputri & Bunyamin, 2022)	Practice based on a curriculum that balances analytical and theoretical skills in manufacturing, design, business and professional settings.	Students are invited to discuss how to facilitate problem-solving in learning.	Adapted and modified from (Mavrikios et al., 2018)					
		Making products/services in accordance with the competencies taught by teachers at school						
		Products/services targeted by the school have been made by students						
		The teacher delivers the material by means of apperception (connecting the material with actual events) so that the material is easy to understand.						

Comment [H9]: How much is the exact number of the population (N) because without the exact number of population is difficult to obtain the sample by using formula

Comment [H10]: Where is the formula, where is the n, N, and e in the formula

Comment [H11]: Describe the research instrument brief, preferably in a statement form e.g. the variable Teaching factory consist of 16 items example “Students are invited to discuss how to facilitate problem-solving in learning’ “Making products/services in accordance with the competencies taught by teachers at school’ adapted from Mavrikios et al.,(2018). **Entrepreneurship Education**consist of **……**

	The teaching factory cooperates with the industry to develop the curriculum that will be used.	Industry plays a role in school learning							
		The work that students do is in accordance with the majors followed at the Vocational School.							
		Materials for teaching and learning activities using the Teaching Factory system are easy to understand							
		Competency standards adjust the curriculum							
	Has cooperation with industry	Teachers and industry work well together							
		Assistance from the industry during practice							
		Practice needs are always available							
		Teaching Factory involves people from the industry who have competence							
	Has collaborations with academic institutions, government and industry	Sufficient number of human resources							
		Ease of choosing an internship program							
		The institution has an important role in the school							
		High standard of competence taught by teachers							
Entrepreneurship Education,(Thomassen et al., 2020)	Creating the desire for entrepreneurship	Entrepreneurship practice is needed to provide experience as well as motivation for entrepreneurship	Adapted and modified from						
		My participation in entrepreneurship seminars will motivate me to become an entrepreneur							
	Gain insight	My school often organizes activities about entrepreneurship							
		I get a lot of knowledge about entrepreneurship from entrepreneurship education at school.							
	Sensitive to business opportuniti	Able to analyze business opportunities available in the surrounding							

	es	environment						
		School entrepreneurship activities help me train to be sensitive to every business opportunity.						
Product Innovation, according to Kotler Armstrong	Product Quality	The quality of the products produced is able to compete with its competitors	Adapted and modified from(Irfan & Hariani, 2022)					
		The product has its own added value						
		The product has good durability						
		Able to customize products with MSME specifications						
	Product variant	Have a good knowledge of various market situations						
		Good knowledge of different market segments						
		Product development by utilizing technology						
		Offer new variants in terms of shape or otherwise.						
	Product style and design	Using new materials and designs						
		Introducing products to the market						
		Adjusting product design to the needs						
		Conducting distribution efficiently and attractively						
Entrepreneurial Interest(Purwanto et al., 2022)	Feelings of interest	I am encouraged to be an entrepreneur because I see people who are successful in entrepreneurship.	Adapted and modified from(Hidayat et al., 2021)					
		I am very interested in entrepreneurship because there are many challenges that will be faced.						
		I want to be an entrepreneur to achieve a better future.						
		In the neighborhood where I live there are not many people who are entrepreneurs so I feel						

		interested in starting entrepreneurship.						
	Feelings of pleasure	I feel happy that one day, I can be a successful entrepreneur.						
		I am very interested in entrepreneurship because it is an independent job						
		I am proud to be an entrepreneur to create jobs						
		I am very interested in making plans to start entrepreneurship						
	Motivation	Entrepreneurship is the right choice for me						
		I have an interest in entrepreneurship because I get support from my family.						
		I feel I have a passion for entrepreneurship						
		My parents expect me to become a successful entrepreneur						
	Expectation	I will choose entrepreneurship because I feel that entrepreneurship will lead me to a bright future						
		With the knowledge and skills that I have, I have the intention to start an entrepreneurship.						
		I have a plan to open my own business after graduation						

Table 2 Lattice of Research Instruments

Primary data were obtained from respondents by filling out questionnaires, while secondary data were sourced from reports on the implementation of Teaching Factory activities and Entrepreneurship Education, as well as the results of tracer studies or tracing of graduates. The data analysis process involves a validity test with Pearson correlation, a reliability test using Cronbach's Alpha Coefficient, a normality test with One Sample Kolmogorov-Smirnov, and classical assumption tests such as the heteroscedasticity test and multicollinearity test. Furthermore, multiple linear regression analysis was used to determine the correlation between the dependent variable (entrepreneurial interest) and the independent variables that influence it. Hypothesis testing was done with the T-test to test the effect of variables individually and the F-test to evaluate the effect of variables simultaneously. The whole process of data analysis is conducted with the help of software, especially by using the SPSS application. In testing the validity and reliability of the instruments, Pearson correlation and Cronbach's Alpha were used as references, while to test the normality of the data, One Sample Kolmogorov-Smirnov was chosen. Classical

Comment [H12]: There is no results/analysis for secondary data and therefore remove

Comment [H13]: All these can be taking care of by the PLS you don't need to run all these separately via SPSS it is only when you are examining direct effect/relationship

assumption tests such as heteroscedasticity and multicollinearity were conducted to ensure the validity of the regression model. This entire methodology was applied to provide a solid foundation for the analysis and interpretation of the results.

3. RESULTS AND DISCUSSION

Comment [H14]: 4

3.1 Instrument Validity and Reliability Test Results

3.1.1 Validity Test

The research instrument was measured using a sample of 403 respondents from the same population and included in the research sample. The tool for measuring validity is Pearson's Product Moment Correlation. An indicator is said to be valid, if n = 403 and α = 0.05, then r table = 0.0977 with the provisions (Aslam&Albassam, 2019):

The result of r count> r table (0.0977) = valid

The result of r count < r table (0.0977) = invalid

The validity of the instrument was tested using the SPSS 25.00 for Windows computer software program.

Table 3 Validity Test Results

Variable	Item	R-Count	R-Table	Sig	Description
Teaching Factory	X1.1	0.735	0.0977	0.000	Valid
	X1.2	0.710	0.0977	0.000	Valid
	X1.3	0.657	0.0977	0.000	Valid
	X1.4	0.775	0.0977	0.000	Valid
	X1.5	0.629	0.0977	0.000	Valid
	X1.6	0.686	0.0977	0.000	Valid
	X1.7	0.610	0.0977	0.000	Valid
	X1.8	0.609	0.0977	0.000	Valid
	X1.9	0.778	0.0977	0.000	Valid
	X1.10	0.612	0.0977	0.000	Valid
	X1.11	0.576	0.0977	0.000	Valid
	X1.12	0.688	0.0977	0.000	Valid
	X1.13	0.676	0.0977	0.000	Valid
	X1.14	0.776	0.0977	0.000	Valid
	X1.15	0.642	0.0977	0.000	Valid
	X1.16	0.686	0.0977	0.000	Valid
Entrepreneurial Education	X2.1	0.670	0.0977	0.000	Valid
	X2.2	0.792	0.0977	0.000	Valid
	X2.3	0.713	0.0977	0.000	Valid
	X2.4	0.745	0.0977	0.000	Valid
	X2.5	0.807	0.0977	0.000	Valid

	X2.6	0.763	0.0977	0.000	Valid
Product Innovation	M1.1	0.642	0.0977	0.000	Valid
	M1.2	0.686	0.0977	0.000	Valid
	M1.3	0.696	0.0977	0.000	Valid
	M1.4	0.715	0.0977	0.000	Valid
	M1.5	0.650	0.0977	0.000	Valid
	M1.6	0.808	0.0977	0.000	Valid
	M1.7	0.676	0.0977	0.000	Valid
	M1.8	0.689	0.0977	0.000	Valid
	M1.9	0.729	0.0977	0.000	Valid
	M1.10	0.698	0.0977	0.000	Valid
	M1.11	0.637	0.0977	0.000	Valid
	M1.12	0.708	0.0977	0.000	Valid
Entrepreneurial Interest	Y1.1	0.649	0.0977	0.000	Valid
	Y1.2	0.698	0.0977	0.000	Valid
	Y1.3	0.648	0.0977	0.000	Valid
	Y1.4	0.655	0.0977	0.000	Valid
	Y1.5	0.770	0.0977	0.000	Valid
	Y1.6	0.775	0.0977	0.000	Valid
	Y1.7	0.800	0.0977	0.000	Valid
	Y1.8	0.787	0.0977	0.000	Valid
	Y1.9	0.783	0.0977	0.000	Valid
	Y1.10	0.752	0.0977	0.000	Valid
	Y1.11	0.771	0.0977	0.000	Valid
	Y1.12	0.801	0.0977	0.000	Valid
	Y1.13	0.788	0.0977	0.000	Valid
	Y1.14	0.785	0.0977	0.000	Valid
	Y1.15	0.752	0.0977	0.000	Valid

Based on the output of the research instrument validity test results above, it was found that all Corrected Item-Total Correlation (r-count) values were more significant than the r-table (0.0977), so all items were declared valid.

3.1.2 Reliability Test

An instrument is said to be reliable if the instrument can be used more than once at different times but still shows relatively consistent results. According to Widayat (2014) states, "reliability refers to an understanding that the instrument is reliable enough to be used as a data collection tool because the instrument is good." Furthermore, the reliability coefficient obtained is compared with the minimum alpha of 0.60. If the reliability coefficient

≥ alpha (0.06), then the question asked is reliable, and if the reliability coefficient ≤ alpha (0.06), then the question asked is not reliable. This is in accordance with the opinion of Widayat (2014: 87) that "a measurement is said to be reliable if at least the alpha value is greater than 0.06". In order to find the reliability of the instrument, the data from the trial were analyzed with the help of the SPSS 25.00 for Windows software program. From this opinion, in this study, the basis for deciding whether an item is reliable or not is alpha (α) ≥ 0.60.

a. Reliability Test (Teaching Factory)

Reliability Statistics

Cronbach's Alpha	N of Items
.921	16

Data source: Primary data processed (2023)

b. Reliability Test (Entrepreneurial Education)

Reliability Statistics

Cronbach's Alpha	N of Items
.843	6

Data source: Primary data processed (2023)

c. Reliability Test (Product Innovation)

Reliability Statistics

Cronbach's Alpha	N of Items
.902	12

Sumber data: Data primer diolah (2021)

d. Reliability Test (Entrepreneurial Interest)

Reliability Statistics

Cronbach's Alpha	N of Items
.943	15

Data source: Primary data processed (2021)

Comment [H15]: Make it in one Table with three column i.e. Column 1 the Variable, Column 2 number of items for each variable then third column is the Crobach Alpha value for each variable

According to the data above, it can be concluded that the Teaching Factory instrument, Entrepreneurial Education, Product Innovation, and entrepreneurial interest are declared reliable because they have a Cronbach alpha value above 0.60.

3.1.2 Classical Assumption Test

3.1.2.1 Normality Test

Comment [H16]: For the normality test show the one obtained in the PLS output

The normality test aims to test whether the variables in the research model are normally distributed. The data normality test in this study uses PPlot normal graph testing and the One-Sample Kolmogorov Smirnov test contained in the SPSS 25.0 for Windows program. Data is said to be normally distributed if the residuals are normally distributed, which has a significance level above 5% (Mardiatmoko, 2020). Normality testing is conducted to see whether the residual value obtained from the model follows a normal distribution or not. The test results show that the residuals are normally distributed if the points seen in the SPSS test results image are around the diagonal line. The results of the normality test can be seen in the following table:

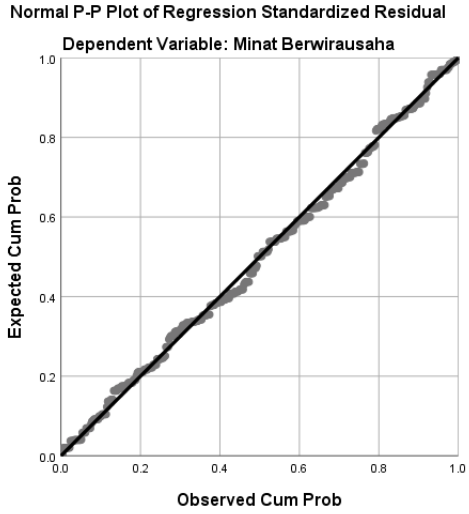

Figure 2 Normality Test

Figure 2. It can be seen that the dots are around the diagonal line. The dots that spread around the diagonal line indicate normally distributed residuals, so it can be concluded that the residuals are between Teaching Factory, Entrepreneurship Education, Product Innovation, and interest in entrepreneurship. Normality tests can also be seen using the one-sample Kolmogorov-Smirnov test, as shown in Table 4.

Table 4

Normality Test Results

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		403
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	.31501950
Most Extreme Differences	Absolute	.041
	Positive	.041
	Negative	-.031

Test Statistic	.041
Asymp. Sig. (2-tailed)	.095[c]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Source: Primary data processed, 2023

From Table 4, the Kolmogorov-Smirnov value is 0.041, with a sig value of 0.095 greater than 0.05. Thus, it can be concluded that H0 is accepted and H1 is rejected, so it can be concluded that all residuals are normally distributed.

3.1.2.2 Multicollinearity Test

The results of testing the Multicollinearity assumption show that there is no Multicollinearity in the model. This can be seen from the correlation matrix between the independent variables in Table 5

Table 5
Multicollinearity Test
Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Teaching Factory	.631	1.586
	Entrepreneurial Education	.634	1.577
	Product Innovation	.597	1.674

a. Dependent Variable: Entrepreneurial Interest

Sumber: Data primer diolah, 2023

Multicollinearity testing can be seen by looking at the VIF and tolerance values obtained. If the tolerance value is more than 0.1 and the VIF value is less than 10, it can be concluded that there is no multicollinearity. From the test results, it is known that the entire VIF value on the variation of Teaching Factory, Entrepreneurial Education, Product Innovation, and interest in entrepreneurship is less than 10, and the tolerance value is more than 0.1, so it is concluded that there is no multicollinearity between the independent variables.

3.1.2.3 Heteroscedasticity Test

The heteroscedasticity test aims to test whether, in the regression model, there is an inequality of variance from the residuals of one observation to another. The way to find out whether heteroscedasticity occurs or not is by looking at the Plot Graph between the predicted value of the dependent variable, namely ZPRED, and the residual SRESID. There is no heteroscedasticity if there is no clear pattern and the points spread above and below the number 0 on the Y axis.

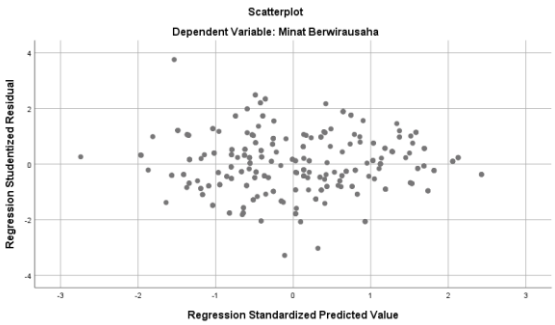

Figure 3 Heteroscedasticity Picture

Based on Figure 3 above, it can be seen that there is no clear pattern, and the points spread above and below the number 0 on the Y axis. This shows that the data in this study does not show heteroscedasticity.

3.2 Multiple Linear Regression Analysis Results

Multiple Linear Regression Analysis is intended to determine the effect or relationship of independent variables Teaching Factory, Entrepreneurship Education, and the dependent variable (Y) in the form of interest in entrepreneurship and moderation Product Innovation. In order to obtain more accurate results, the authors use the help of the SPSS 25.00 software program from the coefficient table and then the resulting output in Table 6.

Table 6

Multiple Regression Testing

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-.907	.192		-4.721	.755
	Teaching Factory	.517	.057	.356	9.087	.000
	Entrepreneurial Education	.363	.049	.288	7.380	.000
	Product Innovation	.353	.048	.298	7.398	.000
	Teaching Factory * Product Innovation	-.136	.126	-.730	-1.077	.282
	Entrepreneurial Education * Product Innovation	.253	.084	1.427	3.023	.003

a. Dependent Variable: Entrepreneurial Interest

Source: Primary data processed, 2023

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.806	.197		4.089	.000

	Teaching Factory	.451	.055	.368	8.178	.000
	Entrepreneurial Education	.383	.048	.361	8.018	.000

a. Dependent Variable: Product Innovation

Source: Primary data processed, 2023

Based on this equation, it can be described as follows:

The regression equation

Y = b0 + b1X1+ b2X2 + b3M + b3X1*M + b3X2*M +e

Y' = 0,907 + 0.517X1+ 0.363X2 + 0.353M+ -0.136M + 0.253M + 0.270

Description:

Y = Satisfaction
b0 = Constant value / reciprocel
X1 = Service Quality
X2 = Trust
b1,2 = Regression coefficient,
e = Standard error

The regression equation above can be explained as follows:

a. The constant of -0.907 means that if Teaching Factory, Entrepreneurship Education, and product innovation are 0, then the interest in entrepreneurship (Y') value is -0.907.

b. The Teaching Factory variable regression coefficient is 0.517, meaning that if the other independent variables remain at a unit increase, then the Teaching Factory will increase by 0.517. The coefficient is positive, meaning that there is a positive influence on entrepreneurial interest.

c. The regression coefficient of the Entrepreneurship Education variable is 0.363, meaning that if the other independent variables remain at a unit increase, then Entrepreneurship Education will increase by 0.363. The coefficient is positive, meaning that there is a positive influence on interest in entrepreneurship.

d. The regression coefficient of the product innovation variable is 0.353, meaning that if the other independent variables remain at a unit increase, then product innovation will increase by 0.353. The coefficient is positive, meaning that there is a positive influence on interest in entrepreneurship.

e. The Teaching Factory variable regression coefficient is 0.451, meaning that if the other independent variables remain at a unit increase, then the Teaching Factory will increase by 0.451. The coefficient is positive, meaning that there is a positive influence on product innovation.

f. The regression coefficient of the Entrepreneurship Education variable is 0.383, meaning that if the other independent variables remain at a unit increase, then Entrepreneurship Education will increase by 0.383. The coefficient is positive, meaning that there is a positive influence on product innovation.

g. The regression coefficient of the Teaching Factory variable moderated by product innovation is - 0.136, meaning that if the other independent variables remain at a unit increase, the Teaching Factory moderated by product innovation will decrease by 0.136. The coefficient is negative, meaning that there is a negative influence on interest in entrepreneurship.

Comment [H17]: Why two tables instead merged inone table

h. The regression coefficient of the entrepreneurship education variable moderated by product innovation is 0.253, meaning that if other independent variables remain at a unit increase, then entrepreneurship education moderated by product innovation will increase by 0.253. The coefficient is positive, meaning that there is a positive influence on interest in entrepreneurship.

i. The standard error value minimizes the error that occurs, so the value of e here is 0.270.

3.3Hypothesis Testing

3.3.1 T-test

The T-test is a test used to determine whether the independent variables partially have a natural effect on the dependent variable or not; the degree of significance used is 0.05. If the significance value is less than the degree of confidence, we accept the alternative hypothesis, which states that an independent variable partially affects the dependent variable.

According to the test criteria:

H0 is rejected if t count > t table (1.66039)

Ha is accepted if t count < table (1.66039)

Based on the results of the SPSS 25 test, the results of the T-test are in Table 7 as follows:

Table 7
Uji T

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-.907	.192		-4.721	.000
	Teaching Factory	.517	.057	.356	9.087	.000
	Entrepreneurial Education	.363	.049	.288	7.380	.000
	Product Innovation	.353	.048	.298	7.398	.000

a. Dependent Variable: Entrepeuneurial Interest

Source: Primary data processed, 2023

Comment [H18]: Where

Based on the results of the t-test (partial) statistical test are as follows:

1. The Teaching Factory variable has a significance value (Sig.) 0.000 in the Coefficients table with an α (degree of significance) value of 0.05, meaning 0.000 <0.05, and the t-count value is smaller than the t table, namely 9.087> 1.66039. This means that Teaching Factory has a positive and significant effect on Entrepreneurial Interest.

2. The Entrepreneurship Education variable has a significance value (Sig.) 0.000 in the Coefficients table with an α (degree of significance) value of 0.05, meaning 0.000 <0.05 and the t-count value is smaller than the t table, namely 7.380> 1.66039. This means that Entrepreneurship Education has a positive and significant effect on Entrepreneurial Interest.

3. The Teaching Factory variable has a significance value (Sig.) 0.000 in the Coefficients table with an α (degree of significance) value of 0.05, meaning 0.000 <0.05, and the t-count value is smaller than the t table, namely 7.398> 1.66039. This means that Product Innovation has a positive and significant effect on Entrepreneurial Interest.

3.3.1 F-Test

With the help of the Anova table, the results of data processing with the SPSS ver 17 program obtained the following data:

Table 8

F-Test Results

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	63.631	3	21.210	212.138	.000[b]
	Residual	39.893	399	.100		
	Total	103.524	402			

a. Dependent Variable: Intrepreneurial Interest

b. Predictors: (Constant), Product Innovation, Entrepreneurial Education, Teaching Factory

Source: Primary data processed, 2023

Based on the data table above, the F-count is 212,138 and sig 0.000. This means that if F-count> F-table (212,138> 2.70) and sig 0.05 (0.000 <0.05), then the hypothesis can be accepted. In this case, it can be said that the variables of Product Innovation, Entrepreneurship Education, and Teaching Factory together significantly affect the interest in entrepreneurship, so the three variables can be used to estimate or predict the variable interest in entrepreneurship.

3.3.1 Results of Analysis of the Coefficient of Determination (R2)

The coefficient of determination in linear regression is often interpreted as the ability of all independent variables to explain the variance and the dependent variable. In simple terms, the coefficient of determination is calculated by squaring the correlation coefficient (R); this reflects how much variation in the dependent variable Y can be explained by the independent variable X. If the coefficient of determination is equal to 0 (R2 = 0), it means that the variation of Y cannot be explained by X at all. Meanwhile, if R2 = 1, it means that the variation of Y as a whole can be explained by variable X. The results of the R2 determination test are in the table below:

Table 9

Test Coefficient of Determination

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.784[a]	.615	.612	.31620

a. Predictors: (Constant), Product Innovation, Entrepreneurial Education, Teaching Factory
b. Dependent Variable: Entrepreneurial Interest

Source: Primary data 2023

Based on Table 9 above, the R2 (R Square) number is 0.615. This shows that the percentage contribution of the influence of independent variables consisting of teaching factory and entrepreneurship education on the dependent variable of entrepreneurial interest is 61.5%. At the same time, the remaining 38.5% is influenced or explained by other variables that are not included in this research model.

The standard Error of the Estimate is a measure of the amount of regression model error in predicting the value of Y. From the regression results, a value of 0.31620 was obtained; this means that the number of errors in predicting entrepreneurial interest is 0.31620. As a guideline, if the Standard error of the estimate is less than the standard deviation of Y, then the regression model is better at predicting the value of Y.

DISCUSSION

Comment [H19]: Number it 4.4

Effect of the Teaching Factory Variables on Entrepreneurial Interest

Statistical analysis shows that the Teaching Factory variable has a significance (Sig.) of 0.000 in the Coefficients table with an α value (significance level) of 0.05. A value lower than the significance level indicates a significant effect, along with the t-count, which is greater than the t table (9.087>1.66039).

These results indicate that Teaching Factory has a positive and significant effect on entrepreneurial interest. In the context of Banyuwangi public vocational school, Teaching Factory has a positive and significant impact on students' entrepreneurial interests. The practical experience gained in an industrial simulation environment not only enhances students' technical skills but also shapes positive perceptions toward entrepreneurship. By being directly involved in the production or service process, students can identify business opportunities and develop innovative ideas. This finding is in line with the results of previous studies, such as research by (Kurniawan & Managi, 2018) and (Afiyati&Santoso, 2022), which show that participation in Teaching Factory is positively correlated with increased entrepreneurial interest of vocational students. The implication is that the Teaching Factory can be considered as an effective instrument in fostering entrepreneurial interest among students of Banyuwangi public vocational schools, providing a strong basis to continue the development of similar programs in various educational contexts and regions.

Comment [H20]: Year should be inside parentices

Effect of Entrepreneurship Education Variables on Entrepreneurial Interest

Based on the results showed that the Entrepreneurship Education variable has a significance value (Sig.) 0.000 in the Coefficients table with an α value (degree of significance) 0.05 means 0.000 <0.05, and the t-count value is greater than the t table is 7.380> 1.66039. This means that entrepreneurship education has a positive and significant effect on entrepreneurial interest. Entrepreneurship education has a positive and significant effect on the entrepreneurial interest of public vocational students in Banyuwangi. By being integrated into the curriculum, students are not only taught business theory but also given the opportunity to apply that knowledge through practical projects. This not only builds technical skills but also spurs students' interest in starting their own businesses. Through teaching entrepreneurship, students can identify business opportunities, develop creative ideas, and experience the challenges that may be faced in the entrepreneurial world. Previous studies by (Boldureanu et al., 2020) (Barba-Sánchez & Atienza-Sahuquillo, 2018) (Vodă&Florea, 2019) have investigated the impact of entrepreneurship education on vocational students in similar regions. The results showed that students who received entrepreneurship education had a higher level of interest in entrepreneurship compared to those who did not participate in similar programs. This finding is consistent with other studies

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that confirm that entrepreneurship education not only improves business knowledge but also positively shapes students' entrepreneurial attitudes and interests.

Effect of Product Innovation Variables on Entrepreneurial Interest

Based on the results showed that the Product Innovation variable has a significance value (Sig.) 0.000 in the Coefficients table with an α value (degree of significance) 0.05 means 0.000 <0.05, and the t-count value is greater than the t table, namely 7.398> 1.66039. This means that product innovation has a positive and significant effect on entrepreneurial interest. Product innovation has a positive and significant impact on the entrepreneurial interest of public vocational students in Banyuwangi. When students are involved in the process of creating innovative products, they not only develop technical skills in design and production but also hone their creative and solution-thinking abilities. This experience opens students' eyes to the business opportunities that can arise from new ideas and innovative products. Product innovation also creates a climate where students can feel the success of their creative endeavors, stimulating interest in entrepreneurship by providing a sense of confidence and motivation. Previous research by (Ramadani et al., 2019). (Lüdeke-Freund, 2020) have explored the relationship between product innovation and entrepreneurial interest, particularly in the vocational education environment. This study found that students who engage in innovative product development activities tend to have higher entrepreneurial interests. These results provide a strong empirical foundation to support the claim that product innovation plays a crucial role in stimulating entrepreneurial interest among vocational students.

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Effect of Teaching Factory Variables on Product Innovation

Based on the results of the study show that the Teaching factory variable has a significance value (Sig.) 0.000 in the Coefficients table with an α (degree of significance) value of 0.05, meaning that 0.000 <0.05 and the t-count value is greater than the t table, namely 8.178> 1.66039. This means that the Teaching factory has a positive and significant effect on product innovation of public vocational students in Banyuwangi. Teaching Factory is a learning approach in the Vocational High Schools that integrates theory and practice with the industrial world. This concept allows students to gain hands-on experience in creating products or services that are relevant to industry needs. Various studies have revealed that Teaching Factory has a positive and significant influence on product innovation of vocational students.

One of the studies supporting this was conducted by (Firdaus et al., 2021), who investigated the impact of Teaching Factory implementation on vocational students' skills in producing innovative products. The results showed that students involved in the Teaching Factory program had a higher level of creativity and were able to produce products with significant added value. By directly engaging in the production process similar to the actual industrial environment, students not only acquire technical skills but also develop the ability to think critically and solve problems. The importance of Teaching Factory in stimulating student product innovation is also reinforced by research (Muhitasari&Purnami, 2021), which focused on developing innovative skills of vocational students through this learning program. In their research, they found that Teaching Factory not only improves students' technical knowledge but also stimulates their creativity in producing new and innovative solutions. This creates a learning environment that supports the development of relevant and high-quality products.

Thus, it can be concluded that Teaching Factory has a positive and significant impact on the product innovation of vocational students. Through practical experience in situations similar to the industrialized world, students can hone their technical skills while stimulating creativity and innovative abilities. These studies provide a strong foundation for the continuation and development of Teaching Factory programs in Vocational High Schools to

ensure that this approach continues to contribute to the preparation of students to become competent innovators in the industrial world.

Effect of Entrepreneurship Education Variables on Product Innovation

Based on the results of the study show that the Entrepreneurship Education variable has a significance value (Sig.) 0.000 in the Coefficients table with an α (degree of significance) value of 0.05, meaning that 0.000 <0.05 and the t-count value is greater than the t table, namely 8.018> 1.66039. This means that entrepreneurship education has a positive and significant effect on product innovation. Entrepreneurship education in vocational high schools has an important role in shaping student product innovation. This education provides the basic knowledge and skills needed to develop an entrepreneurial spirit, which in turn can stimulate the product innovation process. Studies support that entrepreneurship education has a positive and significant effect on the Vocational High School students' ability to create innovative products.

A study conducted by (Suwardi et al., 2021) examined the impact of the entrepreneurship curriculum on the innovation ability of vocational students. The results showed that students who participated in the entrepreneurship program had a higher level of creativity and were able to produce products with significant added value. Entrepreneurship education provides students with a deep understanding of business concepts, marketing strategies, and risk management, all of which are key elements in developing innovative products. In addition, research by (Sektiyaningsih&Aisyah, 2020), highlighted the importance of developing entrepreneurial attitudes in stimulating innovation in vocational students. Through entrepreneurship education, students not only acquire technical knowledge but also develop proactive attitudes, creativity, and competitiveness that are essential in creating products that compete in the market. The program creates a learning environment that supports the development of students' innovative skills, giving them the confidence to face the challenges of creating new solutions.

Thus, entrepreneurship education has a positive and significant impact on the product innovation of vocational students. Through the provision of entrepreneurial skills and the formation of innovative attitudes, students are equipped with the ability to produce products that not only meet technical standards but are also relevant and competitive in the market. Entrepreneurship education in the Vocational High School is a crucial element in preparing the younger generation to become successful innovators and entrepreneurs in today's global era.

Effect of Teaching Factory Variables Moderated by Product Innovation on Entrepreneurial Interest

Based on the results showed that the Teaching factory variable moderated Product Innovation has a significance value (Sig.) 0.282 in the Coefficients table with an α value (degree of significance) 0.05, which means 0.282>0.05 and the t-count value is smaller than the t table, namely -1.077 <1.66039. This means that Product Innovation is not able to moderate the relationship of Teaching Factory to entrepreneurial interest. Teaching Factory, as a practical learning method in the industrial world, has been found to have a positive influence on the entrepreneurial interest of public vocational students in Banyuwangi. Through hands-on experience with the work environment, students can develop the practical and entrepreneurial skills necessary to start their own business. However, this study shows that Product Innovation is not able to moderate the relationship between Teaching Factory and the entrepreneurial interest of public vocational students in Banyuwangi. Although Product Innovation as a concept has important value, it does not significantly change the positive influence provided by Teaching Factory on students' entrepreneurial interest. Previous research by (Darsono et al., 2019) (Rendragraha, 2023) also investigated the possible moderation of Product Innovation on the relationship between practical learning

methods such as Teaching Factory and entrepreneurial interest. This research shows consistency with the findings of the current study, that although Product Innovation has a positive impact on entrepreneurial interest, it does not significantly moderate the relationship with the effect of Teaching Factory.

The Influence of Entrepreneurship Education Variables Moderated by Product Innovation on Entrepreneurial Interest

Based on the results showed that the variable entrepreneurship education moderated Product Innovation has a significance value (Sig.) 0.000 in the Coefficients table with an α value (degree of significance) 0.05, which means 0.003 <0.05 and the t-count value is greater than the t table, namely 3.023> 1.66039. This means that Product Innovation is able to moderate the effect of entrepreneurship education on entrepreneurial interest. Entrepreneurship education in Banyuwangi public vocational schools is recognized as having a positive impact on students' entrepreneurial interests. The program not only provides a theoretical understanding of the business world but also involves students in practical activities that stimulate the development of entrepreneurial skills. This study shows that Product Innovation is able to moderate the positive influence of entrepreneurship education on the entrepreneurial interest of public vocational school students in Banyuwangi. Students who are involved in innovative product development as part of entrepreneurship education tend to have higher entrepreneurial interests. Product innovation strengthens the effect of entrepreneurship education by providing a practical and creative dimension that can increase students' attractiveness to the entrepreneurial world. Previous research by (Fathiyannida&Erawati, 2021) (Srianggareni et al., 2020) (Inayati, 2018) also investigated the moderating role of Product Innovation on the relationship between entrepreneurship education and entrepreneurial interest. The results are consistent with the findings of this study, suggesting that Product Innovation can strengthen the positive effect of entrepreneurship education on the entrepreneurial interest of vocational students. These findings add to the evidence that the integration of product innovation in the context of entrepreneurship learning can be an effective strategy in shaping students' entrepreneurial readiness.

4. CONCLUSION

Comment [H23]: 5

From the above discussion, it can be concluded that the development of entrepreneurial interest among students of public vocational high schools in Banyuwangi involves various key factors. Teaching Factory, as a method of practical learning in the industrial world, is proven to have a positive influence on students' entrepreneurial interests, allowing them to experience first-hand the dynamics of the world of work. Entrepreneurship education also makes an important contribution by providing theoretical understanding and practical involvement in business activities. The importance of Product Innovation in this context proved to be significant, especially in moderating the effect of entrepreneurship education on entrepreneurial interest. The results show that Product Innovation amplifies the positive effects of entrepreneurship education by providing a practical and creative dimension, motivating students to involve themselves in entrepreneurial activities.

Nonetheless, the study also found that Product Innovation was unable to moderate the relationship between Teaching Factory and students' entrepreneurial interest. This shows the complexity of the interaction between educational factors and innovation in shaping entrepreneurial interest. Therefore, a holistic approach that includes various learning elements and innovative practices may be more effective in shaping the entrepreneurial readiness of public vocational students in Banyuwangi. The findings make an important contribution to the development of curriculum and learning strategies to support the growth of youth entrepreneurial potential at the local level.

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