

Does Entrepreneurial Education Promote the Performance of Makers?

—Survey from Zhejiang Province

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Abstract—This paper studies the relationship between entrepreneurship education (EE) and entrepreneurial performance (EP) of college students, and it introduces entrepreneurial intention (EI) as an intermediary variable to test the effect of EE, and discusses the influence mechanism of EE on EP of college students. What's more the article uses hierarchical regression analysis model for empirical study based on field survey data from Zhejiang province. The results show that: (1) Theoretical Entrepreneurship education (TEE) and practical entrepreneurial education (PEE) have significant positive impact on EP, and the latter is bigger than the former as for the effect. (2) EE can promote the formation of EI. EI plays a full intermediary role between TEE and EP, and it plays a partial intermediary role between PEE and EP. The results indicate that we should pay more attention to PEE to promote EP of college students.

Keywords—*Entrepreneurship Education; Entrepreneurial Performance; Entrepreneurial Intention; Hierarchical Regression Analysis Model*

I. INTRODUCTION

Since the launch of the "mass entrepreneurship and innovation" campaign, a wave of innovation and entrepreneurship has swept across the country. China's entrepreneurial activities have undergone tremendous changes in just two or three years. The newly established business operators are experiencing a fast growth. According to statistics, in the first half of 2017, about 49,000 new business operators are registered every day. Small and micro businesses, which have sprung up like a spark of fire, have become a major new force in economic growth while generating employment for tens of millions of people. Predictably, as the mass entrepreneurship and innovation activities continued to carry out and the Internet is widely used, more and more people will use the Internet for business. It will promote employment through starting business and create more employment opportunities by launching business, even promote the stable growth of economy in our country by the successful entrepreneurial efforts.

As the cradle of talents and the highland of science and technology, colleges and universities are important places for innovation and entrepreneurship. According to the data, the number of college graduates starting businesses after

graduation has almost doubled in the past five years, from 1.6% in 2011 to 3.0% in 2017. However, it is a fact that the EP of college students is not ideal and the success rate is very low. The average success rate of entrepreneurship among college students is less than 5%. Especially in the Internet field, the failure rate of entrepreneurship is more than 95% in China. Therefore, it is very important and urgent to improve the EP and success rate of college students. A number of educators attributed the poor EP of college students and the low success rate to the weak EE of college students. They believe that EE of Chinese college students is very weak, the lack of teachers, outdated concepts, simple form and content, and poor results. Therefore, the influence mechanism of EE on EP is worth further discussion.

This paper theoretically discusses the EE mechanism of direct effects and indirect effects on business performance by reviewing literature. After that, hierarchical regression model will be used for empirical analysis on the basis of the field survey data coming from Zhejiang Province.

II. LITERATURE AND HYPOTHESES

A. *The Relationship between EE and EP*

Piperopoulos et al. divided EE into TEE and PEE^[1]. TEE teaches methods such as entrepreneurship theoretical knowledge and basic skills. It provides students the communication opportunities with the campus outstanding mentors, experts and professors etc. The students can contribute to the development of its business activities and the improvement of EP through getting the latest market information, grasping the market trends and obtaining the professional guidance from them. In addition, accepting education and gaining rich professional knowledge can enhance students' confidence in entrepreneurship and also encourage them to seek success in entrepreneurship actively. Therefore, TEE can promote EP.

PEE can make students feel the difficulties and risks in the process of entrepreneurial in advance, solving the problem by innovative way, making students try to overcome difficulties, and persevering to strive for the success of the business from the encouragements of mentors. The experience accumulated in the process of actual entrepreneurship or participation in actual

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entrepreneurship can improve students' ability of market analysis and take positive actions quickly after finding feasible opportunities. Students can be provided the opportunities of communication with the successful people such as the successful entrepreneurs, business executives, the representatives of venture capital and so on, getting the latest market information, high quality information, valuable business guidance, and maybe can obtain supports of the sale, technology, capital etc.. These things can overcome the defects of newcomers and reduce business risks so as to improve business performance. Therefore, TEE can promote the improvement of EP.

So the following hypotheses are proposed:

H1a: TEE has a significant positive effect on EP of college students.

H1b: PEE has a significant positive effect on EP of college students.

B. The Relationship between EP and EI

EI refers to the subjective desire of potential entrepreneurs to engage in entrepreneurial activities, which is considered to be the best predictor of entrepreneurial behavior^[2]. EI is an important driver of entrepreneurial behavior, and entrepreneurship is more likely to come from individuals with strong EI. A stronger EI person to achieve their own entrepreneurial dream, more willing to try to learn business knowledge, improve business skills, take actions to operator business, and work hard for entrepreneurial success. Therefore, EI has a significant influence on entrepreneurship. Usually, the more entrepreneurial desire, the more have the drive to improve its performance, thus the students who have higher EI may achieve better EP.

The following hypothesis is proposed:

H2: EI has a significant positive effect on EP of college students.

C. The Intermediary Role of EI

EE can improve students' entrepreneurial willingness^[3-4]. The creation and formation of EI need students to recognize their own business knowledge and skills. They can find market opportunities from the complex market environment, taking innovations, and making the market opportunities into business opportunities quickly. The students can enrich knowledge, cultivating their skills, motivating their inspiration and creativity, bringing best social relations for them, broadening the students access to social resources through TEE and PEE. In addition, students can acquire relevant knowledge and skills needed for starting a business and obtain more social resources by accepting EE. Therefore, both TEE and PEE can enhance students' EI effectively.

The following hypotheses are proposed:

H3a: EI plays an intermediary role between TEE and EP of college students.

H3b: EI plays an intermediary role between PEE and EP of college students.

From what has been discussed above, the following conceptual model is proposed based on the above analysis:

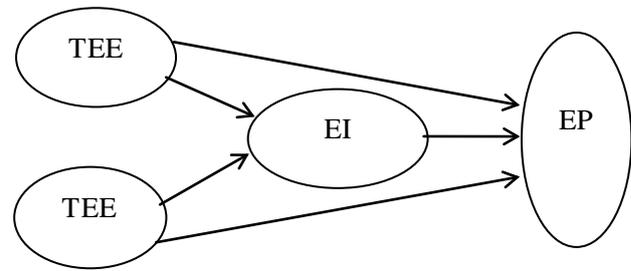


Fig. 1. Research conceptual model

III. METHODOLOGY AND DATA SOURCE

A. The Data Source

In this paper, the data derived from a questionnaire survey conducted by a study group from October to December, 2017. The respondents are the students who engaged in e-commerce business operations come from Hangzhou University of Electronic Science & Technology, Zhejiang University of Industry & Commerce, Ningbo Vocational & Technical College, Wenzhou Vocational & Technical College, Lishui College, Yiwu Vocational and Technical College of Industrial & Commercial, Quzhou College. The survey covers both developed cities and underdeveloped areas. The respondents include undergraduates and vocational colleges students. To a certain extent, the samples are typical. Random sampling was used in this survey. In this survey, a total of 400 questionnaires were issued and 358 copies were recovered, with a return rate of 89.5%. After removing some missing data or contradictory questionnaires, 327 valid questionnaires were finally obtained, with an effective rate of 81.8%. The basic statistical characteristics of the samples are shown in TABLE I.

TABLE I. BASIC STATISTICAL CHARACTERISTICS OF SAMPLES

Indicators		Samples	Percentage
Gender(G)	Male	241	73.6
	Female	86	26.4
Age(A)	Under 20ys	82	25.1
	21-25ys	134	40.9
	26-30ys	74	22.6
	Above 31ys	37	11.4
Monthly Income(I)	Under ¥ 5000	89	27.2
	¥5001-10000	118	36.2
	¥10001-20000	77	23.4
	Above ¥20001	43	13.2
Business Scale(S)	1-2persons	99	30.2
	3-5persons	125	38.3
	6-10persons	75	23.0
	Above 10persons	28	8.5
Years of entrepreneurship(T)	Under 1ys	102	31.1
	1-3ys	128	39.1
	4-5ys	65	20.0
	Above 6ys	32	9.8
Sum		327	100.0

B. Units Variables and Measurement

There are three variables in this study: EE, EI and EP. EE is divided into TEE and PEE.

EE is the independent variable (IV). EI is an intermediary variable(MV). EP is the dependent variable (DV). The all variables adopt Likert scale method five score, where "1" means "strongly disagree", "2" means "disagree", "3" means "general", "4" means "agree", "5" means "strongly agree".

Although there are a few scholars developed EE scale, which was improved by some scholars considering the fact^[5]. This paper measures EE by using respondents who accept EE courses or take part in practical project frequency based on referencing literature^[6] and combining with the characteristics of the network business. There are 4 items for TEE and TEE respectively.

Scholars have not yet formed a unified and recognized measurement method as for the measurement of EI, but it is generally believed that the multi-item measurement scale is more scientific and reasonable. So this paper measures the scale of EI from the dimensions of entrepreneurial ideal, entrepreneurial determination and entrepreneurial perseverance, etc. There are 4 items for measuring EI.

The article measures EP from traffic, turnover and profit growth and target dimension to measure EP by using the method of subjective evaluation. The way is based on the research outcome of Yin Feixiao^[7], and combining with the characteristics of the online business. This scale mainly includes 4 items including online shop visitors , transaction amount, profit and the target.

TABLE II. RELIABILITY AND VALIDITY

Variable	Factor Loading	Reliability and Validity	
TEE	0.801	KMO	0.793
	0.871	Bartlett	379.735***
	0.865	Cronbach's α	0.837
	0.743	Cumulative Variance(%)	67.490
PEE	0.805	KMO	0.795
	0.770	Bartlett	291.738***
	0.813	Cronbach's α	0.810
	0.803	Cumulative Variance(%)	63.654
EI	0.807	KMO	0.807
	0.805	Bartlett	309.172***
	0.800	Cronbach's α	0.819
	0.812	Cumulative Variance(%)	64.952
EP	0.802	KMO	0.773
	0.744	Bartlett	228.801***
	0.770	Cronbach's α	0.765
	0.760	Cumulative Variance(%)	59.216

Note: ***means Sig is 0.000.

The measurement items, reliability and validity indicators and factor analysis results of each variable are shown in TABLE II. It can be seen from TABLE II: The factor loading value of TEE is between 0.743 and 0.871. The KMO value of TEE is 0.793. The Bartlett tests of spherical test result are significant. The Cronbach's logistic coefficient of TEE is 0.837,

and its cumulative contribution variance is 67.49%. The factor loading value of PEE is between 0.770 and 0.805. The KMO value of PEE is 0.795. The Bartlett's spherical test result is significant. The Cronbach's logistic coefficient of PEE is 0.810, and its cumulative contribution variance is 63.65%. The factor loading value of each item of EI is between 0.800 and 0.812. The KMO value of EI is 0.807. The Bartlett's spherical test result is significant. The Cronbach's logistic coefficient of EI is 0.819, and its cumulative contribution variance is 64.95%. The factor loading value of each item of EP is between 0.744 and 0.802. The KMO value of EP is 0.773. The Bartlett's spherical test result is significant. The Cronbach's logistic coefficient of EP is 0.765, and its cumulative contribution variance is 59.22%. In conclusion, questionnaire survey data have high reliability and good quality. It is suitable for empirical analysis.

This study uses AMOS21.0 software for model compatibility analysis. The analysis is carried out on the model for confirmatory factor. The model fitting indexes are shown as follows: CMIN/DF=1.875, less than 2, RMSEA = 0.061, between 0.05 and 0.08, CFI=0.939, FLI=0.927, IFI=0.940, NFI=0.880, RFI=0.855. All index are between 0.855 to 0.940. So the model has good fitting degree for the study of small sample size.

The controlled variables (CV) of this article mainly include gender, age, personal monthly income, employee size and years of starting a business. The method of assignment is used to transform according to the study of Luo Mingzhong and Chen Ming^[8].

C. Empirical Analysis

The correlation analysis of variables is carried out firstly. The specific results of correlation analysis are shown in TABLE III. The results show that the correlation coefficient between TEE and PEE is low, and the level of significance is not obvious. The correlation coefficient of the other variables is between 0.122 and 0.570, which are lower than the critical value of 0.7. They all passed the test of significance. In addition, the Variance Inflation Factor (VIF) of each variable is far less than the critical value 10. It indicates that there is no multicollinearity among the independent variables.

TABLE III. PEARSON COEFFICIENT AMONG VARIABLES

	TEE	PEE	EI	EP	VIF
TEE	1				1.030
PEE	0.078	1			1.222
EI	0.157**	0.438***	1		1.254
EP	0.122*	0.570***	0.427***	1	

Note: Mean value of a variable for statistical analysis; ***, **, *Indicates significance at the 1%, 5%, and 10% significance lever. (the same below)

D. Analysis of Hierarchical Regression

The article conducts the multiple regression analysis on the relationship among entrepreneurial education, entrepreneurial intention and entrepreneurial performance by software SPSS22.0. The results are shown in TABLE IV.

Model 2 shows that TEE and PEE all have significant positive effect on EI, the coefficient are 0.151 and 0.393 respectively. Model 4 shows that TEE and PEE have significant positive effect on EP, but PEE has a stronger impact on EP. Therefore, the hypothesis H1a and H1b have been verified. The regression results of model 5 shows that PI has a significant positive impact on PE. Therefore, hypothesis H2 is supported. In this paper, Baron and Kenny's stepwise regression method will be used to test the mediating effect^[9]. The results show that TEE influences PI and EP positively by the model 2, PEE also influences PI and EP positively by model4. The results show that the influence coefficient of TEE charges smaller and the lever of significance is not obvious by adding EI. And the influence coefficient of PEE changes from 0.554 to 0.505, and the significance remains unchanged. It can be concluded that the EI plays a fully intermediary role between TEE and EP, it plays a partially intermediary role between PEE and EP. Thus hypothesis H3a is tested, hypothesis H3b is partially tested. Therefore, the results of hierarchical regression analysis show that the hypothesis H1a, H1b, H2 and H3a are supported, and H3b is partially tested.

TABLE IV. THE RESULT OF HIERARCHICAL REGRESSION ANALYSIS

Variable	EI		EP				
	M1	M2	M3	M4	M5	M6	
CV	G	0.09	0.08	0.01	-0.02	-0.02	-0.02
	A	-0.18***	-0.11*	-0.23***	-0.13**	-0.17***	-0.12**
	I	0.05	0.02	0.09	0.07	0.08	0.06
	S	0.024	0.02	0.13**	0.14***	0.12**	0.14**
	T	0.09	0.08	0.13**	0.12**	0.11*	0.11***
IV	TEE		0.15**		0.09*		0.08
	PEE		0.39***		0.54***		0.51***
MV	EI				0.32***	0.10*	
R ²	0.05	0.23	0.08	0.38	0.18	0.39	
AdjustedR ²	0.03	0.20	0.06	0.36	0.16	0.37	
F-statistics	2.26	9.47	4.01	19.83	8.16	17.82	

Note: The regression coefficients are standardized.

IV. CONCLUSIONS AND IMPLICATIONS

This paper discusses the relationship between EE, EI and EP of college students theoretically. It uses hierarchical regression analysis based on the field survey data of college students in Zhejiang province for empirical analysis. The results show that TEE and PEE both have significant positive effects on EP, and the direct effect of PEE is more stronger. EI plays a positive role in EP. Moreover, EI plays an intermediary role between EE and EP. EI plays a fully intermediary role between TEE and EP, and it does a partially mediation between TEE and EP.

This paper has the following inspirations based on the research conclusions:

Firstly, entrepreneurship can be taught. EE can enrich the knowledge of the makers in college. It can cultivate their

innovation ability, increase their operation experience and improve their entrepreneurial skills. Thus it will play a positive role in promoting EP eventually. So the local governments, universities and enterprises need to deepen the cooperation to build EE course system such as faculty, entrepreneurial resources, etc. reciprocally. They also can work together to create a strong modern EE system in line with "create, build, sharing, win-win".

Secondly, EE should be strengthened; more important EE should come back practice. Local governments, universities and enterprises need to build a batch of business incubators and maker space in high planning, high grade, high standard construction, and high efficiency operation. It should be provided high quality practical platform for entrepreneurship college students. A diverse mentors team can be building hardly including scholars, experts corporate executives, etc.

Finally, the importance of EI in entrepreneurial activities must be understood fully. The government should propagate entrepreneurship vigorously. People should respect the entrepreneurs, create an atmosphere of innovation and entrepreneurship, enhance people's willingness to start businesses and inspire people's enthusiasm for entrepreneurship.

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