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Influencing Factors of Entrepreneurial Intention among Engineering Students in Sichuan, China

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Abstract

Purpose: The purpose of this study is to investigate the key influencing factors of entrepreneurial intention of engineering students in Sichuan, China. The conceptual framework proposes Entrepreneurship Education (EE), Personal Attitudes (PA), Perceived Behavioral Control (PBC), Subjective Norms (SN), Entrepreneurial Self-efficacy (ESE), Entrepreneurial Creativity (EC) and Entrepreneurial Intention (EI). **Research design, data and methodology:** A quantitative research method (N=693) was adopted to issue questionnaires to engineering students in Xihua University. Nonprobability sampling technique includes judgmental sampling, stratified random sampling, and convenience sampling. Confirmatory factor analysis (CFA) and structural equation model (SEM) was used for data analysis and model measurement, including factor loading, reliability, validity and model fit. **Results:** The results illustrate Entrepreneurship Education (EE) was affected by entrepreneurial self-efficacy (ESE), perceived behavioral control (PBC) and personal attitude (PA). Entrepreneurial self-efficacy (ESE) had an effect on entrepreneurial creativity (EC). Personal attitude (PA) and entrepreneurial creativity (EC) significantly affected entrepreneurial intention (EI). Whereas ESE, PBC and SN did not significant to EI. **Conclusions:** Out of nine hypotheses, only six were supported to meet the research objectives. Therefore, it is suggested to carry out effective reform of entrepreneurship education in combination with the national construction of new engineering for improving students' entrepreneurial intention.

Keywords: Entrepreneurship Education, Entrepreneurial Intention, Perceived Behavioral Control, Entrepreneurial Self-efficacy, TPB theory.

JEL Classification Code E44, F31, F37, G15

1. Introduction

Since February 2017, the Ministry of Education has actively promoted the construction of new engineering. Under the background of the national implementation of "Made in China 2025": Action Plan and innovation-driven development programing documents new engineering construction such as "Fudan Consensus", "Tianda Action" and "Beijing Guide" have been successively formed (Hu et al., 2021). The construction of new engineering has become the direction of the reform and development of higher engineering education, and the quality of innovation and entrepreneurship has been brought into the teaching and discipline evaluation system of relevant universities, with more emphasis on the cultivation of "entrepreneurship and innovation" ability of engineering talents.

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Some scholars have pointed out that training of high-quality talents with engineering practical ability. "Entrepreneurship and innovation" ability is not only the mission and responsibility of universities, but also the key link of implementing "mass entrepreneurship and innovation" (Wang, 2021). Scholars who study new engineering education stated that interdisciplinary integration is an important feature of training new engineering talents to adapt and lead the development of new economy, which its fundamental requirement is innovation and entrepreneurship ability (Wang, 2021).

The new engineering major is an upgrade of the traditional engineering majors such as intelligent manufacturing, cloud computing, artificial intelligence and robot. Compared with the traditional engineering talents, the future emerging industries and new economy need high-quality compound new engineering talents with strong practical ability, innovation ability and international competitiveness (Zhang et al., 2021).

Under the background of new engineering students' innovative undertaking education in accordance with the specific requirements and new technical talents cultivation situation creation fits a pattern of innovation of entrepreneurship education. This can effectively improve college students' innovative entrepreneurial education under the new engineering background to carry out the possible problems in the process under the background of new engineering education industry development. This new education can meet the requirements of college students' innovation and entrepreneurship education and training of new engineering talents (Guo, 2021).

At present, the integration of new engineering education and innovation and entrepreneurship education are not enough, which leads to the problem that entrepreneurial intention among students is not adequate. The new entrepreneurship course fails to carry out personalized comprehensive design according to the characteristics of the new engineering major. Innovation and entrepreneurship education teachers have failed to carry out effective communication on the curriculum setting. In addition, students have failed to select innovation and entrepreneurship courses according to their own professional needs and lack the ability to systematically solve complex engineering problems (Wang, 2021).

Therefore, it is necessary to study the effective influencing factors of engineering students' entrepreneurial intention under the background of new engineering construction, so as to promote the development of innovation and entrepreneurship education. The researchers aim to investigate the relationships among Entrepreneurship Education (EE), Entrepreneurial Self-efficacy (ESE), Perceived Behavioral Control (PBC), Personal Attitude (PA), Entrepreneurial Creativity (EC), Subjective Norms (SN), and Entrepreneurial Intention (EE). This study may prove better for the policy makers and partitioners to frame policy in accordance with the development of entrepreneurial intention because deviation of mind may build and enhance the business activities and self-employment.

2. Literature Review

2.1 Theory of Planned Behavior (TPB)

The theory of planned behavior (TPB) is an extension of the theory of reasoned action (TRA). Initially, TRA incorporates constructs of attitude and subjective norm, behavioral intention and actual behavior (Ajzen & Fishbein ,1980). TPB added the construct of perceived behavioral control. In regard to TPB, an actual behavior is impacted by behavioral intention and perceived behavioral control. Behavioral intention is predicted by attitude, subjective norm and perceived behavioral control (Cho & Cheung, 2003). TPB explains individual's logic, reason and decisions to perform particular behavior by evaluating an existing information or significant of others. A challenge in TPB measurement is the difficulty in conceptualizing and capturing attitudes (Ryan & Carr, 2010).

2.2 Social Cognitive Career Theory (SCCT)

Social cognitive career theory (SCCT) was developed by Lent et al. (1994). SCCT explains three interrelated aspects of career development: (1) how basic academic and career interests develop, (2) how educational and career choices are made, and (3) how academic and career success is obtained. The model incorporates a variety of concepts such as interests, abilities, values, environmental factors from earlier career development theories, employing social cognitive theory of as an extension of framework (Bandura, 1986). According to Kelly (2009), social cognitive career theory clarifies how individuals form career interests, occupational goals, persevere in work environments, and attain job satisfaction.

2.3 Entrepreneurial Event Model (EEM)

Entrepreneurial Event Model (EEM) is an educational and comprehensive model, relating with the decision to achieve entrepreneurial movement that required a pre-existing attitude which honors the activity as compulsory and attainable as well as the tendency to act upon an opportunity (Shapero & Sokol, 1982). EEM factors incorporate perceived feasibility and perceived desirability with the addition of self-efficacy (Soomro et al., 2016). EEM is also known as Shapero's Entrepreneurial Event

model which was originated by Shapero and Sokol (1982) to determine the interaction of cultural and social factors that can lead to a firm creation by influencing individual's perceptions (Miralles et al., 2012).

2.4 Social Learning Theory (SLT)

Social learning theory was developed by Bandura (1986), incorporating with key element of sustainable natural resource management and the promotion of desirable behavioral change (Muro & Jeffrey, 2008). SLT theory conceptualizes the idea from individual's interactions with others in a social setting. For further explanation, people develop their own behavior by observing others' behavior. In addition, a person adjusts and imitates behavior, from his/her observational experiences, relating to positive attitude and earned rewards. Imitation of behavior encompasses the actual replica of monitored activities. (Bandura, 1989).

2.5 Entrepreneurship Education

Entrepreneurship education can be interpreted as an educational activity or practice for the accumulation of relevant knowledge to start a company in the future. It is a good way to stimulate students' understanding and interest in innovation and entrepreneurship and encourage relevant practices (Detienne & Chandler, 2004). At the same time, entrepreneurship education stimulates entrepreneurial willingness and makes indirect contribution to national and regional economic development (Ahmad, 2015; Küttim et al., 2014). Farashah (2013) further pointed out that people trained by entrepreneurship are more innovative, more adventurous in using existing knowledge to carry out innovative behavior and change the world. Many studies consider the effect of entrepreneurship education on individuals from a theoretical point of view (Krueger & Blazeal, 1994; Robinson et al., 1991).

The process of EE is an important mean to shape the spirit of personality (Peterman & Kennedy, 2003). It is an educational paradigm to develop and improve students' basic quality of entrepreneurship, cultivate students' entrepreneurial consciousness, develop entrepreneurial quality, enhance innovative spirit and entrepreneurial ability (Henderson & Robertson, 2000; Krueger & Brazeal, 1994). Therefore, EE has a strong application of example demonstration and social persuasion in entrepreneurship course that can obviously stimulate students' entrepreneurial passion and improve their entrepreneurial self-efficacy (Moulding et al., 2014).

Some universities have developed new curriculum training programs for innovation and entrepreneurship students, breaking the barriers between universities and departments, carrying out interdisciplinary professional elective courses, and designing professional degree courses (Souitaris et al., 2007), so that students can be more comprehensive to master the knowledge needed to start a business and help them improve their confidence in starting a business when they choose their career. Many studies showed that the impact of EE on students with different knowledge base and different majors could have an influence on the evaluation of individual ability, thought and behavior which determine individual's PBC (Hisrich & Peters, 2002; Johnson, 1990).

The importance of EE as external factors has been widely recognized, and also has been verified in the study of psychology (Henderson & Robertson, 2000). Numerous studies found that the PA as antecedent of entrepreneurial behavior, under the influence of EE, received a formal business education (including all kinds of knowledge economics, management and education), attitude towards entrepreneurship (Turker & Selcuk, 2009). Based on the above theoretical analysis, the hypotheses are proposed:

H1: Entrepreneurship Education has a significant impact on Entrepreneurial Self-efficacy.

H2: Entrepreneurship Education has a significant impact on Perceived Behavioral Control.

H3: Entrepreneurship Education has a significant impact on Personal Attitude.

2.6 Entrepreneurial Self-efficacy

Baron (2004) defined entrepreneurial self-efficacy as the confidence to integrate and exert resources, technologies, and capabilities to achieve the expected goals. It is an essential behavior intention when a person wants to start an undertaking behavior. Because of the uncertainty of the business environment, he/she must work hard, never give up, think ahead of time (Bandura & Walters, 1997). This kind of consciousness expresses one's self-confidence in whether he can successfully achieve the work requirements and has the subjective conditions. In addition, Shane et al. (2003) also found that self-efficacy can affect a person's ability to accept risks, and highly efficient people are willing to face obstacles, pay more time and effort, and choose a better route to overcome difficulties.

In the face of failure, people who have a high degree of self-confidence will think that they are accumulating experience and will not completely deny their own efforts (Bandura, 1986). Individuals are good at arousing resonance from ordinary life experience and indirect experience from books to apply them to their ordinary behavior. It can be seen as a natural response to difficulties. This kind of causal explanation and reason can be clearly reflected in the entrepreneur's behavior when starting a business (Murugesan & Jayavelu, 2015).

Entrepreneurial self-efficacy can affect individual entrepreneurial creativity. Self-efficacy is an important incentive factor in individual creative behavior (Shin & Zhou, 2007). It can constantly motivate individuals to adhere to the faith of creative work. Employees' personality traits, self-efficacy and team leadership can affect their creativity (Chen & Zhang, 2019). When faced with challenges, self-efficacy can provide strong internal motivation to support individuals to complete creative performance (Vancouver & Kendall, 2006).

Khuong and An (2016) took university students majoring in business and management in Vietnam National University as research objects to explore the relationship between ESE and EI (Anwar et al., 2020). Similarly, scholars have also proved that self-efficacy has a positive promoting effect on EI in their studies on other countries and regions (Chen, 2021). A large number of research results show that the higher the ESE of an individual is, the more likely the individual is to choose to start a business and have higher confidence in his success in starting a business (De Pillis & Reardon, 2007; Roy et al., 2017). Summarizing the above studies, it can be assumed that:

H4: Entrepreneurial Self-efficacy has a significant impact on Entrepreneurial Creativity.

H5: Entrepreneurial Self-efficacy has a significant impact on Entrepreneurial Intention.

2.7 Perceived Behavioral Control

According to the "TPB" theory, perceived behavioral control refers to the summary of two aspects: the individual's judgment on whether the behavior to be carried out is easy or not (Ajzen, 1991), and the awareness of their own ability and the level of self-control (Murugesan & Jayavelu, 2015; Zhang et al., 2021). It is also an information judgement which can seize resources and opportunities (Bandura, 1989). It can be regarded as a person's attitude of self-reflection in the context of being noticed by the surrounding. As mentioned in earlier studies, from the perspective of psychology, the influencing factors of perceived behavioral control are similar to those of self-efficacy (Solesvik, 2013). Other scholars noted that the judgment of the difficulty of carrying out activities is called perceived behavior control. "TPB" theory and many articles have mentioned it, can also be understood as the correlation between perception and behavior control (Kolvereid, 1996).

Through empirical analysis based on the TPB, a large number of studies have found that university students' personal characteristics and PBC have a significant impact on their EI (Bangash & Naeem, 2014), most students choose to start their own businesses in order to achieve their ideals and give back social value, and the proportion of university students who choose to start their own businesses simply to obtain social wealth is gradually decreasing. University students gradually form a risk awareness to deal with the uncertain environment of entrepreneurship through systematic learning of entrepreneurial knowledge, have a more rational attitude towards entrepreneurial style, and their perceived behavior control which generate EI (Ferreira et al., 2012; Peterman & Kennedy, 2003). Therefore, the following hypotheses are put forward:

H6: Perceived Behavioral Control has a significant impact on Entrepreneurial Intention.

2.8 Personal Attitude

Ajzen (1991) claimed that attitude is a believe and a psychological tendency formed by subjective judgment after being influenced by specific people, events, or ideas for a long time, and thus affects individual behavior tendency. Krueger et al. (2000) identified that entrepreneurs' attitude toward whether the entrepreneurial project can be successful or not and whether there are detailed, and feasible plans will have an impact on entrepreneurial willingness. However, there is no obvious evidence that the attitude of students with higher subjective norms is consistent. However, Zampetakis et al. (2011) proposed that there are also many studies that show attitude, subjective norms and behavior control have a comprehensive impact on entrepreneurial intention, which is represented by Ajzen's (1991) "TPB" theory.

A positive personal attitude can lead to more motivation to start a business. And this quality with subjective tendency can be obtained by learning (Sanna et al., 2015). Desire is considered to be a very important factor in university students' willingness to start a business. According to Schwarz et al. (2006), whether an individual chooses to set up a company or not is greatly influenced by how one conduct himself and how does he/she think of money. Entrepreneurship courses and training are significantly related to students' belief in self-completing entrepreneurial goals, perception of behavior control, and attitude towards entrepreneurship. The learning of entrepreneurial knowledge can impact an individual's attitude towards entrepreneurial intention (Leitao et al., 2009; Wu & Wu, 2008). Based on the above research, the author puts forward the following hypothesis:

H7: Personal Attitude has a significant impact on Entrepreneurial Intention.

2.9 Entrepreneurial Creativity

According to Gilad (1984), entrepreneurial creativity is made up of knowledge, intellect, abilities, and an excellent personality. It consists of series of complex and ongoing high-level psychological activities (Puhakka, 2011). In the

early days, Amabile (1996) defined it as a capacity for generating new ideas, discovering and creating new things. Recently, Carmeli et al. (2014) identified that creativity can be seen as a quality in relation with social development, creative quality and practical activities. Furthermore, entrepreneurial creativity is an important symbol to distinguish talents to demonstrate innovation and creativity, especially under high levels of physical and mental stress (Hamidi et al., 2008; Shahab et al., 2019).

Many researchers have started to focus on the impact of creativity on individual EI because creativity involves individual characteristics and ability (Felsman & Blustein, 1999; Kracke, 2002). People with strong creativity are more likely to produce novel and useful ideas or opinions related to products, services, business models, working methods or management processes, to show a stronger EI (Zhao et al., 2005). Hamidi et al. (2008) indicated creativity practice can be used to improve students' EI. Zampetakis et al. (2011) studied of young people found a positive relationship between EC and EI. Chia and Liang (2016) conducted a survey on students majoring in tourism in Taiwan, which also confirmed this relationship between EC and EI. Thus, this study puts forward the following hypothesis:
H8: Entrepreneurial Creativity has a significant impact on Entrepreneurial Intention.

2.10 Subjective Norms

Whether or not the external pressure exerted on an individual carries out a certain activity is called subjective norms. In other words, the attitude of people who are important to them has a decisive impact on individual decisions (Ajzen, 2002). From another point of view, the social impact area of subjective norms is also a reference factor. Many people who provide financial support to start-ups and acquire shares in the company believe that choosing whether to invest or should not is not only examine human resources, technology and social relations, but also consider whether it will be attracted by top capital (Zhang et al., 2021).From the perspective of Education and Finance, it is concluded that the degree of knowledge reserve and learning ability play a great role in the formation of subjective norms. (Bandura & Walters, 1997).

The EI was comprehensively considered from five aspects of previous interest, perception, free work preference, restricted work preference and behavioral expectation (Gird & Bagraim, 2008). When measuring personal attitude, they divided personal attitude into two variables: endogenous attitude and exogenous attitude (Mentoor & Friedrich, 2007). When measuring the subjective normative dimension, they chose five groups that had the most important impact on students, parents, best friends, teachers, and classmates. The research confirmed that TPB theory's subjective norms has strong applicability in the research field of Chinese university students' EI. Consequently, a hypothesis is derived.
H9: Subjective Norms has a significant impact on Entrepreneurial Intention.

2.11 Entrepreneurial Intention

Intention is an important indicator of whether he or she has a willingness to engage in an activity. It can also be explained as a tendency, which is the result of the mutual influence of character, feeling and action (Boukamcha, 2015). To put it simply, Liñán and Fayolle (2015) argued that it is the faith that people set up their own business in China after careful and in-depth consideration. From the origin, studies on entrepreneurial intention come from two different fields (Liñán & Fayolle, 2015). First of all, in the field of psychology and society, such as Ajzen (1991) and Bandura (1989), through investigation and research, they concluded that the final result of behavior would be influenced by the thinking caused by attitude. In addition, Ajzen (1991)'s "TPB" theory has been widely recognized in this field and occupies an important position (Liñán & Fayolle, 2015). When scholars began to focus on entrepreneurship, they had more new understanding of entrepreneurial intention (Bird, 1988).

3. Research Methods and Materials

This research is a quantitative study, which used the online and offline questionnaire as a data collection and the statistical procedure for analysis. The theories are based on Planned Behavior Theory (TPB), Social Cognitive Career Theory (SCCT), Entrepreneurial Event Model (EEM), and Social Learning Theory (SLT). References and related studies mainly base on entrepreneurial self-efficacy and intention: do entrepreneurial creativity and the issue of issue? by Shahab et al. (2019), the impact of higher education on entrepreneurial intentions of university students in China by Wu and Wu. (2008), and entrepreneurial education, self-efficacy and intentions in Sub-Africa Saharan (Puni et al., 2018). Thus, the framework and methodology for this article are developed as follows:

3.1 Research Framework

According to previous research's theoretical framework, this study developed conceptual framework with seven variables which are Entrepreneurship Education (EE), Entrepreneurial Self-efficacy (ESE), Perceived Behavioral Control (PBC), Personal Attitude (PA), Entrepreneurial Creativity (EC), Subjective Norms (SN), and Entrepreneurial

Intention (EE). Accordingly, the conceptual framework is developed as in Figure 1.

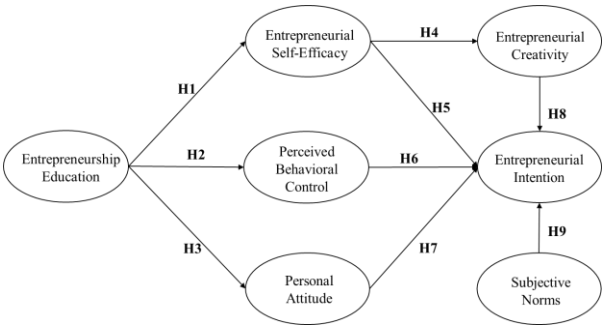

Figure 1: Conceptual Framework

From the conceptual framework, the hypotheses are:

H1: Entrepreneurship Education has a significant impact on Entrepreneurial Self-efficacy.

H2: Entrepreneurship Education has a significant impact on Perceived Behavioral Control.

H3: Entrepreneurship Education has a significant impact on Personal Attitude.

H4: Entrepreneurial Self-efficacy has a significant impact on Entrepreneurial Creativity.

H5: Entrepreneurial Self-efficacy has a significant impact on Entrepreneurial Intention.

H6: Perceived Behavioral Control has a significant impact on Entrepreneurial Intention.

H7: Personal Attitude has a significant impact on Entrepreneurial Intention.

H8: Entrepreneurial Creativity has a significant impact on Entrepreneurial Intention.

H9: Subjective Norms has a significant impact on Entrepreneurial Intention.

3.2 Methodology

In this research, the instrument proposed for data collection conducted through questionnaire via online platform called "Wen Juan Wang". The questionnaire comprised of 3 sections contained 41 questions, involving 4 screening multiple choice questions aimed to identify the targeted respondent, 4 demographics multiple choice questions aimed to collect demographical characteristic of engineering students in university who have received education in innovation and entrepreneurship, and 33 questions of five-point Likert-scale aimed to collect influencing factors of students' entrepreneurial intention. The Likert-scale is composed of 5 scales ranging which are 1 to 5 for strongly disagree to strongly agree. For pilot testing, the expert rating of index of item– objective congruence (IOC) and pilot test for 60 respondents has been tested. Cronbach's Alpha approach was tested for validity and reliability.

3.3 Population and Sample Size

The target population of this study are students from Xihua university in Sichuan province, China, including postgraduates and undergraduates, major in engineering. These students are required to have received entrepreneurship education from the university and aged between 18 and 30. Per show in Table 1, the student enrolment ranges from 2018 to 2021, with a total population of 20,492. After calculate by A-priori Sample Size Calculator for SEM, the result recommended minimum sample size is 425 (Soper, n.d.). To avoid the effects of invalid questionnaires, 700 questionnaires will be distributed. However, only 693 responds were passed the miss handling data.

3.4 Sampling Technique

The three steps of sampling techniques were used. Firstly, the judgmental sampling is used to choosing postgraduates and undergraduates, major in engineering at Xihua university in Sichuan, China. Secondly, stratified random sampling was applied to calculate ratio from total students of each institution (Table 1). Lastly, convenience sampling was used to distribute questionnaire via offline and online channels.

Table 1: Number of target population

No.	Name of institution	Population size Total=20495	Proportion size Total=700
1	School of Energy and Power Engineering	1341	46
2	School of Food and Bioengineering	1981	68
3	School of Aeronautics and Astronautics	432	15
4	School of Electrical and Electronic Information	3220	110
5	Institute of Emergency	299	10
6	School of Materials Science and Engineering	2028	69
7	School of Civil Construction and Environment	4654	159
8	School of Mechanical Engineering	3228	110
9	School of Automobile and Transportation	2891	99
10	Xihua School	418	14

Source: Created by the author

3.5 Reliability Test (Pilot Test)

After the questionnaire was developed, it was distributed to 60 respondents in order to investigate the internal consistency, validity and reliability of the questionnaire. The pilot test conducted for each variable and considered by using Cronbach's alpha coefficient value. The results of Cronbach's alpha are as follow:

Table 2: Consistency of the Scale Test

Variable	Number of Items	Cronbach's Alpha
Entrepreneurship Education (EE)	5	0.890
Personal Attitude (PA)	5	0.886
Subjective Norms (SN)	3	0.830
Perceived Behavioral Control (PBC)	6	0.871
Entrepreneurial Self-efficacy (ESE)	5	0.880
Entrepreneurial Creativity (EC)	4	0.817
Entrepreneurial Intention (EI)	5	0.906

Source: Constructed by author

Cronbach's Alpha (CA) approach can validate the reliability in this study, resulting between 0.817 and 0.906. The values signified the internal consistency of the constructs and the test of reliability for each item with the value of 0.70 or greater means it is acceptable (Nunnally, 1978). CA of each variable demonstrates Entrepreneurship Education (EE) of 0.890, Personal Attitude (PA) of 0.886, Subjective Norms (SN) of 0.830, Perceived Behavioral Control (PBC) of 0.871, Entrepreneurial Self-efficacy (ESE) of 0.880, Entrepreneurial Creativity (EC) of 0.817 and Entrepreneurial Intention (EI) of 0.906 per shown in Table 2.

3.6 Data Analysis

After the reliability test, the questionnaire was distributed to target respondents which resulted in 693 accepted responses. The researcher analyzed the collected data through SPSS AMOS. Then, Confirmatory Factor Analysis (CFA) was used to test the convergence accuracy and validation. The model fits measurement was calculated with the overall test with given data to ensure the validity and reliability of the model. Lastly, the researcher applied the Structural Equation Model (SEM) to examine the effect of variables.

4. Result and Discussion

4.1 Demographic Profile Summary

The 693 surveys were examined with number of students in Xihua university per stratified random sampling. Respondents who did not meet the criteria were eliminated by screening questions. Per Table 3, the results presented the gender group of males was 55.3% and females was 44.7%. For age, most respondents were 18-25 years old with 98.3%. Following group were 18 years old or less with 1.0% and 25-40 years old with 0.7%. The major group of education level was bachelor's degree at 97.8%, followed by below Master's degree at 2.2% and none Doctorate's degree respectively. Participate in the form of entrepreneurship education was used in relevant of this study's context, it showed 97.0% of university course, workshop, one to one coaching and others totally at 3.0%.

Table 3: Demographic Profile of Respondents

Demographic and Behavior Data (N=693)	Frequency	Percentage %
Gender		
Male	383	55.3%
Female	310	44.7%
AGE		
18 years old or less	7	1.0%
18-25 years old	681	98.3%
25-40 years old	5	0.7%
Above 40 years old	0	0%
Education		
Bachelor's degree	678	97.8%
Master's degree	15	2.2%
Doctorate's degree	0	0%
Education Form		
University course	672	97.0%
Workshop	14	2.0%
One to one coaching	2	0.3%
Others	5	0.7%

Source: Constructed by author.

4.2 Confirmatory Factor Analysis (CFA)

Due to the initiate model presents all data met acceptable thresholds and is in harmony in CFA, the modified model is not required. Table 4 illustrates the initiate model displayed all model-fit in acceptable threshold including CMIN/df =2.876, GFI = 0.892, AGFI = 0.872, CFI = 0.941, NFI = 0.912, TLI = 0.934, and RMSEA = 0.052. Consequently, all outputs are greater than acceptable values. From the fit value as expressed, the convergent validity and discriminant validity were ensured.

Table 4: Goodness of Fit of CFA

Index	Criterion	Statistical Values Obtained from Analysis (Before Adjustment)
c2/df (CMIN/df)	<3 (Hair et al., 2006)	2.876
GFI	>0.85 (Hair et al., 2006)	0.892
AGFI	>0.85 (Sica & Ghisi, 2007)	0.872
CFI	>0.85 (Wu & Wang, 2006)	0.941
NFI	>0.90 (Hair et al., 2006)	0.912
TLI	>0.90 (Hair et al., 2006)	0.934
RMSEA	<0.08 (Pedroso et al., (2016)	0.052
Model summary		**Harmony with Empirical data**

Source: Constructed by author.

4.3 Convergent validity

The measurement model was examined by convergent validity. Per the result of fit model which expressed all acceptable values, the convergent validity was certified. Subsequently, Table 5 demonstrates the model measurement considering all these results were approved.

Table 5: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variable	Factor Loading >0.5	T-value>1.98 & p-value<0.5	CA >0.7	CR (pc) >0.7	AVE (pv) >0.5
EE	0.709-0.842	19.166-20.878	0.740	0.893	0.626
PA	0.737-0.829	19.476-21.674	0.869	0.887	0.613
SN	0.779-0.793	21.122-21.134	0.717	0.831	0.622
PBC	0.687-0.779	18.319-21.114	0.891	0.757	0.510
ESE	0.738-0.812	19.994-21.418	0.743	0.881	0.598
EC	0.713-0.767	17.517-18.779	0.886	0.818	0.530
EI	0.783-0.866	22.791-26.098	0.912	0.907	0.662

Source: Constructed by author.

4.4 Discriminant Validity

According to Fornell and Larcker (1981), testing for discriminant validity was evaluated by computing the square root of each AVE. Based on this study, the value of discriminant validity is larger than all inter-construct/factor correlations, therefore, the discriminant validity is supportive per Table 6.

Table 6: Factor Correlations

	EE	PA	SN	PBC	ESE	EC	EI
EE	**0.791**						
PA	0.650	**0.783**					
SN	0.522	0.528	**0.789**				
PBC	0.707	0.699	0.614	**0.794**			
ESE	0.612	0.656	0.508	0.787	**0.773**		
EC	0.533	0.613	0.456	0.680	0.752	**0.728**	
EI	0.451	0.650	0.421	0.573	0.612	0.655	**0.814**

Source: Constructed by author.

4.5 Structural Equation Model (SEM)

SEM analysis after modification presented Chi-Square ($X2$/df) of 2.931, Goodness-of-fit statistic (GFI) = 0.903, Adjusted Goodness-of-fit statistic (AGFI) = 0.880, Comparative Fit Index (CFI) = 0.942, Normed Fit Index (NFI) = 0.915, Tucker-Lewis Index (TLI) = 0.932, and Root Mean Square Error of Approximation (RMSEA) = 0.053. Hence, Table 7 expressed that the model of SEM analysis after modification has met good fit thresholds.

Table 7: Goodness of Fit of SEM

Index	Criterion	Statistical values obtained from analysis	
		Before adjustment	After adjustment
c2/df (CMIN/df)	<3 (Hair et al., 2006)	4.311	2.931
GFI	>0.85 (Hair et al., 2006)	0.842	0.903
AGFI	>0.85 (Sica & Ghisi, 2007)	0.818	0.880
CFI	>0.85 (Wu & Wang, 2006)	0.893	0.942
NFI	>0.90 (Hair et al., 2006)	0.865	0.915
TLI	>0.90 (Hair et al., 2006)	0.883	0.932
RMSEA	<0.08 (Pedroso et al., 2016)	0.069	0.053
Model summary		**Not in harmony with Empirical data**	**In harmony with Empirical data**

Source: Constructed by author.

4.6 Research Hypothesis Testing Result

The significance of each variable was investigated from its standardized path coefficient (β) and t-value per illustrated in Table 8. This research confirmed the significance influence of H1, H2, H3, H4, H7 and H8, whereas H5, H6 and H9 were not supported.

Table 8: Hypotheses Testing Result of the Structural Model

Hypothesis	standardized path coefficient (β)	t-value	Testing result
H1: EE=>ESE	0.892	15.037***	Supported
H2: EE=>PBC	0.970	16.283***	Supported
H3: EE=>PA	0.835	15.239***	Supported
H4: ESE=>EC	0.900	16.559***	Supported
H5: ESE=>EI	-0.133	-0.944*	Not Supported
H6: PBC=>EI	-0.115	-1.386*	Not Supported
H7: PA=>EI	0.473	7.648***	Supported
H8: EC=>EI	0.628	5.226***	Supported
H9: SN=>EI	0.027	0.934*	Not Supported

Note: ***=p-value<0.05, **=p-value<0.1 *=p-value<0.5
Source: Constructed by author.

5. Conclusion and Recommendation

5.1 Conclusion

This study mainly investigates the significant impact of entrepreneurship education on the entrepreneurial intention of engineering students in Sichuan, China. The hypotheses proposed in this paper include the impact of EE on ESE, and PBC and PA, the impact of ESE on EC and EI, the moderating impact of PBC, PA, EC and SN on EI. The questionnaire targeted undergraduate and graduate students in the school of engineering of Xihua University. Through data analysis, this paper studies the educational effect of entrepreneurship education carried out by Xihua University, including entrepreneurship courses, entrepreneurship workshops, one-to-one coaches, etc. Confirmatory factor analysis (CFA) was used to measure the validity and reliability of the conceptual model. The hypothesis was verified by structural equation model (SEM) in path analysis.

The research results are described as follows. Firstly, ESE has the greatest impact on the EC of engineering students (t-value=16.559***). Han and Bai (2020) noted that entrepreneurial self-efficacy is a necessary condition for maintaining personal entrepreneurship and participation. The improvement of students' self-efficacy can effectively stimulate the cultivation of creativity. While EE has a high impact on PBC, ESE and PA (t-value=16.283***,15.037*** and 15.239***), which proves that entrepreneurship courses and training are significantly related to students' belief in self-completing entrepreneurial goals, perception of behavior control, and attitude towards entrepreneurship. Wu and Wu (2008) and Leitao et al. (2009) supported the analysis results, that is, the learning of entrepreneurial knowledge can affect an individual's attitude towards participating in entrepreneurial practice and the degree of behavior control. Among the influencing factors on entrepreneurial intention, PA has the greatest impact (t-value=7.648***). It shows that attitude plays a decisive role in the intention of entrepreneurial behaviour. Followed by EC (t-value=5.226***), indicating that individual confidence in self-entrepreneurial ability and the ability to generate ideas are the direct driving force for whether to carry out entrepreneurial activities. In addition, the impact of PBC, and ESE on EI has been verified in this study. Family, friends and important social relationships' standpoint has significant influence on the individual's choice of whether to start a business, representing SN on BI (t-value=0.934*). The degree of control over entrepreneurial behaviour, the assessment of entrepreneurial risk and the confidence in personal ability has impact on the choice to start a company or not, which has PBC on BI at t-value of -1.386*. Negative effect was found between entrepreneurial self-efficacy and entrepreneurial choice, which has ESE on EI at t-value of -0.944*. It can be concluded that entrepreneurial education can effectively play a role in the development of personal attitude, perceived behavior control and entrepreneurial self-efficacy. Entrepreneurial self-efficacy significantly affects entrepreneurial creativity. Entrepreneurial intention is affected by personal attitude and entrepreneurial creativity, but non-significant on subjective norms, perceived behavior control and entrepreneurial self-efficacy.

5.2 Recommendation

The essential characteristics of the new engineering are fusion of innovation-driven. The orientation of the new engineering innovation and entrepreneurship education should be oriented to solve important social problems and enhance students' entrepreneurial intention (Martínez-Gregorio et al., 2021). Therefore, the following suggestions are put forward based on the results of this study.

Firstly, academic practitioner should expand education content, implement subject depth fusion, break through the limitations of traditional scientific thought and research methods due to the humanities knowledge and natural science, engineering, technology and artificial intelligence, and knowledge depth fusion become a new paradigm of thinking and ways to increase creativity, training practice and innovation ability of high quality new engineering talents, in order to improve the students' entrepreneurial intentions.

Secondly, innovation educator should promote the teaching team crossover despite of entrepreneurship education covers a wide range. The content should be combined with the construction of new engineering, new medicine, new agriculture, so training students can choose entrepreneurship skills, teachers with professional

knowledge in various aspects to improve the education effect that promote the change of engineering students' entrepreneurial attitude.

Thirdly, it is required to strengthen the support of high efficiency and society, the policy guidance for the integration of innovation and entrepreneurship of engineering students for effectively make use of social and alumni resources, with the help of socialized science and technology platforms to be able to give full play to the value of innovation and entrepreneurship achievements, and feedback of the innovation development and entrepreneurship education.

Through the transformation of teaching methods and the establishment of innovation and entrepreneurship education system and practice system, a comprehensive and effective education system can be formed centering on the improvement of engineering students' entrepreneurial intention.

5.3 Limitation and Future Research

In this study, the stratified sampling technique was adopted to select engineering students from Xihua University as samples. Therefore, to cover most target groups without too much dispersion, future studies should select wider or different group of university students for comparative analysis. In addition, due to the selection of specific groups as samples, the respondents are concentrated in graduates and postgraduates. In the future, other researchers can also consider increasing the sample size of engineering postgraduates. Furthermore, the cross-sectional data selected by the study can be taken into account as a control variable from the first year to the fourth year if the study allows, since students' entrepreneurial intentions will change over time. Finally, this study mainly focuses on the internal influencing factors of engineering students, and the future research can add social, economic, national policy and other external influencing factors.

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