

A Study on Entrepreneurial Self-Efficacy and its Influencing Factors among University Students in Shan Dong Province

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Abstract

This research explores the factors that shape entrepreneurial self-efficacy among university students in Shandong Province, with particular emphasis on emotional intelligence and entrepreneurship education. Entrepreneurial self-efficacy, which refers to an individual's confidence in their capacity to succeed in entrepreneurial activities, is a key driver of entrepreneurial intentions and actions. The study surveyed 500 students from diverse academic backgrounds across three universities in Shandong Province. Results indicated that entrepreneurial self-efficacy among university students is generally positive, with emotional intelligence identified as the most influential predictor. Gender differences were also observed, with male students exhibiting higher self-efficacy scores across all dimensions compared to female students. Additionally, entrepreneurial experience and entrepreneurship training were found to significantly impact entrepreneurial self-efficacy, whereas the influence of academic major and year group was relatively minor. These findings underscore the need to incorporate emotional intelligence training and practical entrepreneurial experiences into university programs to enhance entrepreneurial self-efficacy among students.

Keywords: Entrepreneurial Self-Efficacy, Emotional Intelligence, Entrepreneurship Education, University Students, Gender Differences, Entrepreneurial Experience, Shandong Province, China

Introduction

In the current era of China's economic transformation, the "mass entrepreneurship and mass innovation" policy has emerged as a pivotal driver of economic growth. Within this framework, university students have become a vital force in promoting innovation and entrepreneurial activities. A primary objective for higher education institutions is to enhance students' entrepreneurial self-efficacy and unlock their entrepreneurial potential. Entrepreneurial self-efficacy, defined as an individual's confidence in their capacity to successfully undertake

entrepreneurial tasks and roles (Scherer et al., 1989), is a critical factor influencing entrepreneurial behavior. Research consistently demonstrates that entrepreneurial self-efficacy is closely linked to entrepreneurial intentions, motivation, and the probability of achieving entrepreneurial success. It is also a robust predictor of entrepreneurial decision-making, behavior, and outcomes (Boyd & Vozikis, 1994). Both domestic and international scholars have extensively explored the conceptualization, structural dimensions, and functional roles of entrepreneurial self-efficacy, yielding valuable insights.

Firstly, despite the development of various scales to measure entrepreneurial self-efficacy, the applicability of these tools across different cultural contexts remains underexplored. For instance, the five-dimensional scale proposed by Chen et al. (1998)—covering marketing, innovation, management, risk-taking, and financial control—has been widely used but criticized for its inability to effectively distinguish entrepreneurs from managers (DeNoble et al., 1999). Additionally, although emotional intelligence (EI) has been recognized as a crucial factor in career development (Goleman, 1995), its role in entrepreneurial self-efficacy has not been sufficiently examined. This is particularly true in the context of Chinese university students, where empirical research on how EI affects entrepreneurial self-efficacy is lacking. Secondly, existing research on the impact mechanisms of entrepreneurship education is insufficient. While entrepreneurship education is considered a key pathway to enhancing entrepreneurial self-efficacy, the specific mechanisms through which it operates remain unclear. For example, although studies have shown that factors such as gender, major, and educational level significantly influence entrepreneurial self-efficacy (Dang & Wei, 2011), the mechanisms underlying these effects have not been adequately compared and validated across different cultural contexts. Moreover, current research has predominantly focused on individual traits, environmental factors, and demographic variables, often neglecting the role of emotional factors and emotional management capabilities.

This study addresses these gaps in the literature through an empirical survey of university students in Shandong Province, China. First, we employ a validated entrepreneurial self-efficacy scale (Kickul et al., 2005) and an emotional intelligence scale adapted for the Chinese context (Law et al., 2004) to systematically investigate the impact of EI on entrepreneurial self-efficacy. Second, we compare entrepreneurial self-efficacy across different genders, majors, and academic years, and analyze the mechanisms through which entrepreneurial experience and entrepreneurship education exert their influence. Finally, through multiple regression analysis, we reveal the predictive roles of EI, entrepreneurial experience, and entrepreneurship education on entrepreneurial self-efficacy, offering new insights for both theoretical and practical applications in entrepreneurship education.

Research Methodology

Research Participants

This study involved a random selection of students from diverse academic fields across three comprehensive universities in Shandong Province. The disciplines included humanities, science and engineering, management, and medicine, with participants ranging from first-year to fourth-year undergraduates. A total of 550 students were surveyed, yielding 500 valid responses, representing a response rate of 92%. Among the participants, 289 were male (57.8%) and 211 were female (42.2%). The distribution by academic discipline was as follows: 221 students from science and engineering, 133 from management and business, 53 from

humanities, and 93 from medicine. In terms of academic year, the sample included 156 first-year students, 118 second-year students, 115 third-year students, and 111 fourth-year students.

Measurement

Entrepreneurial Self-Efficacy Scale

The Entrepreneurial Self-Efficacy Scale, developed by Kickul et al. (2005), was utilized in this study. It comprises four subscales: opportunity recognition efficacy, relationship efficacy, management efficacy, and risk tolerance efficacy, with a total of 19 items. Higher scores on this scale indicate greater entrepreneurial self-efficacy. The scale has been previously validated in a survey study by Zhan Yi (2008), demonstrating strong reliability and validity. Prior to the formal survey, a reliability analysis was conducted, revealing an internal consistency (Cronbach's α) of 0.946.

Emotional Intelligence Scale

The Emotional Intelligence Scale employed in this study was adapted for the Chinese context in 2004. It includes 16 items divided into four dimensions: self-emotion appraisal (4 items), emotion regulation (4 items), emotion utilization (4 items), and others' emotion appraisal (4 items). Higher scores on this scale reflect greater emotional intelligence. The scale has been shown to exhibit high reliability and validity (Law, Wong, & Song, 2004). A pretest was conducted before the formal survey, and the internal consistency (Cronbach's α) was found to be 0.901.

Data Analysis

All data were processed using SPSS 19.0 software. Analytical methods included descriptive statistics, analysis of variance (ANOVA), correlation analysis, and regression analysis to explore the relationships and patterns within the data.

Results

General Status of Entrepreneurial Self-Efficacy among University Students

As illustrated in Table 1.1, the overall entrepreneurial self-efficacy of university students demonstrates a positive trend, although it is not particularly strong. The entrepreneurial self-efficacy scale revealed a maximum score of 133 and a minimum score of 19, with a median score of 76. Scores above the median indicate a positive level of entrepreneurial self-efficacy. Both the total scale and the individual subscales showed mean scores slightly above their respective median values, suggesting that while university students generally exhibit a positive entrepreneurial self-efficacy, the overall level remains in the moderate-to-high range.

Among the subscales, the lowest average score was observed in opportunity recognition efficacy, followed by management efficacy, relationship efficacy, and risk tolerance efficacy. This indicates that students may struggle more with identifying entrepreneurial opportunities and managing entrepreneurial tasks compared to building relationships and tolerating risks. These findings highlight areas where targeted interventions could enhance students' entrepreneurial confidence and capabilities.

Table 1.1

Mean Scores and Standard Deviations of University Students' Entrepreneurial Self-Efficacy

	Entrepreneurial Self-Efficacy	Opportunity Identification Efficacy	Relationship Efficacy	Management Efficacy	Risk Tolerance Efficacy
Mean	91.81	18.82	24.41	24.05	24.53
Standard Deviation	16.759	4.293	5.188	4.843	4.827

Data source: compiled by the author.

Gender Differences in Entrepreneurial Self-Efficacy Among University Students

An independent samples t-test was performed to examine the entrepreneurial self-efficacy scores of male and female students (refer to Table 1.2). The results indicated that, assuming equal variances, there was a significant difference in entrepreneurial self-efficacy between male and female students ($t = 1.846$, $p < 0.01$). Across the four subscales, male students scored significantly higher than female students in opportunity recognition efficacy, relationship efficacy, management efficacy, and risk tolerance efficacy. Notably, the difference in relationship efficacy was highly significant ($p < 0.001$). These findings suggest that male students exhibit greater confidence in identifying opportunities, managing relationships, handling entrepreneurial tasks, and tolerating risks compared to their female counterparts. The pronounced difference in relationship efficacy underscores the need for targeted interventions to address this gap and enhance female students' confidence in building and managing interpersonal networks in entrepreneurial contexts.

Table 1.2

Comparison of Entrepreneurial Self-Efficacy University College Students by Gender

	Male Students		Female Students		t
	M	SD	M	SD	
Entrepreneurial Self-Efficacy	92.99	18.249	90.19	14.357	1.846**
Opportunity Identification Efficacy	19.30	4.574	18.16	3.789	2.946***
Relationship Efficacy	24.47	5.640	24.34	4.507	0.268***
Management Efficacy	24.38	5.154	23.60	4.354	1.780*
Risk Tolerance Efficacy	24.84	5.164	24.09	4.297	1.729*

Note: $p < 0.05$, *** $p < 0.01$, **** $p < 0.001$, the same below.

Data source: compiled by the author.

Comparison of Entrepreneurial Self-Efficacy Across Different Year Groups

A one-way ANOVA was conducted to compare the entrepreneurial self-efficacy scores of students from different year groups (see Table 1.3). The results revealed no significant differences in the overall entrepreneurial self-efficacy scores or the scores of the subscales across the four year groups ($p > 0.05$). This suggests that students' entrepreneurial self-efficacy remains relatively consistent throughout their university years, indicating that year group is not a decisive factor in shaping entrepreneurial confidence.

Table 1.3

ANOVA of Factors Influencing Entrepreneurial Self-Development Differences Among University Students of Different Levels

		Sum Squares	of <i>df</i>	Mean Square	<i>F</i>	<i>Sig.</i>
Entrepreneurial Self-Efficacy	Between Groups	463.532	3	154.511	0.549	0.649
	Within Groups	139685.418	496	281.624		
Opportunity Identification Efficacy	Between Groups	13.455	3	4.485	0.242	0.867
	Within Groups	9182.983	496	18.514		
Relationship Efficacy	Between Groups	76.782	3	25.594	0.951	0.416
	Within Groups	13352.520	496	26.920		
Management Efficacy	Between Groups	86.754	3	28.858	1.232	0.297
	Within Groups	11618.074	496	23.424		
Risk Tolerance Efficacy	Between Groups	20.380	3	6.793	0.290	0.832
	Within Groups	11606.282	496	23.400		

Data source: compiled by the author.

Comparison of Entrepreneurial Self-Efficacy Across Different Majors

A one-way ANOVA was also performed to compare the entrepreneurial self-efficacy scores of students from different academic disciplines (see Table 1.4). The results showed no significant differences in the overall entrepreneurial self-efficacy scores across the four disciplines: science and engineering, management, humanities, and medicine ($p > 0.05$). However, significant differences were observed in management efficacy ($p < 0.05$). Post-hoc LSD multiple comparisons indicated that management efficacy differed significantly between science and engineering students and humanities students, as well as between management students and humanities students ($p < 0.05$). Additionally, significant differences were found in the overall entrepreneurial self-efficacy scores between science and engineering students and humanities students ($p < 0.05$). These findings suggest that while major does not broadly influence entrepreneurial self-efficacy, specific aspects like management efficacy may vary depending on the academic discipline.

Table 1.4

ANOVA of Factors Influencing Entrepreneurial Self-Development Differences Among University Students of Different Majors

		Sum	of	Mean	F	Sig.
		Squares	df	Square		
Entrepreneurial Self-Efficacy	Between Groups	1512.177	3	504.059	1.803	0.146
	Within Groups	138636.773	496	279.510		
Opportunity Identification Efficacy	Between Groups	100.126	3	33.375	1.820	0.143
	Within Groups	9096.312	496	18.339		
Relationship Efficacy	Between Groups	96.354	3	32.118	1.195	0.311
	Within Groups	13332.948	496	26.881		
Management Efficacy	Between Groups	200.725	3	66.908	2.885	0.035
	Within Groups	11503.923	496	23.193		
Risk Tolerance Efficacy	Between Groups	57.617	3	19.206	0.823	0.481
	Within Groups	11569.045	496	23.325		

Data source: compiled by the author.

Analysis of Factors Influencing Entrepreneurial Self-Efficacy

To explore the factors influencing entrepreneurial self-efficacy, Pearson correlation analysis was conducted between entrepreneurial self-efficacy and various factors, including emotional intelligence, academic performance, entrepreneurial experience, part-time work experience, leadership experience, and entrepreneurship training courses (see Table 1.5). The results showed that entrepreneurial self-efficacy was significantly correlated with emotional intelligence, academic performance, entrepreneurial intention, entrepreneurial experience, and entrepreneurship training ($p < 0.01$). However, no significant correlations were found with part-time work experience or leadership experience. Notably, the correlation between entrepreneurial self-efficacy and emotional intelligence was extremely significant ($p < 0.001$), with a correlation coefficient above 0.6, indicating a strong relationship. The four subdimensions of entrepreneurial self-efficacy also showed strong and significant correlations with emotional intelligence, highlighting the close relationship between emotional intelligence and entrepreneurial self-efficacy among university students.

Table 1.5

Correlation Analysis of University Students' Entrepreneurial Self-Efficacy with Emotional Intelligence and Other Factors

	EQ	Academic Performance	Student Leadership	Entrepreneurial Experience	Work Experience	Entrepreneurship Courses
Entrepreneurial Self-Efficacy	0.661** *	0.121**	0.080	0.204***	-0.045	0.164***
Opportunity Identification Efficacy	0.542** *	0.139**	-0.063	0.215***	-0.019	0.188***
Relationship Efficacy	0.624** *	0.102*	-0.099*	0.116**	-0.027	0.110*
Management Efficacy	0.550** *	0.123**	-0.052	0.187***	-0.050	0.141**
Risk Tolerance Efficacy	0.590** *	0.064	-0.063	0.203***	-0.060	0.142**

Data source: compiled by the author.

Multiple Regression Analysis of Factors Influencing Entrepreneurial Self-Efficacy

A multiple stepwise regression analysis was conducted to examine the predictive effects of emotional intelligence, academic performance, entrepreneurial experience, entrepreneurship training, and demographic factors on entrepreneurial self-efficacy (see Table 1.6). The results showed that emotional intelligence, entrepreneurial experience, entrepreneurship training, and gender sequentially entered the regression equation. These four variables together explained 46.3% of the variance, $F(4,493) = 106.316$, $p < 0.000$. Among these factors, emotional intelligence accounted for the highest proportion of variance, explaining 43.9% of the variation in entrepreneurial self-efficacy, $F(1,496) = 388.471$, $p < 0.000$. Entrepreneurial experience, entrepreneurship training, and gender contributed to increases in explained variance of 1.3%, 0.6%, and 0.5%, respectively. The regression equation was as follows:

$$\text{Entrepreneurial Self-Efficacy} = 25.460 + 0.784(\text{Emotional Intelligence}) + 2.254(\text{Entrepreneurial Experience}) + 2.304(\text{Entrepreneurship Training}) - 2.395(\text{Gender}).$$

This equation indicates that emotional intelligence is the strongest predictor of entrepreneurial self-efficacy, followed by entrepreneurial experience and entrepreneurship training. Gender also plays a role, with male students exhibiting slightly higher entrepreneurial self-efficacy than female students. These findings underscore the importance

of emotional intelligence and practical entrepreneurial experiences in fostering students' entrepreneurial confidence and capabilities.

Table 1.6

Stepwise Regression Analysis of the Impact of Emotional Intelligence and Other Factors on Entrepreneurial Self-Efficacy

Entered Variable	Unstandardized Coefficients	Standard Error	Standardized Coefficients	t	p
Constant	0.661***	0.121**	0.080	0.204***	-0.045
Emotional Intelligence (EQ)	0.542***	0.139**	-0.063	0.215***	-0.019
Entrepreneurial Experience	0.624***	0.102*	-0.099*	0.116**	-0.027
Entrepreneurship Courses	0.550***	0.123**	-0.052	0.187***	-0.050
Gender	0.590***	0.064	-0.063	0.203***	-0.060

Data source: compiled by the author.

Analysis and Discussion

The study revealed that university students exhibit above-average entrepreneurial self-efficacy, indicating a generally positive trend, though there remains substantial room for improvement. As a vital force for innovation and entrepreneurship, students require universities to take an active role in fostering entrepreneurial talent. Many Chinese universities have already implemented measures such as entrepreneurship education courses and student entrepreneurship incubation centers to enhance students' entrepreneurial interests and capabilities, with some success. However, the survey results highlight that entrepreneurship education initiatives in many institutions are still inadequate. Educators must deepen their research into entrepreneurship education, identify key factors that enhance students' entrepreneurial abilities, and provide targeted education, training, and practical experiences to further boost students' entrepreneurial enthusiasm and success rates.

Some scholars argue that individual factors such as gender, major, educational level, age, and entrepreneurship education significantly influence entrepreneurial self-efficacy (Dang & Wei, 2011). The findings of this study indicate that male students exhibit significantly greater entrepreneurial self-efficacy compared to female students, with a notable difference observed in the dimension of relationship efficacy. This suggests that male students are more driven by the desire to succeed and are better at managing interpersonal relationships, aligning with previous research. However, the study also found no significant differences in entrepreneurial self-efficacy across different year groups or majors, except for slight variations in management efficacy between students in science and engineering, management, and humanities fields. Specifically, differences were noted between students

in science and engineering and humanities. This implies that year group and major are not decisive factors in determining a student's ability to engage in entrepreneurship. As long as conditions are favorable, students from any year or major can attempt entrepreneurship. While this may seem inconsistent with previous findings that factors like gender, major, and age influence entrepreneurial self-efficacy, it is not contradictory when viewed from the perspective of an individual's overall life development. University students, as a social group, show significant differences in entrepreneurial self-efficacy compared to individuals with different educational backgrounds. However, within the university context, educational level (year group) does not significantly affect entrepreneurial self-efficacy. The study also revealed that while there are differences in entrepreneurial self-efficacy among certain majors, overall, no significant differences exist across all majors.

Additionally, the study found that emotional intelligence, entrepreneurial experience, entrepreneurship course training, and gender significantly impact students' entrepreneurial self-efficacy. Emotional intelligence showed the strongest correlation with entrepreneurial self-efficacy ($P < 0.001$), with correlation coefficients exceeding 0.6, indicating a robust relationship. Emotional intelligence was the most significant predictor, explaining 43.9% of the variance in entrepreneurial self-efficacy, while entrepreneurial experience, entrepreneurship course training, and gender accounted for only 1.3%, 0.6%, and 0.5% of the variance, respectively. Previous research in entrepreneurship has often focused on personality traits, environmental factors, and demographic variables, overlooking the role of emotional factors and emotional management capabilities. This study underscores the importance of emotional intelligence for university students' entrepreneurial self-efficacy, as it explains the majority of the variance. Emotional intelligence theory emphasizes its critical role in individual success, and extensive research has shown its significant impact on cognitive intelligence, decision-making, leadership, and performance (Wu, Guan, & Hu, 2011). Since entrepreneurs must also be effective leaders and managers, emotional intelligence is particularly crucial for entrepreneurial students. This finding should draw considerable attention from educators, especially those involved in entrepreneurship education, as it highlights the need to integrate emotional intelligence development into entrepreneurship training programs.

Conclusion and Recommendation

Offering More Systematic, Scientific, and Open Entrepreneurship Courses for All Students

This study revealed no significant differences in entrepreneurial self-efficacy among university students across different year groups and majors, suggesting that age and major do not substantially influence students' entrepreneurial intentions and beliefs during their university years. However, the data highlighted that entrepreneurship course training significantly impacts students' entrepreneurial self-efficacy. Entrepreneurship education, as a core component of fostering entrepreneurial development, has garnered considerable attention globally. For instance, the United States, a pioneer in entrepreneurship education, has established a systematic and comprehensive framework. U.S. universities offer scientifically designed courses that emphasize openness and integration, often collaborating with enterprises to ensure the curriculum remains aligned with market trends and business needs (Huang & Zhao, 2015).

In contrast, entrepreneurship education in Chinese universities began later. In 2012, the Ministry of Education selected nine universities to pilot entrepreneurship education. By 2020 and 2022, key documents such as Opinions on Vigorously Promoting Innovation and Entrepreneurship Education in Higher Education Institutions and Students' Autonomous Entrepreneurship and Basic Requirements for Entrepreneurship Education in Regular Undergraduate Universities (Trial) were issued to promote entrepreneurship education. Despite these efforts, disparities in institutional conditions have led to uneven development. While some universities offer compulsory courses like "Entrepreneurship Management" and "Entrepreneurship Studies," many struggle to provide comprehensive entrepreneurship education. Often, the courses are theoretical and fail to address students' practical entrepreneurial needs, limiting their confidence and ability to engage in real-world entrepreneurial activities.

To address these gaps, it is essential to learn from the advanced practices of developed countries and offer more systematic, scientific, and open entrepreneurship courses to all students.

Offering Emotion and Social Skills Education Courses to All Students to Enhance Emotional Intelligence

The study found that emotional intelligence (EI) significantly impacts university students' entrepreneurial self-efficacy, demonstrating strong predictive power. EI, often overlooked by traditional measures of cognitive ability, focuses on the role of emotions, feelings, and affect in intelligent activities and their coordination with cognition to solve emotional problems. As Goleman (1995) noted, EI is a critical determinant of whether an individual becomes a societal pillar or remains ordinary. EI reflects the ability to perceive, regulate, and apply emotional information to solve problems, enhancing interpersonal management, self-regulation, and resilience while influencing subjective well-being and self-efficacy.

Despite its importance, current entrepreneurship education often prioritizes knowledge, skills, and practical experience over emotional management. To address this, universities should introduce specialized emotional education courses for all students, providing training in emotional regulation to improve EI levels.

Creating a Strong Entrepreneurial Atmosphere and Encouraging Student Participation in Various Entrepreneurial Activities

The study also found that entrepreneurial experience significantly enhances entrepreneurial self-efficacy. Thus, entrepreneurship education should emphasize practical engagement, encouraging students to participate in the preparation, operation, and management of entrepreneurial projects to gain real-world experience.

Although national and local policies in China support student entrepreneurship, less than 1% of university graduates engage in entrepreneurial activities, compared to over 20% in the U.S. This disparity may stem from a lack of entrepreneurial self-efficacy. To address this, the Chinese government has called for strengthened entrepreneurship education, including psychological counseling to help students overcome fears of failure and risk aversion. Universities are encouraged to establish entrepreneurship bases, enabling students to master skills such as identifying business opportunities, organizing teams, and leveraging resources.

However, many universities still fall short of national requirements, with weak entrepreneurial atmospheres hindering student enthusiasm. To improve this, universities should integrate social resources, offering entrepreneurship courses, business plan competitions, forums, simulations, and incubation centers. Providing "entrepreneur mentors" or "alumni mentors" can strengthen faculty support. Collaborating with entrepreneurs and alumni to organize mentoring sessions, exchange meetings, and competitions will help students realize that entrepreneurship is achievable. Through dedicated learning and practice, students can develop the confidence and skills needed to succeed as entrepreneurs.

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