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# Investigation on Factors Impacting Natural Science Students' Entrepreneurial Intention: A Case of a University in Chengdu, China

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## Abstract

This research studies the entrepreneurial intention of natural science students in a public university in Chengdu, China. The research model involves subjective norms, entrepreneurial attitude, desirability, educational support, self-efficacy, perceived behavioral control, and entrepreneurial intention. The researcher distributed structured questionnaires to 491 natural science students. The sampling methods to collect data are judgmental, quota, and convenience sampling. Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) were used to determine the relationship between the variables under study. The data analysis proves all hypotheses, where entrepreneurial attitude has the strongest and most significant impact on entrepreneurial intentions, followed by the subjective norm. This study recognized entrepreneurial attitudes and assessment of students for the positive meaning of entrepreneurship that should be highly supported and actively guided by university administrators.

Keywords: Subjective Norm, Entrepreneurial Attitude, Educational Support, Perceived Behavioral Control, Entrepreneurial Intention

## Introduction

Entrepreneurship, an ever-changing system of vision, innovation, and change, had previously been centered on spotting and taking advantage of possibilities to create novel goods and offerings or demonstrate the value they could bring. In the context of increasing technological competition and the push for innovation, high-level and excellent in quality entrepreneurship is receiving more attention, and research on the attitudes and intentions of entrepreneurs is growing (Feng & Li, 2020).

Most college students believe that entrepreneurship encompasses more than just starting a business or being an individual; it also includes using imaginative thinking and innovation in their majors or engaging in entrepreneurial practice (Li et al., 2020). The percentage of employed people in the country can increase, creativity and the growth of technological and scientific advances can be promoted, and the economy can grow by encouraging more college students to start their firms (Feng & Li, 2020).

Natural science students also play an important role in scientific communication. They write research papers, present their findings at conferences, and contribute to scientific journals. Through these activities, they share their knowledge, insights, and discoveries with the scientific community, fostering collaboration and advancement in their respective fields (Kurniawan et al., 2019).

After more than 20 years of development, China's college students' conditions and environment for entrepreneurship have undergone significant changes, moving through four stages of development from "encouraging entrepreneurship in theory" to "attaching importance to the implementation and reform of policies." The social acceptance of college students who are entrepreneurs has grown, and entrepreneurship-related attitudes and behaviors have gradually improved. The success rate for entrepreneurial endeavors among college students is low, and numerous factors influence attitude and commitment, which to some extent impedes the growth of entrepreneurship among university students in China, according to a vast number of literature research. Focusing on a community of college students intending to be entrepreneurs, providing targeted guidance, and providing more support are all necessary to vigorously promote good business development among college students. This will enable these students to translate their entrepreneurial thoughts into actual entrepreneurial actions (Li et al., 2020).

This study looks at the factors that significantly affect the entrepreneurial attitudes and intents of students studying Natural Science in public universities. The investigation concentrated on the elements that affect students' intentions regarding entrepreneurship. In order to understand how students in colleges majoring in the Colleges of Architecture and Civil Engineering and Food and Biological Engineering evaluated their influencing features on six crucial aspects associated with entrepreneurial goals, the researcher performed a survey. Due to the research gap that limited research has explored student entrepreneurial attitudes and intentions in China, this paper aims to examine the factors impacting entrepreneurial attitudes and intentions of college students majoring in Natural Science at public universities in Chengdu.

**College Students' Entrepreneurship of China**

The conditions and environment for college students' entrepreneurship in China have undergone great changes. The government has taken the initiative to create a largely stable system of policy support, developing proactive financial supporting policies and measures, enhancing social recognition of college students' entrepreneurship, and enhancing attitudes and willingness of college students to start their businesses. Compared to data from prior years, the willingness of college students to launch a business has increased. As many as 49.86% of college students have a strong desire to launch a business in society, according to the 'China College Student Entrepreneurship Report 2020, published by Renmin University of China. Chinese college students will be more entrepreneurial in 2022 than in 2021, when they would be more entrepreneurial by a factor of 0.78%, or 4.35%. Despite the slow growth, it is still necessary to research the causes and issues that hinder college students' successful entrepreneurship.

However, the current research on college students' entrepreneurship focuses on creating entrepreneurial environments and conditions. Influenced by the traditional education concept,

the employment concept of college students is still relatively traditional, and they do not actively know and understand entrepreneurship and innovation. They still take enterprises and institutions as their first choice for employment (Guan et al., 2021). Some professional teachers lack internal motivation because they believe that teaching college students about innovation and entrepreneurship does not fall under the purview of their work (Zhao et al., 2019). Overall, very limited statistical analyses using Confirmatory Factor Analysis and Structural Equation Model have been used to study entrepreneurial attitudes and intentions.

## Literature Review

### Theory of Planned Behavior (TPB)

One of the most used theories to study people's deliberate acts is the theory of planned behavior (TPB), which has primarily been used in the social and behavioral sciences. Ajzen (1991) suggested that deliberate choices to behave in a particular way come before actions. He said that he believed these intents were the outcome of mindsets formed via life events, individual traits, and perceptions derived from these earlier experiences. He asserted that there are three factors that influence action-intention. They are perception of behavioral control, subjective norm, and attitude regarding the behavior as it is (Trivedi, 2016).

The components of TPB theory provided the basis for the researcher to consider the conceptual framework created for this study. Thus, based on the support of this theory, the conceptual framework includes perceived behavioral control, subjective norms as independent variables and attitudes toward behavior as mediating variables (Mykolenko et al., 2021).

### Subjective Norm

Throughout the case of entrepreneurial behavior, subjective norm refers to the degree to which an individual judges and appears to agree with what everyone else thinks are significant about their course of action to start a business. Subjective norm is an individual's assessment regardless of what others think they consider making a judgment call (Gieure et al., 2019). It has been proposed that the term "subjective norms" refers to how one perceives support from their significant social ties, such as socioeconomic support from family, friends, and mentors (Waris et al., 2021). The phrase "subjective norm" refers to the social pressure a person feels from their environment when selecting whether to carry out a specific activity (Varamäki et al., 2015).

Subjective norms are an important component and are seen as one of the four significant factors impacting entrepreneurial orientation in certain scholars' analyses of the trait utilizing the theory of planned action (Sun et al., 2017). While under social pressure, a person's feelings about a specific behavior have much to do with subjective standards (Kitcharoen & Vongurai, 2021). For example, when under social pressure, a person's feelings about entrepreneurialism as a vocation have much to do with that. This encompasses a consumer's intention to uphold the performance of the behavior and what family, close friends, and coworkers anticipate of them to do so (Mykolenko et al., 2021). A subjective norm is a person's perception of what other important individuals or small communities believe about the conduct being studied (Trivedi, 2016). The subjective norms are believed to be based on the perception of whether a group of human beings, regarded as a justification for

their entrepreneurial intellectual ability, approves of the formation of a new company, as well as the significance of this inclusion or exclusion for both the personal character and the economy (Mercedes Villanueva-Flores et al., 2020). Thus, two hypotheses are set:

Hypothesis 1: Subjective norm has a significant impact on entrepreneurial attitude.

Hypothesis 2: Subjective norm has a significant impact on entrepreneurial intention.

**Entrepreneurial Attitude**

The willingness to accept personal responsibility for decisions made and actions taken is referred to as having an entrepreneurial attitude. This willingness is demonstrated in entrepreneurship as the willingness to accept personal responsibility for one's education, professional life, and other aspects of one's life closely linked to entrepreneurial behavior (Shah & Soomro, 2017). Entrepreneurial attitudes serve as behavior guides in addition to their cognitive and affective functions. Examples include performance expectations for a subject and a propensity to perform a particular behavior (Harris & Gibson, 2008). Guess it depends on the objective evaluation of the individual who wishes to establish a business; the attitude toward starting a business is either good or negative compared to the prospect of doing other employment (Mykolenko et al., 2021). Entrepreneurial intention, which comes before a decision to start a business and seems to predict successful future start-up activity, is the best indication of entrepreneurial potential (Mercedes Villanueva-Flores et al., 2020).

The entrepreneurial mindset is an important and main aspect in the study of entrepreneurial intention. According to several studies, entrepreneurial attitude is the best predictor of purchase intention, explaining more than half of all variances (Farooq, 2018). A person's ability to assess risky situations, react appropriately, and be smart enough to make crucial judgments should be strengthened by having a commissioned news (İlerisoy et al., 2021). How favorably or negatively students feel about starting up a business indicates how they feel about that. Attitude has already been established as one of the major aspects determining a student's commitment to entrepreneurship (Londono et al., 2020). One's views about entrepreneurial conduct, including choosing to run someone else's business rather than employment for somebody else, may result from one's entrepreneurial purpose (Gieure et al., 2019). Entrepreneurial views and environmental concerns are strongly connected (Waris et al., 2021). Therefore, a hypothesis is proposed:

Hypothesis 3: Entrepreneurial attitude has a significant impact on entrepreneurial intention.

**Desirability**

Desirability measures how appealing a particular activity or idea is to a person. Entrepreneurial desirability, in essence, is a people's attitude toward starting up a business; it measures how appealing the concept of setting up a business is when somebody is entering into the contract (Gerba, 2012). In the research of entrepreneurial, desirability corresponds to the extent to which the individual finds it appealing to start a business and own a continue, or the degree to which owning this firm prompts idealistic conduct that the individual is either willing or unable to execute upon (Boukamcha, 2015). It gauges how appealing it is for someone to launch their own business instead of obtaining employment (Vuorio et al., 2017). Entrepreneurial attractiveness is the degree to which starting a business appeal to a person. In

contrast, feasibility refers to an individual's belief in their ability to do any of this (Alammari et al., 2019).

Desirability is an interpersonal observation and catalyst for change that influences a person's decision to take or refrain from a specific action. Entrepreneurship influences how one forms an entrepreneurial decision and develops entrepreneurial ambition. It is related to the widespread perceptions and expectations that there would be many positive elements of the implications of starting up a business (Boukamcha, 2015). Psychological empathy and personal morality based on evaluating a person with a particular action are highlighted and regarded as key factors in the development of social enterprises (Tiwari et al., 2019). It also represents the entrepreneur's attraction due to his or her natural charisma, such as the courage or charm he or she displayed in beginning the company or other qualities that others think the entrepreneur has (Dabic et al., 2012). The desirability of students can determine their learning goals and future career. Hence, the researcher hypothesizes that:

Hypothesis 4: Desirability has a significant impact on entrepreneurial intention.

**Educational Support**

In entrepreneurship, "educational support" refers to the guidance and assistance given to students by academic institutions or other institutions that help them develop the skills and knowledge necessary for entrepreneurship (Maheshwari, 2021). The transmission of knowledge, abilities, talents, and attitudes concerning business competencies to students through academic institutions or other organizations is known as education support in entrepreneurship. Students gain and internalize this knowledge to build notions about entrepreneurship that must be converted towards entrepreneurial attitudes and actual entrepreneurial acts (Duong, 2016). Universities provide citizens with the knowledge and skills they need to properly begin professional careers, providing everyone with the necessary knowledge base (Gieure et al., 2019). Entrepreneurship education is an endeavor to promote participant motivation and willingness to act in entrepreneurial acts, as well as some ideas and behaviors that might also impact intention, such as the perception of entrepreneurial rewards. This instruction may occur inside and outside the mainstream education system (Boukamcha, 2015).

Scholarly interest in the outcomes of entrepreneurship education is growing. Authorities are now using entrepreneurship education to speed up new initiatives and increase people's entrepreneurial tendencies (Duong, 2016). Because it enables job searchers to identify their capabilities and provides in-depth knowledge of new business opportunities, education support is crucial for encouraging entrepreneurship among many job seekers (Mykolenko et al., 2021). Supporting entrepreneurial education is one of the key functions of institutions of higher learning and other educational organizations. They should raise awareness among the general public and disseminate the skills and knowledge required to become an entrepreneur (Trivedi, 2016). The value of entrepreneurial education can be observed in how it can profoundly alter learners' attitudes and heighten their ambition to launch their businesses (Boukamcha, 2015). According to empirical research, fostering an entrepreneurial mindset is a great approach to motivating students to progress in an entrepreneurial venture, which fosters entrepreneurial behaviors and raises the proportion of students who start their businesses (Tiwari et al., 2019). Accordingly, a hypothesis is

indicated:

Hypothesis 5: Educational support has significant impact on entrepreneurial intention.

**Self-Efficacy**

In general, self-efficacy refers to one's opinion that one can engage in an activity. The confidence that they can engage in a particular behavior is noteworthy (Latip et al., 2020). Students' confidence to offer valuable information in a discourse style is called "self-efficacy" (Zhang et al., 2012). According to some studies, self-efficacy is the conviction that one can plan an effort to be conducted and carry it out as intended (Maheshwari, 2021). In studies of individual entrepreneurship, self-efficacy is connected to the degree to which individuals believe they can manage the surroundings and conditions required to launch a firm (Alammari et al., 2019). According to some academicians, self-efficacy is the belief somebody has in his or her capabilities to organize and execute (Tiwari et al., 2019).

Since self-efficacy significantly impacts entrepreneurial behavior, supporting students' self-efficacy is critical to boosting understudies' entrepreneurial intention (Ferreira et al., 2012). Drive and self-actualization are based on self-efficacy. Because they are confident in their skills, someone with high self-efficacy may be desperate to start their firm (Maheshwari, 2021). Entrepreneurial self-efficacy, which measures people's capacity for and assurance of their opportunity to improve as entrepreneurs, is the best indicator of entrepreneurial intention (Gerba, 2012). Self-efficacy, which generates behavioral responses to continuously raise goals, decrease dangers, and manage unpleasant conditions in which the consequence cannot be predicted, is another risk assessment form (İlerisoy et al., 2021). Subsequently, this study put forward a hypothesis:

Hypothesis 6: Self-efficacy has a significant impact on entrepreneurial intention.

**Perceived Behavioral Control**

Perceived behavioral control refers to the relationship between the perceived difficulty of a task and the likelihood of completing that task, such that if people perceive a task to be easy, they are more likely to complete it. Conversely, if they perceive the task to be difficult, they are less likely to complete it (Farooq, 2018). The concept of perceived behavioral control refers to the belief that the entrepreneurial knowledge, resources, opportunities, or abilities people have influenced the way they behave, such as the many factors in entrepreneurship that can influence the entrepreneur's judgment and decisions and the entrepreneur's combined entrepreneurial knowledge, resources, opportunities and abilities to make risk judgments and have the confidence to start a business, which is what perceived behavioral control is for entrepreneurship (Sun et al., 2017). A person's perception of how difficult or even impossible it is to adopt a conditioned response is perceived as behavioral control (Trivedi, 2016). It frequently also refers to a person's willingness to judge and control activities that they must carry out (Gieure et al., 2019).

Perceived behavioral control reflects how people see their abilities when doing specific tasks. It also pertains to the idea that engaging in some activities would be difficult for them (Duong et al., 2022). Entrepreneurs' perceived control over their behavior is mirrored in their decision to work for themselves or plan to launch their businesses (Mykolenko et al., 2021). The perceived behavioral control in entrepreneurship reflects the possibility that an

individual has the consciousness and decision to launch a firm on their own and act immediately to run that profitable business once it has been established (Trivedi, 2016). Perceived behavioral control is related to how much a person feels in command of the monitored behavior and how easy (or difficult) they believe the monitored behavior is to carry out (Solesvik, 2013). Consequently, H7 is suggested:

Hypothesis 7: Perceived behavioral control has a significant impact on entrepreneurial intention.

**Entrepreneurial Intention**

Having an excellent desire to launch a business on one's own or with a larger population and commitment to doing so is referred to as having entrepreneurial ambition (İlerisoy et al., 2021). Entrepreneurial intention is a state of awareness that directs awareness, experience, and action toward a specific goal or strategy (Ferreira et al., 2012). Entrepreneurial intention is the tendency and readiness of a person to start a new business and to see it through in the future (Maheshwari, 2021). The mindset that prompts people to choose personality over regular salary-based employment is reflected in their entrepreneurial intention (Gerba, 2012). Entrepreneurial intention is the term used to describe a person's readiness to start their own business (Alammari et al., 2019). Entrepreneurial aspirations are a person's commitment to future behavior predicted toward starting a company or organization (Tiwari et al., 2019).

Entrepreneurial ambition significantly impacts one's entrepreneurial intent, which reflects the entrepreneur's purpose of introducing a firm (Zollo et al., 2017). The most common application of entrepreneurial intent in entrepreneurship research is to determine the circumstances for preventing and managing risk among entrepreneurs and examine the conditions and goals of entrepreneurship (Ferreira et al., 2012). In addition, it is most adept at foreseeing entrepreneurial conduct (Farooq, 2018). The entrepreneurial purpose is the idea that a person wants to act in a certain way or is trying to. It also sheds light on a person's drive, perseverance, and effort in maintaining their behavior (Shah & Soomro, 2017).

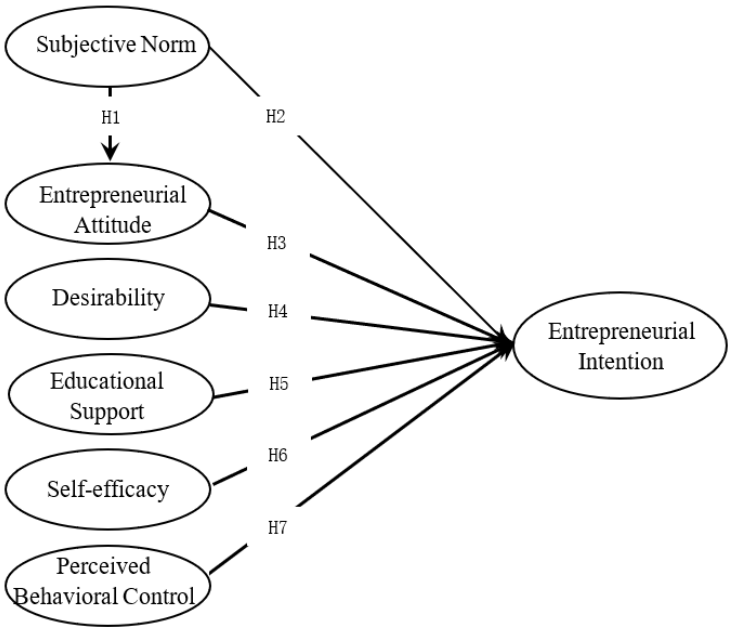
## Research Methodology

**Conceptual Framework**

Based on the TPB in the three theoretical frameworks of existing studies, the conceptual framework of this study was constructed. Using the TPB theory, Sun et al. (2017) and other researchers investigated the correlation between subjective norms, attitudes, and entrepreneurial intentions. Boukamcha (2015) demonstrated the link between desirability, self-efficacy, perceived feasibility, and entrepreneurial intentions. Maheshwari (2021) analyzed the relationship between 10 variables: educational support, self-efficacy, perceived behavioral control, and entrepreneurial intention. The conceptual framework was constructed based on these constructs, as shown in Figure 1.

**Figure 1**

*Conceptual Framework*




Note: Constructed by author

## Research Design

The instrument for this study was a quantitative questionnaire that could be divided into three parts: screening questions, demographic information, and scale items for the entire observed variables. First, standardized screening questions were originally designed to distinguish and examine people with specific characteristics (Cooper & Schindler, 2011; Kervin, 1992), so the researcher ensured that the sample was appropriate for the study based on three screening questions. In addition, four demographic surveys were used to collect respondents' background characteristics (Lodico et al., 2006; Mertens, 2015), including gender, age, home location, and undergraduate or graduate students.

In the questionnaire, 33 scale items adopted from the previous literature were utilized to evaluate the latent variables, which included six items for subjective norms, five items regarded to entrepreneurial attitudes, four items connected to desirability, four items associated with educational support, four items correlated to self-efficacy, four items regarded to perceived behavioral control, and last six items connected with entrepreneurial intentions. The five-point Likert scale was implemented to estimate the full-scale items, with five indicating strong approval for the optimistic items and one denoting strong disapproval for the negative items (Salkind, 2017).

Before the data collection, Index of item objective congruence (IOC) and a pilot test (n=50) were applied to test the validity and reliability of the scale items and constructs. The results are that IOC passed at a score not less than 0.6, and Cronbach’s Alpha coefficient value at equal or higher than 0.7 in the pilot test of 50 respondents (Gable & Wolf, 1993).

The researchers used a sampling strategy with a multistage sampling method that can be divided into three steps. First, the researchers used judgmental sampling to identify 4020 students with entrepreneurial experience or at least existing entrepreneurial intentions from 2 Social Science majors in selected target public universities. Then, using quota selection, 500 respondents were identified from these students as the final sample for the survey. Table 2 shows the specific sample size. Finally, convenience sampling was implemented to distribute online questionnaire.

**Research Population and Sample**

Students from the College of Architecture and Civil Engineering and the College of Food and Biological Engineering at Xihua University (XHU) in Chengdu were the target population for the survey. Hair et al. (2010) suggested that 200-500 respondents would be the minimum sample size for a challenging methodology in a structural equation model. Therefore, after screening and quota selection, 500 students were selected as the final sample size from a population of 4698. After the data screening 491 valid questionnaires were collected as the final valid data for the quantitative analysis of this study.

**Data Analysis**

The sample was drawn from 4318 students in Natural Science disciplines at Xihua University (XHU) in Chengdu, China, who had successively received entrepreneurial education or had entrepreneurial intentions to varying degrees. Then, 500 respondents were selected by quota for the final stage of the sample. After collecting the questionnaire, 491 data were considered valid, and 9 were considered invalid. Table 1 shows the sample units and sample sizes.

**Demographics of Participants**

Information on the combined demographic characteristics of the 491 respondents is summarized in Table 1. Males accounted for 58.2% of all participants, and females accounted for 41.8%. According to the age of the participants, 30.1% were aged 18-20 years, 43.8% were aged 21-22 years, 20.8% were aged 23-24 years, and 5.3% were aged 25-26 years. Families in towns accounted for 37.1%, while those in villages accounted for 62.9%. Undergraduates accounted for 89.8%, and postgraduates accounted for 10.2%.

**Table 1**

*The demographic data*

| Demographic and General Data (n=491) | Category | Frequency | Percentage |
|---|---|---|---|
| **Gender** | Male | 286 | 58.2% |
| | Female | 205 | 41.8% |
| **Age** | 18-20 | 148 | 30.1% |
| | 21-22 | 215 | 43.8% |

| Demographic and General Data (n=491) | Category | Frequency | Percentage |
|---|---|---|---|
| | 23-24 | 102 | 20.8% |
| | 25-26 | 26 | 5.3% |
| **Address** | Town | 182 | 37.1% |
| | Village | 309 | 62.9% |
| **Level** | Undergraduate | 441 | 89.8% |
| | Postgraduate | 50 | 10.2% |

## Results and Discussion

Confirmatory factor analysis (CFA) was used to determine whether the scale items' constituent and loading counts matched expectations based on theories or presumptions. In Table 2, the Cronbach's Alpha (CA) coefficient value equals or exceeds 0.7 (Gable & Wolf, 1993). The outcome of the factor loading and acceptable values for each observed variable illustrated the goodness of fit of the research matrix (Hair et al., 2010). The results demonstrate that the absolute values of the average extracted variance (AVE) were greater than 0.50, the composite reliability (CR) was beyond 0.70, and the factor loading values were all over 0.50 (Bagozzi & Yi, 1988; Hulland, 1999).

**Table 2**

*Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)*

| Variables | Source of Questionnaire | No. of Item | CA | Factors Loading | CR | AVE |
|---|---|---|---|---|---|---|
| Subjective Norm (SN) | Gieure et al. (2019) | 6 | 0.909 | 0.767-0.819 | 0.910 | 0.628 |
| Entrepreneurial Attitude (EA) | Shah and Soomro (2017) | 5 | 0.898 | 0.751-0.822 | 0.899 | 0.640 |
| Desirability (DES) | Gerba (2012) | 4 | 0.872 | 0.769-0.821 | 0.872 | 0.631 |
| Educational Support (ES) | Maheshwari (2021) | 4 | 0.880 | 0.776-0.820 | 0.880 | 0.647 |
| Self-efficacy (SE) | Latip et al. (2020) | 4 | 0.867 | 0.759-0.818 | 0.867 | 0.621 |
| Perceived Behavioral Control (PBC) | Farooq (2018) | 4 | 0.829 | 0.710-0.774 | 0.830 | 0.550 |
| Entrepreneurial Intention (EI) | İlerisoy et al. (2021) | 6 | 0.909 | 0.734-0.844 | 0.909 | 0.627 |

The consequences of the investigation into and presentation of the discriminant validity are demonstrated in Table 3. The diagonally designated quantity is the AVE square root of the AVE, and neither of the correlations crossing any two latent variables was larger than 0.80 (Liu et al., 2020; Schmitt & Stults, 1986). Therefore, discriminant validity was established.

**Table 3**

*Square roots of AVEs and correlation matrix*

| | SN | EA | DES | ES | SE | PBC | EI |
|---|---|---|---|---|---|---|---|
| **SN** | **0.792** | | | | | | |
| **EA** | 0.476 | **0.800** | | | | | |
| **DES** | 0.401 | 0.307 | **0.794** | | | | |
| **ES** | 0.226 | 0.270 | 0.205 | **0.804** | | | |
| **SE** | 0.377 | 0.386 | 0.311 | 0.223 | **0.788** | | |
| **PBC** | 0.125 | 0.179 | 0.155 | 0.135 | 0.301 | **0.742** | |
| **EI** | 0.486 | 0.535 | 0.373 | 0.312 | 0.409 | 0.271 | **0.792** |

Note: The diagonally listed value is the AVE square roots of the variable

Additionally, as presented in Table 4, all the applicable thresholds for the absolute fit indicators, such as CMIN/DF, GFI, AGFI, and RMSEA, as well as the incremental fit measurements as CFI, NFI, and TLI, match the requirements. Consequently, all these measurements for the goodness of fits employed in the CFA examination were acceptable.

**Table 4**

*Goodness of Fit for Measurement Model*

| Fit Index | Acceptable Criteria | Statistical Values |
|---|---|---|
| **CMIN/DF** | < 3.00 (Hair et al., 2010) | 1.243 |
| **GFI** | ≥ 0.90 (Bagozzi & Yi, 1988) | 0.931 |
| **AGFI** | ≥ 0.80 (Sica & Ghisi, 2007) | 0.919 |
| **RMSEA** | < 0.05 (Pedroso et al., 2016) | 0.022 |
| **CFI** | ≥ 0.90 (Bentler, 1990) | 0.987 |
| **NFI** | ≥ 0.90 (Bentler & Bonett, 1980) | 0.939 |
| **TLI** | ≥ 0.90 (Bentler & Bonett, 1980) | 0.986 |
| **Model Summary** | | **In harmony with empirical data** |

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = Goodness-of-fit index, AGFI = Adjusted goodness-of-fit index, RMSEA = Root mean square error of approximation, CFI = Comparative fit index, NFI = Normed fit index, and TLI = Tucker–Lewis index.

## Structural Equation Modeling (SEM)

After passing the CFA evaluation, the investigators used Structural Equation Model (SEM) for validation. Structural Equation Modeling (SEM) is typically considered an explanatory modeling method (Bollen, 1989; Kline, 2015). SEM examines the causal relationship between the characteristics in the specified matrix and accounts for assessment bias or dishonesty in the coefficient (Rattanaburi, 2021). Table 5 demonstrates that when adjusted by AMOS, the combined values of CMIN/DF, GFI, AGFI, CFI, NFI, TLI, and RMSEA were all above acceptable limitations. As the outcome reveals, the goodness of fit of the SEM was established.

**Table 5**

*Goodness of Fit for Structural Model*

| Index | Acceptable Criterion | Statistical Values |
|---|---|---|
| **CMIN/DF** | < 3.00 (Hair et al., 2010) | 1.703 |
| **GFI** | ≥ 0.90 (Bagozzi & Yi, 1988) | 0.901 |
| **AGFI** | ≥ 0.80 (Sica & Ghisi, 2007) | 0.884 |
| **RMSEA** | < 0.05 (Pedroso et al., 2016) | 0.038 |
| **CFI** | ≥ 0.90 (Bentler, 1990) | 0.963 |
| **NFI** | ≥ 0.90 (Bentler & Bonett, 1980) | 0.916 |
| **TLI** | ≥ 0.90 (Bentler & Bonett, 1980) | 0.960 |
| **Model Summary** | | **In harmony with empirical data** |

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = Goodness-of-fit index, AGFI = Adjusted goodness-of-fit index, RMSEA = Root mean square error of approximation, CFI = Comparative fit index, NFI = Normed fit index, and TLI = Tucker–Lewis index

## Hypothesis Testing Results

Testing the hypothesis, the results are shown in Table 6. Subjective norm (SN) had a direct and significant effect on entrepreneurial attitude (EA), leading to the strongest effect of this quantitative method with a standardized path coefficient β of 0.523 (t-value= 10.270***). The second largest interaction effect of entrepreneurial attitude (EA) on β entrepreneurial intention (EI) was 0.376 (t-value= 6.921***). Additionally, subjective norm (SN) significantly influenced entrepreneurial intention (EI) with the β at 0.229 (t-value =4.379***). At the same time, desirability (DES) markedly impacted entrepreneurial intention (EI) with the β at 0.153 (t-value =3.519***), as well as educational support (ES), which significantly influenced entrepreneurial intention (EI) with β at 0.143 (t-value =3.305***). Moreover, perceived behavioral control (PBC) was also examined and determined to impact entrepreneurial intention substantially (EI) with the β of 0.162 (t-value =3.606***). Consequently, self-efficacy (SE) exhibited the least significant influence on entrepreneurial intention (EI) in this quantifiable investigation, with β 0.136 (t-value =3.099**).

**Table 6**

*Summary of hypothesis tests*

| Hypothesis | Standardized path coefficient (β) | t-value | Testing result |
|---|---|---|---|
| H1: Subjective Norm has a significant impact on entrepreneurial attitude. | 0.523 | 10.270 *** | Supported |
| H2: Subjective Norm has a significant impact on entrepreneurial intention. | 0.229 | 4.379 *** | Supported |
| H3: Entrepreneurial Attitude has a significant impact on entrepreneurial intention. | 0.376 | 6.921 *** | Supported |

| Hypothesis | Standardized path coefficient (β) | t-value | Testing result |
|---|---|---|---|
| H4: Desirability has a significant impact on entrepreneurial intention. | 0.153 | 3.519 *** | Supported |
| H5: Educational Support has a significant impact on entrepreneurial intention. | 0.143 | 3.305 *** | Supported |
| H6: Self-efficacy has a significant impact on entrepreneurial intention. | 0.136 | 3.099 ** | Supported |
| H7: Perceived Behavioral Control has a significant impact on entrepreneurial intention. | 0.162 | 3.606 *** | Supported |

Note: *** $p<0.001$, ** $p<0.01$

**Discussion**

Additionally, Table 7 shows that the structural method confirms an H1 normalized route parameter threshold of 0.523, demonstrating that the subjective norm (SN) is a significant predictor of entrepreneurial attitude (EA). Numerous studies have shown that subjective norms predict entrepreneurial ambitions with high accuracy and are positively connected. (Duong, 2021; Farooq, 2018; Ferreira et al., 2012; Trivedi, 2016).

The believed subjective norm (SN) had previously been shown to have a weak impact on entrepreneurial intentions (EI). However, the results were inconsistent across studies because some found that it significantly impacted entrepreneurial intention despite not being the most important predictor (Trivedi, 2016). According to the analysis, the normalized path coefficient of the subjective norm (SN) on entrepreneurial inclinations (EI) is 0.229 for H2.

The hypothesis that entrepreneurial attitude (EA) has a considerable impact on entrepreneurial intentions (EI) was shown by observation of H3 statistics; the normalized path of 0.376 suggests that it is the second most important element in the theoretical framework. Studies show that attitude and the other two TPB framework components, considerably impacts entrepreneurial intention (perceived behavioral control and subjective norm). People with favorable attitudes are likelier than those with negative views of favorably seeing entrepreneurship (Maheshwari, 2021).

H4 showed that desirability (DES) highly impacted entrepreneurial intentions (EI), with a standard coefficient of 0.153. Some studies agree that desirability greatly impacts pupils' entrepreneurial aspirations (Aloulou, 2016; Devonish et al., 2010; Yousaf et al., 2015).

In H5, it was confirmed that there was a substantial effect because the standardized coefficient value for educational support (ES) on entrepreneurship intentions (EI) was 0.143. According to certain research, pupils encouraged to pursue entrepreneurship in school are likelier to do so. (Sim et al., 2021). According to numerous studies, entrepreneurship instruction and training can successfully advance important student outcomes (Aboobaker & Renjini, 2020).

Self-efficacy (SE) and entrepreneurial inclinations (EI) had a significant association in H6 with a common coefficient value of 0.136. Self-efficacy can create behavioral patterns, raise goals consistently, reduce risks, and manage difficult situations with unknown outcomes

(İlerisoy et al., 2021). The conclusions, which emphasize establishing positive attitudes and self-efficacy as a viable approach to nurturing entrepreneurial potential, are supported by a large body of additional research, such as Hassan (2020) and Cain et al. (2016).

Finally, H7 found that perceived behavioral control (PBC) and entrepreneurial ambitions (EI) were substantially correlated, with a standardized coefficient value for the active influence of 0.162. The likelihood of performing the activity increases with the interpretation of perceived behavioral control. Other studies on the connection between perceived behavioral control and entrepreneurial objectives provide evidence in favor of this, showing that perceived behavioral control positively affects such intentions. (Aloulou, 2016; Duong et al., 2022; Duong, 2021).

## Conclusion and Recommendations

### Conclusion

Based on the current economic situation and social development context, this study focuses on which factors significantly impact the entrepreneurial intentions of college students in Natural Science disciplines at a public university in Chengdu, China. A conceptual framework was developed using seven hypotheses to verify the interaction between subjective norm, entrepreneurial attitude, desirability, educational support, self-efficacy, perceived behavioral control, and entrepreneurial intention. To determine the interaction between these variables, 491 college students with entrepreneurial plans and ideas participated in a questionnaire. Confirmatory Factor Analysis (CFA) was used to determine if the data fit the specified theoretically derived measurement model. Similarly, Structural Equation Modeling (SEM) was used to assess the relationships between observed and potential variables affecting entrepreneurial intention, and hypotheses were tested individually.

The study found that entrepreneurial attitude had the largest direct interaction with entrepreneurial intention. Subjective norms had the strongest effect on entrepreneurial attitude. In addition, desirability, educational support, self-efficacy, and perceived behavioral control significantly affected entrepreneurial intention, although the standardized path coefficients were relatively low.

### Recommendations

Based on the conclusions drawn from this study, the researcher suggests the following suggestions for paying more attention to developing entrepreneurial intentions and promoting entrepreneurial success among college students in Natural Science. First, this study shows that entrepreneurial attitudes directly and significantly influence entrepreneurial intentions, while subjective norm impacts entrepreneurial attitude formation most. Therefore, due to individual attitudes' subjective and variable characteristics, schools should facilitate entrepreneurial policies, environment, and conditions to cultivate entrepreneurial consciousness, prompt college students to have good entrepreneurial experiences, gradually establish positive entrepreneurial attitudes, and stimulate endogenous motivation for entrepreneurship.

Secondly, entrepreneurial intentions are significantly influenced by desirability and educational support. The findings of this study confirm that college students are more concerned about the attractiveness of entrepreneurship to them and having an entrepreneurial

knowledge base. Schools can use this research to focus on attracting students with successful entrepreneurial cases, providing entrepreneurial platforms and opportunities, such as holding the "Entrepreneurial Skills Competition, " and guiding them to make entrepreneurial attempts. More integration of entrepreneurship education and practice in teaching systems for college students provides the necessary knowledge and skills.

Finally, regarding self-efficacy and perceived behavioral control, teachers should teach more practical problem-solving skills and lead students to conduct natural science research to inject more innovative factors according to the characteristics of natural science majors. Encourage students to transform their innovative research results, such as incubating innovative projects through "University Student Science and Technology Parks," pushing them into the market when the products or services are mature, enhancing confidence in successful entrepreneurship, and turning their will into concrete actions.

**Limitations and Further Study**

Since policies and environments greatly influence college students' entrepreneurship, and there are large differences in the entrepreneurial attitudes and willingness possessed by college students in different countries and regions, this study is limited to public universities in the Chengdu area. The survey sample is only for some majors in natural science, and the coverage of the differences in entrepreneurial willingness discussed by professional characteristics needs to be increased. Therefore, to further verify the factors influencing entrepreneurial intentions, an in-depth comparative study should be conducted by expanding the sample respondents' geographic area and the number of majors.

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