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Analysis on the Factors Affecting Online Entrepreneurial Willingness Among College Students Based on TPB Model

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Abstract: College students from five private colleges and universities in Guangdong Province were selected as the research subjects. By using entrepreneurship education as a variable in the theory of planned behavior (TPB) model, a relationship model was constructed based on the influencing factors of intention of participating in online entrepreneurship among private college and university students. Then, the mechanism of entrepreneurial attitude, subjective norm, perceived behavior control, and entrepreneurial education on online entrepreneurial willingness were analyzed. Results show that the standardized path coefficients of entrepreneurial attitude, subjective norm, perceived behavior control, entrepreneurial education and online entrepreneurial intention are as follows: 0.251, 0.239, 0.163 and 0.244, respectively, showing a significant positive impact on online entrepreneurial willingness.

Keywords: Theory of planned behavior; College students; Entrepreneurial intention; Analysis

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1. Introduction

This year, there are 10.76 million college graduates in China. The employment situation is increasingly concerning, and the employment pressure of graduates is even greater. In view of this, the issue of providing a solution for the employment problem among college students has been widely discussed. The emergence of independent entrepreneurship can alleviate the employment pressure of graduates and realize diversified employment channels. In order to encourage independent entrepreneurship among college students, the state and governments of all levels have issued many preferential policies for entrepreneurship. According to relevant data, in 2019, the average proportion of undergraduate students doing entrepreneurship is 1.6%, and the average proportion of vocational students doing entrepreneurship is 3.4%, and the value is still increasing, which shows that more and more college students choose to start independent entrepreneurship [1]. In this Internet era, college students' adoption of online entrepreneurship has become the main form of independent entrepreneurship. The first domestic "Research Report on Chinese college students' online entrepreneurship" shows that 97.6% of college students are relatively supportive of online entrepreneurship, 68.8% of college students have a positive attitude towards online entrepreneurship and are willing to conduct online entrepreneurship [2]. Therefore, it is very important to further the research on college students' online entrepreneurial willingness. Entrepreneurial willingness is an individual's subjective attitude to decide whether to start a business, and it is the internal driving force for entrepreneurial behavior.

The strength of entrepreneurial willingness determines whether entrepreneurial behavior occurs [3]. The study of entrepreneurial willingness has become the focus of entrepreneurship research in the world. Theory of Planned Behavior is widely used in foreign countries to study entrepreneurial intention, while it is less used in domestic research. Querying the database of China National Knowledge Infrastructure (CNKI), there are only 106 relevant literatures. For example, Feng Xi explored the factors that affect college students' willingness to return home to start an entrepreneurship based on the TPB model, and found that there is a significant positive correlation between College Students' entrepreneurial ability and entrepreneurial control in their perceived behavior control and the willingness to start an entrepreneurship in their hometown, and the influence of entrepreneurial control is greater than that of entrepreneurial ability [4]. Jin Chao et al. believe that subjective norms, entrepreneurial attitudes and perceived behavior control factors have a significant impact on College Students' entrepreneurial willingness. Among them, the influence of perceptual behavior control is the most obvious [5]. Based on the TPB model theory, Shi Shengxu et al. surveyed college students in ten universities. The results showed that college students' perceptual behavior control intuition had a significant impact on entrepreneurial willingness, and entrepreneurial attitude and subjective norms indirectly affected entrepreneurial willingness by influencing perceptual behavior control. Yu Liwei et al. also found that behavior attitudes and subjective norms have varying degrees of influence on the willingness to return to their hometown to start a business. At present, domestic scholars have made some achievements in the study of College Students' entrepreneurial willingness by using the theory of planned behavior, which is still in the exploratory stage as well as a few studies on College Students' online entrepreneurship [6]. Therefore, this paper analyzes the influencing factors of private college students' online entrepreneurial willingness based on the influencing factor model of the theory of planned behavior.

2. Model construction and theoretical assumptions

2.1. Model construction

Ajzen put forward the theory of planned behavior (TPB) in 1985 which states that the individual's will determines the behavior, and the individual can determine the intensity of the will through subjective norms, behavioral attitudes, and perceived behavioral control [7]. College students' entrepreneurial behavior is a purposeful behavior, which is affected by subjective norms, behavioral attitudes and perceived behavior control. Using TPB to explain college students' entrepreneurial behavior has good applicability and explanatory power. The results of literature analysis performed in this study shows that entrepreneurship education has an impact on entrepreneurial willingness, so we add entrepreneurship education variables to the TPB model to build a relationship model of the influencing factors of private college students' online entrepreneurial willingness, as shown in **Figure 1.**

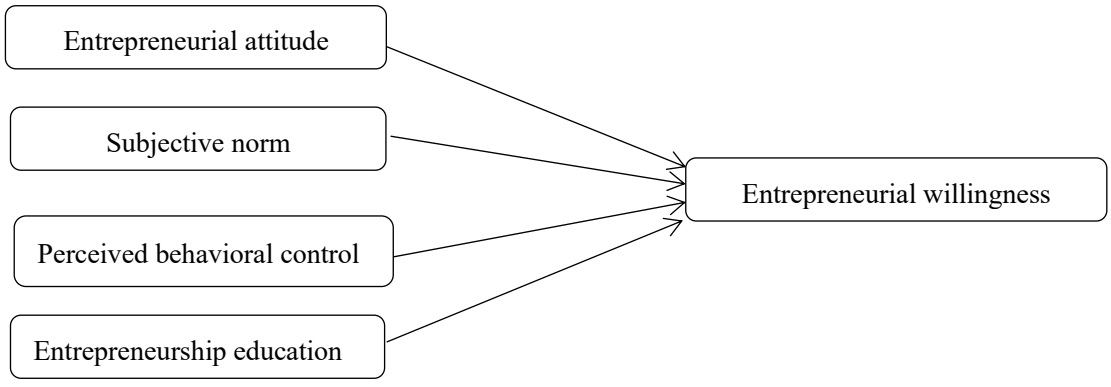

Figure 1. Relationship model of influencing factors of online entrepreneurial willingness

2.2. Hypothesis formulation

2.2.1. Entrepreneurial attitude

Entrepreneurial attitude refers to the individual's view and preference for entrepreneurship. Whether an individual engages in entrepreneurship depends on his attitude to a certain extent. Crockett and Brayfield (1955) first confirmed that there is a certain relationship between attitude and behavior [8], and then Cialdini and Cacioppo further confirmed that entrepreneurial attitude has a significant impact on entrepreneurial willingness [9]. In China, Shi Yongchuan et al. had found out through investigation that entrepreneurial attitude and entrepreneurial willingness have a significant impact [10]. The entrepreneurial attitude of college students reflects whether they are positive or negative to their entrepreneurial willingness. If the entrepreneurial attitude of college students is positive, the stronger their entrepreneurial willingness is, the more likely they are to carry out entrepreneurial behavior. Hence, hypothesis H1 is proposed as follows:

Hypothesis H1: Entrepreneurial attitude has a significant impact on College Students' online entrepreneurial willingness.

2.2.2. Subjective norm

Subjective norms have two definitions: One is a person who has an important influence on an individual's behavior, and has certain expectations for the individual's behavior; the other is a person who has an important influence on an individual's behavior, and has an influence on the individual's views and behaviors that require compliance [11]. In this study, when college students decide whether to start an online entrepreneurship, they feel the expectations that they need to meet and needs support from important people from family, teachers, classmates and so on. Krueger and Kolvereid were the first to demonstrate the influence of subjective norm on intention. Shi Shengxu's study found that the more support college students get from the people around them, the stronger their willingness to return to their hometown to start a business will be [12]. For this, hypothesis H2 is proposed as follows:

Hypothesis H2: Subjective norm has a significant impact on college students' online entrepreneurial willingness.

2.2.3. Perceived behavioral control

Perceived behavioral control is the ability an individual perceives to be in control of engaging in a behavior. The most critical element reflecting perceived behavioral control is self-efficacy. In general, individuals with high self-efficacy are more likely to identify opportunities than ordinary people, and they are more willing to start a business. Scherer first confirmed that self-efficacy is closely related to entrepreneurial behavior [13]. The research of Li Guofeng et al. and Li Yongdao et al. showed that the perception of entrepreneurial behavior control is a key factor of entrepreneurial willingness [14, 15]. Hence, hypothesis H3 is proposed as follows:

Hypothesis H3: Perceived behavior control has a significant impact on college students' online entrepreneurial willingness.

2.2.4. Entrepreneurship education

Entrepreneurship education is an educational activity that cultivates individuals with entrepreneurial thinking, entrepreneurial awareness, entrepreneurial skills and other entrepreneurial abilities. Marques et al. found that college students with entrepreneurial education experience have stronger entrepreneurial ability and market environment analysis ability as well as stronger entrepreneurial intention [16]. Lin Gang et al. believe that the more entrepreneurship education college students are exposed to and the deeper their understanding of entrepreneurship, the greater the willingness of college students to generate entrepreneurial ideas upon graduation [17]. Hence, hypothesis H4 is proposed:

Hypothesis H4: Entrepreneurship education has a significant impact on college students' online entrepreneurial willingness.

3. Research design and result analysis

3.1. Questionnaire design and sample selection

Based on the TPB model, this study designed a questionnaire on the basis of previous studies, using a five-point Likert scale, with 1 to 5 indicating disagree, somewhat disagree, general, somewhat agree, and agree. The scale consists of five parts: entrepreneurial attitude, subjective norm, perceived behavioral control, entrepreneurial education and online entrepreneurial willingness. A total of 600 questionnaires were issued, and 553 were valid questionnaires, with an effective recovery rate of 92.17%. College students from 5 private universities in Guangdong Province were randomly selected as research subjects. The demographic distribution of the sample is as follows (see **Table 1**): 255 males, accounting for 46.11% of the total, 298 females, accounting for 53.89% of the total; 183 students majoring in economics and management, accounting for 33.09% of the total. Among all the students, the students number majoring in science and engineering is 114, accounting for 20.61% of the total; the number of students majoring in literature and history is 155, accounting for 28.03% of the total; the number of students majoring in art is 101, accounting for 18.27% of the total; the number of first-year students is 163, and the number of second-year students is 146. There are 113 third grade students and 131 fourth grade students, accounting for 29.48%, 26.40%, 20.43% and 23.69% of the total respectively. From the perspective of sample data, the distribution of demographic characteristics of this time is relatively reasonable and suitable for data analysis.

Table 1. Distribution of sample cases

Name	Option	Number of people	Percentage (%)	Cumulative percentage (%)
Gender	Male	255	46.11	46.11
	Female	298	53.89	100.00
Major	Economic management	183	33.09	33.09
	Science and engineering	114	20.61	53.70
	Literature and history	155	28.03	81.73
	Arts	101	18.27	100.00
Grade	First grade	163	29.48	29.48
	Second grade	146	26.40	55.88
	Third grade	113	20.43	76.31
	Fourth grade	131	23.69	100.00
Total		553	100.0	100.0

3.2. Reliability and validity analysis

3.2.1. Reliability analysis

In this study, SPSS 26 statistical software was used to analyze the reliability of 23 analysis items of 5 variables: entrepreneurship attitude, subjective norms, perceived behavior control, entrepreneurship education and online entrepreneurial willingness (see **Table 2**).It can be seen from **Table 2** that the Cronbach's α coefficient of the total scale is 0.962, and the reliability of the questionnaire is greater than the reference value of 0.8, reflecting the high reliability of the total scale and meeting the requirements of questionnaire analysis. The Cronbach's α coefficients of the five variables were all greater than the reference value of 0.8, indicating that the internal consistency of each measurement index of the questionnaire was high and the questionnaire had good reliability. It is also known from **Table 2** that the

KMO value of each variable is greater than 0.7, indicating that the data of this questionnaire survey has a positive effect. Based on the above results, the survey data of this study can be verified by factor analysis.

Table 2. Reliability analysis

Variable	Number of items	Standardized Cronbach' α coefficient	KMO value
Entrepreneurial attitude	6	0.939	0.906
Subjective norm	3	0.906	0.715
Perceived behavioral control	6	0.927	0.885
Entrepreneurship education	4	0.906	0.843
Entrepreneurial willingness	4	0.909	0.758
Total	23	0.962	0.949

3.2.2 Validity analysis

In this study, confirmatory factor analysis was used to analyze the validity of the questionnaire. This time, a total of 5 variables and 23 analysis items were analyzed by confirmatory factor analysis (CFA). The results are shown in **Table 3** and **Table 4**. **Table 3** shows that the absolute values of the standardized load systems of the 23 analysis items are all greater than 0.7 and show significance, which means that there is a good measurement relationship. It can be seen from **Table 4** that the average variance extracted AVE values corresponding to a total of 5 variables are all greater than 0.5, and the composite reliability (CR) values are all higher than 0.7, which means that the data in this analysis have good convergent validity. It shows that the validity of each variable and the design of the questionnaire is good, and the survey results are suitable for this study.

Table 3. Factor load factor table

Analysis item	Non-standard load factor	Standard error	z	p	Standard load factor
1	1.000	-	-	-	0.930
2	0.810	0.034	23.545	0.00	0.758
3	0.989	0.028	35.272	0.00	0.913
4	0.816	0.033	24.729	0.00	0.777
5	1.000	-	-	-	0.789
6	1.094	0.047	23.337	0.00	0.862
7	1.187	0.047	25.014	0.00	0.906
8	1.120	0.051	22.088	0.00	0.828
9	1.141	0.049	23.455	0.00	0.865
10	1.097	0.047	23.139	0.00	0.857
11	1.000	-	-	-	0.774
12	1.143	0.047	24.116	0.000	0.913
13	1.162	0.047	24.937	0.000	0.951
14	1.000	-	-	-	0.819
15	0.979	0.042	23.353	0.000	0.832
16	0.987	0.041	24.354	0.000	0.856
17	0.912	0.040	23.010	0.000	0.824
18	0.934	0.040	23.261	0.000	0.830

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Analysis item	Non-standard load factor	Standard error	z	p	Standard load factor
19	0.873	0.041	21.457	0.000	0.785
20	1.000	-	-	-	0.862
21	0.872	0.037	23.556	0.000	0.811
22	0.971	0.035	27.666	0.000	0.896
23	0.855	0.038	22.792	0.000	0.794

3.3. Correlation analysis and hypothesis testing result analysis

3.3.1. Correlation analysis

Correlation analysis was performed to understand the correlation between entrepreneurial attitudes, subjective norms, perceived behavioral control, entrepreneurial education and entrepreneurial willingness, and uses the Pearson correlation coefficient to indicate the strength of the correlation. The results are shown in **Table 5**. It can be seen from **Table 5** that entrepreneurial willingness and entrepreneurial attitude, subjective norm, perceived behavior control, and entrepreneurial education all show significant differences, and the correlation coefficient values are 0.665, 0.674, 0.587, and 0.573, respectively. Greater than 0 means that there is a positive correlation between entrepreneurial willingness and entrepreneurial attitude, subjective norm, perceived behavioral control, and entrepreneurial education.

Table 4. Model AVE and CR metrics results

Variable	Average variance extracted AVE value	Combined reliability CR value
Entrepreneurial attitude	0.726	0.941
Subjective norm	0.779	0.913
Perceived behavioral control	0.680	0.927
Entrepreneurship education	0.709	0.907
Entrepreneurial willingness	0.719	0.910

Table 5. Pearson related

	Mean	Standard deviation	1	2	3	4	5
Entrepreneurial willingness	3.237	0.835	1				
Entrepreneurial attitude	2.785	0.836	0.665**	1			
Subjective norm	2.927	0.747	0.674**	0.824**	1		
Perceived behavioral control	2.882	0.812	0.587**	0.613**	0.616**	1	
Entrepreneurship education	2.934	0.788	0.573**	0.482**	0.506**	0.526**	1

* $p < 0.05$, ** $p < 0.01$

3.3.2. Analysis of hypothesis testing results

In order to verify the relationship model of the influencing factors of online entrepreneurial willingness, path analysis was used to verify the model assumptions, and the results are shown in **Table 6**.

Table 6. Model regression coefficient summary table

X	→	Y	Non standardized path coefficient	SE	z	p	Standardized path coefficient
Entrepreneurial attitude	→	Entrepreneurial willingness	0.250	0.051	4.913	0.000	0.251
Subjective norm	→	Entrepreneurial willingness	0.267	0.058	4.580	0.000	0.239
Perceived behavioral control	→	Entrepreneurial willingness	0.168	0.039	4.306	0.000	0.163
Entrepreneurship education	→	Entrepreneurial willingness	0.258	0.036	7.096	0.000	0.244

Remarks: → indicates the path of influence relationship

It can be seen from **Table 6** that:

(1) The impact of entrepreneurial attitude on entrepreneurial willingness is significant ($z = 4.913$, $p = 0.000 < 0.01$), and the standardized path coefficient is $0.251 > 0$, which indicates that entrepreneurial attitude will have a significant impact on online entrepreneurial willingness. This indicates a positive influence relationship, therefore H1 is retained.

(2) Subjective norm also affects entrepreneurial willingness significantly ($z = 4.580$, $p = 0.000 < 0.01$), and the standardized path coefficient value is $0.239>0$, thus indicating that subjective norm will have a significant impact on online entrepreneurial willingness Significant positive influence relationship, thus H2 is retained.

(3) Perceived behavioral control also affects entrepreneurial willingness significantly ($z = 4.306$, $p = 0.000 < 0.01$), and the standardized path coefficient is $0.163 > 0$, thus indicating that perceived behavioral control will affect online entrepreneurial willingness. produce a significant positive impact relationship, thus H3 is retained.

(4) Entrepreneurship education affects entrepreneurial intention significantly ($z = 7.096$, $p = 0.000 < 0.01$), and the standardized path coefficient value is $0.244 > 0$, thus indicating that entrepreneurship education will have a significant impact on entrepreneurial willingness, thus H4 is retained.

4. Conclusions

In this paper, 553 students from five private colleges and universities in Guangdong Province were selected as research subjects. The results are as follows: the TPB based model of influencing factors of private college students' online entrepreneurial willingness explained 63.7% of the reasons for the change of online entrepreneurial willingness, among the influencing factors of College Students' online entrepreneurial willingness, entrepreneurial attitude, subjective norms, perceived behavior control and entrepreneurial education are all important influencing factors, among which entrepreneurial attitude has the greatest impact on entrepreneurial willingness, followed by entrepreneurial education, and the third is subjective norms, of which perceived behavior control has the least impact. The entrepreneurial attitude of private college students is the most important influencing factor of online entrepreneurial willingness, which is similar to the conclusions of many studies, that is, the more positive the behavioral attitude is, the more likely the individual will manifest a certain behavior [18], private college students are more active in online entrepreneurial attitude, and are willing to accept the challenges in the entrepreneurial process. Entrepreneurship education of college students in private colleges and universities has an important impact on online entrepreneurial willingness. According to the survey, all colleges and universities involved in this

study carry out entrepreneurship courses, and also actively provide opportunities for students to participate in entrepreneurship training, expert lectures and Internet-related enterprise internships. These educations enable students to have a clearer understanding of online entrepreneurship, and thus making them wore willing to start online entrepreneurships. The support of family members, classmates, teachers and others of private college students also directly affects their entrepreneurial willingness. If they are familiar with the online entrepreneurial process, their online entrepreneurial willingness will be increase. According to the research conclusions made, we put forward several suggestions to improve the online entrepreneurial willingness of private college students:

Firstly, in the Internet era, in order to improve college students' entrepreneurial willingness, private colleges and universities should create an online entrepreneurial environment on campus, mobilize college students' enthusiasm for online entrepreneurship, take the initiative to understand college students' online entrepreneurial tendencies and ideas, so as to provide targeted help and support.

Secondly, private college students should be prepared to cope with the changes in the current social environment, establish a correct concept of Network Entrepreneurship, enhance the quality of Network Entrepreneurship, improve the ability of Network Entrepreneurship, and constantly tap their own advantages, so as to stimulate their entrepreneurial willingness and interest [19].

Third, private colleges and universities should attach importance to entrepreneurship education, and integrate the employment-oriented concept of online entrepreneurship education into teaching, so as to stimulate college students' willingness to start online entrepreneurship [20]. Update the online entrepreneurship education mode, improve the online entrepreneurship practice education system, and encourage college students to participate in online entrepreneurship competitions and intern in Internet related companies, so as to improve college students' online entrepreneurship knowledge.

Fourthly, entrepreneurship education in private colleges and universities needs to strive to build the college students' perception and control ability of online entrepreneurship behavior, so as to improve their entrepreneurial confidence. Besides, it is important to cultivate the entrepreneurial spirit among students. Entrepreneurship education should also help the students in building the courage take risks, the ability face challenge and innovate, give play to the vitality of young people, and stimulate students' passion for entrepreneurship [21].

Fifth, teachers should improve the guidance of college students' online entrepreneurship and change the traditional employment view of college students' parents. The starting of online entrepreneurships of students is also affected by many internal and external factors, such as teachers, parents and classmates. Under the guidance of their teachers and the support of their parents, college students will have a stronger willingness to start online entrepreneurships.

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