TDAF IETI Transactions on Data Analysis and Forecasting

iTDAF | elSSN: 2959-0442 | Vol. 1 No. 4 (2023) | OPEN ACCESS

https://doi.org/10.3991/itdaf.v1i4.46359

PAPER

Research on the Mechanism of Entrepreneurship Education on College Students' Entrepreneurial Willingness and Its Future Prediction

Liu Yingzhen¹(ﷺ), Fang Jiasheng², Zou Yuwei³, Gu Jieyu⁴, Hu Mingjie⁴, Xinyi Xie⁴

¹School of Plant Protection, Yangzhou University, Yangzhou, China

²School of Western Studies, Heilongjiang University, Harbin, China

³College of Engineering and Physical Sciences, University of Birmingham, Birmingham, England

⁴Business School, Yangzhou University, Yangzhou, China

lyz@yzu.edu.cn

ABSTRACT

The strength of college students' entrepreneurial willingness is a barometer for measuring the effectiveness of entrepreneurship education. It is also an important avenue for college students to expand their employment opportunities and enhance the quality of their employment in the face of new employment trends. Comprehensive universities offer a wide range of disciplines and great professional specialization. It is of great significance to explore the diversity results in college students' entrepreneurship education indicators. According to the data on the relationship between entrepreneurial education and entrepreneurship willingness in comprehensive universities in Jiangsu province, various factors such as subject characteristics, work experience, educational background, and family environment significantly impact college students' willingness to become entrepreneurial consciousness, the cultivation of entrepreneurial abilities, and the improvement of entrepreneurial willingness, has a direct impact on college students' willingness to start their own businesses.

KEYWORDS

entrepreneurship education, college students, entrepreneurship willingness

1 INTRODUCTION

The 20th report (The 20th National Congress of the Communist Party of China) emphasizes the need to promote education, science and technology, and talent development as a unified effort in order to enhance the overall quality of personnel training and advance the modernization of education in China. Currently, the development of entrepreneurship courses, the establishment of entrepreneurship practice platforms, and the implementation of entrepreneurship policies in colleges and universities play a crucial role in the entire process of student education and training, as

Yingzhen, L., Jiasheng, F., Yuwei, Z., Jieyu, G., Mingjie, H., Xie, X. (2023). Research on the Mechanism of Entrepreneurship Education on College Students' Entrepreneurial Willingness and Its Future Prediction. *IETI Transactions on Data Analysis and Forecasting (iTDAF)*, 1(4), pp. 4–13. <u>https://doi.org/10.3991/</u>itdaf.v1i4.46359

Article submitted 2023-09-30. Revision uploaded 2023-11-02. Final acceptance 2023-11-03.

© 2023 by the authors of this article. Published under CC-BY.

well as in cultivating individuals for the era of innovation and entrepreneurship [1]. However, during the process of reforming entrepreneurship education for college students, the diversity of their professions, backgrounds, and personality demands leads to the need for a precise supply of entrepreneurship education. In order to study the factors influencing college students' entrepreneurship [2], it is necessary to examine the dynamic balance between supply and demand. By optimizing the quantity and quality of the supply, we can enhance the diversity of entrepreneurship [3].

Entrepreneurial willingness is a form of self-efficacy that serves as the foundation for entrepreneurial action. It is also a self-response to the analysis and prediction of entrepreneurial outcomes [4]. Entrepreneurship is a high-risk social activity, and the success rate of college students' business incubation is still relatively low. Therefore, it is particularly important to study the factors that influence college students' entrepreneurial willingness and update the mode of entrepreneurship education. Starting with the impact of entrepreneurship education on development, this paper focuses on the factors influencing college students' willingness to become entrepreneurs. It also compares the influence of entrepreneurial education on entrepreneurship willingness under different conditions, with the aim of enhancing the quality of entrepreneurship education [5].

2 THEORETICAL BASIS

The educational concept of colleges and universities is to uphold the value of "moral education." Entrepreneurship education aims to foster students' innovative spirit, develop their ability to independently identify, analyze, and solve problems, and enhance their entrepreneurial mindset. By improving students' willingness to start their own businesses, entrepreneurship education promotes the employment of college students and contributes to their high-quality development [6].

The law of external relations in education states that educational development is contingent upon meeting the demands of social development [7]. Whether entrepreneurship education can enhance the inclination towards entrepreneurship depends on whether the focus of entrepreneurship education aligns with the current societal demands and the environment of social development. It should also be able to generate added value for individuals, inspire students to seize opportunities, unleash personal potential, and foster a goal-oriented mindset towards entrepreneurship [8]. Therefore, external factors such as courses, innovation and entrepreneurship competitions, and sound entrepreneurship policies are aligned with entrepreneurship education, and they influence college students' willingness to engage in entrepreneurship.

From the perspective of the internal relationship law of education, the question arises as to whether entrepreneurship education can fulfill the internal needs of college students and align with their career planning [9]. The growth patterns of college students in universities can be summarized into three modes: "high openness and low perseverance," "low openness and high perseverance," and "step by step." The current drive of college students to actively participate in entrepreneurship is not high, and their ability to evaluate the skills needed for social development and understand social development dynamics is insufficient. Therefore, personal recognition of the value of entrepreneurship will affect the willingness to start [10].

From the perspective of the comprehensive law of education, teachers' teaching objectives, teaching level, their sense of identity with entrepreneurship education, and their ability to tap into students' individual potential are all important factors affecting college students' entrepreneurial willingness [11]. At present, teachers have

a limited understanding of entrepreneurship education. They view it as a teaching activity rather than recognizing its importance in helping college students explore their personal future, enhance their entrepreneurial willingness, and improve their employment prospects. Therefore, various factors, such as cadre experience, family background, academic performance, and teachers' values, and influence the entrepreneurial willingness of college students [12].

Based on this, this paper puts forward the following hypothesis: the universality and differentiation of college entrepreneurship education have a direct impact on promoting entrepreneurship among college students. The impact of differentiated entrepreneurship education on entrepreneurial intention is greater than that of universal entrepreneurship education. Compared to colleges and universities that do not offer entrepreneurship education, students who receive high-quality entrepreneurship education have a higher degree of entrepreneurial intention.

3 STUDY DATA AND VARIABLE DEFINITION

This study is based on a comprehensive sampling of universities in Jiangsu Province. The survey was conducted from April to August 2023 and included students from various undergraduate grades, professional backgrounds, and genders. Through the combination of group sampling and random sampling, a representative from a comprehensive university in Jiangsu province was investigated. This time, 800 questionnaires were distributed, 736 were successfully recovered, and the recovery rate was 92%.

3.1 Independent variables

The strength of college students' entrepreneurial willingness can be influenced by various factors, including both internal and external environments [13]. In this study, entrepreneurship education is considered an independent variable to investigate its significant impact on entrepreneurship. Students evaluated the implementation of entrepreneurship education in comprehensive universities in Jiangsu Province using a Likert five-level scale questionnaire. "Very fit" is worth 5 points, "more fit" is worth 4 points, "fit" is worth 3 points, "not quite fit" is worth 2 points, and "not fit" is worth 1 point. Document Theme Project: List of 4 Aspects and 12 Small Problems. (1) Types of curriculum: (a) The school offers universal enterprises courses for college students; (b) The school offers the SYB (Start Your Business) program; and (c) The school offers specialized entrepreneurship courses for different groups. (2) Entrepreneurship practice construction: (a) The school has an entrepreneurship incubation park; (b) The school organizes and participates in entrepreneurship practice activities of off-campus enterprises; and (c) The school invites entrepreneurship experts to interact with students. (3) Level of competition at the institution: (a) The school places significant emphasis on the application and evaluation of college students' innovation and entrepreneurship training and research projects; (b) The school prioritizes extracurricular competitions such as the "Challenge Cup" and "Internet +"; (c) The school establishes distinct entrepreneurial projects for various disciplines. (4) Policy implementation and team building: (a) The school established an employment and entrepreneurship association, relying on the association for policy consultation, and entrepreneurship guidance; (b) Entrepreneurship teaching staff, group guidance, and individual consultation activities; and (c) School entrepreneurship education is supported by the government and all sectors of society and implemented in student entrepreneurship education.

In order to ensure the rationality and validity of the questionnaire, reliability, validity, and exploratory factor analysis were conducted after the completion of the questionnaire. After evaluation, the Cronbach's alpha coefficient of the independent variable was 0.972, and the Cronbach's alpha coefficient of the related dimension ranged from 0.896 to 0.968, which met the internal consistency requirements. The KMO result of the scale is 0.960. The probability value of the Bartlett sphere test is less than 0.001. Through factor analysis, the factor load after rotation is greater than 0.749, indicating good scale validity (see Table 1).

Independent Variable	Specific Dimensions	Cronbach's Alpha	KMO Value	Bartlett Spherical Test	Factor Loading
Entrepreneurship education	Type of course opening		0.960	<0.001	0.749–0.802
	Entrepreneurship practice construction	0.072			0.808-0.844
	Competition formation level	0.972			0.860–0.896
	Policy implementation and team building				0.900–0.928

 Table 1. Results of reliability and validity test of entrepreneurship education

3.2 Dependent variable

Entrepreneurial willingness is a form of social awareness and the ideological foundation for entrepreneurial endeavors. Potential entrepreneurs can only put their business ideas into practice when they navigate the complex internal and external environment [14]. In this study, entrepreneurial willingness will be measured as a dependent variable, focusing on three main aspects: (1) alignment with work expectations; (2) preference for entrepreneurship over traditional employment; and (3) desire to start a business in the future. The Likert Level 5 scale assesses the severity of the problem and measures the level of entrepreneurship. After conducting reliability and validity tests on the questionnaire, the overall validity was found to be 0.875. The internal consistency is relatively high, indicating that the three questions can be used. Based on the questionnaire results, a scoring system of "0–9" and "10–15 points" was established, with a pass line of 60%. Scores ranging from 0–9 are categorized as "no entrepreneurial intention," while scores ranging from 10–15 are categorized as "entrepreneurial intention." These categories will be used as the dependent variables in the logistic model.

3.3 Control variables

While studying the relationship between entrepreneurship education and entrepreneurship willingness, several control variables were introduced to examine the extent of change in the relationship between the independent and dependent variables. These control variables include age, student status, educational background, and participation in campus cultural activities.

4 **RESULTS ANALYSIS**

The independent, dependent, and control variables were calculated using a logistic regression model and are presented in Table 2.

	Model 1			Model 2							
Controlled Variable	Regression Coefficient	Standard Error	Odds	Regression Coefficient	Standard Error	Odds					
Gender (female = 0)	0.087	0.201	1.093	0.090	0.203	1.094					
Age	-0.053	0.108	0.952	-0.073	0.112	0.931					
Grade (first year of college $= 0$)											
Second grade in college	0.048	0.256	1.051	0.057	0.253	1.052					
Third grade in college	-0.067	0.284	0.937	-0.003	0.287	0.991					
Fourth grade in college	-0.334	0.375	0.716	-0.276	0.378	0.745					
Subject category (literature, History and philosophy = 0)	0.498**	0.198	1.646	0.513***	0.199	1.677					
Employment experience (none = 0)	0.539***	0.197	1.716	0.579***	0.198	1.787					
Comprehensive test score (excellent = 0)											
Front level	-0.271	0.273	0.776	-0.204	0.278	0.818					
Central level	-0.188	0.294	0.828	0.293	0.287	0.915					
End level	0.012	0.432	1.101	0.094	0.386	1.067					
Student origin (city = 0)											
Cities and towns	-0.861***	0.312	0.436	-0.857***	0.304	0.434					
Rural area	-0.714***	0.291	0.510	-0.676**	0.279	0.513					
Family background (low income = 0)											
Comparatively well-off level	-0.028	0.225	0.987	-0.015	0.210	0.979					
Better level	1.135***	0.482	2.741	0.951***	0.421	2.571					
Very good level	1.712**	0.766	5.015	1.608**	0.764	5.104					
Entrepreneurship education				0.301**	0.142	1.297					
Constant	1.989	2.310	7.163	1.420	2.265	4.133					
Sample number		736			736						
Chi-square value		57.748***			62.932***						
Nagelkerke R ²		0.121				0.132					

 Table 2. The Logistic regression results of college students' entrepreneurship education on entrepreneurship willingness

Notes: 1. ***P < 0.01, **P < 0.05; 2. Reference group for each variable noted in parentheses.

4.1 Analysis of the relationship between control variables and college students' entrepreneurial willingness

The correlation between control variables and entrepreneurial intention was calculated using the model. The chi-square value was 58.921 and the Nagelkerke R^2 was 0.121, which passed the significance level of 0.01 on test 1. Now, disciplines (philosophy), medicine of workers and peasants, students' distribution, and family

background conditions at a good level have a direct impact on college students' entrepreneurial intentions. Some regression coefficients are positive, while others are negative. Whether strong or weak, both can extract important factors that illustrate the influence of college students' entrepreneurial intentions.

4.2 The relationship between entrepreneurship education and college students' entrepreneurial willingness

In this paper, the relationship between independent variables and dependent variables was studied in various model contexts. Through Model 1, the Nagelkerke R^2 results increased to 0.132. This indicates that the content of the entrepreneurship education sector accounts for 11% of the variance in the influence of entrepreneurial willingness. The chi-square value is 0.132, and the significance is > 0.001. It passed the test. Through the analysis of relevant results in Model 2, it was found that the regression relationship between entrepreneurship education and entrepreneurship willingness is 0.301. For each increase in the total score of entrepreneurship education, college students' willingness to engage in entrepreneurship will increase by 29.7% (exp(0.295) – 1), indicating a positive correlation. This result is consistent with the conditional logic and the current research findings.

4.3 Influence degree of college students' entrepreneurial willingness under different disciplines

Comprehensive university features encompass a wide range of disciplines [15]. In contrast, entrepreneurship education varies among different professions and subject backgrounds, resulting in noticeable differences in college students' entrepreneurial endeavors. By analyzing a logistic regression model, it is evident that students with backgrounds in philosophy, science, workers, and peasants, as well as medical fields, exhibit varying thinking abilities, cognitive approaches, and perspectives on entrepreneurship education. Students with strong practical abilities are less influenced by the theory of entrepreneurship education. Their acceptance of practical teaching is more important than theoretical teaching, and liberal arts students are more influenced by entrepreneurship education than students in science and engineering. Students' work experience has a significant impact on their willingness to start a business. Students from more affluent families with a background in entrepreneurship are more likely to receive entrepreneurship education. The verification results show that the acceptance and willingness to engage in entrepreneurship among liberal arts college students are significantly higher than those among science and engineering college students.

5 CONCLUSIONS

Through the analysis of the research results, it is evident that entrepreneurship education has a significant impact on college students' entrepreneurial willingness. Specifically, the quality and teaching level of teachers, as well as their entrepreneurial experience, play a crucial role in improving students' entrepreneurial consciousness and intention through course training. Additionally, providing reasonable policies can positively incentivize college students' entrepreneurial behavior.

On a specific level, this survey examines the impact of entrepreneurship education on the willingness to engage in entrepreneurship, taking into account various backgrounds. The study analyzes four aspects and twelve dimensions. Through the research, students reported that the school has implemented both universal and differentiated entrepreneurship education and cultivation activities. These include programs such as the "Hongzhi Aviation Assistance" program for underprivileged students, SYB employment and entrepreneurship training courses, and the Maker Elite training camp, among others. However, this type of education is undifferentiated selection without prior registration through a questionnaire. To some extent, there is a "one-size-fits-all" situation, and the lack of targeted entrepreneurial guidance for individuals with different professional backgrounds affects the effectiveness of college students' entrepreneurial aspirations.

Control variables such as family background and student source cannot be changed. However, the experience of being a cadre has a significant influence on entrepreneurial will, although it varies from person to person. Encouraging students to actively participate in community and class student cadres, as well as taking on leadership roles, can strengthen their acceptance and willingness to engage in entrepreneurship.

6 COUNTERMEASURES AND SUGGESTIONS

The entrepreneurship curriculum system in colleges and universities should align with the developmental needs of students and their academic backgrounds and integrate professional courses with extracurricular activities. At the same time, the curriculum system should be designed to cater to the diverse individual needs of students who are willing, daring, and capable of starting a business in advance [16]. The teachers of entrepreneurship courses should uphold diversity, professionalism, and passion. They should have a deep understanding of entrepreneurship, both in theory and in practice. The teaching staff should consist of school course teachers, full-time lecturers, academic leaders, and off-campus enterprise mentors who have a good understanding of education and entrepreneurship.

6.1 Strengthen entrepreneurship practice education and strengthen the entrepreneurial cultural atmosphere

The university should strengthen the construction and promotion of the college students' entrepreneurship park, bridging the gap in entrepreneurship services and facilitating practical entrepreneurial experiences [17]. Practice will conduct immersive entrepreneurial experience activities, such as project roadshows and business simulations. It will also implement the "Entrepreneurship Carnival" maker interactive program and organize visits, learning, and communication activities with different types of enterprises. These initiatives aim to enhance the entrepreneurial cultural atmosphere. Through learning and gaming experience, college students develop an understanding of the operational processes of enterprises. They also apply their entrepreneurial knowledge to further enhance their willingness to engage in entrepreneurship.

6.2 Explore the characteristics of professional events, and consolidate the results of promoting learning through competition

Entrepreneurship education is not limited to classroom and outdoor practice alone. It can also stimulate college students' enthusiasm for entrepreneurship through initiatives such as "Internet +," "Challenge Cup," and "Three Innovation Competition." These activities help to enrich the entrepreneurial atmosphere of disciplined competitions. At the same time, students are encouraged to conduct scientific research related to their majors and interests, focusing on the application of college students' entrepreneurial projects in order to incubate innovative products. The school provides resources and support for competitions, and the establishment of a platform helps college students enhance their entrepreneurial mindset through these competitions.

7 OUTLOOK AND FUTURE FORECASTS

Entrepreneurship education is not only about business planning and venture capital but also about fostering entrepreneurial awareness. In the future, entrepreneurship education will focus more on cultivating students' innovation and creativity and helping them better understand and solve real-world problems. This will increase college students' interest in entrepreneurship and make them more inclined to consider entrepreneurship as a career option. Entrepreneurship often requires interdisciplinary knowledge and skills. In the future, entrepreneurship education will place more emphasis on interdisciplinary cooperation and encourage students from various majors to collaborate on entrepreneurial projects together. Such cooperation will promote the success of innovation and entrepreneurship and will also attract more college students to participate in them. Entrepreneurship education will be more closely integrated with the support system for entrepreneurs. The university will provide more resources and support, including incubators, mentors, and funding, to help students turn their entrepreneurial ideas into reality. This will reduce the risk of students' entrepreneurship and increase their confidence in entrepreneurship. The future of entrepreneurship education will place more emphasis on social responsibility and sustainable development. Students will be taught how to start businesses with social significance, solve social problems, and promote sustainable development. This will attract college students who care about social and environmental issues to participate in entrepreneurship. Entrepreneurship education will encourage students to understand and respect the tradition of entrepreneurship. Students will have the opportunity to learn from the experiences and lessons of past entrepreneurs, providing them with inspiration and guidance for their future entrepreneurial projects. Entrepreneurship education in the future will be more global, encouraging students to engage in entrepreneurial activities across international borders. International cooperation and transnational entrepreneurship will become the norm, providing broader development opportunities for college students.

8 ACKNOWLEDGMENT

2023 Philosophy and Social Science Research General Project of Jiangsu Universities "Research on the Mechanism of Entrepreneurship Education on College Students' Entrepreneurial willingness (2023SJSZ1221)".

9 **REFERENCES**

- [1] F. Liñán and A. Fayolle, "A systematic literature review on entrepreneurial intentions: Citation, thematic analyses, and research agenda," *International Entrepreneurship* and Management Journal, vol. 11, no. 4, pp. 907–933, 2015. <u>https://doi.org/10.1007/</u> s11365-015-0356-5
- [2] V. Souitaris, S. Zerbinati, and A. Al-Laham, "Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration, and resources," *Journal of Business Venturing*, vol. 22, no. 4, pp. 566–591, 2007. https://doi.org/10.1016/j.jbusvent.2006.05.002
- [3] L. Kolvereid and Ø. Moen, "Entrepreneurship among business graduates: Does a major in entrepreneurship make a difference?" *Journal of European Industrial Training*, vol. 21, no. 4, pp. 154–160, 1997. https://doi.org/10.1108/03090599710171404
- [4] Yang Zhou, Zhengyan Liu, Meng Wang, Rebecca Kechen Dong and Xiao-Guang Yue, "Evaluating the impacts of education and digitalization on renewable energy demand behaviour: New evidence from Japan," *Economic Research-Ekonomska Istraživanja*, vol. 36, no. 3, p. 2164033, 2023. https://doi.org/10.1080/1331677X.2022.2164033
- [5] K. Yu, X.-G. Yue, A. A. Madfa, and Y.-H. Du, "Application of problem-based learning network teaching platform in medical education," *Journal of Computational and Theoretical Nanoscience*, vol. 13, no. 5, pp. 3414–3417, 2016. <u>https://doi.org/10.1166/jctn.2016.5007</u>
- [6] A. Fayolle and B. Gailly, "The impact of entrepreneurship education on entrepreneurial attitudes and intentions: Hysteresis and persistence," *Journal of Small Business Management*, vol. 53, no. 1, pp. 75–93, 2015. https://doi.org/10.1111/jsbm.12065
- [7] C. Lüthje and N. Franke, "The 'making' of an entrepreneur: Testing a model of entrepreneurial intent among engineering students at MIT," *R&D Management*, vol. 33, no. 2, pp. 135–147, 2003. https://doi.org/10.1111/1467-9310.00288
- [8] X.-G. Yue, S. K. Boddhu, Y. Lu, F. Xiao, T. Memonen, and M. V. Cañiv, "Gas outburst prediction based on OD algorithm," *Recent Patents on Computer Science*, vol. 9, no. 1, pp. 25–39, 2016. https://doi.org/10.2174/2213275908666150218194450
- [9] G. Zhang, X.-G. Yue, F. Li, and S.-L. Zhao, "Partially stabilised zirconia stability prediction based on opposite degree algorithm for safety engineering," *Materials Research Innovations*, vol. 19, pp. S5671–S5673, 2015. <u>https://doi.org/10.1179/1432891714Z</u>. 0000000001173
- [10] D. F. Kuratko, J. S. Hornsby, and D. W. Naffziger, "An examination of an evolving entrepreneurship conceptualization," *Journal of Business Venturing*, vol. 12, no. 5, pp. 335–357, 1997.
- [11] G.-Z. Wang and X.-G. Yue, "Prediction of transport tanks safety based on general regression neural network," *Journal of Computational and Theoretical Nanoscience*, vol. 12, no. 8, pp. 1560–1562, 2015. https://doi.org/10.1166/jctn.2015.3928
- [12] N. F. Krueger and A. L. Carsrud, "Entrepreneurial intentions: Applying the theory of planned behavior," *Entrepreneurship & Regional Development*, vol. 5, no. 4, pp. 315–330, 1993. https://doi.org/10.1080/08985629300000020
- [13] M. Guerrero, J. Rialp, and D. Urbano, "The impact of desirability and feasibility on entrepreneurial intentions: A structural equation model," *International Entrepreneurship* and Management Journal, vol. 4, no. 1, pp. 35–50, 2008. <u>https://doi.org/10.1007/s11365-006-0032-x</u>
- [14] D. C. Yuan and X. G. Yue, "SVMR model for coal mine cost management prediction," *Applied Mechanics and Materials*, vol. 484, pp. 608–611, 2014. <u>https://doi.org/10.4028/</u> www.scientific.net/AMM.484-485.608

- [15] Kai Song, Die Hu, Yao Tong, and Xiaoguang Yue, "Remaining life prediction of lithiumion batteries based on health management: A review," *Journal of Energy Storage*, vol. 57, p. 106193, 2023. https://doi.org/10.1016/j.est.2022.106193
- [16] G. Segal, D. Borgia, and J. Schoenfeld, "The motivation to become an entrepreneur," *International Journal of Entrepreneurial Behavior & Research*, vol. 11, no. 1, pp. 42–57, 2005. https://doi.org/10.1108/13552550510580834
- [17] S.-Y. Zheng, S.-P. Jiang, X.-G. Yue, R. Pu, and B.-Q. Li, "Application research of an innovative online education model in big data environment," *International Journal of Emerging Technologies in Learning*, vol. 14, no. 8, pp. 125–138, 2019. <u>https://doi.org/10.3991/ijet.</u> v14i08.10404

10 AUTHORS

Liu Yingzhen is a Lecturer at the School of Plant Protection at Yangzhou University and Global Career Development Facilitator & Beisen Career Facilitator (E-mail: <u>lyz@yzu.edu.cn</u>).

Fang Jiasheng is an undergraduate student of School Western Studies at Heilongjiang University, No 74 Xuefu Road, Nangang District, Harbin 150080 (E-mail: fangjiasheng2024@163.com).

Zou Yuwei is a graduate of School of Computer Science at College of Engineering and Physical Sciences, University of Birmingham(UoB), Edgbaston, Birmingham, B15 2TT, United Kingdom (E-mail: 1483019053@qq.com).

Gu Jieyu is an undergraduate student of Business School at Yangzhou University, No. 196, West Huayang Road, Yangzhou City, Jiangsu Province, 225100, China (E-mail: kiyum430@gmail.com).

Hu Mingjie is an undergraduate student of Business School at Yangzhou University, No. 196, West Huayang Road, Yangzhou City, Jiangsu Province, 225100, China (E-mail: 2636796110@qq.com).

Xinyi Xie is an undergraduate student of Business School at Yangzhou University, No. 196, West Huayang Road, Yangzhou City, Jiangsu Province, 225100, China (E-mail: xiexyhk2025@163.com).