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The Influence of Entrepreneurship Education on Innovation Capability among Chinese Undergraduate Students in COVID-19 Pandemic Era: A Framework of Analysis

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Abstract

The recent global outbreak of COVID-19 epidemic crisis has posed a health and economic dual threat to countries and societies around the world**,** and before COVID-19 global spread, economic growth in almost all countries had slowed in the context of a tense trade war between the United States and China. In this spreading global pandemic, unemployment and stagnation of international trade have caused great economic pressures to many countries, especially China as a big exporter. This paper aimed at finding out the influence of entrepreneurship education on innovation capability among Chinese undergraduate students, the empirical research method is utilized in this study, 400 senior undergraduates from 3 universities in China are surveyed by questionnaires, all data collected will be analyzed by SPSS 20 and Amos 21. Many schools and universities around the world have adopted online education tools of the blended learning approach to mitigate this pandemic shock of the education industry. Nowadays, the competition among the big countries in the world is mainly focused on the technical barriers and innovation capability, according to the Triple Helix Model of Innovation that three main stakeholders in entrepreneurship ecosystem: government, university and industry is very important to the innovation. Finding indicated that the institutional environment and supporting infrastructure have a significant impact on student's innovation capability in the three dimensions of entrepreneurship education. Therefore, the Chinese universities should combine the innovation-driven entrepreneurship education program, strengthen the supporting of institutional environment and infrastructure that enhance the student's innovation practice ability with the human capital and social capital.

Keywords: Entrepreneurship Education, Innovation Capability, Chinese Undergraduate, COVID-19 Pandemic

1. Introduction

In March 2020, WHO announced that the COVID-19 Pandemic which began in Wuhan, China has turned into an international public health crisis and spread to more than 180 countries worldwide. And it is now clear that we are facing an acute public health, economic, and humanitarian crisis (Loayza, 2020). Although the first wave of the epidemic was a massive outbreak in China, and it seems that only China has suffered the first wave of impact, but this impact on the world's economy is the global supply chain and the global manufacturing industry. The second wave of outbreaks mainly in Europe and the United States, hit the global economy and caused a

global stock market crash. The outbreak of pandemic has caused huge losses to economic activities around the world, and the stock market's main index plunged, down nearly one-third of their value in just a few weeks. Surprisingly, the downward curve is similar to the 2008 global financial crisis (Figure 1), and the combination of the epidemic and financial issues is likely to repeat the 2007 debt crisis and the 2008 global financial crisis. Policy makers around the world have rapidly deployed a wide arsenal of tools to cope with the inevitable economic recession, pledging aid to private firms in Europe and the United States (The Economist 2020).

Under the situation of pandemic, the nature of China-US relations has further changed fundamentally, from cooperation-oriented relations to strategical competition, the possibility of a "new cold war" or even "full-scale conflict" between China and the United States is rising. Before the outbreak of the epidemic, the friction between China and the United States mainly focused on the trade relations between the two sides, but with the spread of the epidemic, many countries recognized the importance of public health security to the national security. Obviously, China-US contradictions have further intensified into Taiwan's accession to the WHO, Hong Kong's status as a democracy and financial center, and the South China Sea dispute.

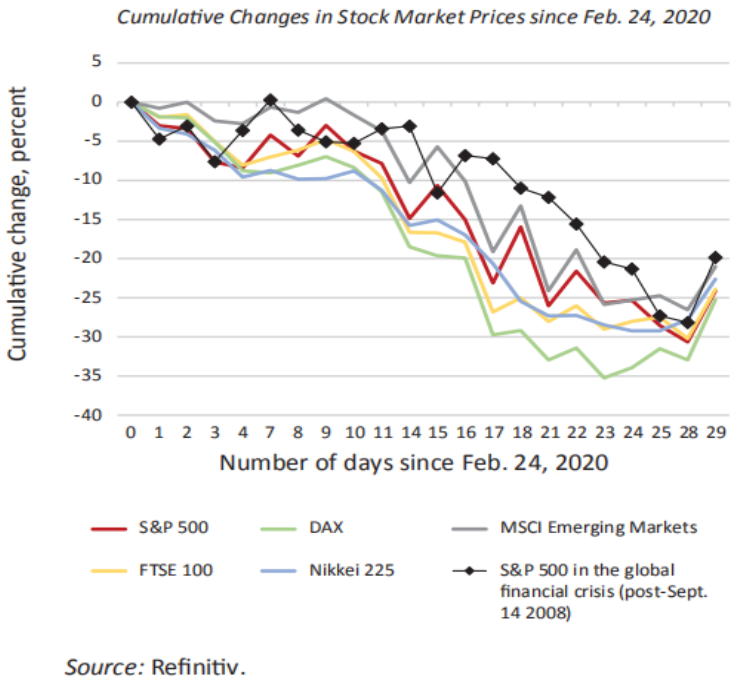


Figure 1. Magnitude of the COVID-19 Shock across Countries

The two superpowers have upgraded from the trade balance and 5G technology competition to a comprehensive strategic confrontation between high-tech, finance, defense and military and space satellites. Through the strategic layout of the two countries, it can be predicted that the future competitive advantage is the innovation capability of science and technology and innovative talents, America's Ministry of Industry and Security has announced will block companies around the world from using American-made machinery and software to

design or produce chips for Huawei or its entities. And from World Intellectual Property Organization Report 2019 (WIPO) and the data of gross national product data on R & D investment, the figure of STEM doctoral degrees, VC invested and AI innovation, these two countries show many of fierce competitions, China is positive in quantity but still has a big gap with the United States in the quality of innovation (Figure 2).

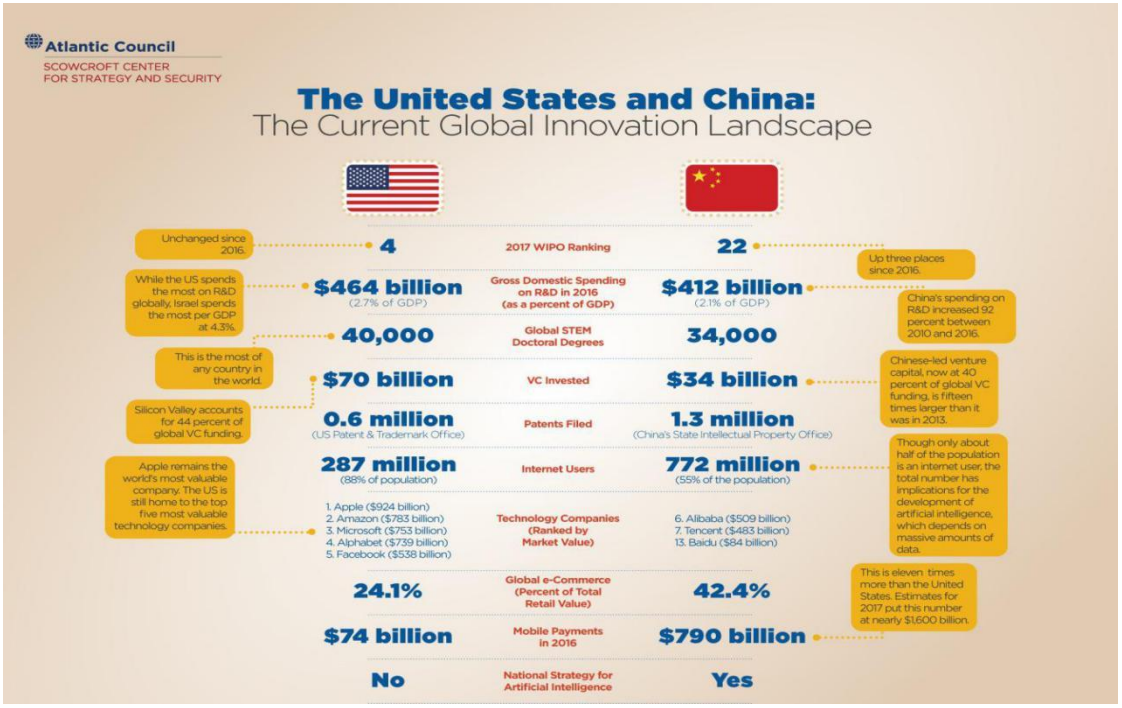


Figure 2. The fierce competition of innovation between China and the United States

Data from the National Bureau of Statistics of China show the country has been on lockdown for weeks to curb the spread of the virus have seriously affected the social economy. Compared with the same period of the previous year, China's economy contracted 6.8% in the first quarter of 2020—the largest decline in nearly 30 years, as factory production and domestic consumption in China almost completely stalled in the unprecedented shock of the COVID-19 pandemic, resulting in the bankruptcy of many small and medium-sized enterprises and the unemployment of employees. Since 1999, China has embarked on higher education expansion, where the number of students enrolled in higher education institution has increased exceed eight-fold, from 1 million in 1998 to 8.2 million in 2018. According to the China's National Bureau of Statistics report, the unemployment rate of the national urban survey from 2014 to 2018 has remained at about 5%. In the shock of the global pandemic, China's State Council announced that the urban survey unemployment rate in 2020 has risen to 6%. In such a situation, entrepreneurship education is expected to make a large contribution to creating an impetus for the economy and increasing community income (Idris et al., 2018).

The world's academic community has done a lot of research in entrepreneurship education and innovation, which are also the most popular research topics in China, most of research focuses on entrepreneurial intentions

and self-efficacy or curriculum developing related factors in specific university areas. Lack of comprehensive research on dimensions of entrepreneurship education and their impact on student's individual innovation capabilities, and lack of research on entrepreneurial capital for students and the relationship of peer effect.

Entrepreneurship Education (EE) is an academic education or formal training interventions that share the broad objective of providing individuals with the entrepreneurial mindsets and skills to support participation and performance in a range of entrepreneurial activities (World Bank, 2014). China carried out the undertaking of innovation and entrepreneurship education in various universities and colleges in 1997, and it has been more than 20 years since its establishment, the basic disciplinary system has been basically completed and a large number of innovative talents have been trained for the socialist modernization. Although entrepreneurship education has been gradually popularized in Chinese higher education in recent years, many of the entrepreneurial knowledge and skills needed are rarely derived from traditional teaching methods in higher institutions. From the overall development situation, university student's entrepreneurship education still faces many difficulties, focusing on the lack of a strong entrepreneurial education atmosphere, the lack of systematic entrepreneurship education theory, the lack of entrepreneurial teachers and the lack of college student entrepreneurship (Liu, 2018).

From the perspective of original innovation content, the practice model of innovation and entrepreneurship education in the colleges and universities can be divided into three types: innovation-driven, mode-driven and skill-driven. Among them, the Innovation-driven innovation and entrepreneurship education has the most original innovation elements (Chen, 2018). This study aims to fill this gap by investigating the impact of entrepreneurship education on the cultivation of innovative capability of Chinese undergraduate students.

2. **Literature Review**

The literature has been conducted numerous entrepreneurship education studies on management capacity, entrepreneurial culture, and innovation spirit, entrepreneurial intention (Pittaway & Cope, 2006; Lorz et al.,2013; Sirelkhatim & Gangi, 2015; Nabi et al., 2017; Bazan et al., 2020). The previous literature on the field of innovation is mainly focused on national innovation, innovative city and enterprise innovation levels, but there was a lack of studies seeking to identify and understand potential relationships between entrepreneurship education and innovation capability. Wu (2018) stated entrepreneurial education is a creative education, the establishment of enterprises is not the real goal of entrepreneurial education, its ultimate goal is to cultivate learner's innovation, entrepreneurial spirit, ability and literacy, so that learners have the ability to achieve their own goals, rather than directly set a certain goal for them. Many factors related to the success or failure of undergraduate student entrepreneurship including adequate capital, government policy, mentoring, and entrepreneurial skill are particularly critical. Fetters (2010) constructed a university-based ecological model of entrepreneurship education, including entrepreneurship education management, curriculum, entrepreneurship education research projects and centers, student societies, incubators and chief professors of entrepreneurship

education. This is also a new subject of entrepreneurship education which needs to be explored continuously. MIT, Stanford University and some American universities emphasized the systematization and openness of entrepreneurship education, give full play to the social network of universities, link the resources inside and outside the school, integrate courses, teachers, funds, policies and entrepreneurial intermediary organizations, and realize scientific research, teaching and industry through effective coordination mechanism. However, the history of innovation and entrepreneurship education in Chinese universities is very short, still at early development stage, and lack of systematic and practical effectiveness. There is a need to deep explore the key issues in the process of innovation and entrepreneurship education. Innovation and entrepreneurship education in Chinese universities has become the important part of Chinese higher education (Lu&Zhang, 2018). How to enable students to acquire entrepreneurial capital and enhance their innovation capability is a key research direction, several recent studies on entrepreneurship have shown that the tendency of individuals to become entrepreneurs seems to be related to the type of company and different working environments. Nanda and Sørensenan (2006) proposed a hypothesis that individual's colleagues may influence their transition to entrepreneurship by observing how diversity in a person's peers previous career relates to their own tendency to become some entrepreneurs. Members inside peer groups also learn to develop relationships with others in the social system. Peers, particularly group members, become important social referents for teaching other members customs, social norms, and different ideologies. Many new workers are absorbed by start-ups, making entrepreneurship a solution to lower community unemployment (Galvão et al., 2018).

Innovation Strategy Implementation and Pandemic Era

COVID-19 pandemic will threaten education through two major shocks: first, the direct impact of the closure of schools and universities; and second, the impact caused by the economic recession, the response to which has begun and will continue to deepen in the coming period. Higher education is a key determinant of the country's economic future, and the higher education sector is also severely affected by the pandemic. To use online teaching methods to ensure the smooth development of classroom teaching, universities offer online courses using learning management software and open-source digital learning solutions (Tarkar, 2020). Because billions of people are forced to stay at home to help stop the spread of COVID-19, the video conferencing app Zoom has revealed that it has surpassed 300 million daily Zoom meeting participants in April, 2020. During the COVID-19 outbreak, almost all tertiary institutions completely changed the learning process from face-to-face to online learning, the governments should develop innovation strategies to restore development and mitigate losses in the post-pandemic era at least from the following aspects.

- High-tech innovation as the focus of economic development, whether it is digital economy or real economy, innovation is the first driving force leading the development of economy and science and technology.

- Tertiary institutions can also carry out focused applied research and promote local innovation in response to COVID-19, for example, to

address shortages in critical supplies and reduce supply chain disruptions.

● Optimize the environment of innovation and entrepreneurship, strengthen the construction of supporting facilities, changing the model of entrepreneurship education and cultivating the innovative ability of students.

Principle of Triple Helix Model of Innovation Adopted

Etzkowitz and Leydesdorff (1995) proposed a set of interactions between academia (universities), industry and government is proposed to promote economic and social development, such as knowledge-based economic and knowledge society. The advantage of interaction between government and universities is reflected in the general relationship and policy of government to higher education. And through the network thinking to form the interaction between the elements, and then help the individual students from the entrepreneurial ecological environment to establish entrepreneurial innovation network (Tataj, 2015). This study further analyzes the correlation between entrepreneurship education and innovation capability by applying the Triple Helix Model of Innovation.

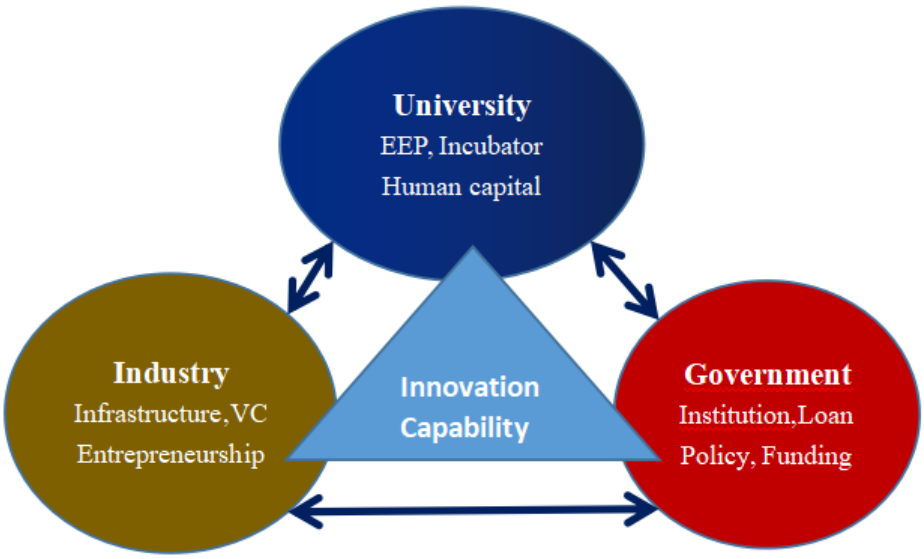


Figure 3. The Triple Helix Model of innovation framework

Innovation capability (IC)

It is availability of resources, collaborative structure and process to solve problems. Innovation is production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets development of new methods of production; and establishment of new management systems (Crossan & Apaydin, 2010).

Entrepreneurship Education Program (EEP)

Entrepreneurship Education Program refers to an academic education or formal training interventions that share the broad objective of providing individuals with the entrepreneurial mindsets and skills to support participation and performance in a range of entrepreneurial activities, which tend to focus on building knowledge and skills about or for the purpose of entrepreneurship (World Bank, 2014).

H1: Entrepreneurship Education Program has significant relationship on innovation capability.

Institutional environment (IE)

Institutions are identified with a social purpose, transcending individuals and intentions by mediating the rules that govern living behavior, institutions also are integrated systems of rules that structure social interactions. Scott (1995) stressed that the institution can make the society stable and have cognitive, normative and regulatory restraint mechanisms and activities, on the basis of this theory logic he proposed three kinds of restriction behaviors: regulation, normalization and cognition.

H2: Institutional environment has significant relationship on innovation capability.

Supporting infrastructure (SI)

There are two types of infrastructure views generally, tangible and intangible. Van de Ven & Garud (1989) stressed the perspective of the social system argues that the three functions of the social system provide the infrastructure essential to the emergence of industry: the functions of technical instrument, the functions of resource procurement and institutional legitimization and governance.

H3: Supporting infrastructure has significant relationship on innovation capability.

Peer input (PI)

Peer input is a valuable scientific or technical basis for improving products, sometimes referred to as peer consultations, often means interactive work products during the development of an evolving institution, providing open communication of data, insights and ideas. Harris (1995) argued peer relationships also have a double impact on innovation ability. Individuals can use social capital to promote their career prospects rather than for the benefit of the organization. Therefore, this paper focuses on how the adjustment of peer input moderating variables affects the relationship between the acquisition of social capital (institutional environment, support facilities) in entrepreneurship education and the capability of entrepreneurial innovation.

H4: The relationship between institutional environment and innovation capability is significantly influenced by peer input.

H5: Peer input significantly moderates the relationship between supporting infrastructure and innovation capability.

3. Conceptual Framework

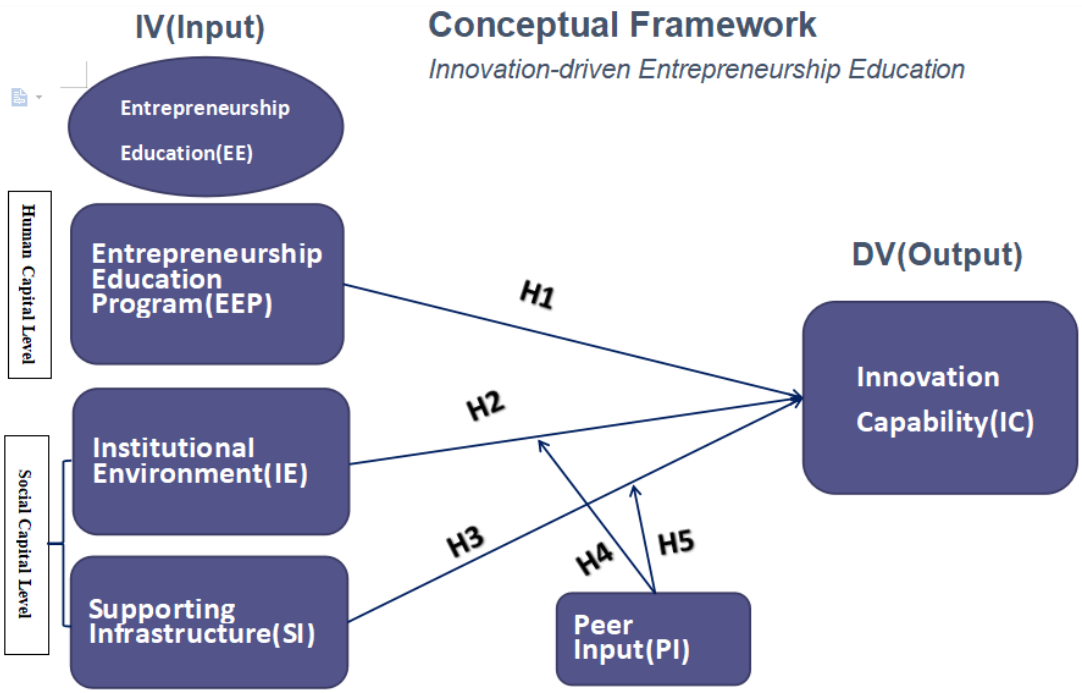


Figure 4. Conceptual framework of the study

4. Methodology

A larger sample size is needed to ensure the result interpretation and the reliability and validity of the instrument structure. In order to ensure representative samples, participants will need experience from different genders, grades, and faculties. Participants will come from four faculties of three universities (Faculty of economics and trade, information technology, business management, humanity and art). According to the university size in western china, the potential population size of the selected universities in this study is approximately 15365 students, the selection of three locations and different academic traditions in a country's region aims to increase the universality of outcomes beyond the context of a university or project (Souitaris et al ., 2007). In addition, the three universities will be selected according to their geographical location, that is, the north, middle and south of Guangxi, China. The formula of Yamane (1967) is applied to the above sampling, we get equation to calculate the sample size of this study is $N = 15365 /[1+15365(0.05)^2]$, the sample size: N=394 respondents, and the total number of questionnaires distributed online to senior undergraduates was 500. However, 425 of the 500 questionnaires were returned; 25 of the unqualified questionnaires were removed from the sample. Finally, the remaining 400 valid questionnaires were used for practical analysis, Hair et al., (2006) suggested 150-400 is best sample size for SEM. The questionnaire was pilot studied in a graduating class of 53 students and revised before a large-scale questionnaire survey. The validity and reliability of all questionnaires

were tested before the use scale measurements to ensure that they could be used for further hypothesis testing. Before the data collection, the validity of the content was checked by showing the scale items to five experts, and they checked the scale items and made corresponding professional modifications. As a result, the Cronbach's alpha of entrepreneurship education program, institutional environment, supporting infrastructure, peer input and innovation capability are 0.963, 0.948, 0.963, 0.886, 0.965. At 0.65-0.70, the coefficient is considered to be the minimum acceptable value (Sekaran, 2005), and if greater than 0.7, the internal consistency of the scale is good. The data statistical analysis software SPSS 20 and Amos 21 are used to obtain the research results.

Measurement

The questionnaire survey is divided into six parts : (a) demographics profile; (b) entrepreneurship education program; (c) institutional environment; (d) supporting infrastructure; (e) peer input; (f) innovation capability. The questionnaire consists of 50 items and answers that must be marked by senior undergraduates. Each statement reflects their position in university entrepreneurship, because of their knowledge, awareness and entrepreneurial practice in school. The questionnaire was designed using five likert scale.

Entrepreneurship Education Program (EEP) : The Kaufman Foundation defines entrepreneurship education as "the process of imparting an idea and skill to an individual. It should include identifying risks and opportunities, integrating resources to start new businesses and managing them (Xu and Gong, 2011). We will measure EEP from three dimensions of curriculum system, qualified faculty and entrepreneurship training.

Institutional Environment (IE): Scott (1995) stressed that the institution can make the society stable and have cognitive, normative and regulatory restraint mechanisms and activities, on the basis of this theory logic he proposed three kinds of restriction behaviors: regulation, normalization and cognition.

Supporting Infrastructure (SI): Infrastructure consists of physical, institutional and organizational structures that support economic activities such as entrepreneurship, tangible and intangible infrastructure will be measured in this study. Van de Ven (1993) claimed the framework dedicated to entrepreneurship can be re-conceptualized, focusing on resource endowments, institutional arrangements, proprietary functional support.

Peer Input (PI): Peer input, sometimes referred to as peer consultations, often means interactive work products during the development of an evolving institution, providing open communication of data, insights and ideas. Nanda and Sørensenan (2006) proposed a hypothesis that individual's colleagues may influence their transition to entrepreneurship by observing how diversity in a person's peers previous career relates to their own tendency to become entrepreneurs. Peer input will be measure through peer group and peer interaction in this study.

Innovation Capability (IC): Innovation capability is the core factor of successful entrepreneurship including entrepreneurship activities and capacity, innovation spirit and thinking. Woodman and Schoenfeldt (1990)

pointed out that the theory of innovation ability interaction holds the innovation is an individual's behavior in a particular situation, prior experience, personal factors, environmental factors will influence innovation behavior.

5. Analysis Results and Discussion

The study sent 500 online questionnaires to senior undergraduates at three universities in Guangxi, China (Guangxi University of Finance &Economics, Guangxi Normal University and Nanning University), with 400 valid responses. Among them, 24.72% were male (99) and 75.28% were female (301). The respondent's age ranges from 18 to 30 years old, where 97.79% of respondents are between 18 to 25 years, and only 2.21% are between 25 to 30 years old. In the study major aspect, 12.58% is economic and trade, information technology accounts for 14.35%, humanities and art account for 22.08%, and the most is business management accounts for 50.99%. There are 76.38% of respondents had taken entrepreneurship courses, compared with 23.62% of them haven't. In the family financial background, only 3.25% were engaged in business, 18.25% were salariat working-class, 20.75% were individual household, and the most is farming were 57.75%. Only 6.62% of the respondents had entrepreneurial experience, while 93.38% of the students haven't participate in any entrepreneurial activities. Table 1 below shows the demographic profile of the respondents for this study.

Table 1: Demographic Profile of Respondents

Characteristics	Number of Participants	Percentage	Characteristics	Number of Participants	Percentage
Gender			*Entrepreneurial Course Study*		
Male	99	24.72	Yes	306	76.38
Female	301	75.28	No	94	23.62
Age			*Entrepreneurial Experience*		
18-25 years	391	97.79	Yes	26	6.62
25-30 years	9	2.21	No	374	93.38
Major			*Family Financial Background*		
Economics and Trade	51	12.58	Business	13	3.25
Information Technology	57	14.35	Salariat	73	18.25
Business Management	204	50.99	Individual household	83	20.75
Humanity and Art	88	22.08	Farming	231	57.75

Total Respondents Number: 400

Table 2 below shows the measurement of model evaluation. In the reliability test of the scale, using the coefficient (Cronbach's alpha) evaluation, the coefficient value at 0.65-0.70 is Sekaran (2005) considered to be

the minimum acceptable value. If greater than 0.7, the internal consistency of the scale is good. The convergent validity is mainly measured by calculating the factor load, the compound reliability (CR) and the average variation extraction (AVE) of the item, such as the factor load greater than 0.7, which indicates that the convergent validity is good (Wu, 2010). The R^2 and adjustment R square are show the fitting degree of the model equation in regression analysis, and Lu (2000) points out that greater than 0.6 indicates fitting is good, the innovation capability is demonstrated by a large effect (0.816) with independent variables in this study.

Table 2: Variables Measurement and Model Evaluation

Variable Constructs	Items Factor Loading	CR	AVE	Cronbach's Alpha	R Square
Entrepreneurship Education Program	EEP1 0.790, EEP2 0.820, EEP3 0.820, EEP4 0.870, EEP5 0.840, EEP6 0.890, EEP7 0.900, EEP8 0.920, EEP9 0.900	0.963	0.743	0.963	
Institutional Environment	IE1 0.820, IE2 0.840, IE3 0.870, IE4 0.860, IE5 0.840, IE6 0.890, IE7 0.850	0.949	0.728	0.948	
Supporting Infrastructure	SI1 0.850, SI2 0.890, SI3 0.890, SI4 0.900, SI5 0.890, SI6 0.900, SI7 0.880, SI8 0.900	0.967	0.788	0.963	
Peer Input	PI1 0.780, PI2 0.790 PI3 0.770, PI4 0.770 PI5 0.740, PI6 0.710	0.892	0.578	0.886	
Innovation Capability	IC1 0.870, IC2 0.860, IC3 0.860, IC4 0.870, IC5 0.870, IC6 0.850, IC7 0.880, IC8 0.850, IC9 0.820, IC1 0.820	0.965	0.732	0.965	0.816

This study calculates the correlation between variables, and uses the collated data to test the discriminant validity of the innovation capability scale again. Table 3 shows that the square root of the AVE on the diagonal line is larger than that of the lower left of the diagonal line. There was a significant correlation between variables (P value <0.01) means that the discriminant validity of the scale designed in this study is good.

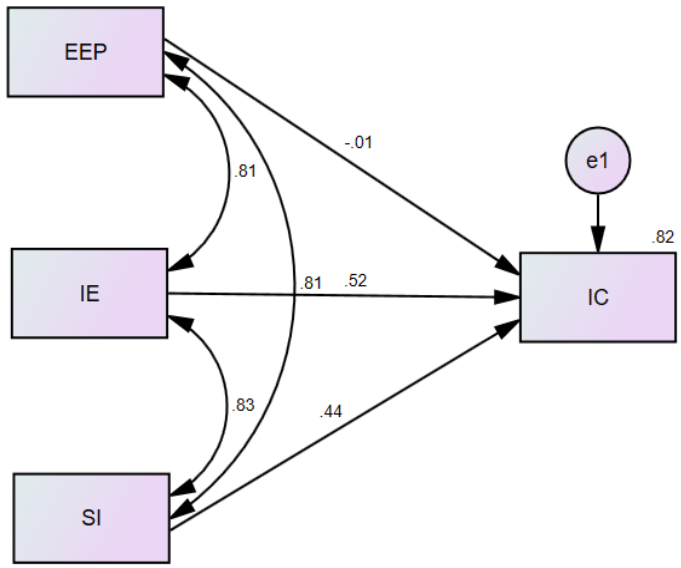
Table 3＞＞: Correlation and Discriminant Validity

		EEP	IE	SI	IC	PI
EEP	Pearson Correlation					
	Sig. (2-tailed)					
IE	Pearson Correlation	.811**				
	Sig. (2-tailed)	.000				
SI	Pearson Correlation	.813**	.829**			
	Sig. (2-tailed)	.000	.000			
IC	Pearson Correlation	.764**	.871**	.857**		
	Sig. (2-tailed)	.000	.000	.000		
PI	Pearson Correlation	.733**	.662**	.704**	.680**	
	Sig. (2-tailed)	.000	.000	.000	.000	

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 5 below shows the structural model evaluation studied by path analysis. The t-value and R square are also calculated by 2000 of bootstrapping. The path coefficients of independent variable to dependent variable innovation capability (IC) are: entrepreneurship education program (EEP) -0.01, institutional environment (IE) 0.52, supporting infrastructure (SI) 0.44.

Figure 5: Path Analysis Results of SEM Calculation



About the influence of potential variable peer input as the moderating variable between institutional environment and innovation capability, supporting infrastructure and innovation capability, this study uses interactive variables and bootstrapping calculation methods to verify (Preacher, 2007). Figure 6 below shows that interaction of peer input and institutional environment P-value is 0.243 , confidence interval (-0.448, 0.695), the moderating impact is not significant and H4 is not supported. However, peer input and supporting

infrastructure interaction, confidence interval (0.319, 0.969) and the standardized Regression Weights P＜0.001, indicating the moderating impact on innovation capability is significant and support hypothesis H5.

Figure 6: The Moderating Variable Interaction Effect Model

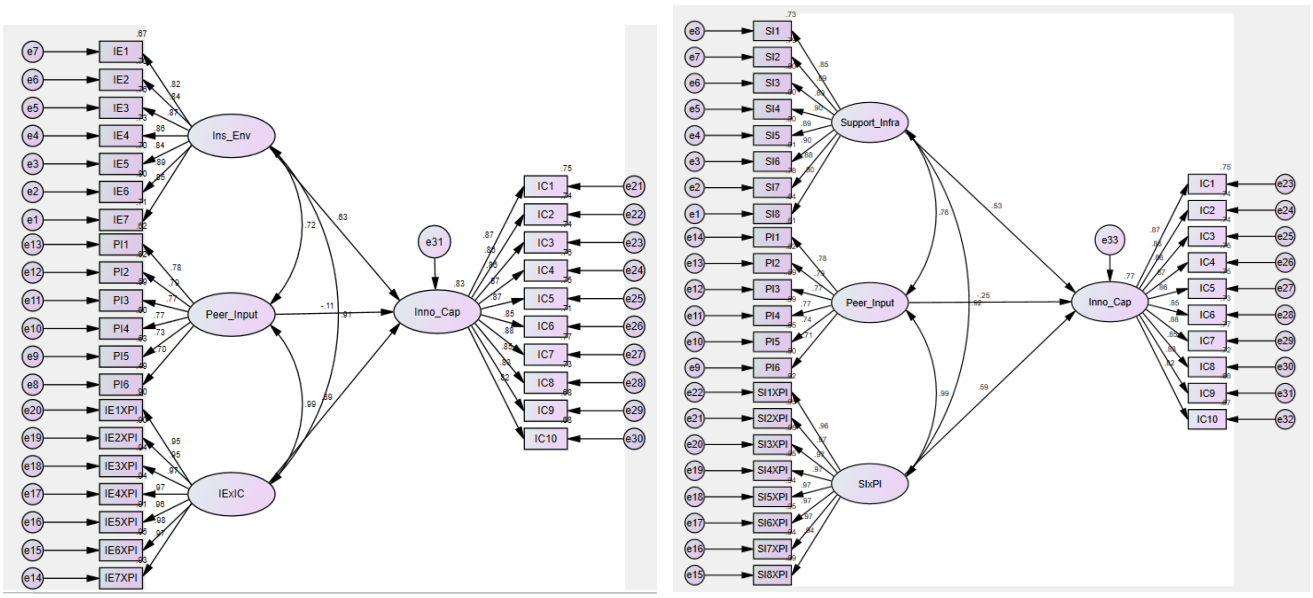


Table 4 shows the results of the direct effect hypothesis between independent variables and dependent variable. Firstly, we assume that entrepreneurship education program have a significant relationship to innovation capability, but according to the analysis data show (β=-0.010, t=-0.241, p＞0.01,VIF=3.583), hypothesis 1 is not supported, the education program in this study include only entrepreneurship-related curriculum, faculty and training program. Secondly, we assume that the institutional environment has a significant impact on innovation capability, and the results show (β=0.517, t=12.159, p＜0.001, VIF=3.893), the IE significantly impact IC and hypothesis 2 is supported. This result is consistent with Walter (2015) claimed that entrepreneurship education stimulates entrepreneurs activities that entrepreneurship incubates in entrepreneurial-friendly institutional environments. Finally, we hypothesize that supporting infrastructure has significant relationship on undergraduate's innovation capability. As results in Table 4, a positive and significant relationship is found between SI and IC (β=0.436, t=10.220, p＜0.001, VIF=3.915). In this way, hypothesis 3 is supported. This result supports the view of Heger and Veith (2015) stated given the importance of entrepreneurship, public and private organizations are interested in the topic of mechanisms or infrastructure to support entrepreneurship.

Table 4: Result of Hypotheses Test

Hypothesis Relationship		Std. Error	Std. Beta	t-value	p-value Sig.	VIF
H1	EEP→IC	.037	-.010	-.241	.810	3.583
H2	IE→IC	.042	.517	12.159	.000	3.893
H3	SI→IC	.041	.436	10.220	.000	3.915

Conclusion

In the context of pandemic era, human life and the global economy have suffered great losses and effects, while countries around the world to realize the security risks caused by excessive dependence on supply chains and technology imports. A growing number of governments and policymakers are aware that innovation capability and innovative talents will be the most effective way to cope with economic depression and unemployment. The purpose of this study is to investigate the influence of various dimensions of entrepreneurship education on improving student's innovation capability. The finding of data analysis shows through the cognitive adaptation of institutional environment and the application of supporting infrastructure resources that entrepreneurship education has a significant impact on the improvement of student's innovation capability. In university entrepreneurship education programs, entrepreneurship mentors and university decision makers should focus on how to improve and support more effective entrepreneurship education practice teaching, such as using a blended teaching model of online classroom and offline practice.

Although China like many other developing countries is working hard to promote entrepreneurship education, it is obvious that the actual effect is not satisfactory. Innovation strategy will play a key role in post-epidemic government economic policy recovery, and entrepreneurship education will not only be limited to the education sector but also play an active role in the whole society. Universities need to improve incentive mechanisms to enhance teacher's enthusiasm for engaged in entrepreneurship curriculum teaching. University student entrepreneurship is in a special and complex environment, facing institutional and financial difficulties as well as difficulties in obtaining entrepreneurial professional knowledge resources. How to use innovative education model to cultivate student innovative consciousness and ability is the key to improve the outcome of entrepreneurship education.

Since this study only selected three local universities, further research can combine the qualitative analysis and mixed-method triangulation study design will be used to identify which capital that students can obtained from entrepreneurship education and how to build an innovation-driven entrepreneurship education model. The study involved the availability of data that were relatively difficult to obtain due to the impact of the epidemic.

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References

1. Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179–211.
2. Aldrich, H. & Zimmer, C. (1986). Entrepreneurship through social networks. California Management Review, 33(3), 3-23.
3. Alex, M. & Chris, B. (2010). A blended learning approach to entrepreneurship education. 2010 ICOI Proceedings, Actual Problems of Economics.
4. Almaskari, H. T., Mohamad, E. & Yahaya, N. S. (2020). The development of innovation capabilities. A review paper about the challenges and future research trend in the UAE high education. TEST Engineer & Management, 83(2), 7299 - 7307.
5. Bergmann, H., Hundt, C. & Sternberg, R. (2016). What makes student entrepreneurs? On the relevance (and irrelevance) of the university and the regional context for student start-ups. Small Business Economics, 47(1), 53-76.
6. Bain, D., & Kleinknecht, A. (Eds.). (2016). New concepts in innovation output measurement. Springer.
7. Cinar, E. M., Du, Y. & Hienkel, T. (2018). Chinese entrepreneurship attributes: a comparative GEM data analysis. Journal of Entrepreneurship in Emerging Economies, 10(2), 217-248.
8. Christensen, C. M., Bartman, T., & Van Bever, D. (2016). The hard truth about business model innovation. MIT Sloan Management Review, 58(1), 31.
9. Cope, J. & Watts, G. (2000). Learning by doing–an exploration of experience, critical incidents and reflection in entrepreneurial learning. International Journal of Entrepreneurial Behavior & Research, 6(3), 104-124.
10. Creswell, J. W. (2003). Research design: Qualitative, quantitative and mixed methods approaches. (2nd

Ed.). Thousand Oaks, California: Sage.

11. Chen, A. L., Li, L. P. & Lei, D. (2013). Study on innovation capability of college students based on extenics and theory of creativity. Information Technology and Quantitative Management, Elsevier Publishing.
12. Chen, J. (2018). The practice model of innovation and entrepreneurship education in China's colleges and universities. Advances in Social Science, Education and Humanities Research.
13. De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behaviour. Creativity and innovation management, 19(1), 23-36
14. Du Plessis, M. (2007). The role of knowledge management in innovation. Journal of knowledge management, 11(4), 20-29.
15. Dorenbosch, L., Engen, M. L. V., & Verhagen, M. (2005). On-the-job innovation: The impact of job design and human resource management through production ownership. Creativity and innovation management, 14(2), 129-141.
16. Eisenbeiss, S. A., van Knippenberg, D., & Boerner, S. (2008). Transformational leadership and team innovation: Integrating team climate principles. Journal of applied psychology, 93(6), 1438.
17. Fayolle, A. & Kyro, P. (Eds.) (2008). The Dynamics between Entrepreneurship, Environment and Education, Cheltenham, UK: Edward Elgar Publishing.
18. Hua, Z., Yang, J. & Coulibaly, S. (2006). Integration TRIZ with problem-solving tools: a literature review from 1995 to 2006. International Journal of Business Innovation and Research, 1 (1–2), 111–128.
19. Ismail, M. (2005). Creative climate and learning organization factors: their contribution towards innovation. Leadership & Organization Development Journal, 26(8), 639-654.
20. Jaffer, S. (2013). Harnessing innovation in the 21st century: The impact of leadership styles (Doctoral dissertation, The George Washington University).
21. Jaiswal, N. K., & Dhar, R. L. (2015). Transformational leadership, innovation climate, creative self-efficacy and employee creativity: A

multilevel study. International Journal of Hospitality Management, 51, 30-41.

22. Kelley, D. J., Singer, S. & Herrington, M. (2018). Global entrepreneurship monitor 2018 global report. Global Entrepreneurship Research Association, London Business School.

23. Kasemsap, K. (2017). Strategic innovation management: An integrative framework and causal model of knowledge management, strategic orientation, organizational innovation, and organizational performance. In Organizational Culture and Behavior: Concepts, Methodologies, Tools, and Applications (pp. 86-101).

24. Leitch, C., Hazlett, S. A. & Pittaway, L. (2012). Entrepreneurship education and context. Entrepreneurship & Regional Development, 24(9-10), 733-740.

25. Lu,Y. & Tang, M. F. (2014). Does Chinese university entrepreneurship education fit students' needs? Journal of Entrepreneurship in Emerging Economies, Emerald Group Publishing.

26. Preeti, T. (2020). Impact of Covid-19 pandemic on education system. International Journal of Advanced Science and Technology, 29(9), 3812-3814

27. Perry-Smith, J. E., & Shalley, C. E. (2003). The social side of creativity: A static and dynamic social network perspective. Academy of management review, 28(1), 89-106

28. Shayegheh, A. & Shahamak, R. (2016). People's human and social capital benefiting careers in entrepreneurship: adults in China and in the Chinese diaspora. Business and Globalisation, Inderscience Enterprises Publishing.

29. Slåtten, T. (2011). Antecedents and effects of employees' feelings of joy on employees' innovative behaviour. International Journal of Quality and Service Sciences, 3(1), 93-109.

30. Scott, W. R. (2008). Institutions and organizations: ideas and interests. Los Angeles, CA: Sage Publications

Van de Ven, A. H. (1989). Using paradox to build management and organization theories. Academic of Management Review, 14(4), 562-578

31. Wonglimpiyarat, J. (2017). Technology auditing and risk management of technology incubators/science parks. World Journal of

Entrepreneurship, Management and Sustainable Development, 13(1), 44-56.

32. Zhu, C. (2015). Organisational culture and technology-enhanced innovation in higher education. Technology, Pedagogy and Education, 24(1), 65-79.