

A study on the Impact of Online Entrepreneurship Education on Entrepreneurship: A Case Study of Western China

자 오 야 주¹
Zhao Yazhu

류 환¹
Liu Huan

유 자 양*
Liu Ziyang

ABSTRACT

This study aims to investigate the influence of online entrepreneurship education on first-time entrepreneurs in western China. The research employed an online self-management survey method to collect data from participants involved in online entrepreneurship education and first-time entrepreneurs. The data was analyzed using SPSS and AMOS statistical software. The research findings indicate that online entrepreneurship education has a positive impact on entrepreneurial intention. There is a positive correlation between online entrepreneurship education and entrepreneurial execution capability. Entrepreneurial intention effectively promotes entrepreneurial execution capability, which is critical for successful entrepreneurship. Online entrepreneurship education also emphasizes the development of innovative abilities and thinking patterns, thereby enhancing the competitiveness of entrepreneurs. Additionally, entrepreneurial support plays a direct positive role in entrepreneurial success by providing resources, guidance, knowledge sharing, and confidence, thereby increasing the likelihood of success.

☞ keyword : Online Entrepreneurship Education, Digital Education, Entrepreneurial Support, Entrepreneurship, Innovative Thinking

1. Introduction

During the COVID-19 pandemic, universities began implementing online teaching, and with the development of big data, utilizing big data and the Internet for innovative online education has become a mainstream teaching method [1]. School closures and home isolation measures implemented globally have made online education an important means of continuing learning, accelerating its popularity and acceptance. Schools and educational institutions had to quickly shift to online teaching, prompting more educators and students to recognize the value and convenience of online education. To meet this rapid transformational demand, online education platforms and technological tools have been developed and improved,

providing a higher quality teaching experience and learning re-sources[2] The pandemic has deepened people's recognition and trust in online learning. During home isolation periods, students could only communicate and learn from teachers and classmates through online platforms, leading them to realize that online learning can provide high-quality education while offering flexibility and autonomy. This cognitive shift has driven more people to choose online education as a long-term learning method, rather than just a temporary measure in response to the pandemic.

As of May 15, 2023, data released by the National Bureau of Statistics of China indicates that although the overall unemployment rate has slightly decreased, the youth (aged 16-24) unemployment rate has reached a historic peak of 20.4% and is expected to continue rising in the coming months. Youth unemployment has become a significant issue faced by Chinese society. Faced with the challenges of employment, entrepreneurship has become a survival and development choice for an increasing number of individuals.

¹ Dept. of Global Business, Kyonggi University, Suwon, 16227, Korea.

* Corresponding author (victor@kgu.ac.kr)

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The Chinese government has always attached importance to the development of the western region and has implemented a series of supportive policies. These policies provide support to entrepreneurs in the form of tax incentives, entrepreneurship subsidies, and technological support, promoting entrepreneurial activities. The western region of China has a large population, tremendous market potential, and evident cost advantages, providing a better development environment and support for entrepreneurs. Therefore, the opportunities and prospects for entrepreneurship in the western region of China deserve attention.

2. Theoretical underpinning and hypotheses

2.1 Underpinning Theory

At present, online education enterprises, driven by technology-driven economies of scale, have adapted to rapid growth in online education users, meeting demands for quality, vocational, and life-long education. They've become a significant force in digital education. Responding to China's push for educational digitization and a learning-centered society, the nation has achieved notable strides in macro-level research on online entrepreneurial education and entrepreneurship. The Theory of Planned Behavior (TPB), proposed by Ajzen, a prominent attitude-behavior relationship theory in social psychology, is widely applied in behavioral intention research. TPB has been introduced by many scholars and practitioners to assess entrepreneurship education activities. Given the intricate, long-term, and interdisciplinary nature of entrepreneurship, it encompasses economics, sociology, management, psychology, law, and more, rather than just courses. The STEAM education concept, originating in the US in 2009, integrates Science, Technology, Engineering, Arts, and Mathematics, fostering interdisciplinary thinking, innovation, and problem-solving through active exploration and creativity. This concept offers a robust theoretical foundation and practical direction for entrepreneurship education.

2.2 Online Entrepreneurship Education and Entrepreneurial Intention

Amid the strategic landscape of "Internet Plus" and "Mass Entrepreneurship and Innovation," educational institutions and training organizations embed the development of innovative thinking and entrepreneurial skills into their talent cultivation objectives, aiming to nurture individuals with such abilities[3]. The University of Pennsylvania pioneered the world's first Master's program in Educational Entrepreneurship, focusing on interdisciplinary integration, boasting strong faculty, and adopting blended online and offline teaching modes to meet the rising demand for entrepreneurial talents. Online entrepreneurship education emphasizes enhancing students' innovation and problem-solving capabilities. By integrating case analysis, team collaboration, and entrepreneurial project implementation, students can cultivate innovative thinking and entrepreneurial awareness, thereby fostering positive attitudes and intentions toward entrepreneurship. An analysis of the Financial Times' 2018 ranking of the top 50 entrepreneurship MBA programs in the UK reveals that nearly half of the programs incorporate aspects such as entrepreneurial leadership, mindset, skills, and opportunity creation[4].

Entrepreneurship education effectively boosts the essential entrepreneurial abilities required for executing entrepreneurial actions. It offers a comprehensive and direct means for students to grasp the entrepreneurial domain. Through interactions with successful entrepreneurs, field trips, and practical projects, students can develop a profound comprehension of the entrepreneurial journey, enhancing their determination and intention. Building on this context, the research presents its initial research hypothesis.

H1: Online entrepreneurship education has a positive impact on enhancing entrepreneurial intention.

2.3 Online Entrepreneurship Education and Entrepreneurial Execution Capability

The interactive nature of online education transcends commodity production, transforming educational labor into a productive, social, and interactive process, yielding

educational labor value and utility[5]. Online entrepreneurship education imparts practical knowledge, skills, and experiences to students, facilitating a comprehensive grasp of the entrepreneurial process and its components. Through this education, students can enhance their entrepreneurial execution capabilities, mastering essential elements like market analysis, business model design, and team management.

Entrepreneurship is intricate and systemic, with any misstep potentially derailing the entrepreneurial journey. Governments, universities, and relevant institutions are intensifying entrepreneurship education and recognizing the value in learning from entrepreneurial failures. Online entrepreneurship education fuels students' entrepreneurial drive by offering practical learning through case studies, simulations, and entrepreneurial projects. The rise of online live streaming has revolutionized knowledge dissemination with diverse content. Content entrepreneurship on knowledge live streaming platforms is becoming a burgeoning entrepreneurial area, steadily gaining traction among entrepreneurs. Based on the above discussion, the research proposes the second research hypothesis.

H2: Online entrepreneurship education is positively correlated with entrepreneurial execution capability.

2.4 Entrepreneurial Intention and Entrepreneurial Execution Capability

Entrepreneurial intention is the starting point of entrepreneurship, reflecting the interest, aspiration, and determination of individuals or teams towards entrepreneurial activities. Entrepreneurial intention serves as the intrinsic driving force behind entrepreneurial actions. Entrepreneurship is an important path for the development and success of young people in the new era. The arrival of the era of innovation and entrepreneurship has brought new employment opportunities for young people, becoming a vivid manifestation of the great practice of "mass entrepreneurship and innovation"[6]. Individuals or teams with strong entrepreneurial intention are more likely to actively pursue entrepreneurial opportunities, face challenges and risks, and take practical actions.

Entrepreneurial execution capability is the key factor in transforming entrepreneurial intention into actual entrepreneurial actions. Individuals or teams with higher entrepreneurial execution capability can maintain stable decision-making and action-taking abilities when facing challenges and risks. They can effectively adapt to changes and difficulties, implement entrepreneurial plans, and pursue entrepreneurial goals[7]. Based on the above discussion, the research proposes the third and fourth research hypothesis.

H3: Entrepreneurial intention is positively correlated with entrepreneurial execution capability.

H4: Entrepreneurial execution capability has a positive impact on entrepreneurship.

2.5 Innovative Thinking

Online entrepreneurship education focuses on cultivating students' innovative abilities and thinking approaches. It provides innovative tools, technologies, and resources, encouraging students to think and explore novel ways of problem-solving, thereby fostering their innovative thinking. In highly competitive business environments, entrepreneurs need to continuously seek new business opportunities, create unique value, and devise novel approaches to solve existing problems. Entrepreneurship education can enhance entrepreneurs' creativity, and entrepreneurship in higher education increasingly emphasizes the importance of entrepreneurial creativity as a key driver for improving students' innovation capabilities[8].

Innovative thinking enhances entrepreneurs' competitiveness as they demonstrate uniqueness and discriminant in the market. They continuously optimize and improve their products or services to meet customer needs, thereby strengthening their own competitiveness. Digital entrepreneurship is becoming increasingly prevalent, alleviating employment pressure and promoting the development of the digital economy. Based on the above discussion, the research proposes the fifth and sixth research hypotheses.

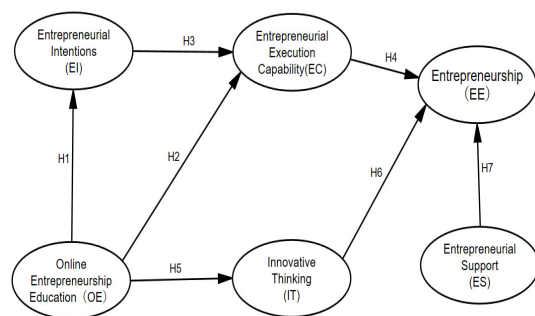
H5: Online entrepreneurship education has a positive impact on cultivating innovative thinking.

H6: Innovative thinking has a positive impact on entrepreneurship.

2.6 Entrepreneurial Support

Entrepreneurship is a complex and systematic process, and entrepreneurship education can help individuals develop the necessary knowledge, mindset, and skills to enhance their entrepreneurial abilities and prepare them for their entrepreneurial aspirations[9]. By using the mediating mechanism of entrepreneurial education and the moderating mechanism of entrepreneurial self-efficacy, a moderated mediation model has been constructed and studied, linking entrepreneurship education with entrepreneurial intentions[10]. In the context of online entrepreneurship, it facilitates the cognitive construction of the theory of planned behavior. Online entrepreneurship education has been shown to moderate the relationship between TPB cognitive construction and online entrepreneurial intentions. However, obtaining direct support such as capital, technological patents, and experiential skills has a direct impact on entrepreneurship, even on entrepreneurial success. Based on the above discussion, the research proposes the seventh re-search hypothesis.

H7: Entrepreneurial support, as a direct influencing factor, has a direct positive impact on entrepreneurial success.



(Figure 1) Theoretical framework.

Based on the theoretical review and research hypotheses, this study presents a research model. The research model Figure 1 establishes relationships among five dimensions: online entrepreneurship education(OE), entrepreneurial intentions(EI), entrepreneurial execution capability(EC), innovative thinking(IT), and entrepreneurial support(ES) in the entrepreneurship(EE). The model suggests that online

entrepreneurship education plays a crucial role in entrepreneurship.

3. Methodology

3.1 Participants and Procedure

Due to the research's specific regional focus and the researchers' affiliation with the region, a convenience sampling technique was employed in this study. To ensure questionnaire quality, researchers explained the purpose and significance of the questionnaires to respondents and assured them that the questionnaire results would be used solely for academic research and would not be disclosed to anyone, alleviating respondents' concerns. Information was sourced from staff members of the Western China Innovation and Entrepreneurship Alliance, Western universities, city business incubators in the region, and selected entrepreneurship training platforms. The survey encompassed participants' demographic characteristics, including gender, education level, major, part-time work experience, family and friends' entrepreneurial experience, birthplace, and family income, in relation to online entrepreneurship education, entrepreneurial intention, entrepreneurial execution capability, innovative thinking, and entrepreneurial support. To ensure objective data collection, researchers explained the study's purpose, alleviated concerns, and ensured confidentiality and the exclusive academic research use of survey data. A total of 306 valid questionnaires were collected.

Among all survey participants, as shown in Table 1, it can be observed that regarding gender, over 50% of the samples were categorized as "male," while the proportion of female samples was 43.14%. In terms of education level, the majority of the samples held a "bachelor's degree," accounting for 53.59% of the total. Among educational backgrounds, 35.95% of participants opted for "STEM fields." When examining part-time work experience, around 50% of samples reported having had "1-2 experiences." Concerning whether family members or friends had entrepreneurship experience, the highest proportion answered "yes," comprising 56.54%. Additionally, 43.46% of samples indicated "no" in this context. Regarding birthplace distribution, the majority of samples were from "rural areas

or towns," constituting 52.61% of the total. Lastly, over 50% of samples selected "50,000 RMB or below" as the average annual family in-come within the past three years.

(Table 1) Basic Demographic Properties.

Distinction		N	P(%)
Gender	Male	174	56.9
	Female	132	43.1
Education	Junior college and below	83	27.1
	Bachelor's degree	164	53.6
	Postgraduate and above	59	19.3
Major	Management and economics	52	17
	Humanities and Social Science	73	23.9
	Science and Technology	110	35.9
	Agriculture, medicine	11	3.6
	Other	60	19.6
Part-time Work Experience	Never participated	67	21.9
	1-2 times	156	51
	3 times and above	83	27.1
Family Entrepreneurship	Yes	173	56.5
	No	133	43.5
Birthplace	Capital city	16	5.2
	General city	38	12.4
	County district	91	29.7
	Township	161	52.6
Average annual net family income in the past three years	5W and below	176	57.5
	6W-10W	78	25.5
	11W-15W	25	8.2
	16W-20W	13	4.2
	Above 20W	14	4.6

3.2 Research instrument

In the research model depicted in Figure 1, all the constructs were adapted from the existing scales mentioned. The indicator for online entrepreneurship education was adopted from [11], the measurement items for entrepreneurial intention were derived from [12], and the measurement items for entrepreneurial execution capability were sourced from [13]. The measurement indicators for innovative thinking were adopted from [14], while in the domain of entrepreneurial support, the scale from [15] was used. A survey questionnaire was employed using a Likert five-point

scale to measure all variables ranging from 'strongly disagree' (1) to 'strongly agree' (5).

Convenient sampling technique was utilized to collect data for this study, and the data were organized, cleaned, and subjected to descriptive statistical analysis using SPSS 26. The research model was validated through confirmatory factor analysis using AMOS 26 software to establish reliability and validity. The proposed hypotheses were examined using structural equation modeling. Prior to conducting factor analysis, the suitability of the re-search data was assessed. The KMO measure for the data was found to be 0.914, surpassing the minimum threshold of 0.6, which indicates that the data is suitable for factor analysis. Furthermore, the data successfully passed the Bartlett's test of sphericity ($p < 0.05$), affirming its suitability for factor analysis.

To ensure meaningful analysis, the reliability of the data was assessed using Cronbach's alpha coefficient, which ranges from 0 to 1 and indicates the level of reliability. Generally, 0.8 to 0.9 are highly reliable. According to Table 2, all dimensions and indicators involved in this study exhibited Cronbach's alpha coefficients exceeding 0.8, indicating high data reliability. Therefore, the data can be confidently utilized for further analysis.

(Table 2) Reliability Statistics

Variables	Cronbach's Alpha	N of Items
OE	0.844	5
EI	0.885	5
EC	0.882	5
EE	0.84	5
ES	0.895	6
IT	0.862	5

4. Results

4.1 Descriptive statistics

Discriminant validity analysis is used to verify whether there are statistical differences between two different constructs. The items within different constructs should not be highly correlated. The average scores for all constructs ranged from 3.224 to 3.753, indicating that respondents scored high in this structure, suggesting that the data has a normal distribution.

(Table 3) Discriminant validity.

	OE	EI	EC	EE	ES	IT
OE	0.722					
EI	0.464	0.782				
EC	0.493	0.562	0.774			
EE	0.357	0.427	0.4	0.717		
ES	0.061	0.018	0.044	0.381	0.767	
IT	0.36	0.306	0.27	0.435	0.058	0.746

* p<0.05 ** p<0.01 *** p<0.001

Discriminant validity analysis is used to verify whether there are statistical differences between two different constructs. The items within different constructs should not be highly correlated. The average scores for all constructs ranged from 3.224 to 3.753, indicating that respondents scored high in this structure, suggesting that the data has a normal distribution.

In this study, a rigorous AVE method was used to evaluate discriminant validity. The square root of AVE for each factor should be greater than the correlation coefficient between each pair of variables, indicating discriminant validity among the factors. The diagonal represents the square root of AVE for each factor, which is greater than the standardized correlation coefficients outside the diagonal. Therefore, this study demonstrates discriminant validity, and the lower triangular represents the correlation coefficients. Please refer to the Table 3 for details.

According to the Table 4, the standardized factor loadings for each item are all above 0.5, and the residuals are positive and significant, indicating no estimation violations. The composite reliability (CR) values for the factors are all above 0.7, and the average variance extracted (AVE) is above 0.5 for all factors, meeting the criteria for convergent validity. The fit indices are also within an acceptable range. Therefore, all items are retained for subsequent analysis.

4.2 Structural model assessment

From Table 5 the fit indices suggest a good fit for the analyzed model and the data. The CMIN/DF ratio is 1.174, indicating a good fit since it's less than 3. The GFI, AGFI, IFI, NFI, TLI (NNFI), and CFI values are all above 0.9, indicating a good to relatively good fit. The RMSEA is 0.024, indicating a very good fit as it's less than 0.08.

Additionally, the SRMR is 0.04, showing a good fit as it's less than 0.05. These results support the adequacy of the model for further analysis.

(Table 4) Confirmatory Factor Analysis Results.

		Loadings	CR	AVE			
Q8	OE	0.713	0.845	0.522			
Q9		0.753					
Q10		0.713					
Q11		0.716					
Q12		0.717					
Q13	EI	0.732	0.887	0.612			
Q14		0.78					
Q15		0.844					
Q16		0.758					
Q17		0.794					
Q18	EC	0.738	0.882	0.599			
Q19		0.773					
Q20		0.816					
Q21		0.748					
Q22		0.793					
Q23	EE	0.741	0.841	0.514			
Q24		0.718					
Q26		0.758					
Q34		0.745					
Q35		0.787					
Q36	IT	0.773	0.863	0.557			
Q38		0.728					
Q28		ES			0.742	0.895	0.588
Q29					0.787		
Q30					0.783		
Q31	0.795						
Q32	0.754						
Q33	0.739						

(Table 5) Model fit summary

Fit indices	Acceptable range	Measurements
CMIN		491.846
DF		419
CMIN/DF	<3	1.174
GFI	>0.9	0.91
AGFI	>0.9	0.894
RMSEA	<0.08	0.024
IFI	>0.9	0.985
NFI	>0.9	0.904
TLI(NNFI)	>0.9	0.983
CFI	>0.9	0.984
SRMR	<0.05	0.04

5. Discussion

There are now diverse online entrepreneurship education courses available domestically and internationally for people to learn from. Entrepreneurs can choose different educational methods, educational objectives, learner backgrounds, and course characteristics based on their actual needs. The demand for entrepreneurship courses is vast and diverse, requiring educational institutions and entrepreneurship platforms to provide more effective projects and courses.

(Table 6) Path analysis.

	Relationship	C.R.	P	Standardized Estimate
H1	EK→OE	7.613	***	0.549
H2	EC→OE	4.561	***	0.32
H3	EC→EI	6.528	***	0.469
H4	EE→EC	5.746	***	0.352
H5	IT→OE	6.246	***	0.437
H6	EE→IT	6.197	***	0.393
H7	EE→ES	6.711	***	0.403

From Table 6, it can be observed that all path coefficients are significant at a level lower than 0.001, indicating significant positive effects. All hypotheses of this study have received support. Firstly, it suggests that online entrepreneurship education has a promotive effect on entrepreneurial intention. This indicates that receiving entrepreneurship education can enhance respondents' willingness for entrepreneurship, nurture their entrepreneurial capabilities, and boost their confidence in entrepreneurship. This personalized and convenient learning approach can ignite enthusiasm and proactivity in first-time entrepreneurs, thereby increasing their positive attitude and intention towards entrepreneurship.

Secondly, there is a positive correlation between online entrepreneurship education and entrepreneurial execution capability. Online entrepreneurship education provides practical knowledge, skills, and experiences for first-time entrepreneurs, helping them better understand the entrepreneurial process and elements. Practical learning assists first-time entrepreneurs in developing entrepreneurial thinking and problem-solving abilities, as well as cultivating

practical operational skills for entrepreneurial execution capability.

Thirdly, entrepreneurial intentions effectively promote low-execution entrepreneurial efforts. Entrepreneurial intentions provide motivation and drive for entrepreneurs, while entrepreneurial execution capability provides the practical abilities and actions to fulfill those intentions. Entrepreneurs need to possess a positive entrepreneurial intention and continually enhance and develop their entrepreneurial execution capabilities to achieve success in the entrepreneurial process.

Fourthly, online entrepreneurship education emphasizes the cultivation of students' innovation abilities and thinking processes. By fostering innovative thinking through online entrepreneurship education, students can better understand and apply innovative concepts and methods, identify entrepreneurial opportunities, and enhance their competitiveness.

Lastly, through data analysis and practical observations, it is evident that entrepreneurial support has a direct positive impact on entrepreneurial success. Support from families or society, helps entrepreneurs overcome challenges, reduce risks, and increase their chances of success. Entrepreneurs can leverage the support provided by entrepreneurial support organizations and institutions to better achieve their entrepreneurial goals.

5.1 Theoretical Implications

This study unveils a model that provides a detailed explanation of the factors influencing decisions for novice entrepreneurs. The results emphasize the significant connections among variables. The theoretical significance of online entrepreneurship education lies in its capacity to offer a systematic understanding of entrepreneurial knowledge and theoretical frameworks. Through online platforms, entrepreneurs can delve into essential subjects like management, marketing, and business models, gaining insights into ecosystems, market dynamics, and learning from both successes and failures. This cultivates a cognitive foundation, fostering a profound theoretical understanding of entrepreneurship.

5.2 Practical Implications

The research findings offer practical insights for educational institutions and platforms, guiding the formulation of rules, curricula, and training plans encompassing key elements. Novice entrepreneurs must recognize the complexity and systemic nature of entrepreneurship. Governments should support entrepreneurship based on a strong educational foundation. These conclusions not only extend theoretical insights but also provide practical recommendations for governments, educational institutions, training organizations, educators, and entrepreneurs. The practical significance of online entrepreneurship education lies in providing tangible guidance and experiential learning, fostering comprehensive growth and entrepreneurial success.

5.3 Conclusion

This study explores the intricate link between entrepreneurship education and entrepreneurial outcomes. It underscores the significance of online entrepreneurship education in enhancing intention among aspiring entrepreneurs. Equipping individuals with essential skills and a proactive mindset, this education fosters engagement in innovative ventures. Moreover, the study highlights how online entrepreneurship education develops robust execution capabilities, aiding entrepreneurs in translating ideas into viable businesses. It establishes a strong correlation between innovative thinking and entrepreneurship, emphasizing the integration of creative problem-solving and strategies for business growth and success.

Furthermore, the study highlights the vital role of entrepreneurial support in driving success. It stresses the valuable contributions of families, society, and entrepreneurial assistance organizations in providing resources, guidance, collaboration opportunities, and boosting entrepreneurs' confidence. The symbiotic relationship between support networks and entrepreneurial efforts is evident in their ability to help entrepreneurs navigate challenges, mitigate risks, and increase their chances of achieving goals. Amid the unique economic challenges of the post-pandemic era, the study recognizes entrepreneurship as a viable solution for addressing youth unemployment pressures. Here, the roles of government, educational institutions, and entrepreneurs

themselves become crucial. Government can foster an enabling environment by shaping policies that promote and support entrepreneurship, providing a platform for aspiring entrepreneurs to confidently embark on their journey. Educational institutions have an opportunity to integrate comprehensive entrepreneurship education into their curriculum, nurturing an entrepreneurial mindset alongside essential skills, fostering an atmosphere of innovation and risk-taking. For entrepreneurs, the study underscores the value of tapping into available support networks through active engagement with entrepreneurial assistance organizations, seeking mentorship, and embracing collaborative opportunities, collectively enhancing the likelihood of entrepreneurial success.

In conclusion, the study underscores the transformative potential of online entrepreneurship education. Looking ahead, collaborative efforts between government, educational institutions, and entrepreneurs themselves will be the linchpin for nurturing a thriving entrepreneurial ecosystem, thereby fostering economic growth and societal well-being.

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● 저 자 소 개 ●



자 오 야 주(Zhao Yazhu)

2009년 흑룡강대학교 사회학과(법학 학사)
2012년 흑룡강대학교 대학원 사회학과(법학 석사)
관심분야 : 빅데이터, Business Analysis, etc.
E-mail : zhaoyazhu@kyonggi.ac.kr



류 환(Liu Huan)

2009년 창안대학교 환경공학학과(공학사)
2010년 영국 제국 공과대학교 대학원 환경공학학과(이학 석사)
관심분야 : 빅데이터, Business Analysis, etc.
E-mail : liuhuan@kyonggi.ac.kr



유 자 양(Liu Ziyang)

2006년 석가장육군지휘개학교 공산관리학과(경영학사)
2010년 경기대학교 대학원 경영학과(경영석사)
2013년 경기대학교 대학원 경영학과(경영박사)
2015년~현재 경기대학교 글로벌비즈니스학과 교수
관심분야 : 빅데이터, Business Analysis, E-business, Behavioral economics, etc.
E-mail : victor@kgu.ac.kr