2021 Global University Entrepreneurial Spirit Students' Survey

Report for Korea 2021

KOEF KOREA ENTREPRENEURSHIP FOUNDATION

GUESSS
Global University Entrepreneurial Spirit Students' Survey

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“2021 GUESSS is supported by EY as the global project partner.”

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01
Introduction

1.1. Background

GUESSS, short for 'Global University Entrepreneurial Spirit Students' Survey,' is an international research project on university students' intentions and activities related to starting a business.

This report is a national report of the Republic of Korea, and aims to attain the following objectives:

- Observe students' entrepreneurial motivations and activities in a systemic way over a long time
- Identify critical factors affecting students who are willing to pursue their careers in new ventures or entrepreneurial endeavors
- Observe and evaluate supports by universities for students' entrepreneurial activities

GUESSS's survey deals with topics such as students' willingness to start a business, entrepreneurial environment within the university, and the status and characteristics of nascent entrepreneurs and student entrepreneurs, along with current social issues through a questionnaire. While the 2018 questionnaire tended to focus on social or corporate power relations, workplace sexual harassment, corporate culture, and so on, the 2021 survey put an emphasis on the availability of university support for sustainable development goals, the impact of the COVID-19, and the behavioral characteristics of nascent/student entrepreneurs

among others.

1.2. Theoretical Model

The theoretical basis of GUESSS is the 'Theory of Planned Behavior[1].' In a nutshell, TPB is a theory claiming that three factors, such as attitude toward behavior, subjective standards, and perceived behavioral control, can explain the intention behind specific behaviors.

1.3. The Project Planning and Data Collection

GUESSS project is organized by the University of Bern, Switzerland and KMU-HSG (The Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen) and supervised by Professor Philipp Seiger from the University of Bern. Also, EY assumes the role of supporting international projects. Each country has one representative appointed and the survey is delivered online. In Korea, it is represented by the Korea Entrepreneurship Foundation, which biennially conducts a nationwide online survey for university students. The following is a summary of the 2020-21 GUESSS survey:

1) Ajzen, I.(1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179-211.

〈Table 1〉 2021-21 GUESSS Suvery Overview

Classification	Detail
Subjects of survey	University students in Korea
Survey cycle	Biennial (Every other year)
Survey period	February 19, 2021 - June 30, 2021
Survey method	Online poll
Effective samples	1,220 in total
Data collection tool	Structured questionnaire

The international data analyzed and employed in this report were based on around 267,000 records from 58 countries, including the Republic of Korea.

02

Demographical Characteristics

2.1. Statistics on Respondents

This survey targets university students in Korea and the participating universities are as follows:

〈Table 2〉 Target Universities

University
Catholic Kwandong University
Konkuk University Glocal Campus
Konkuk University
Kyonggi University
Kyungmin University
Kyungwoon University
Keimyung University
KwangWoon University
Daegu Haany University
Dongguk University
Dongyang University
Myongji College
Mokwon University
Baekseok University
Sangmyung University
Soon Chun Hyang University
Soongsil University
Anyang University

University
Yonsei University Mirae Campus
Yeungnam University
Incheon National University
Inha Technical College
Jeonju University
Chung-ang University
Korea National University of Transportation
Hanshin University
Honam University
Others

We discovered the following distribution of respondents by academic attainment: bachelor's (85.9%), master's (3.1%), doctorates (1.2%), and others (MBA, etc.; 9.9%).

〈Table 3〉 Academic Attainment of Respondents

Classification	N	%
Undergraduate (Bachelor level)	1,041	85.9
Graduate (Master level)	37	3.1
PhD	14	1.2
Other (e.g., MBA)	120	9.9
Total	**1,212**	**100.0**

Engineering (23.3%), including architecture as well as human medicine and health sciences (25.2%) tended to occupy a larger proportion of respondents' major programs, followed by social sciences (psychology, political science, education, etc.; 9.4%), arts/humanities (culture studies, history, linguistics, philosophy, religion, etc.; 7.8%), business management

(7.5%), computer/IT (4.5%), natural sciences (4.2%), mathematics and science of art (art, design, dramatics, music, etc.; 3.4%, respectively), economics (1.9%) and law (0.3%).

〈Table 4〉 Main Field of Study of Respondents

Main field of study	N	%
Arts / Humanities (e.g., cultural studies, history, linguistics, philosophy, religion)	95	7.8
Business / Management	91	7.5
Computer sciences / IT	55	4.5
Economics	23	1.9
Engineering (incl. architecture)	284	23.3
Human medicine / health sciences	308	25.2
Law	4	0.3
Mathematics	42	3.4
Natural sciences	51	4.2
Science of art (e.g., art, design, dramatics, music)	42	3.4
Social sciences (e.g., psychology, politics, education)	115	9.4
Other	110	9.0
Total	**1,220**	**100.0**

Respondents' ages are as follows: The majority of respondents were under the age of 24 (as of 2021) and accounted for 81.4%. The age group of 25 to 30 years old accounted for 14.1 percent while those above 30 years old accounted for 4.6 percent.

〈Table 5〉 Age Bracket of Respondents

Age bracket	N	%
24 years old or younger (born in 1998 or later)	873	81.4
25 - 30 years old (born in 1992 - 1997)	151	14.1
31 years old or older (born in 1991 or before)	49	4.6
Total	1,073	100.0

By gender, women made up 54.7 percent of the respondents, males 45.1 percent, and others 0.2 percent. When comparing to international data, which indicated 60.3 percent of women and 39.1 percent of men, the proportion of male respondents is higher than that of the global average.

〈Table 6〉 Gender Distribution of Respondents

Classification	Male		Female		Other		Total	
	N	%	N	%	N	%	N	%
Korea	548	45.1	665	54.7	3	0.2	1,216	100.0
Global	104,439	39.1	160,872	60.3	1,632	0.6	266,943	100.0

When it comes to marital status, 95.9 percent replied that they were single.

〈Table 7〉 Marital Status of Respondents

Classification	N	%
Single	1,137	95.9
Married	41	3.5
Other	8	0.7
Total	1,186	100.0

In terms of nationality, 99.6 percent of respondents were Korean.

〈Table 8〉 Nationality of Respondents

Classification	N	%
Korea	754	99.6
Other	3	0.4
Total	**757**	**100.0**

2.2. Respondents' Subjective Well-being

Respondents' subjective well-being was measured with the following five questions:

- In most ways my life is close to my ideal.
- The conditions of my life are excellent.
- I am satisfied with my life.
- So far, I have gotten the important things I want in life.
- If I could live my life over, I would change almost nothing.

It was found that respondents had an average level of subjective well-being. It showed that while they felt their lives are neither close to their ideal nor in excellent conditions, most respondents are content with their lives. If given the opportunity to live a different life, however, they still wish to make changes in their lives.

〈Table 9〉 Subjective Well-being of Respondents

Classification	N	Mean	SD
In most ways my life is close to my ideal.	1,214	4.00	1.438
The conditions of my life are excellent.	1,210	4.29	1.446
I am satisfied with my life.	1,206	4.62	1.538
So far, I have gotten the important things I want in life.	1,205	4.18	1.487
If I could live my life over, I would change almost nothing.	1,207	3.35	1.756

03

Willingness to Choose a career

We investigated university students' post-graduate careers, careers after 5 years, willingness to start a business, and factors that influenced their career choices.

3.1. Career After Graduation

In response to "Which career path do you intend to pursue right after completion of your studies?," 23.0 percent of students stated they didn't know yet, 22.2 percent said they planned to acquire a job in a large business (over 250 people), 21.0 percent said they planned to acquire a job in a public agency, and 15.6 percent said they planned to start working at a medium-sized business (50-249 employees). We found that 7.2 percent of students said they would start a business.

〈Table 10〉 Career After Graduation

Classification	N	%
an employee in a small business (1-49 employees)	59	4.8
an employee in a medium-sized business (50-249 employees)	190	15.6
an employee in a large business (250 or more employees)	271	22.2
an employee in a non-profit organization	7	0.6
an employee in academia (academic career path)	60	4.9
an employee in public service	256	21.0
a founder (entrepreneur) working in my own business	88	7.2

Classification	N	%
a successor in my parents' / family's business	6	0.5
a successor in another business	3	0.2
Other / do not know yet	280	23.0
Total	1,220	100.0

When asked, "Which career path do you intend to pursue 5 years later?," 24.9 percent of students said they wanted to work for a large company (over 250 employees), while 23.8 percent said they wanted to work in public service, indicating almost no deviation from those of the postgraduate career path. On the other hand, students who desired to start a business after five years account for 11.7 percent of the total, implying that students intend to start a business after certain period of time rather than immediately after graduation.

〈Table 11〉 Career 5 Years Later

Classification	N	%
an employee in a small business (1-49 employees)	30	2.5
an employee in a medium-sized business (50-249 employees)	132	10.8
an employee in a large business (250 or more employees)	304	24.9
an employee in a non-profit organization	10	0.8
an employee in academia (academic career path)	60	4.9
an employee in public service	290	23.8
a founder (entrepreneur) working in my own business	143	11.7
a successor in my parents' / family's business	10	0.8
a successor in another business	7	0.6
Other / do not know yet	234	19.2
Total	1,220	100.0

3.2. Intention to Start a Business

Students who answered that they are thinking about starting a business or are getting ready to start one made up 25.4 percent of the total. The global data under the same category indicated that 28.4 percent of students are planning to start a business. There was a modest uptick but no major change from the 2018 poll, which found that 24.5 percent of students are thinking or preparing to start a business.

〈Table 12〉 Intention to Start a Business

Classification	Yes		No		Total	
	N	%	N	%	N	%
Korea	310	25.4	910	74.6	1,220	100.0
Global	75,838	28.4	191,528	71.6	267,366	100.0

* Are you currently trying to start your own business / to become self-employed?

Only 4.3 percent of students who responded said they had already started and were managing a business. It was slightly lower than the 2018 outcome, which showed that 5.6 percent of students had already started their own firm. On the other hand, international data shows that 10.8 percent of students have established their own firm, indicating that the proportion of students starting their own business in Korea is slightly lower.

〈Table 13〉 Already Running a Business or Self-Employed

Classification	Yes		No		Total	
	N	%	N	%	N	%
Korea	53	4.3	1,167	95.7	1,220	100.0
Global	28,877	10.8	238,489	89.2	267,366	100.0

* Are you already running your own business / are you already self-employed?

3.3. Views on Career Choice

To find out how university students feel about their career decision, we used the following three statements: "I am willing to take risks when choosing a job or a company to work for," "I prefer a low risk/high security job over a job that offers high risks and high rewards," and "I view risk on a job as a situation to be avoided at all costs."

Using the Likert scale of 1 to 7, with 1 denoting "not at all" and 7 denoting "very much", "I am willing to take risks when choosing a job or a company to work for" received 4.14 points; "I prefer a low risk/high security job over a job that offers high risks and high rewards" earned 4.91 points and; "I view risk on a job as a situation to be avoided at all costs" got 3.99 points.

Compared to the international average, Korean students are slightly more likely to avoid risk. While Korean students scored lower than the global average (5.13 points) in the readiness to take risks when choosing a career or firm, they scored higher in the preference of secure jobs and risk avoidance.

〈Table 14〉 Views on Career Choice

Classification	Korea			Global		
	N	Mean	SD	N	Mean	SD
I am willing to take risks when choosing a job or a company to work for.	1,219	4.14	1.608	266,324	5.13	1.561
I prefer a low risk/high security job over a job that offers high risks and high rewards.	1,213	4.91	1.517	263,487	4.33	1.735
I view risk on a job as a situation to be avoided at all costs.	1,210	3.99	1.357	261,809	3.46	1.763

* Please indicate the extent to which you agree withthe following statements (1=not at all, 7=very much)

04

Critical Determinants for Starting a Business

We examined the effects of an environment encouraging entrepreneurship and courses, individuals' entrepreneurial intention and attitude and influence of family, and others.

4.1. University Factor

Regarding universities where respondents are enrolled, we surveyed the environment of the university, education programs, availability of support for the United Nations' Sustainable Development Goals (hereinafter SDGs), and more.

The following questions were used to assess the respondents' university environments. For each question, we applied the Likert scale where 1 denoted "not at all" and 7 denoted "very much":

- The atmosphere at my university inspires me to develop ideas for new businesses.
- There is a favorable climate for becoming an entrepreneur at my university.
- At my university, students are encouraged to engage in entrepreneurial activities.

As result, "The atmosphere at my university inspires me to develop ideas for new businesses" scored 3.85 points; "There is a favorable

climate for becoming an entrepreneur at my university" 3.82 points and; "At my university, students are encouraged to engage in entrepreneurial activities" 4.23 points. The scores in Korea were lower than the global average across the board when the same Likert items were compared with the global average.

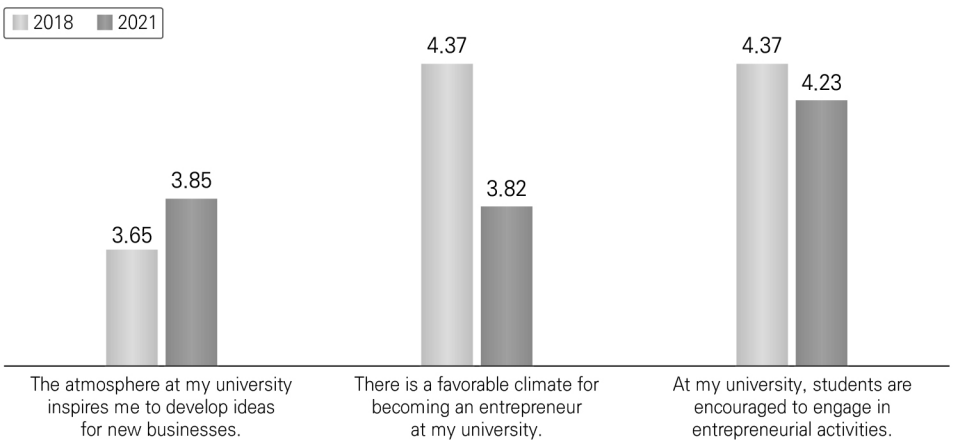
〈Table 15〉 Entrepreneurship-related Environment at University

Classification	Korea			Global		
	N	Mean	SD	N	Mean	SD
The atmosphere at my university inspires me to develop ideas for new businesses.	1,215	3.85	1.637	265,498	4.30	1.904
There is a favorable climate for becoming an entrepreneur at my university.	1,210	3.82	1.588	261,864	4.29	1.879
At my university, students are encouraged to engage in entrepreneurial activities.	1,209	4.23	1.595	261,358	4.48	1.929

* Please indicate the extent to which you agree with the following statements about the university environment (1=not at all, 7=very much)

Compared with the result of 2018, students replied that their universities' environment has improved in terms of developing new business ideas, but that of entrepreneurial activities has somewhat retreated.

〈Figure 1〉 Comparison of Entrepreneurship-related Environment in Universities (2018-2021)



The entrepreneurship programs of universities were measured by the following five sentences: For each sentence, we applied the Likert scale where 1 denoted “not at all” and 7 denoted “very much”.

- The courses and offerings I attended ncreased my understanding of the attitudes, values, and motivations of entrepreneurs.
- The courses and offerings I attend dincreased my understanding of the actions someone has to take to start a business.
- The courses and offerings I attended nhanced my practical management skills to start a business.
- The courses and offerings I attended nhanced my ability to develop networks.
- The courses and offerings I attended nhanced my ability to identify an opportunity.

With regard to the effects of courses, respondents rated: enhanced ability to identify an opportunity as 4.34 points, increased understanding of the attitudes, values, and motivations of entrepreneurs as 4.12 points, enhanced ability to develop the network as 4.08 points, enhanced understanding of the actions someone has to take to start a business as 4.02 points, and the practical management skills to start a business as 3.85 points. According to the findings, while basic knowledge for starting a business was provided to some extent, key understanding for practical management abilities was more or less lacking.

When compared to the global average, Korean students rated the enhancement of their ability to identify an opportunity higher than the global average (4.29 points), but the rest of the items were scored lower than the global average, implying that they were considered less effective.

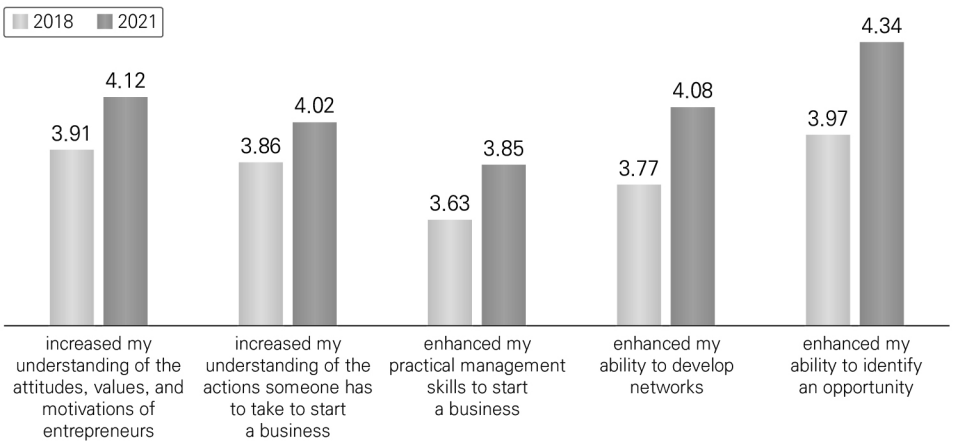
〈Table 16〉 Effectiveness of Universities' Entrepreneurship Programs

Classification	Korea			Global		
	N	Mean	SD	N	Mean	SD
increased my understanding of the attitudes, values, and motivations of entrepreneurs.	1,217	4.12	1.605	266,085	4.45	1.875
increased my understanding of the actions someone has to take to start a business.	1,209	4.02	1.609	262,334	4.17	1.977
enhanced my practical management skills to start a business.	1,208	3.85	1.629	261,965	4.08	1.972
enhanced my ability to develop networks.	1,207	4.08	1.612	261,309	4.31	1.879
enhanced my ability to identify an opportunity.	1,208	4.34	1.523	260,770	4.29	1.906

* Please indicate the extent to which you agree with the following statements about your studies (1=not at all, 7=very much). The courses and offerings I attended…

Compared with the 2018 survey outcomes, students felt that the effect of the entrepreneurship program had improved in general. In all items, the scores were higher than those of 2018.

〈Figure 2〉 Comparison of Universities' Entrepreneurship Programs (2018-2021)



We examined whether or not students attended a course on entrepreneurship with the following questionnaire:

- I have not attended a course on entrepreneurship so far.
- I have attended at least one entrepreneurship course as elective.
- I have attended at least one entrepreneurship course as compulsory part of my studies.
- I am studying in a specific program on entrepreneurship.
- I chose to study at this university mainly because of its strong entrepreneurial reputation.

Out of all 1,220 respondents, 43.7 percent said they had not taken an entrepreneurship course so far, indicating that over half of the students had. It showed that students who have taken an entrepreneurship course as electives accounted for 33.3 percent while those who have

taken the course as compulsory part of their studies were 21.5 percent. In addition, 12.5 percent of students said that they were currently attending a specific program on entrepreneurship. Meanwhile, those who chose to study at this university mainly because of its strong entrepreneurial reputation accounted for 6.6 percent of the total respondents.

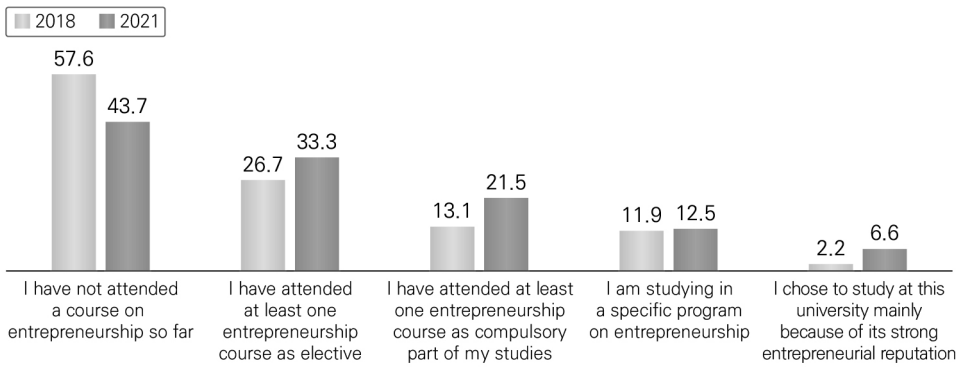
When compared with global data, Korean students tended to enroll in entrepreneurship courses at a higher rate than students from other nations. 53.3 percent of students surveyed abroad stated that they had never taken an entrepreneurial course before. The finding revealed that Korean students have higher course enrollment and program participation for entrepreneurship courses as elective/compulsory courses. However, when asked if they considered entrepreneurship reputation when choosing a university, 14.3 percent of global students answered that they did, which was higher than in Korea.

〈Table 17〉 Attendance to Entrepreneurship-related Lecture

Classification	Korea		Global	
	N	%	N	%
I have not attended a course on entrepreneurship so far.	533	43.7	142,491	53.3
I have attended at least one entrepreneurship course as elective.	406	33.3	69,843	26.1
I have attended at least one entrepreneurship course as compulsory part of my studies.	262	21.5	52,450	19.6
I am studying in a specific program on entrepreneurship.	153	12.5	18,295	6.8
I chose to study at this university mainly because of its strong entrepreneurial reputation.	80	6.6	38,338	14.3

Compared to the 2018 survey results, some significant improvement was observed in terms of students' enrollment in an entrepreneurship course or program. In particular, the proportion of students who took an entrepreneurship course as compulsory part of their studies has climbed dramatically from 13.1 percent to 21.5 percent, implying that the number of universities offering entrepreneurship as a core course has increased. The proportion of students who have never taken a course on entrepreneurship also dropped from 57.6 percent to 43.7 percent.

〈Figure 3〉 Comparison of Attendance to Entrepreneurship-related Lecture (2018-2021)



The following six statements were used to determine if universities support the United Nations' Sustainable Development Goals (hereinafter, "SDGs"). Each question was based on a Likert scale with 1 denoting "not at all" and 7 denoting "very much".

My university ensures that all students (irrespective of gender, age, ethnicity, religion, disability, or socio-economic status)...

- have equal access to affordable and quality education.
- have equal participation, representation, and voice in the university's decision-making.
- acquire the knowledge and skills needed to promote sustainable development.
- the development of research, technology, innovation, and entrepreneurship.
- the collaboration with local authorities / firms to provide

employment for all students.

- the development of sustainable and green practices to mitigate climate change.

The statement saying 'offering equal access to affordable and quality education regardless of gender, age, ethnicity, religion, disability, or socio-economic status' was rated as 4.93 points, 'equal participation, representation, and voice in the university's decision-making' as 5.07 points, and 'acquire the knowledge and skills needed to promote sustainable development' as 5.10 points.

〈Table 18〉 Equality in Educational Environment Supports

Classification	N	Mean	SD
have equal access to affordable and quality education.	1,213	4.93	1.531
have equal participation, representation, and voice in the university's decision-making.	1,207	5.07	1.454
acquire the knowledge and skills needed to promote sustainable development.	1,204	5.10	1.420

'University's support for the development of research, technology, innovation, and entrepreneurship' scored as high as 4.7 points, while 'collaboration with local authorities/firms' to provide employment for students' obtained a higher-than-average rating of 4.84 points. The survey also scored 4.39 points for 'the university's support for the development of sustainable and green practices.'

〈Table 19〉 Sustainable Development Goals (SDGs) Supports

Classification	N	Mean	SD
the development of research, technology, innovation, and entrepreneurship.	1,212	4.70	1.435
the collaboration with local authorities / firms to provide employment for all students.	1,203	4.84	1.368
the development of sustainable and green practices to mitigate climate change.	1,202	4.39	1.487

4.2. Willingness to Start a Business

We asked 898 university students other than those that are preparing for or have already started a new business for the general idea on entrepreneurship. The questionnaires in this section of the survey explored entrepreneurial intention, entrepreneurial attitude, entrepreneurial self-efficacy and locus of control, and they were all based on a Likert scale, with 1 denoting “strongly disagree” and 7 denoting “strongly agree.”

The following statements were used to figure out students’ entrepreneurial intention:

- I am ready to do anything to be an entrepreneur.
- My professional goal is to become an entrepreneur.
- I will make every effort to start and run my own business.
- I am determined to create a business in the future.
- I have very seriously thought of starting a business.
- I have the strong intention to start a business someday.

It seems that students' entrepreneurial intention is generally low. According to the survey result, the statement, 'I am ready to do anything to be an entrepreneur,' obtained 3.44 points, and 'entrepreneur as a professional goal' received 2.81 points, indicating that students did not usually agree with it. The statement, 'I will make every effort to start and run my own business,' earned 3.37 points. Relatively lower scores were observed in the items such as 'the willingness to start a business (2.78 points),' 'the consideration of establishing a business (2.68 points),' and 'the intention to start a business (2.67 points).'

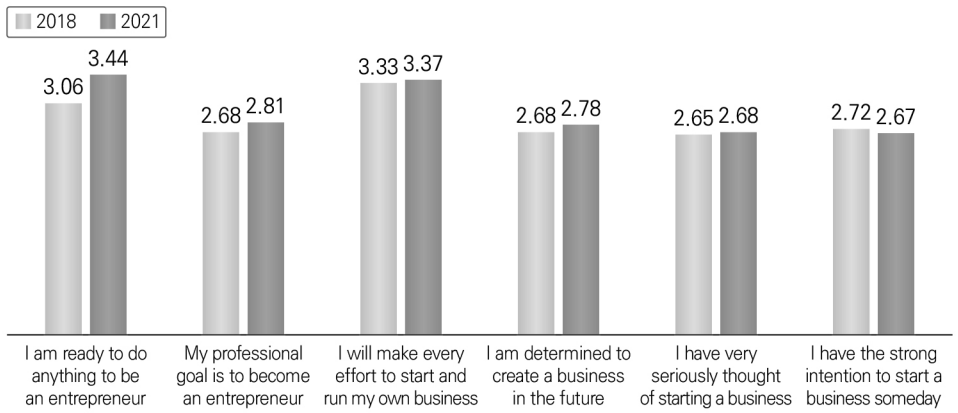
Compared to the global data, it becomes more salient that students' entrepreneurial intention is lower. Scores of all the items are below the global averages.

〈Table 20〉 Entrepreneurial Intention

Classification	Korea			Global		
	N	Mean	SD	N	Mean	SD
I am ready to do anything to be an entrepreneur.	892	3.44	1.549	184,968	3.83	1.897
My professional goal is to become an entrepreneur.	883	2.81	1.543	183,479	3.81	2.047
I will make every effort to start and run my own business.	884	3.37	1.634	183,188	3.85	2.067
I am determined to create a business in the future.	886	2.78	1.614	183,060	3.82	2.107
I have very seriously thought of starting a business.	885	2.68	1.593	182,860	3.79	2.116
I have the strong intention to start a business someday.	882	2.67	1.598	182,673	3.89	2.175

When students' entrepreneurial intentions were compared to those of 2018, the results showed an increase generally, but not at a significant rate. Rather, the willingness to start a business in the future decreased slightly.

〈Figure 4〉 Comparison of Entrepreneurial Intention (2018-2021)



The following statements were used to figure out students' entrepreneurial attitude:

- Being an entrepreneur implies more advantages than disadvantages to me.
- A career as entrepreneur is attractive for me.
- If I had the opportunity and resources, I would become an entrepreneur.
- Being an entrepreneur would entail great satisfactions for me.
- Among various options, I would rather become an entrepreneur.

Students' entrepreneurial attitude was more or less average. The statement, "Among various options, I would rather become an entrepreneur"

received the lowest score (3.11 points), and "Being an entrepreneur implies more advantages than disadvantages to me" scored 3.73 points, which is also below average. Statements like "A career as an entrepreneur is attractive for me," "If I had the opportunity and resources, I would become an entrepreneur," and "Being an entrepreneur would entail great satisfaction for me" on the other hand, scored 4.54, 4.25 and 4.10, respectively, which are close to averages.

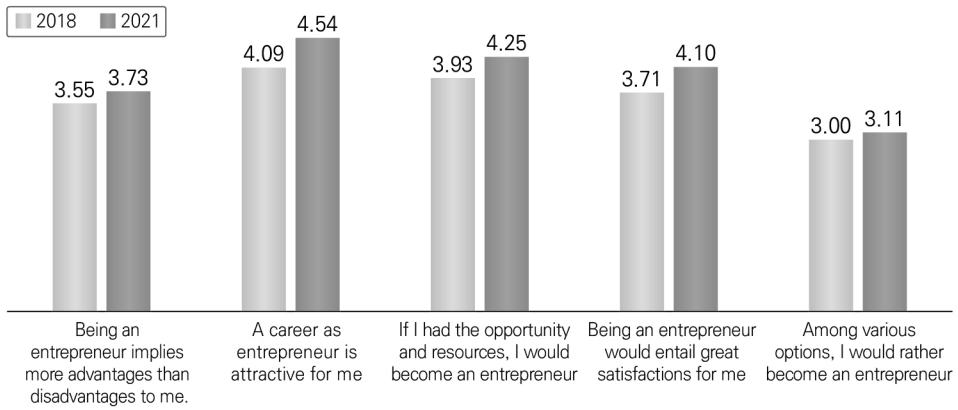
Compared to the global data, students' entrepreneurial attitudes were once again below the global average. Despite this, the item on the entrepreneur as an attractive vocation received a better rating than the global average at 4.27 points.

〈Table 21〉 Entrepreneurial attitude

Classification	Korea			Global		
	N	Mean	SD	N	Mean	SD
Being an entrepreneur implies more advantages than disadvantages to me.	890	3.73	1.327	184,699	4.21	1.758
A career as entrepreneur is attractive for me.	885	4.54	1.443	183,248	4.27	1.919
If I had the opportunity and resources, I would become an entrepreneur.	885	4.25	1.697	183,087	4.80	1.947
Being an entrepreneur would entail great satisfactions for me.	885	4.10	1.512	183,043	4.46	1.966
Among various options, I would rather become an entrepreneur.	884	3.11	1.470	182,707	3.96	1.993

It also revealed that the entrepreneurial attitude was slightly better in 2021 than in 2018. The average score of the 2021 survey has improved in every category.

〈Figure 5〉 Comparison of Entrepreneurial Attitude (2018-2021)



Entrepreneurial self-efficacy was measured by asking students how many critical abilities they possess for starting a business.

- Identifying new business opportunities
- Creating new products and services
- Managing innovation within a business
- Being a leader and communicator
- Building up a professional network
- Commercializing a new idea or development
- Successfully managing a business

Students responded that they lacked most of the essential skills, however, they gave the leadership and communication category an

average score of 4.36 points.

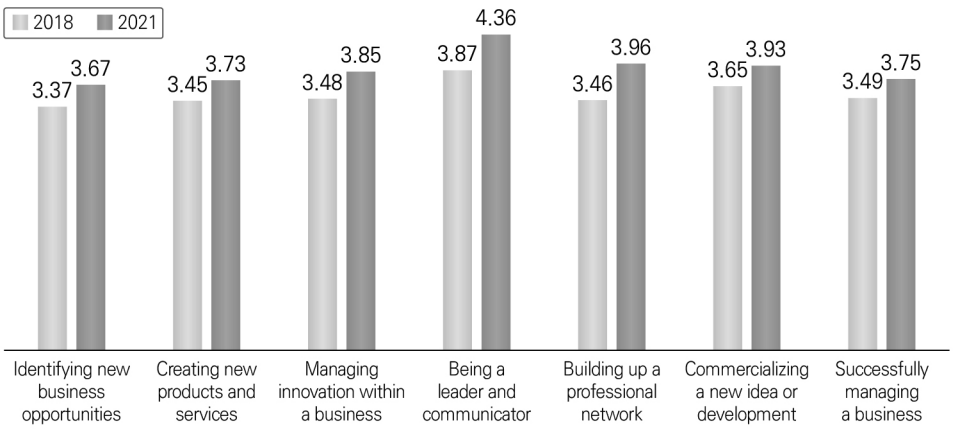
The global data showed higher self-efficacy than those of Korean students in all items. University students both in Korea and abroad rated themselves as having strong leadership and communication skills.

〈Table 22〉 Entrepreneurial self-efficacy

Classification	Korea			Global		
	N	Mean	SD	N	Mean	SD
Identifying new business opportunities	893	3.67	1.434	184,504	4.28	1.651
Creating new products and services	887	3.73	1.442	183,030	4.25	1.667
Managing innovation within a business	884	3.85	1.460	182,789	4.42	1.716
Being a leader and communicator	885	4.36	1.516	182,710	5.01	1.665
Building up a professional network	883	3.96	1.425	182,733	4.51	1.690
Commercializing a new idea or development	883	3.93	1.437	182,605	4.43	1.729
Successfully managing a business	883	3.75	1.506	182,331	4.54	1.767

Again, in 2021, all self-efficacy items scored higher than in 2018, and respondents specifically stated that their leadership, communication, and network development skills had much improved.

〈Figure 6〉 Comparison of Entrepreneurial Self-efficacy (2018-2021)



Locus of control has been surveyed through the following questionnaires:

- I am usually able to protect my personal interests.
- When I make plans, I am almost certain to make them work.
- I can pretty much determine what will happen in my life.

Locus of control marked the highest scoring group that surveyed general ideas on entrepreneurship. Statements like "I am usually able to protect my personal interests" and "I can pretty much determine what will happen in my life" scored 4.92 points, respectively, while the item on planning obtained 4.66 points.

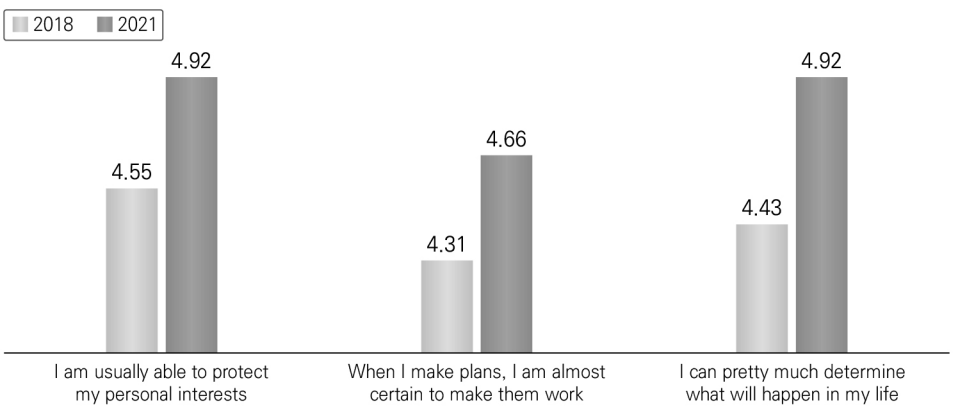
While the global averages shows higher scores for questionnaires related with personal interests and desire, and the capacity to stick to a plan, Korean students showed a higher tendency of decisiveness about what will happen in their life.

〈Table 23〉 Locus of control

Classification	Korea			Global		
	N	Mean	SD	N	Mean	SD
I am usually able to protect my personal interests.	892	4.92	1.353	184,707	5.43	1.350
When I make plans, I am almost certain to make them work.	889	4.66	1.309	183,431	5.35	1.359
I can pretty much determine what will happen in my life.	886	4.92	1.325	183,338	4.54	1.727

Again, for locus of control, the average scores of all items increased from the results in 2018.

〈Figure 7〉 Comparison of Locus of Control (2018-2021)



4.3. Family Factors

We looked into whether a university student's family member was an entrepreneur and what their family's attitude was toward starting a firm.

27.2 percent of respondents answered that one or both parents run a business. Also, 11.5 percent of students reported their parents were either business owners or major shareholders.

〈Table 24〉 Parents' Entrepreneurial Status

Classification		N	%
Are your parents self-employed?	No	888	72.8
	Yes, father	178	14.6
	Yes, mother	53	4.3
	Yes, both	101	8.3
	Total	**1,220**	**100.0**
Are your parents majority owners of a business?	No	1,080	88.5
	Yes, father	87	7.1
	Yes, mother	17	1.4
	Yes, both	36	3.0
	Total	**1,220**	**100.0**

To the question that asks about the response of the people in the students' environment to their decision to start a business, higher percentage of respondents expected neither negative nor positive responses. According to the Likert scale, where 1 denoted "very negative" and 7 denoted "very positive," family scored the lowest score of 4.03 points, while friends received 4.6 points, showing that students expected their friends to have the most favorable response.

〈Table 25〉 Response of People in the Environment to Starting a Business

Classification	N	Mean	SD
Your close family	1,216	4.03	1.642
Your friends	1,207	4.60	1.554
Your fellow students	1,209	4.44	1.482

* If you would pursue a career as an entrepreneur, how would people in your environment react (1=very negatively, 7=very positively)?

05

Nascent Entrepreneur

We asked 269 students who said they were thinking about starting a business or were getting ready to start one about their plans to start a business, excluding those who had already started one.

5.1. General Information

In terms of the gender distribution of nascent entrepreneurs, we found 51.7 percent were male, and 48.3 percent were female. Given that 45.1 percent of male students and 54.7 percent of female students participated in the survey, it's safe to assume that more male students are thinking about starting a business.

〈Table 26〉 Gender Distribution of Nascent Entrepreneur

Classification	N	%
Male	139	51.7
Female	130	48.3
Total	**269**	**100.0**

The distribution of major programs among nascent entrepreneurs is shown in 〈Table 27〉. Engineering accounted for 26.4 percent, followed by human medicine/health sciences (12.3%), business/management (10.8%), and arts/humanities (9.3%).

〈Table 27〉 Main Field of Study of Nascent Entrepreneur

Main field of study	N	%
Arts / Humanities (e.g., cultural studies, history, linguistics, philosophy, religion)	25	9.3
Business / Management	29	10.8
Computer sciences / IT	15	5.6
Economics	9	3.3
Engineering (incl. architecture)	71	26.4
Human medicine / health sciences	33	12.3
Law	1	0.4
Mathematics	1	0.4
Natural sciences	14	5.2
Science of art (e.g., art, design, dramatics, music)	20	7.4
Social sciences (e.g., psychology, politics, education)	21	7.8
Other	30	11.2
Total	**269**	**100.0**

57.5 percent of students who planned to start a business reported that they have not decided on the actual timing. 20.9 percent of students said they wanted to start their own business within two years of graduation, while 15.3 percent said they wanted to finish it while still in school.

〈Table 28〉 Expected Timing of Starting a Business

Classification	N	%
During my studies	41	15.3
Right after my studies	17	6.3
Up to 2 years after completing my studies	56	20.9
Do not know yet	154	57.5
Total	**268**	**100.0**

* When do you plan to complete the founding process (i.e., to actually found your business)?

Regarding a business start-up plan, 49.6 percent of students responded that it would be their primary work, while 12.7 percent expected it to be a side job in addition to other jobs or a different career path after graduation.

〈Table 29〉 Business as Main Occupation After Graduation

Classification	N	%
No	34	12.7
Yes	133	49.6
Do not know yet	101	37.7
Total	**268**	**100.0**

* Do you want this business to become your main occupation after graduation?

88.4 percent of nascent entrepreneurs had no prior business experience, whereas 11.6 percent were planning a new venture based on their existing experience.

〈Table 30〉 Previous Business Experience of Nascent Entrepreneur

Classification	N	%
No	237	88.4
Yes	31	11.6
Total	268	100.0

* Have you created another business before?

56.7 percent of nascent entrepreneurs claimed they obtained their business ideas outside the university, while 31.3 percent reported that they acquired them from their university classes.

〈Table 31〉 Source of Business Idea

Classification	N	%
From a university course	84	31.3
In another form related to the university	32	11.9
Largely independent from the university	152	56.7
Total	268	100.0

* How did this start-up project emerge?

According to the findings, the COVID-19 inspired 27.3 percent of nascent entrepreneurs to follow their plans to start a business.

〈Table 32〉 Impact of COVID-19 on Business Plans

Classification	N	%
No	194	72.7
Yes	73	27.3
Total	267	100.0

* Do you plan to create this business largely because of the implications of the COVID-19 pandemic?

According to the findings, nascent entrepreneurs put more importance on raising the value of their business (78.4%) than keeping maximum ownership and control of this business (21.6%).

〈Table 33〉 Emphasis in Business Operation

Classification	N	%
Increasing the value of this business as much as possible	207	78.4
Maintaining maximum ownership and control of this business	57	21.6
Total	264	100.0

* If you had to decide between the two following alternatives: What is more important to you?

With 15.2 percent, advertising/design/marketing was the most popular business sector among students who want to establish a firm, followed by ITC (including software and IT service) and manufacturing with 10.4 percent. Besides, they were planning to launch a business in a variety of sectors including, health care, social network, education, and training.

〈Table 34〉 Field of Business for Starting a Business

Classification	N	%
Advertising / Design / Marketing	41	15.2
Architecture and Engineering	18	6.7
Construction	3	1.1
Consulting (HR, law, management, tax)	9	3.3
Education and training	18	6.7
Financial services (incl. banking, insurance, investment, real estate)	6	2.2
Human health and social work activities	20	7.4
Information technology (IT) and communication (incl. software & IT services)	28	10.4
Manufacturing	28	10.4
Tourism and leisure	8	3.0
Trade (wholesale / retail)	18	6.7
Other services (e.g., transportation)	12	4.5
Other	60	22.3
Total	**269**	**100.0**

5.2. Activities for Starting a Business

Nascent entrepreneurs replied that they were engaged in activities to start a business including information collection on market and competitors (33.5%), discussing product and business ideas with potential customers (26.0%), writing a business plan (25.7%), and product/service development (16.7%). Most of them conducted initial business activities such as market research and developing ideas. 43.5 percent of nascent entrepreneurs said that they had not done anything for business, other

than intentions to start a business.

〈Table 35〉 Activities for Starting a Business

Classification	N	%
Discussed product or business idea with potential customers	70	26.0
Collected information about markets or competitors	90	33.5
Written a business plan	69	25.7
Started product/service development	45	16.7
Started marketing or promotion efforts	26	9.7
Purchased material, equipment or machinery for the business	23	8.6
Attempted to obtain external funding	6	2.2
Applied for a patent, copyright, or trademark	9	3.3
Registered the business	7	2.6
Sold product or service	13	4.8
Nothing of the above done so far	117	43.5

* Which of the following activities have you (or somebody else from the founding team, if existing) already carried out in order to start your own business (multiple answers possible)?

5.3. Detailed Information on New Business

47.2 percent of nascent entrepreneurs planned to start a business on their own. As for the reasons, 41.6 percent said that they wanted to do their own business without co-founders.

〈Table 36〉 Intention to Start a Business With/Without a Co-founder

Classification	N	%
On my own (0 co-founders)	126	47.2
With 1 co-founder	58	21.7
With 2 co-founders	50	18.7
With 3 or more co-founders	33	12.4
Total	267	100.0

〈Table 37〉 Reason for Starting a Business Without a Co-founder

Classification	N	%
This is a type of self-employment that does not need a co-founder.	28	22.4
I do not want a co-founder; I want to start this business on my own.	52	41.6
I have looked for a co-founder but have not found somebody suitable.	18	14.4
So far, I have not looked for a co-founder. I will do so in the future.	9	7.2
None of the above.	18	14.4
Total	125	100.0

Female co-founders made up 46.1 percent of nascent entrepreneurs aiming to co-found, with relatives accounting for 12.7 percent and fellow students accounting for 44.7 percent.

〈Table 38〉 Number of Females/Relatives/Fellow Students Among Nascent Co-founders

Classification	Female		Relatives		Fellow Students	
	N	%	N	%	N	%
0 person	76	53.9	123	87.2	78	55.3
1 person	41	29.1	13	9.2	28	19.9
2 person	14	9.9	4	2.8	24	17.0
3 person	1	0.7	1	0.7	4	2.8
4 persons of more	9	6.4	-	-	7	5.0
Total	141	100.0	141	100.0	141	100.0

To the question of the ownership structure of their company, over half of respondents (50.8%) said they would hold 50 to 100 percent of shares of their company, while 28.2 percent said they would own 50 percent and 21.1 percent said they would own 0 to 49 percent.

〈Table 39〉 Shareholding Status of Nascent Entrepreneurs

Classification	N	%
0-49% (minority owner)	56	21.1
50%	75	28.2
51-100% (majority owner)	135	50.8
Total	266	100.0

5.4. Entrepreneurial Orientation

Ten statements in 〈Table 40〉 were used to analyze nascent entrepreneurs' entrepreneurial orientation. For each sentence, we

applied the Likert scale where 1 denoted "strongly disagree" and 7 denoted "strongly agree."

We found that nascent entrepreneurs tended to take relatively high level of risk. Also high were their innovativeness and preemptive attitude.

〈Table 40〉 Entrepreneurial Orientation of Nascent Entrepreneurs

Classification	N	Mean	SD
I like to take bold action by venturing into the unknown.	267	5.09	1.509
I am willing to invest a lot of time and/or money on something that might yield a high return.	266	5.40	1.406
I tend to act "boldly" in situations where risk is involved.	265	4.75	1.508
I often like to try new and unusual activities that are not typical but not necessarily risky.	267	5.07	1.343
In general, I prefer a strong emphasis in projects on unique, one-of-a-kind approaches rather than revisiting tried and true approaches used before.	266	4.73	1.401
I prefer to try my own unique way when learning new things rather than doing it like everyone else does.	266	5.17	1.362
I favor experimentation and original approaches to problem solving rather than using methods others generally use for solving their problems.	266	5.11	1.278
I usually act in anticipation of future problems, needs or changes.	267	5.08	1.334
I tend to plan ahead on projects.	267	5.04	1.403
I prefer to "step-up" and get things going on projects rather than sit and wait for someone else to do it.	267	5.22	1.392

06

Entrepreneurs

We inquired about the businesses of 53 respondents who said they had already started their own.

6.1. General Information

〈Table 41〉 shows the gender distribution of entrepreneurs. The proportion of females (57.4%) is higher than that of males (45.3%).

〈Table 41〉 Gender Distribution of Entrepreneurs

Classification	N	%
Male	24	45.3
Female	29	54.7
Total	**53**	**100.0**

Business/management was the most common major program of entrepreneurs (26.4%), followed by economics, human medicine/health sciences, and social sciences (9.4%, respectively). Compared to the distribution of nascent entrepreneurs' major programs, there were no computer sciences/IT, law, and natural sciences.

〈Table 42〉 Main Field of Study of Entrepreneurs

Main field of study	N	%
Arts / Humanities (e.g., cultural studies, history, linguistics, philosophy, religion)	2	3.8
Business / Management	14	26.4
Computer sciences / IT	-	-
Economics	5	9.4
Engineering (incl. architecture)	3	5.7
Human medicine / health sciences	5	9.4
Law	-	-
Mathematics	1	1.9
Natural sciences	-	-
Science of art (e.g., art, design, dramatics, music)	3	5.7
Social sciences (e.g., psychology, politics, education)	5	9.4
Other	15	28.3
Total	**53**	**100.0**

22.9 percent of student entrepreneurs replied that they founded their firms in 2021. While 20.8 percent of respondents started their businesses in 2019, 18.8 percent started their enterprises in 2020, indicating a high proportion of businesses with a two- to three-year existence. On the other hand, 35.5 percent of businesses had been in operation for more than three years.

〈Table 43〉 Year of Founding Business

Classification	N	%
Before 2015	7	14.6
2016	2	4.2
2017	4	8.3
2018	5	10.4
2019	10	20.8
2020	9	18.8
2021	11	22.9
Total	48	100.0

The majority of the businesses had only one full-time employee (35.4%), followed by three (14.6%), two or zero (12.5%), and five (8.3%). 16.8 percent of businesses hired more than six employees.

〈Table 44〉 Number of Full-time Employees in Business

Classification	N	%
0 person	6	12.5
1 person	17	35.4
2 person	6	12.5
3 person	7	14.6
4 person	-	-
5 person	4	8.3
6 persons or more	8	16.7
Total	48	100.0

As for shareholding, 82 percent of respondents claimed they owned 51 to 100 percent of the company, while 14.0 percent owned less than

50 percent and 4.0 percent owned 50 percent.

〈Table 45〉 Shareholding Status of Entrepreneurs

Classification	N	%
0-49% (minority owner)	7	14.0
50%	2	4.0
51-100% (majority owner)	41	82.0
Total	50	100.0

72.9 percent of respondents reported that they wanted their present business to be their primary occupation, whereas 14.6 percent said they didn't. Students who said, "Do not know yet" made up 12.5 percent of the total.

〈Table 46〉 Present Business as Main Occupation After Graduation

Classification	N	%
No	7	14.6
Yes	35	72.9
Do not know yet	6	12.5
Total	48	100.0

* Do you want this business to become your main occupation after graduation?

14 percent of the total replied that they started a business due to the implications of the COVID-19 pandemic. 86 percent of respondents said that the COVID-19 pandemic had nothing to do with their business.

〈Table 47〉 Impact of COVID-19 on Starting a Business

Classification	N	%
No	43	86.0
Yes	7	14.0
Total	50	100.0

* Have you created your business largely because of the implications of the COVID-19 pandemic?

When asked about the previous startup experience, 46 percent of students answered affirmatively. Compared to the case of nascent entrepreneurs, where 88.4 percent gave a negative response, it is clear that prior entrepreneurial experience encourages students to try again to start a business.

〈Table 48〉 Previous Business Experience of Entrepreneurs

Classification	N	%
No	27	54.0
Yes	23	46.0
Total	50	100.0

* Have you created another business before?

Manufacturing (20%), trading (wholesale/retail; 16%), advertising/design marketing (12%), education and training (10%), and other business sectors were among the most popular with student entrepreneurs.

〈Table 49〉 Field of Business of Entrepreneurs

Classification	N	%
Advertising / Design / Marketing	6	12.0
Architecture and Engineering	1	2.0
Construction	-	-
Consulting (HR, law, management, tax)	3	6.0
Education and training	5	10.0
Financial services (incl. banking, insurance, investment, real estate)	1	2.0
Human health and social work activities	-	-
Information technology (IT) and communication (incl. software & IT services)	4	8.0
Manufacturing	10	20.0
Tourism and leisure	-	-
Trade (wholesale / retail)	8	16.0
Other services (e.g., transportation)	1	2.0
Other	11	22.0
Total	**50**	**100.0**

36 percent of student entrepreneurs indicated they have more than one co-owners, and 66.7 percent said they have more than one female co-owner. 27.9 percent of students said that they had relatives among their co-owners, and 38.9 percent said they co-founded a firm with their fellow students.

〈Table 50〉 Co-owner Status

Classification	N	%
0 person	32	64.0
1 person	8	16.0
2 persons	5	10.0
3 persons	3	6.0
4 persons or more	2	4.0
Total	50	100.0

* How many co-owners (next to yourself) does your business have?

〈Table 51〉 Number of Females/Relatives/Fellow Students Among Co-founders

Classification	Female		Relatives		Fellow students	
	N	%	N	%	N	%
0 person	6	33.3	13	72.2	11	61.1
1 person	7	38.9	3	16.7	5	27.8
2 person	4	22.2	1	5.6	2	11.1
3 person	-	-	-	-	-	-
4 persons or more	1	5.6	1	5.6	-	-
Total	18	100.0	18	100.0	18	100.0

6.2. Motivation Behind and Goal for Starting a Business

We looked into student entrepreneurs' motivation behind and goals for starting a business through 18 statements in 〈Table 52〉, 〈Table 53〉, and 〈Table 54〉. For each sentence, we applied the Likert scale where 1 denoted "strongly disagree" and 7 denoted "strongly agree."

When asked about their motivation behind starting a business, the

majority of respondents agreed "to make money and become rich(5.12 points)", followed by "to advance my career in the business world (5.06 points)" and, "to play a proactive role in changing how the world operates(4.61points)". The statement, "to solve a societal problem that private businesses usually fail to address (such as social injustice, environmental protection)" received 3.96 points.

〈Table 52〉 Motivation for Starting a Business

Classification	N	Mean	SD
to make money and become rich.	50	5.12	1.662
to advance my career in the business world.	49	5.06	1.842
to solve a specific problem for a group of people that I strongly identify with (e.g., friends, colleagues, club, community).	50	4.18	2.027
to play a proactive role in shaping the activities of a group of people that I strongly identify with (e.g., friends, colleagues, club, community).	49	4.55	1.894
to solve a societal problem that private businesses usually fail to address (such as social injustice, environmental protection).	49	3.96	2.179
to play a proactive role in changing how the world operates.	49	4.61	2.070

According to the findings, while almost all items listed in 〈Table 53〉 were important to student entrepreneurs, they put particular significance on sharing views, interests, and values with customers (6.12 points). This is followed by an analysis of the financial prospects of their businesses (5.61 points), which shows consistency with their reply in which they

founded a business to accumulate wealth.

〈Table 53〉 Business Operating Principle of Entrepreneurs

Classification	N	Mean	SD
to operate my firm on the basis of solid management practices.	50	5.10	1.644
to have thoroughly analyzed the financial prospects of my business.	49	5.61	1.336
to provide a product / service that is useful to a group of people that I strongly identify with (e.g., friends, colleagues, club, community).	50	5.16	1.376
to be able to express to my customers that I fundamentally share their views, interests and values.	50	6.12	1.118
to be a highly responsible citizen of our world.	50	5.26	1.575
to make the world a "better place" (e.g., by pursuing social justice, protecting the environment).	50	5.26	1.771

The next is entrepreneurs' perceived importance in business operations. They believed that the most important thing was to achieve high performance while still being cognizant of the company's social duty.

〈Table 54〉 Business Operating Goal of Entrepreneurs

Classification	N	Mean	SD
to have a strong focus on what my firm can achieve vis-à-vis the competition.	50	5.74	1.139
to establish a strong competitive advantage and significantly outperform other firms in my domain.	50	5.46	1.388
to have a strong focus on the group of people that I strongly identify with (e.g., friends, colleagues, club, community).	50	4.90	1.502
to support and advance the group of people that I strongly identify with (e.g., friends, colleagues, club, community).	50	4.86	1.807
to have a strong focus on what the firm is able to achieve for society-at-large.	50	5.64	1.241
to convince others that private firms are indeed able to address the type of societal challenges that my firm addresses (e.g., social justice, environmental protection).	50	4.96	1.551

6.3. Individual Characteristics of Entrepreneurs

〈Table 55〉 illustrates entrepreneurs' life experiences. We used a Likert scale where 1 denoted "strongly disagree" and 7 denoted "strongly agree." Most entrepreneurs said that they led a busy life. We discovered that they felt a sense of responsibility for their work and guilt during their free time, implying that they feel high level of pressure from work.

〈Table 55〉 Life Experiences of Entrepreneurs

Classification	N	Mean	SD
I seem to be in a hurry and racing against the clock.	49	5.16	1.688
I find myself continuing work after my co-workers have called it quits.	49	4.51	2.103
I stay busy and keep my irons in the fire.	49	5.51	1.474
I spend more time working than socializing with friends, on hobbies, or on leisure activities.	50	5.06	1.812
I find myself doing two or three things at one time such as eating lunch and writing a memo, while talking on the phone.	50	4.80	1.979
It's important for me to work hard even when I don't enjoy what I'm doing.	50	4.62	1.947
I often feel that there's something inside me that drives me to work hard.	50	6.12	0.982
I feel obliged to work hard, even when it's not enjoyable.	50	4.88	1.757
I feel guilty when I take time off work.	50	4.62	1.783
It is hard for me to relax when I'm not working.	50	4.36	1.871

〈Table 56〉 represents questions about behaviors as entrepreneurs. The questions were assessed with a Likert scale where 1 denoted "strongly disagree" and 7 denoted "strongly agree." The majority of respondents gave lower scores for narcissism, strategic propensity, and empathy, all of which are some attributes of a leader who controls an organization. In particular, they chose "somewhat disagree" for qualities like inability to feel compunction and indifference to morality.

Items like pursuing an entrepreneur's reputation, social status, and

gaining respect, on the other hand, received higher than average scores.

〈Table 56〉 Behaviors as Entrepreneurs

Classification	N	Mean	SD
I tend to manipulate others to get my way.	50	4.20	1.818
I have used deceit or lied to get my way.	50	3.00	1.938
I have used flattery to get my way.	50	3.00	1.895
I tend to exploit others towards my own end.	50	3.28	2.041
I tend to lack remorse.	51	2.78	2.072
I tend to be unconcerned with the morality of my actions.	49	2.73	1.901
I tend to be callous or insensitive.	50	3.24	1.954
I tend to be cynical.	50	3.48	1.887
I tend to want others to admire me.	50	4.82	1.535
I tend to want others to pay attention to me.	50	4.70	1.644
I tend to seek prestige or status.	50	5.18	1.424
I tend to expect special favors from others.	50	4.62	1.602

6.4. Business Performance

Next, we asked about the performance of the business they operated. We assessed the questions with a Likert scale where 1 denoted "very poor" and 7 denoted "excellent." The majority of entrepreneurs rated their business performance as neither favorable nor negative, however, they did give a low rating to the element of job creation.

〈Table 57〉 Business Performance

Classification	N	Mean	SD
Sales growth	50	4.30	1.607
Market share growth	50	4.10	1.555
Profit growth	50	4.28	1.485
Job creation	50	3.44	1.929
Innovativeness	50	4.54	1.764

6.5. Support from Family

To find out how much support they received for their business from their family members, we used a Likert scale with 1 denoting “strongly disagree” and 7 denoting “strongly agree.” Most entrepreneurs were found to rate their family’s interest and support as somewhat positive. In particular, the statement on their family’s understanding in times of struggle due to business was rated 5.02 points, demonstrating that the view on business failure is not quite negative.

〈Table 58〉 Support from Family of Entrepreneurs

Classification	N	Mean	SD
When I have a problem at work, members of my family express concern.	50	4.80	1.969
When I am frustrated by my business, someone in my family tries to understand.	50	5.02	1.767
Members of my family are interested in my business.	50	4.56	1.971
When I talk with them about my business, family members do not really listen.	50	3.40	2.03
Family members often contribute to my business without expecting to be paid.	50	4.66	2.096
I can count on my family members to fill in for me and/or my employees if needed.	49	4.10	2.266
My family gives me useful feedback about my ideas concerning my business.	50	4.46	2.052
Family members often go above and beyond what is normally expected in order to help my business succeed.	50	4.34	2.026
Members of my family often help me with my business.	50	4.12	2.135

07
Family Business

7.1. Potential Business Successor

For the questions on a potential business successor, 319 students whose parents were business owners or major shareholders and who had not yet established a business were selected.

The distribution of the business age of parents' company is as shown in 〈Table 59〉.

〈Table 59〉 Business Age of Parents' Company

Classification	N	%
Less than 10 years (2012 - 2021)	56	31.6
Over 11 years - less than 20 years (2002 - 2011)	56	31.6
Over 21 years (before 2001)	65	36.7
Total	**177**	**100.0**

When it comes to the size of a parent's business, 1 to 9 employees accounted for 69.9 percent of the total, which is the highest. 15.9 percent of the companies hired 10 to 49 employees, and 8 percent hired none. It was found that the companies hired about 32 permanent employees on average.

〈Table 60〉 Size of Parents' Company

Classification	N	%
0 person	14	8.0
1~9 persons	123	69.9
10~49 persons	28	15.9
50~99 persons	3	1.7
100 persons or more	8	4.5
Total	176	100.0

75.7 percent of students said that their father or mother led the business operation.

〈Table 61〉 Parents' Status of Leading Business Operation

Classification	N	%
No	73	24.3
Yes	227	75.7
Total	300	100.0

62.5 percent of respondents replied that their family owns 51 to 100 percent of shares of the company, while 5 percent of students said they possess stock in their family's company.

〈Table 62〉 Shareholding Status of Family Business

Classification	N	%
0-49% (minority owner)	70	26.0
50%	31	11.5
51-100% (majority owner)	168	62.5
Total	269	100.0

* What is the ownership share that is in the hands of your family?

〈Table 63〉 Ownership Stake in Family Business

Classification	N	%
No	286	95.0
Yes	15	5.0
Total	301	100.0

* Do you have a personal ownership stake in the business?

18.5 percent of students regarded their parents' company as their family business, while 27.5 percent answered that they had worked at their parents' firm.

〈Table 64〉 Perception as Family Business

Classification	N	%
No	243	81.5
Yes	55	18.5
Total	298	100.0

* Do you regard this business as a "family business"?

〈Table 65〉 Experience of Working for Family Business

Classification	N	%
No	222	72.5
Yes	84	27.5
Total	306	100.0

* Have you been working for your parents' business?

〈Table 66〉 Number of Siblings

Classification	N	%
0 person	27	8.7
1 person	191	61.6
2 persons or more	92	29.7
Total	310	100.0

The distribution of business sectors of parents' company is as shown in 〈Table 67〉.

〈Table 67〉 Field of Parents' Business

Classification	N	%
Advertising / Design / Marketing	15	5.1
Architecture and Engineering	18	6.2
Construction	30	10.3
Consulting (HR, law, management, tax)	3	1.0
Education and training	21	7.2
Financial services (incl. banking, insurance, investment, real estate)	9	3.1
Human health and social work activities	8	2.7
Information technology (IT) and communication (incl. software & IT services)	12	4.1
Manufacturing	43	14.7
Tourism and leisure	5	1.7
Trade (wholesale / retail)	29	9.9
Other services (e.g., transportation)	31	10.6
Other	68	23.3
Total	292	100.0

Through statements in 〈Table 68〉, we probed into students' perspectives on taking over their parents' business. We discovered that most students did not intend to succeed in their parents' business when we graded them on a scale of 1 to 7, with 1 denoting "strongly disagree" and 7 denoting "strongly agree."

〈Table 68〉 Perspectives on Succeeding Parents' Business

Classification	N	Mean	SD
I am ready to do anything to take over my parents' business.	305	2.70	1.696
My professional goal is to become a successor in my parents' business.	305	2.31	1.574
I will make every effort to become a successor in my parents' business.	305	2.39	1.665
I am determined to become a successor in my parents' business in the future.	305	2.22	1.575
I have very seriously thought of taking over my parents' business.	304	2.29	1.669
I have the strong intention to become a successor in my parents' business one day.	304	2.45	1.696

When asked to evaluate their parents' business, they gave relatively high marks for sales growth, market share increase, and profit growth, but somewhat low scores for job creation and innovativeness.

〈Table 69〉 Performance of Parents' Business

Classification	N	Mean	SD
Sales growth	289	4.25	1.430
Market share growth	285	4.01	1.399
Profit growth	285	4.12	1.445
Job creation	285	3.65	1.591
Innovativeness	283	3.71	1.481

* How do you rate the performance of your company compared to your competitors since its establishment in the following dimensions (1=much worse, 7=much better)?

7.2. (In case of Entrepreneurs) Relationship with a Family Business

On the other side, we looked into the relationship between students' businesses and their parents by questioning 16 students who said that they had launched a business and had one of their parents own a business or be the dominant shareholder.

26.7 percent of students replied they started a business in the same market/industry as their parents, while 33.3 percent reported their parents held an ownership stake in their business. Furthermore, 26.7 percent said the two companies had business dealings.

〈Table 70〉 Starting a Business in Same Industry as Parents'

Classification	N	%
No	11	73.3
Yes	4	26.7
Total	**15**	100.0

* Are the two businesses active in the same market/industry?

〈Table 71〉 Shareholding Status of Parents in Students' Business

Classification	N	%
No	10	66.7
Yes	5	33.3
Total	15	100.0

* Do your parents hold an ownership stake in your own business?

〈Table 72〉 Business Transactions with Parents' Business

Classification	N	%
No	11	73.3
Yes	4	26.7
Total	15	100.0

* Are there relevant business transactions between the two businesses?

08

Summary and Conclusion

2021 Global University Entrepreneurial Spirit Students' Survey was conducted among over 267,000 students from 58 countries in the world. In Korea, 1,220 students from over 27 universities took part in the survey. While the gender proportion stayed nearly unchanged from the 2018 survey results, students' ages rose somewhat and the proportion of undergraduates declined marginally.

Comparing students' intended career paths between right after graduation and after five years, we found that students' employment in SMEs dropped from 4.8 percent to 2.5 percent and in established firms from 15.6 percent to 10.8 percent, whereas employment in large enterprises increased from 22.2 percent to 24.9 percent, and public organizations from 21.0 percent to 23.8 percent, signifying students' tendency to seek job stability. On the contrary, the percentage of students who aspired to start a business rose from 7.2 percent to 11.7 percent, demonstrating that students' attitudes toward a career path altered over time in terms of security and challenge.

According to the findings, 25.4 percent of students reported that they were thinking about or preparing for starting a business, while 4.3 percent actually established a firm. Compared to the average of all participating countries, we found that Korean students tended to have a higher risk avoidance when deciding on a career path. In comparison to the fact that South Korea recorded the lowest level of fear of failure

in the 2020 Global Entrepreneurship Monitor (GEM), this implies that university students are more afraid of failure and that the government or university may take some initiatives to alleviate it. Also, another way to interpret the findings is that students may view their attempt to create a business as some useful prior experience rather than a professional plan. In this regard, universities must expand the doors of opportunity for such experiences in order to encourage students to seriously consider starting a business as a feasible career option. Korean students demonstrated a stronger risk-aversion than students from other nations when it came to choosing a profession.

The findings revealed that the university's entrepreneurship-related environment has improved. While universities' environment for entrepreneurs or promotion for business startup activities has slightly diminished, the impact of entrepreneurship courses/programs offered has improved since 2018. It also confirmed that students' willingness to start a business has grown. When compared to the global total, however, Korean universities fell short in every category, including encouraging students to generate new business ideas (3.85:4.30), providing a conducive atmosphere for entrepreneurs (3.82:4.29), and encouraging entrepreneurial activity (4.23:4.48). And the findings show that although encouraging entrepreneurial activity, they fail to give students with adequate stimulation and surroundings, highlighting the need to change attitudes about starting a firm and improve the environment.

In terms of input regarding students' enrollment in entrepreneurial courses and involvement in relevant programs, Korea outperforms all

other countries. However, the output is insufficient and requires improvement in that the impact of these programs, such as understanding of entrepreneurs, activities involving the establishment of a firm, as well as capability of practical management and network development, is relatively low, and the universities' reputation on entrepreneurship has little bearing on students' choice of university.

Furthermore, all items on entrepreneurial intention are lower than those of other countries, with a large average difference, and entrepreneurial attitude and attitude on establishing a firm, as well as entrepreneurial self-efficacy, are all lower than other countries. While these items have increased compared to those of 2018, they are still lower than those of all the other countries and countermeasures are required.

42.5 percent of nascent entrepreneurs replied that they would finish establishing their business within two years after graduation. The intended completion time for a business establishment was while in school (15.3%), right after graduation (6.3%), and within two years after graduation (20.9%), implying that different entrepreneurial support is required for different time schedules for business establishment, as well as for considering startup support for graduates. It may also be required to provide support programs to strengthen the link between activities outside of universities and industries, given that 56.7 percent indicated the source of business ideas was irrelevant to universities. According to the findings, the COVID-19 pandemic inspired 27.3 percent of nascent entrepreneurs to follow their plans to start a business. The

activities of nascent entrepreneurs for starting a business primarily revolve around the initial phase activities of a startup, such as identifying potential customers and discussing ideas, collecting market information, writing a business plan, and developing a product/service, with activities such as fund attraction, patent application, and others still being neglected. nascent entrepreneurs tend to have relatively high risk taking along with innovativeness and preemptive attitude. However, we must keep in mind that in the potential entrepreneurs' entrepreneurial orientation category, respondents expressed that they preferred to behave "boldly" in situations involving risk and favor experimentation and creative ideas to start a business obtained lower scores.

About 65 percent of student entrepreneurs have been in business for two to three years. According to the findings, approximately half of student entrepreneurs have previous startup experience, and when compared to 88.4 percent of nascent entrepreneurs who stated that they had no prior experience starting a business, we can see that student entrepreneurs can be serial entrepreneurs and that such experience is essential. As for the motivation behind starting a business, monetary motivation comes first, followed by the desire to gain business experience and the desire to play a pivotal role in making a difference in the world. Given that it is significant for entrepreneurship to arise from problems relating to one's immediate environment or social issues, and that this factor received the lowest scores among Korean student entrepreneurs, it is possible that their perspective on starting a business

is primarily focused on monetary and economic gains. As a result, it may be required to restructure educational programs and build a culture in order to change their viewpoints.

As for students' life experience as entrepreneurs, they are swamped with works and work hard yet they are able to separate work and life to some level. Furthermore, as they place a high value on their reputation and position as entrepreneurs while scoring lower on sacrificing moral or humanitarian aspects to achieve their aims, it seems that they do not wish to be exploitative entrepreneurs who use all means necessary to achieve their goals. In terms of business objectives, they seek to achieve exceptional business performance while demonstrating a strong interest in the social responsibility of their organization.

When it came to family support, the majority of the entrepreneurs gave good responses. Low marks were given for stake ownership of their family's firm, perspective on the family business, and business transactions between their own and their parents' businesses. The majority of students did not want to take over their parents' business, according to the survey.

Compared to the 2018 survey, it showed that a significant improvement was achieved in the area of students' enrollment in entrepreneurship courses or programs. The percentage of students who said that they had taken an entrepreneurship course as a core subject climbed from 13.1 percent to 21.5 percent, while assessment of the influence of participation programs improved marginally from 2018. What's more encouraging is that even students who aren't presently

involved in any activities related to launching a business expressed a higher propensity to do so than in the past. We also discovered that items such as entrepreneurial intention, attitude, self-efficacy, and locus of control have risen even marginally than in the past. It's an encouraging outcome since it indicates that entrepreneurship isn't just for business, but can also be practiced in everyday life.

According to the findings of Global Entrepreneurship Monitor, South Korea's entrepreneurial education at post-school stage evaluated by experts has made a significant improvement from 4.19 points in 2019 to 4.6 points in 2020. Taking this information into account, we may conclude that universities' efforts to foster entrepreneurship and encourage students to start businesses are having some success.

Nonetheless, the proportion of students planning to start their own business after five years has decreased slightly from 15.38 percent to 11.7 percent in 2021, which is thought to be due to a rise in proportion of master's or doctoral students among 2021 respondents (2.9% in 2018 vs. 4.3% in 2021).

It is reported that South Korea's ranking in the Global Entrepreneurship Monitor or Global Startup Ecosystem Report continues to rise. It is because there are ongoing efforts made by the public and private sectors, while an increasing emphasis is being placed on entrepreneurship and starting a business to meet the demands of the times. Universities play an important role in spreading entrepreneurship such as innovative competence and talent cultivation, and the government agencies in charge of innovation such as the Ministry of Education, Ministry of

Science and ICT, and Ministry of SMEs and Startups, all offer a range of support programs. Because universities play such an important role in cultivating excellent entrepreneurial talents and entrepreneurs, they should not rest on their laurels by offering some programs for students; instead, they should strive to foster an appropriate culture in which potential entrepreneurs have the proper views and interest in starting a business and achieving relevant outcomes, thereby assuming the role of an entrepreneurial university.

• PART 02 •

2021 GUESSS South Korea in-depth analysis

| 2021 Global University Entrepreneurial Spirit Students' Survey |

01
Introduction

1.1. Research Background

GUESSS(Global University Entrepreneurial Spirit Students' Survey) is an international research project that investigates college students' startup intentions and activities. In the 2021 survey study, meaningful analysis results are presented by conducting in-depth analysis studies along with existing basic studies.

1.2. Research methodology for in-depth analysis

Previously, the analysis results were mainly conducted based on frequency. In this study, the following in-depth analysis methodology is applied to understand the correlation between major variable factors.

- Exploratory Factor Analysis is performed on individual variables to analyze whether the factors extracted from the collected data sufficiently explain each questionnaire variable.
- Factor variables that can represent major questionnaire variables are derived based on the factor load matrix to reduce the number of major variables.
- The summed scale is derived by quantifying the representative factor variables on average to have a single value.

- Based on the summed scale of the factor variables, an in-depth analysis is performed by performing cross-tabulation analysis of the statistical characteristics such as demographic characteristics, career choice intentions, and nascent entrepreneurs characteristics.

1.3. Selection of variables and factors for in-depth analysis

In this study, in-depth analysis is possible based on questionnaire variables capable of exploratory factor analysis. Representative factor analysis is performed based on the following variables, except for no response values(null) and non-scale values. In addition, "Parent Business" and "Relationships with Parent Business" were excluded.

〈Table 1〉 Survey code and factor analysis by classification

Classification	Survey Code	Factor Analysis
1. Studies	Q1.1~Q1.3	X
2. Career Choice Intentions	Q.2.1~Q2.4	X
3. University	Q3.1~Q.3.2	O
	Q3.3	X
	Q3.4~Q3.5	O
4. Entrepreneurship	Q4.1~Q4.3	O
5. Family Environment	Q5.1~Q5.3	X
6. Personal Information	Q6.1~Q6.5	X
7. Own Business (Active Entrepreneur)	Q7.1~Q7.8	X
	Q7.9~Q7.15	O
8. Planned Own Business (Nascent Entrepreneur)	Q8.1~Q8.12	X
	Q8.13	O

The results of the GUESSS showed differences in questionnaire response according to the characteristics of respondents (whether they intend to start a business/Q2.2~Q2.3), and the analysis was conducted in consideration of these differences.

〈Table 2〉 Response results according to whether or not to start a business

Classification	No intention of starting a business	Nascent Entrepreneur	Active Entrepreneur
1. Studies	O	O	O
2. Career Choice Intentions	O	O	O
3. University	O	O	O
4. Entrepreneurship	O	X	X
5. Family Environment	O	O	O
6. Personal Information	O	O	O
7. Own Business (Active Entrepreneurs)	X	X	O
8. Planned Own Business (Nascent Entrepreneurs)	X	O	X

Factor candidates were specified by referring to related previous studies in the existing GUESSS for major questionnaire variables subject to factor analysis. In the "University" questionnaire, a total of 5 items were surveyed, and 4 were targeted except for multiple response questions. Q3.1 and Q3.2 are composed of questions about the university environment and program learning. Factor analysis is performed on a total of 8 questionnaire variables to derive communality to analyze how well each variable is explained, and representative factors are derived by reducing the number of variables. Next, Q3.4 and Q3.5 consist of

questions about sustainable support from universities, and exploratory factor analysis is performed on a total of 6 variables. Q3.3 was excluded from the analysis as an item with multiple responses.

〈Table 3〉 Survey variables & factor candidates for 'University'

Classification	Survey Code	Survey Questionnaire	Variables	Factor candidates from previous studies
3. University	Q3.1	statements about the university environment	3	University Environment[1)]
	Q3.2	statements about your studies	5	Program Learning[2)]
	Q3.4	statements about irrespective of gender, age, ethnicity, religion, disability, or socio-economic status	3	Sustainable Development Goals[3)]
	Q3.5	statements for what to enhances, facilitates, and supports	3	

In the question of 'Entrepreneurship', an analysis was performed based on a total of 21 variables for 4 questionnaire factors. It is shown in 〈Table 4〉. In the 'active entrepreneurs' question, an analysis was conducted based on a total of 54 variables for 11 questionnaire factors, excluding two questionnaire factors, not nominal scales. It is presented in 〈Table 5〉.

1) Franke & Lüthje, 2004; Geissler, 2013
2) Souitaris et al., 2007
3) UN Sustainable Development Goals

〈Table 4〉 Survey variables & factor candidates for 'Entrepreneurship'

Classification	Survey Code	Survey Questionnaire	Variables	Factor candidates from previous studies
4. Entrepreneurship	Q4.1a	Entrepreneur refers to someone who runs his or her own business (a)	6	General Thoughts[4] (Intentions)
	Q4.1b	Entrepreneur refers to someone who runs his or her own business (b)	5	General Thoughts (Attitude)
	Q4.2	Your level of competence in performing the following tasks (a)	7	Skills[5] (Entrepreneurial self-efficacy)
	Q4.3	Your level of competence in performing the following tasks (b)	3	Skills[6] (Locus of Control)

〈Table 5〉 Survey variables & factor candidates for 'Active Entrepreneurs'

Classification	Survey Code	Survey Questionnaire	Variables	Factor candidates from previous studies
7. Own Business (Active Entrepreneurs)	Q7.9a	Your motivations and goals (I created my firm in order..)	6	Founder Identity[7] (Motivations)

4) Linan & Chen, 2009
5) Chen et al., 1998, Zhao et al., 2005
6) Levenson, 1973
7) Sieger et al., 2016
8) Schaufeli et al., 2009
9) Jonason & Webster, 2010
10) Eddleston et al., 2008; Dess & Robertson, 1984
11) Eddleston & Powell, 2012

Classification	Survey Code	Survey Questionnaire	Variables	Factor candidates from previous studies
	Q7.9b	Your motivations and goals (As a firm founder, it is very important to me..)	6	Founder Identity (Goals)
	Q7.9c	Your motivations and goals (When managing my firm, it is very important to me..)	6	Founder Identity (Managing Firm)
	Q7.10a	Your experiences as an entrepreneur (a)	5	Experiences[8] (Work Excessively)
	Q7.10b	Your experiences as an entrepreneur (b)	5	Experiences (Work Compulsively)
	Q7.11a	Your behavior as an entrepreneur (a)	4	Behavior[9] (Macchiavellism)
	Q7.11b	Your behavior as an entrepreneur (b)	4	Behavior (Psychopathy)
	Q7.11c	Your behavior as an entrepreneur (c)	4	Behavior (Narcussism)
	Q7.12	How do you rate the performance of your company compared to your competitors	5	Firm Performance[10]
	Q7.13a	Family-to-Business Support (a)	4	Family Support[11] (Emotional)
	Q7.13b	Family-to-Business Support (b)	5	Family Support (Instrumental)

'Nascent Entrepreneurs' conducted an analysis based on a total of 10 variables for 3 questionnaire factor.

〈Table 6〉 Survey variables & factor candidates for 'Nascent Entrepreneurs'

Classification	Survey Code	Survey Questionnaire	Variables	Factor candidates from previous studies
8. Planned Own Business (Nascent Entrepreners)[12]	Q8.13a	Your founding approach (a)	3	Risk-Taking
	Q8.13b	Your founding approach (b)	4	Innovativeness
	Q8.13c	Your founding approach (c)	3	Proactiveness

Finally, single/multiple response variables, not scale items, are used as indicators for cross-tabulation analysis along with factor analysis results.

12) Bolton & Lane, 2012

02

Exploratory Factor Analysis

2.1. Results of factor analysis for 'University'

As a result of performing the KMO and Bartlett's test on 14 variables of four survey factors, the sampling adequacy was greater than 0.5 and the significance probability was lower than 0.05 (95% confidence level). It was confirmed that factor analysis of these variables could be conducted.

〈Table 7〉 KMO and Bartlett's Test for 'University'

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.919
Bartlett's Test of Sphericity	Approx. Chi-Square	13645.963
	Degree of Freedom	91
	Significance Probability	.000

Next, it was examined whether the factors extracted through communality analysis can sufficiently explain each variable. Usually, the criterion for the absolute value of the maximum factor load varies from 0.3 to 0.5, but in this study, it was determined based on variables of 0.4 or more. Since 14 variables are greater than the reference point of 0.4, all variables can be considered meaningful.

〈Table 8〉 Communality Results for 'University'

	Initial	Extraction		Initial	Extraction
Q3.1_1	1.000	.563	Q3.2_5	1.000	.668
Q3.1_2	1.000	.655	Q3.4_1	1.000	.736
Q3.1_3	1.000	.507	Q3.4_2	1.000	.791
Q3.2_1	1.000	.773	Q3.4_3	1.000	.810
Q3.2_2	1.000	.818	Q3.5_1	1.000	.706
Q3.2_3	1.000	.780	Q3.5_2	1.000	.670
Q3.2_4	1.000	.690	Q3.5_3	1.000	.628

The purpose of factor analysis is to reduce the number of variables, and as a result of analyzing the covariance and eigenvalues of variables, it was confirmed that 69.9% of the total data can be explained with a total of two representative factors.

〈Table 9〉 Total Variance Explained for 'University'

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.847	56.050	56.050	7.847	56.050	56.050	5.588	39.917	39.917
2	1.948	13.912	69.962	1.948	13.912	69.962	4.206	30.045	69.962
3	.800	5.717	75.679						
4	.700	4.998	80.678						
5	.499	3.565	84.243						
6	.461	3.289	87.532						
7	.329	2.352	89.884						
8	.277	1.980	91.864						
9	.244	1.742	93.605						
10	.238	1.698	95.303						

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
11	.206	1.469	96.772						
12	.195	1.393	98.165						
13	.145	1.034	99.199						
14	.112	.801	100.000						

Principal component analysis (PCA) was used as a factor extraction method, and Varimax with Kaiser normalization, the most popular criterion, was used as a factor rotation method. As a result of two iterations, factor rotation converged.

Through the component matrix, grouping of variables was performed with two factors. As a result, the variables of Q3.1~Q3.2 defined in the existing literature study were grouped into the first factor, and the variables of Q3.4~Q3.5 were grouped into the second factor, respectively, and can be named 'University Environment and Program Learning' and 'Sustainable Development Goals of University'.

〈Table 10〉 Rotated Component Matrix for 'University'

	Component 1	Component 2
Q3.2_2	.877	.219
Q3.2_3	.863	.190
Q3.2_1	.852	.217
Q3.2_4	.793	.248
Q3.2_5	.764	.290
Q3.1_2	.755	.290
Q3.1_1	.718	.217
Q3.1_3	.640	.311
Q3.4_3	.196	.878
Q3.4_2	.150	.877
Q3.4_1	.171	.841
Q3.5_2	.370	.731
Q3.5_1	.457	.705
Q3.5_3	.452	.651

〈Table 11〉 Define the New Factor Variables for 'University'

Classification	New Factor Variables	Questionnaire Variables
3. University	University Environment and Program Learning	Q3.1_1 / Q3.1_2 / Q3.1_3 Q3.2_1 / Q3.2_2 / Q3.2_3 Q3.2_4 / Q3.2_5
	Sustainable Development Goals of University	Q3.4_1 / Q3.4_2 / Q3.4_3 Q3.5_1 / Q3.5_2 / Q3.5_3

The significance and communality of variables were confirmed through factor analysis, and several individual variables can be converted into a single numerical value using the summated scale method of the variables of the two factors. In the 'university', Q3.1_1~Q3.2_58

variables were averaged to derive a new factor, the 'University Environment and Program Learning' scale, and Q3.4_1~Q3.5_36 variables were averaged to derive a 'Sustainable Development Goals of University' factor scale.

2.2. Results of factor analysis for 'Entrepreneurship'

As a result of performing the KMO and Bartlett's test on 21 variables of four survey factors, the sampling adequacy was greater than 0.5 and the significance probability was lower than 0.05 (95% confidence level). It was confirmed that factor analysis of these variables could be conducted.

〈Table 12〉 KMO and Bartlett's Test for 'Entrepreneurship'

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.934
Bartlett's Test of Sphericity	Approx. Chi-Square	13947.643
	Degree of Freedom	210
	Significance Probability	.000

Since 21 variables are greater than the reference point of 0.4, all variables can be considered meaningful.

〈Table 13〉 Communality Results for 'Entrepreneurship'

	Initial	Extraction
Q4.1a_1	1	0.631
Q4.1a_2	1	0.852
Q4.1a_3	1	0.721
Q4.1a_4	1	0.89
Q4.1a_5	1	0.88
Q4.1a_6	1	0.863
Q4.1b_1	1	0.583
Q4.1b_2	1	0.724
Q4.1b_3	1	0.636
Q4.1b_4	1	0.697
Q4.1b_5	1	0.672

	Initial	Extraction
Q4.2_1	1	0.696
Q4.2_2	1	0.722
Q4.2_3	1	0.739
Q4.2_4	1	0.582
Q4.2_5	1	0.71
Q4.2_6	1	0.712
Q4.2_7	1	0.712
Q4.3_1	1	0.653
Q4.3_2	1	0.684
Q4.3_3	1	0.723

The purpose of factor analysis is to reduce the number of variables, and as a result of analyzing the covariance and eigenvalues of variables, it was confirmed that 71.8% of the total data can be explained with a total of four representative factors.

〈Table 14〉 Total Variance Explained for 'Entrepreneurship'

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.407	44.797	44.797	9.407	44.797	44.797	5.373	25.587	25.587
2	2.888	13.753	58.550	2.888	13.753	58.550	4.785	22.784	48.372
3	1.692	8.055	66.605	1.692	8.055	66.605	2.812	13.392	61.763
4	1.097	5.226	71.831	1.097	5.226	71.831	2.114	10.067	71.831
5	.682	3.248	75.078						
6	.605	2.883	77.961						

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
7	.541	2.577	80.538						
8	.499	2.376	82.914						
9	.474	2.255	85.168						
10	.426	2.031	87.199						
11	.392	1.868	89.067						
12	.360	1.712	90.780						
13	.348	1.657	92.437						
14	.299	1.422	93.859						
15	.278	1.326	95.185						
16	.244	1.162	96.347						
17	.219	1.044	97.390						
18	.192	.913	98.303						
19	.179	.853	99.156						
20	.101	.482	99.638						
21	.076	.362	100.000						

Principal component analysis (PCA) was used as a factor extraction method, and Varimax with Kaiser normalization, the most popular criterion, was used as a factor rotation method. As a result of 6 iterations, factor rotation converged.

Through the component matrix, grouping of variables was performed with four factors. As a result, except that only the 'Q4.1b_5' was changed, it could be defined in the same as the four factor candidates defined in the existing literature study.

〈Table 15〉 Rotated Component Matrix for 'Entrepreneurship'

	Component 1	Component 2	Component 3	Component 4
Q4.1a_4	.909	.194	.160	.029
Q4.1a_5	.899	.202	.170	.044
Q4.1a_6	.895	.191	.157	.031
Q4.1a_2	.887	.180	.178	.025
Q4.1a_3	.758	.218	.295	.113
Q4.1a_1	.675	.292	.294	.060
Q4.1b_5	.609	.230	.494	-.068
Q4.2_3	.181	.812	.167	.138
Q4.2_5	.131	.807	.125	.158
Q4.2_6	.236	.785	.110	.164
Q4.2_7	.266	.785	.105	.117
Q4.2_2	.316	.764	.157	.118
Q4.2_1	.341	.726	.195	.123
Q4.2_4	.006	.711	.171	.218
Q4.1b_2	.098	.147	.800	.232
Q4.1b_4	.285	.204	.743	.146
Q4.1b_3	.368	.134	.685	.114
Q4.1b_1	.348	.235	.634	.069
Q4.3_3	.000	.207	.091	.820
Q4.3_1	.031	.135	.216	.767
Q4.3_2	.090	.306	.088	.758

〈Table 16〉 Define the New Factor Variables for 'Entrepreneurship'

Classification	New Factor Variables	Questionnaire Variables
4. Entrepreneurship	General Thoughts (Intentions)	Q4.1a_1 / Q4.1a_2 / Q4.1a_3 / Q4.1a_4 / Q4.1a_5 / Q4.1a_6 / Q4.1b_5
	Skills (Entrepreneurial self-efficacy)	Q4.2_1 / Q4.2_2 / Q4.2_3 / Q4.2_4 / Q4.2_5 / Q4.2_6 / Q4.2_7
	General Thoughts (Attitude)	Q4.1b_1 / Q4.1b_2 / Q4.1b_3 / Q4.1b_4
	Skills (Locus of Control)	Q4.3_1 / Q4.3_2 / Q4.3_3

The significance and communality were confirmed through factor analysis, and several individual variables can be converted into a single numerical value using the summated scale method of the variables of the four factors. This indicator is used for cross-tabulation analysis in the next chapter.

2.3. Results of factor analysis for 'Active Entrepreneurs'

Of the total 1,154 responses, 41 samples (excluding missing values) answered that Q2.3 (whether or not a founder) was operating the business. Factor analysis must be at least 50 or 100 levels to enable normal analysis. Therefore, the 'Active Entrepreneurs' questionnaire was excluded from the analysis.

2.4 Results of factor analysis for 'Nascent Entrepreneurs'

As a result of performing the KMO and Bartlett's test on 10 variables of three survey factors, the sampling adequacy was greater than 0.5 and the significance probability was lower than 0.05 (95% confidence level). It was confirmed that factor analysis of these variables could be conducted.

〈Table 17〉 KMO and Bartlett's Test for 'Nascent Entrepreneurs'

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.869
Bartlett's Test of Sphericity	Approx. Chi-Square	1664.088
	Degree of Freedom	45
	Significance Probability	0

Since 10 variables are greater than the reference point of 0.4, all variables can be considered meaningful.

〈Table 18〉 Communality Results for 'Nascent Entrepreneurs'

	Initial	Extraction
Q8.13a_1	1.000	.638
Q8.13a_2	1.000	.436
Q8.13a_3	1.000	.510
Q8.13b_1	1.000	.718
Q8.13b_2	1.000	.697
Q8.13b_3	1.000	.715
Q8.13b_4	1.000	.781
Q8.13c_1	1.000	.746
Q8.13c_2	1.000	.826
Q8.13c_3	1.000	.732

The purpose of factor analysis is to reduce the number of variables, and as a result of analyzing the covariance and eigenvalues of variables, it was confirmed that 68% of the total data can be explained with a total of two representative factors.

〈Table 19〉 Total Variance Explained for 'Nascent Entrepreneurs'

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.364	53.637	53.637	5.364	53.637	53.637	4.359	43.595	43.595
2	1.436	14.361	67.998	1.436	14.361	67.998	2.440	24.403	67.998
3	.999	9.985	77.983						
4	.496	4.965	82.948						
5	.418	4.185	87.133						
6	.362	3.618	90.750						
7	.298	2.984	93.734						
8	.268	2.683	96.417						
9	.203	2.029	98.447						
10	.155	1.553	100.000						

Principal component analysis (PCA) was used as a factor extraction method, and Varimax with Kaiser normalization, the most popular criterion, was used as a factor rotation method. As a result of 3 iterations, factor rotation converged. Through the component matrix, grouping of variables was performed with 2 factors. As a result, risk-taking and innovativeness classified in previous studies were combined into one, and Proactiveness was derived as a second factor.

〈Table 20〉 Rotated Component Matrix for 'Nascent Entrepreneurs'

	Component 1	Component 2
Q8.13b_4	.857	.218
Q8.13b_3	.833	.145
Q8.13b_1	.824	.200
Q8.13b_2	.822	.149
Q8.13a_1	.755	.259
Q8.13a_3	.671	.243
Q8.13a_2	.586	.304
Q8.13c_2	.080	.906
Q8.13c_3	.288	.806
Q8.13c_1	.352	.789

〈Table 21〉 Define the New Factor Variables for 'Nascent Entrepreneurs'

Classification	New Factor Variables	Questionnaire Variables
8. Nascent Entrepreneurs	Entrepreneurial Orientation (Innovativeness &Risk Taking)	Q8.13a_1 / Q8.13a_2 / Q8.13a_3 / Q8.13b_1 / Q8.13b_2 / Q8.13b_3 / Q8.13b_4
	Entrepreneurial Orientation (Proactiveness)	Q8.13c_1 / Q8.13c_2 / Q8.13c_3

The significance and communality were confirmed through factor analysis, and several individual variables can be converted into a single numerical value using the summated scale method of the variables of the two factors. This indicator is used for cross-tabulation analysis in the next chapter.

03

In-depth analysis of GUESSS

3.1. Statistical variables for cross-tabulation analysis

Cross-tabulation analysis was performed using the following statistical variables based on the major factor variables derived in Chapter 2.

〈Table 22〉 Statistical variables for cross-tabulation analysis

Classification	Survey Code	Survey Questionnaire
Demographic Characteristics	Q1.2	On what level are you studying?
	Q1.3	What is your main field of study?
	Q6.2	What is your year of birth?
	Q6.3	Your gender?
	Q6.4	Your marital status?
Career Choice Intentions	Q2.1a	Which career path do you intend to pursue right after completion of your studies?
	Q2.1b	Which career path do you intend to pursue 5 years later?
	Q2.2	Are you currently trying to start your own business/to become self-employed?
	Q2.3	Are you already running your own business/are you already self-employed?
Nascent Entrepreneurs Characteristics	Q8.1	When do you plan to complete the founding process (i.e., to actually found your business)?
	Q8.2	Do you want this business to become your main occupation after graduation?
	Q8.3	Have you created another business before?

Classification	Survey Code	Survey Questionnaire
	Q8.4	How did this start-up project emerge?
	Q8.5	Do you plan to create this business largely because of the implications of the COVID-19 pandemic?
	Q8.7	In which economic sector will your business be mainly active in?
	Q8.12	Are you trying to start this business on your own or with co-founders?

3.2. Cross-tabulation analysis of 'University' factor variables

The results of cross-tabulation analysis with demographic characteristic variables based on the 'University Environment & Program Learning' and 'Sustainable Development Goals of University' factor variables are as follows. The comparison was conducted based on the average value of the summed scale, and the analysis results are shown in 〈Table 23〉.

- Q1.2〉 In the distribution of respondents' academic background, master level students responded higher than other degree students in the university's educational environment and support.
- Q1.3〉 In the distribution of respondents' majors, economics, law, and business majors responded relatively highly to the importance of the educational environment and support, and overall, it was analyzed that they focused on the sustainable goals of universities.
- Q6.3〉 In the gender distribution of respondents, male evaluated the importance of the university environment higher than female, and it was analyzed that they were relatively interested in sustainable goals and support of universities.

〈Table 23〉 'University' Factor Variables - Demographic Characteristics

Factors-Survey Variables		University Environment & Program Learning	Sustainable Development Goals of University
		Average of Summated Scale	
Q1.2 Academic Backgrounds	Undergraduate (Bachelor level)	3.98	4.81
	Graduate (Master level)	5.58	5.85
	Ph.D	5.28	5.15
	Other	4.00	4.80
Q1.3 Major Distributions	Arts / Humanities	3.73	4.74
	Business / Management	4.49	5.12
	Computer sciences / IT	3.94	4.70
	Economics	4.90	5.15
	Engineering (incl. architecture)	4.07	4.86
	Human medicine / health sciences	3.95	4.81
	Law	4.28	4.67
	Mathematics	3.82	4.92
	Natural sciences	3.93	4.61
	Science of art	3.99	4.80
	Social sciences	3.89	4.72
	Other	4.29	5.00
Q6.3 Gender Distributions	Male	4.15	4.90
	Female	3.95	4.80

The results of cross-tabulation analysis with career choice intentions characteristic variables based on the 'University Environment & Program Learning' and 'Sustainable Development Goals of University' factor variables are as follows. The comparison was conducted based on the average value of the summed scale, and the analysis results are shown in 〈Table 24〉.

- Q2.1a〉 In the career plan after graduation, it was confirmed that both factor indicators were low in the case of students aiming to get a job in public institutions and small and medium-sized enterprises. On the other hand, it was analyzed that students who aim to succeed in start-ups and businesses had a relatively high interest in the university start-up support environment.
- Q2.1b〉 Five years later, the career plan showed a similar pattern to the career plan after graduation, and students aiming to get a job in public institutions and small and medium-sized enterprises were likely to increase their interest in start-ups in the future.
- Q2.2/Q2.3〉 It was confirmed once again that the start-up plan and active start-up were of great interest depending on the related demand.

The results of cross-tabulation analysis with Nascent Entrepreneurs Characteristics variables based on the 'University Environment & Program Learning' and 'Sustainable Development Goals of University' factor variables are as follows. The comparison was conducted based on the average value of the summed scale, and the analysis results are shown in 〈Table 25〉.

- Q8.1〉 At the time of completion of the start-up, it was expected that the use of university start-up resources would be high for students preparing for start-up while studying.
- Q8.2〉 In the case of choosing to start a business as a major job after graduation, it was analyzed that they showed interest in university start-up education and support regardless of whether they started a business or not.
- Q8.3〉 In the case of students with existing start-up experience, the importance of the educational environment and support was highly responded.
- Q8.5〉 It is analyzed that students planning to start a business related to COVID-19 are likely to actively utilize resources in universities at a stage that requires a lot of resources in a timely manner.
- Q8.7〉 Among the business fields prepared as major start-ups, consulting and tourism/leisure were found to be large areas related to university factors.

〈Table 24〉 'University' Factor Variables - Career Choice Intentions

Factors-Survey Variables		University Environment & Program Learning	Sustainable Development Goals of University
		Average of Summated Scale	
Q2.1a Career plans after graduation.	employee in a small business (1-49 employees)	3.89	4.76
	employee in a medium-sized	4.21	4.88

Factors-Survey Variables		University Environment & Program Learning	Sustainable Development Goals of University
		Average of Summated Scale	
	business (50-249 employees)		
	employee in a large business (250 or more employees)	4.01	4.96
	employee in a non-profit organization	4.39	4.67
	employee in academia (academic career path)	4.02	4.65
	employee in public service	3.82	4.75
	founder (entrepreneur)	4.97	5.35
	successor in my parents'/family's business	4.77	5.44
	successor in another business	4.17	4.00
	Other / do not know yet	3.87	4.68
Q2.1b Career plans in 5 years later	employee in a small business (1-49 employees)	4.00	5.15
	employee in a	3.96	4.83

Factors-Survey Variables		University Environment & Program Learning	Sustainable Development Goals of University
		Average of Summated Scale	
	medium-sized business (50-249 employees)		
	employee in a large business (250 or more employees)	4.14	5.01
	employee in a non-profit organization	4.49	5.13
	employee in academia (academic career path)	4.17	4.75
	employee in public service	3.81	4.77
	founder (entrepreneur)	4.62	4.99
	successor in my parents'/family's business	4.41	5.00
	successor in another business	4.00	4.26
	Other / do not know yet	3.80	4.59
Q2.2 Willingness to start a business.	No	3.90	4.82
	Yes	4.44	4.91

Factors-Survey Variables		University Environment & Program Learning	Sustainable Development Goals of University
		Average of Summated Scale	
Q2.3 Whether to start a business.	No	4.01	4.83
	Yes	4.89	5.02

〈Table 25〉 'University' Factor Variables - Nascent Entrepreneurs Characteristics

Factors-Survey Variables		University Environment & Program Learning	Sustainable Development Goals of University
		Average of Summated Scale	
Q8.1 plan to complete the founding process	During my studies	4.79	5.28
	Right after my studies	4.68	4.76
	Up to 2 years after completing my studies	4.61	4.88
	Do not know yet	4.13	4.82
Q8.2 Whether to start a business after graduation	No	4.51	5.01
	Yes	4.48	4.98
	Do not know yet	4.18	4.76
Q8.3 Experience of another business before	No	4.30	4.87
	Yes	4.96	5.13
Q8.4 Time to discover business ideas	From a university course	4.88	5.20
	In another form related to the university	4.80	5.19

Factors-Survey Variables		University Environment & Program Learning	Sustainable Development Goals of University
		Average of Summated Scale	
	Largely independent from the university	4.00	4.68
Q8.5 Whether you plan to start a business due to COVID-19.	No	4.19	4.79
	Yes	4.84	5.20
Q8.7 Economic sector to prepare for Start-up	Advertising / Design / Marketing	4.50	5.10
	Architecture and Engineering	4.53	4.78
	Construction	3.96	5.50
	Consulting	5.41	5.83
	Education and training	4.65	4.94
	Financial services	3.66	4.25
	Human health and social work activities	4.38	4.82
	Information technology (IT) and communication	4.24	4.92
	Manufacturing	4.65	5.14
	Tourism and leisure	5.20	5.73
	Trade (wholesale/retail)	3.94	4.79
	Other services (e.g., transportation)	4.75	4.83
	Other	3.94	4.51

3.3. Cross-tabulation analysis of 'Entrepreneurship' factor variables

The results of cross-tabulation analysis with demographic characteristic variables based on the four factor variables of 'Entrepreneurship' are as follows. The comparison was conducted based on the average value of the summed scale, and the analysis results are shown in 〈Table 26〉.

- Q1.2〉 In the distribution of respondents' academic background, it was found that master level students had a leading tendency in terms of entrepreneurial intention, attitude, and locus of control than other degree students. However, it was analyzed that Ph.D. students were relatively high in Entrepreneurial self-efficacy, which is their own ability to start a business.
- Q1.3〉 In the distribution of respondents' majors, entrepreneurial intentions were low in most major distributions, and entrepreneurial attitudes and self-efficacy were high in students majoring in economics.
- Q6.3〉 In the gender distribution of respondents, male evaluated the importance of university entrepreneurial intention/attitude and skill rather than female, and it can be seen that they value relatively self-directed tendencies.

The results of cross-tabulation analysis with career choice intentions characteristic variables based on the four factor variables of 'Entrepreneurship' are as follows. The comparison was conducted based on the average value of the summed scale, and the analysis results are

shown in 〈Table 27〉.

- Q2.1a〉 In the career plan after graduation, it was confirmed that all four factor indicators were low for students aiming to get a job in public institutions and small and medium-sized enterprises. On the other hand, it was analyzed that students who relatively aim to start a business and succeed business have relatively entrepreneurial intentions, attitudes, and related entrepreneurial skills.
- Q2.1b〉 After five years, career plans showed similar patterns to career plans after graduation, and all four factor indicators declined, indicating that interest in entrepreneurship and start-up could be relatively lowered after graduation.

〈Table 26〉 'Entrepreneurship' Factor Variables - Demographic Characteristics

Factors-Survey Variables		General Thoughts (Intentions)	General Thoughts (Attitude)	Skills (Entrepreneurial self-efficacy)	Skills (Locus of Control)
		Average of Summated Scale			
Q1.2 Academic Backgrounds	Undergraduate (Bachelor level)	2.93	4.14	3.87	4.84
	Graduate (Master level)	4.55	5.33	4.76	5.94
	Ph.D	3.29	4.75	5.57	5.00
	Other	3.15	4.23	4.10	4.79
Q1.3 Major Distributions	Arts / Humanities	2.65	4.06	3.82	4.68

Factors-Survey Variables		General Thoughts (Intentions)	General Thoughts (Attitude)	Skills (Entrepreneurial self-efficacy)	Skills (Locus of Control)
		Average of Summated Scale			
	Business / Management	3.07	4.23	4.08	4.97
	Computer sciences / IT	3.03	4.22	3.94	4.80
	Economics	2.84	4.94	4.49	4.78
	Engineering (incl. architecture)	3.22	4.28	4.05	4.83
	Human medicine / health sciences	2.96	4.15	3.89	4.82
	Law	3.24	3.75	3.62	4.33
	Mathematics	3.08	3.99	3.95	5.08
	Natural sciences	2.65	3.88	3.66	4.98
	Science of art	2.71	3.84	3.25	4.53
	Social sciences	2.69	4.06	3.63	4.83
	Other	3.02	4.29	3.95	4.93
Q6.3 Gender Distributions	Male	3.19	4.27	4.06	4.91
	Female	2.80	4.08	3.77	4.78

〈Table 27〉 'Entrepreneurship' Factor Variables - Career Choice Intentions

Factors-Survey Variables		General Thoughts (Intentions)	General Thoughts (Attitude)	Skills (Entrepreneurial self-efficacy)	Skills (Locus of Control)
		Average of Summated Scale			
Q2.1a Career plans after graduation.	employee in a small business (1-49 employees)	3.24	4.18	3.91	4.56
	employee in a medium-sized business (50-249 employees)	3.07	4.18	4.13	4.82
	employee in a large business (250 or more employees)	2.85	4.20	4.01	5.03
	employee in a non-profit organization	3.60	5.00	4.00	4.44
	employee in academia (academic career path)	2.71	4.18	4.06	5.02
	employee in public service	2.82	4.00	3.74	4.79
	founder (entrepreneur)	6.21	6.13	6.71	5.83
	successor in my parents'/ family's business	5.00	5.50	5.43	6.00
	successor in another business	-	-	-	-

Factors-Survey Variables		General Thoughts (Intentions)	General Thoughts (Attitude)	Skills (Entrepreneurial self-efficacy)	Skills (Locus of Control)
		Average of Summated Scale			
	Other / do not know yet	3.11	4.21	3.70	4.71
Q2.1b Career plans in 5 years later	employee in a small business (1-49 employees)	2.77	4.45	3.45	4.83
	employee in a medium-sized business (50-249 employees)	3.00	4.14	3.87	4.75
	employee in a large business (250 or more employees)	2.97	4.24	4.16	5.03
	employee in a non-profit organization	3.11	4.97	3.89	5.04
	employee in academia (academic career path)	3.02	4.18	4.22	5.00
	employee in public service	2.77	4.01	3.73	4.83
	founder (entrepreneur)	5.67	5.58	5.03	5.50
	successor in my parents'/ family's business	4.00	4.92	4.71	4.67

Factors-Survey Variables		General Thoughts (Intentions)	General Thoughts (Attitude)	Skills (Entrepreneurial self-efficacy)	Skills (Locus of Control)
		Average of Summated Scale			
	successor in another business	3.05	3.50	3.33	4.67
	Other / do not know yet	3.05	4.14	3.72	4.61

3.4. Cross-tabulation analysis of 'Nascent Entrepreneurs' factor variables

The results of cross-tabulation analysis with demographic characteristic variables based on the factor variables of 'innovativeness & risk-taking' and 'proactiveness' which are the two main entrepreneurial orientation of nascent entrepreneurs, are as follows. The comparison was conducted based on the average value of the summed scale, and the analysis results are shown in 〈Table 28〉.

- Q1.2〉 In the distribution of respondents' academic background, two entrepreneurial orientation were analyzed high in all degree courses, and doctoral students were analyzed relatively much higher.
- Q1.3〉 In the distribution of respondents' majors, the average value was high in the overall major, and innovativeness & risk-taking and proactiveness were high in students majoring in economics.
- Q6.3〉 In the gender distribution of respondents, the difference

between male and female was not large, but men's entrepreneurial orientation were slightly higher.

The results of cross-analysis with career choice intentions characteristic variables based on the factor variables of 'innovativeness & risk-taking' and 'proactiveness' which are the two main entrepreneurial orientation of nascent entrepreneurs, are as follows. The comparison was conducted based on the average value of the summed scale, and the analysis results are shown in 〈Table 29〉.

- Q2.1a〉 In the career plan after graduation, students who aim to get a job in non-profit organizations along with start-ups showed high entrepreneurial orientation, and despite their tendency as prospective entrepreneurs, the target figures for SME/large enterprises were relatively high.
- Q2.1b〉 Five years later, the career plan showed a similar trend, but in the case of nascent entrepreneur with specific entrepreneurial orientation, it was found that they could set their careers as small and medium-sized enterprises/large enterprises or start-ups rather than their goals for employment in non-profit organizations.

〈Table 28〉 'Nascent Entrepreneurs' factor variables - Demographic Characteristics

Factors-Survey Variables		Entrepreneurial Orientation (Innovativeness & Risk-Taking)	Entrepreneurial Orientation (Proactiveness)
		Average of Summated Scale	
Q1.2 Academic Backgrounds	Undergraduate (Bachelor level)	5.07	5.16
	Graduate (Master level)	4.90	4.93
	Ph.D	5.79	6.39
	Other	4.77	4.67
Q1.3 Major Distributions	Arts / Humanities	5.15	5.10
	Business / Management	4.93	5.20
	Computer sciences / IT	5.30	5.42
	Economics	5.83	6.04
	Engineering (incl. architecture)	5.15	5.28
	Human medicine / health sciences	4.94	5.04
	Law	4.00	4.00
	Mathematics	3.86	5.33
	Natural sciences	5.22	4.79
	Science of art	4.74	4.93
	Social sciences	4.81	5.05
	Other	5.01	4.85
Q6.3 Gender Distributions	Male	5.19	5.28
	Female	4.90	4.98

〈Table 29〉 'Nascent Entrepreneurs' factor variables – Career Choice Intentions

Factors–Survey Variables		Entrepreneurial Orientation (Innovativeness & Risk-Taking)	Entrepreneurial Orientation (Proactiveness)
		Average of Summated Scale	
Q2.1a Career plans after graduation.	employee in a small business (1-49 employees)	5.13	5.15
	employee in a medium-sized business (50-249 employees)	5.05	5.16
	employee in a large business (250 or more employees)	4.87	5.12
	employee in a non-profit organization	6.43	6.00
	employee in academia (academic career path)	5.50	5.63
	employee in public service	4.72	4.95
	founder (entrepreneur)	5.44	5.14
	successor in my parents'/family's business	5.63	6.07
	successor in another business	3.64	5.33
	Other / do not know yet	4.81	4.97
Q2.1b Career plans in 5 years later	employee in a small business (1-49 employees)	5.02	5.22
	employee in a medium-sized business (50-249 employees)	5.14	5.13

Factors-Survey Variables		Entrepreneurial Orientation (Innovativeness & Risk-Taking)	Entrepreneurial Orientation (Proactiveness)
		Average of Summated Scale	
	employee in a large business (250 or more employees)	4.93	5.05
	employee in a non-profit organization	3.71	4.67
	employee in academia (academic career path)	5.10	5.52
	employee in public service	4.54	5.15
	founder (entrepreneur)	5.35	5.21
	successor in my parents' / family's business	5.33	5.78
	successor in another business	3.57	5.00
	Other / do not know yet	4.81	4.76

The results of cross-tabulation analysis with nascent entrepreneurs characteristic variables based on the factor variables of 'innovativeness & risk-taking' and 'proactiveness' which are the two main entrepreneurial orientation of nascent entrepreneurs, are as follows. The comparison was conducted based on the average value of the summed scale, and the analysis results are shown in 〈Table 30〉.

- Q8.1〉 At the time of start-up planning, it was analyzed that students with higher entrepreneurial orientation are more likely to plan start-ups even after graduation.
- Q8.2〉 In the case of choosing to start a business as a major job

after graduation, it was analyzed that there was no significant difference regardless of whether or not to start a business.

- Q8.4〉 As for the timing of discovering business ideas, it was analyzed that students with higher entrepreneurial orientation actively utilize not only universities but also various external support programs.
- Q8.5〉 There was no significant difference in whether or not to start a business related to COVID-19.
- Q8.7〉 It was analyzed that the higher the entrepreneurial orientation in the field of start-up business, the higher the proportion of consulting and tourism and leisure.

〈Table 30〉 'Nascent Entrepreneurs' factor variables - Nascent Entrepreneurs Characteristics

Factors-Survey Variables		Entrepreneurial Orientation (Innovativeness & Risk-Taking)	Entrepreneurial Orientation (Proactiveness)
		Average of Summated Scale	
Q8.1 plan to complete the founding process	During my studies	5.42	5.51
	Right after my studies	4.92	5.00
	Up to 2 years after completing my studies	5.42	5.42
	Do not know yet	4.83	4.95
Q8.2 Whether to start a business after graduation	No	5.19	5.38
	Yes	5.24	5.32
	Do not know yet	4.75	4.80
Q8.3 Experience of another business	No	5.02	5.11

Factors-Survey Variables		Entrepreneurial Orientation (Innovativeness & Risk-Taking)	Entrepreneurial Orientation (Proactiveness)
		Average of Summated Scale	
before	Yes	5.33	5.33
Q8.4 Time to discover business ideas	From a university course	5.17	5.15
	In another form related to the university	5.18	5.01
	Largely independent from the university	4.96	5.16
Q8.5 Whether you plan to start a business due to COVID-19.	No	4.96	5.04
	Yes	5.28	5.39
Q8.7 Economic sector to prepare for Start-up	Advertising / Design / Marketing	5.09	5.22
	Architecture and Engineering	5.28	5.39
	Construction	4.10	5.56
	Consulting	5.36	5.63
	Education and training	4.89	5.12
	Financial services	5.21	5.58
	Human health and social work activities	5.14	5.04
	Information technology (IT) and communication	5.32	5.40
	Manufacturing	4.94	4.69
	Tourism and leisure	5.86	5.50

Factors–Survey Variables		Entrepreneurial Orientation (Innovativeness & Risk-Taking)	Entrepreneurial Orientation (Proactiveness)
		Average of Summated Scale	
	Trade (wholesale/retail)	4.55	5.04
	Other services (e.g., transportation)	5.82	5.44
	Other	4.78	4.93

04
Conclusions

GUESSS(Global University Entrepreneurial Spirit Students' Survey) is an international research project that investigates college students' startup intentions and activities. In the 2021 survey study, meaningful analysis results are presented by conducting in-depth analysis studies along with existing basic studies.

- Exploratory Factor Analysis is performed on individual variables to analyze whether the factors extracted from the collected data sufficiently explain each questionnaire variable.
- Factor variables that can represent major questionnaire variables are derived based on the factor load matrix to reduce the number of major variables.
- The summed scale is derived by quantifying the representative factor variables on average to have a single value.
- Based on the summed scale of the factor variables, an in-depth analysis is performed by performing cross-tabulation analysis of the statistical characteristics such as demographic characteristics, career choice intentions, and nascent entrepreneurs characteristics.

Representative factor variables derived through factor analysis are as follows.

- First of all, two representative factor variables were set for 14 variables of a total of four questionnaire factors related to

'University'.

['University Environment and Program Learning' and 'Sustainable Development Goals of University']

- Next, four representative factor variables were set for 21 variables of a total of four questionnaire factors related to 'Entrepreneurship'. ['General Thoughts (Intentions)', 'General Thoughts (Attitude)', 'Skills (Entrepreneurial self-efficacy)', 'Skills(Locus of Control)']
- Third, we tried to derive factor variables related to 'Own Business' (Active Entrepreneurs), but we could not perform a meaningful analysis with fewer than 50 samples.
- Finally, two representative factor variables were set for 10 variables of a total of three questionnaire factors related to 'Nascent Entrepreneurs'. ['Entrepreneurial Orientation (Innovativeness & Risk Taking)', 'Entrepreneurial Orientation (Proactiveness)']

Cross-tabulation analysis was performed between representative factors of three categories (university, entrepreneurship, nascent entrepreneur) and statistical variables (demographic characteristics, career goals, and nascent entrepreneurial characteristics). Significant results were derived, and the main results are summarized as follows.

- In terms of respondents' academic background, it was found that master's students had a leading tendency in terms of entrepreneurial intention, attitude, and locus of control than other degree students. However, it was analyzed that Ph.D. students were relatively high in entrepreneurial self-efficacy, which is their own skills for

start-ups. In addition, in the nascent entrepreneur group, it was analyzed that doctoral students had relatively high entrepreneurial orientation and that their own ability to start a business, entrepreneurial self-efficacy, was superior.

- As a result of analyzing the difference in career plans after graduation and five years, it was analyzed that there is a high possibility that they will be interested in start-ups in the future and show interest in the university start-up support environment even after graduation. However, in the case of nascent entrepreneurs preparing to start a business immediately after graduation, it was analyzed that there would be great concern about uncertainty about the future due to relatively low innovativeness & risk-taking in their career plans after 5 years.
- Regardless of whether or not to start a business, it was found that students enrolled in universities are more likely to use the university's start-up resources, so they are more likely to consider starting a business in the future. However, after graduation, entrepreneurship as a job was relatively low. In addition, it was analyzed that nascent entrepreneurs with high entrepreneurial orientation are more likely to plan their start-ups even after graduation.

Through this in-depth analysis, it was confirmed that analysis may be possible based on various structural models other than cross-analysis, and further research will be possible to examine the relationship between various variables based on variables derived through factor

analysis.

Finally, the limitation of this study is that there is a relatively insufficient sample of 'Own Business (Active Entrepreneurs)' that contain the most meaningful variable factors.s. When conducting a survey in the future, a method of efficiently investigating actual university student founders should be considered by supplementing the limitations made by simple requests to the current university start-up support divisions.

Writer

Prof. Sanghyun Sung | Assistant Professor, Gyeongsang National University(GNU)
Yeongsoo Kim | Secretary General, Korea Entrepreneurship Foundation
Yunsock Lee | Managing Director of Centre, Korea Entrepreneurship Foundation
Hyeram Kim | Manager, Korea Entreprenreuship Foundation

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Korea Entrepreneurship Foundation
(06595) 2F/16, Seocho-daero 45-gil, Seocho-gu,
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KOREA ENTREPRENEURSHIP FOUNDATION

2F/16, Seocho-daero 45-gil, Seocho-gu, Seoul, Republic of Korea
TEL 02-2156-2293 FAX 02-2156-2290 www.koef.or.kr

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