




Case Report

A Study on the Effectiveness of Entrepreneurship Education Programs in Higher Education Institutions: A Case Study of Korean Graduate Programs

Chung-Gyu Byun ¹, Chang Soo Sung ², Joo Y. Park ^{3,*}  and Dae Soo Choi ⁴

¹ Department of Business Administration, Gyeongsang National University, Jinju 52828, Korea; cgbyun@gnu.ac.kr

² Department of Technology Entrepreneurship, Dongguk University, Seoul 100-272, Korea; redsun44@dongguk.edu

³ School of Business, Yonsei University, Seoul 120-749, Korea

⁴ Department of Software Engineering, Joongbu University, Chungnam 312-702, Korea; daesoo_c@naver.com

* Correspondence: park3500@naver.com; Tel.: +82-2-2123-8654

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Abstract: The purpose of this study is to verify the effectiveness of the entrepreneurship curriculum and the educational program recognized by students and graduates. This paper has studied the improvement of curriculum and educational programs operated by the Graduate School of Entrepreneurship by using Importance-Performance Analysis (IPA). This study was conducted on students and graduates who attended entrepreneurship graduate schools designated by the Ministry of SMEs and Startups (MSS) in Korea. The results of the questionnaire survey were tested the differences of curriculum courses by paired-sample *t* test and its improvement was analyzed through Importance-Performance Analysis (IPA). According to the research analysis, there was a difference in the preference of the curriculum and the educational program recognized by graduate students and graduates. The results of this study suggested academic and practical implications. In academic terms, this study classified the subject and educational curriculums of entrepreneurship graduate programs through the analysis of importance-satisfaction. In practical terms, this study suggested implications for the improvement of curriculum and educational programs for the activation of entrepreneurship graduate schools.

Keywords: entrepreneurship education; entrepreneurship education curriculum; entrepreneurship program; graduate school; importance-performance approach (IPA)

1. Introduction

Entrepreneurship has become a powerful tool for creating jobs and improving economic power in the labor market and economy as a whole. Moreover, with the advent of the fourth industrial revolution, a variety of competencies such as creativity, innovation, and agility are required for start-ups [1]. Therefore, most institutions currently provide entrepreneurial training programs with the belief that the importance of entrepreneurship and the knowledge and skills needed to become an entrepreneur can be taught, and the proportion of policy support toward entrepreneurship education has been increasing in many countries around the world [2,3]. In addition, interest and investment in entrepreneurship education are increasing in all degree programs from elementary schools to graduate schools in order to increase entrepreneurial thinking. This entrepreneurial education has become important in tandem with the demand of students seeking business education that can provide the necessary skills to succeed in an increasingly diverse and complex management environment [4].

Entrepreneurship education plays an important role in an uncertain environment because it can develop the insights needed to discover and create opportunities for entrepreneurs and gain the ability to successfully start and manage their own businesses [5–8]. Therefore, the university has emphasized the necessity of systematic entrepreneurship education and played a role in conducting professional entrepreneurship education. Many universities are also actively pursuing a variety of educational developments as part of their broader strategy to improve the quality of entrepreneurial courses and programs and to encourage student education and learning. Moreover, they offer many entrepreneurship related courses and programs in purpose of providing students with motivation and confidence in entrepreneurship and a role for social contribution through entrepreneurship [9,10]. However, opinions about which approaches are effective and which teaching methods are appropriate are still controversial [11].

In Korea, a graduate school of entrepreneurship is run through government-level support to provide systematic and professional entrepreneurship education. The goal of this professional graduate school is to nurture start-up experts who can adapt well to uncertain circumstances. In order to achieve this goal, the schools have provided practical training programs for each start-up stage to differentiate them from programs in existing business schools [12]. The background and purpose of the students who enroll in the entrepreneurship graduate school vary. For example, students go on to the entrepreneurship graduate school for reasons such as the use of information and infrastructure for incubation, the construction of a human network, the preparation for start-up, and the acquisition of a degree. Accordingly, formal education programs that do not consider students' entrepreneurship motivation are ineffective [13,14]. On the other hand, well-designed curricula and programs that take into account the motivations and goals of students can enhance the effectiveness of entrepreneurial education [15,16]. Entrepreneurship curriculum and programs are highly evaluated in terms of encouraging entrepreneurial attitudes and awareness of students, and increasing intent to start a business [17]. Thus, in many studies on entrepreneurship education, the effectiveness of entrepreneurship education is often measured by the degree of entrepreneurship intention [18,19]. In addition, in order to reduce the gap between educators and students about entrepreneurship education, it is necessary to analyze the importance and satisfaction of entrepreneurship curriculum and programs that students perceived. This generally allows students to improve their knowledge and skills through a well-established entrepreneurship curriculum and experience. However, most entrepreneurship education research focuses on program design and implementation, and objective evaluation practices by experts and students are still poorly addressed in this field [20]. Moreover, there is a lack of evaluation of the effectiveness of entrepreneurship education in higher education such as graduate level courses and the analysis of its importance and satisfaction is insufficient [21].

Therefore, the purpose of this study is to analyze the importance-satisfaction of entrepreneurship education programs for the students and graduates to examine the effectiveness of programs and suggest improvement plans and guidelines. In this study, the effectiveness of entrepreneurship education is defined as the degree of importance and satisfaction of students perceiving the entrepreneurial curriculum, and the higher the degree of satisfaction and importance, the greater the effectiveness of entrepreneurship education.

This study analyzes characteristics of entrepreneurship curriculum and educational programs through the importance-performance analysis (IPA) of the entrepreneurship education programs conducted in entrepreneurship graduate schools designated by the Ministry of SMEs and Startups (MSS) in Korea. The results of this study will provide practical guidelines for the professors and policy makers to evaluate and improve entrepreneurial education programs.

This paper is divided into the following sections. First, we review the literature on entrepreneurship education programs and explain important-performance. The following section describes the selection of subjects and analysis of results through IPA analysis. Finally, the implications of the research are presented through the results and discussed in the implication and conclusion section.

2. Literature Review

2.1. Entrepreneurship Education Program

As traditional business education fails to meet the changing needs of the environment, entrepreneurship education that enhances entrepreneurial attitudes and abilities has increased in the undergraduate and graduate schools of universities. While traditional business education emphasizes the establishment and operation of large enterprises, the entrepreneurship programs emphasize creativity, imagination, proactiveness, and risk taking that can respond to an uncertain environment [6]. Entrepreneurship education is a process in which all series of education and training activities in the education system. It provides entrepreneurial behavior, entrepreneurial knowledge, and the feasibility of business activities. Additionally, entrepreneurship education attempts to encourage entrepreneurs to develop or start their own business [22]. Entrepreneurship education provides opportunities for knowledge, education, and training to those who are interested in job creation or small business development [23], learning opportunities, organizing resources at risk, and building a business [24]. In other words, entrepreneurship education focuses on the expertise used to discover and commercialize business opportunities.

A number of studies have been conducted to develop entrepreneurial courses and to operate them effectively. Kourilsky [23] categorized the components of the entrepreneurship curriculum into opportunity identification, resource allocation and input, and operational organization creation. Opportunity recognition requires insights into market observation, customer needs, and inventions and innovation. The distribution and input of resources includes the willingness to take risks as well as the skills needed to protect external investments. The creation of operating organizations includes financial, marketing, and management skills to provide products or services. In addition, Harvard business school's entrepreneurship curriculum focuses on three key concepts: opportunity assessment, resource acquisition, and business growth and retention [25]. Jones and English [6] defined the curriculum goals of entrepreneurship education as: first, learn how to recognize ideas and develop ideas. Second, assess personal resources and financial status, investigate and evaluate the risks needed to get started, learn business planning and resource procurement. Third, learn how to allocate resources, use various marketing strategies, and build a business that manages money and manpower. Moreover, Vesper and Gartner [13] analyzed the curriculum of entrepreneurship education in the undergraduate and graduate schools where the curriculum was established. Entrepreneurship programs are classified into academic courses, faculty publications, community influence, graduate activities, incarnation, and public relations. And, the curriculum is divided into entrepreneurship, small business management, consulting, business plan writing, and venture finance. The study by Hahn and Ko [15] provided the differences the entrepreneurship programs between United States and Korea dividing the curriculum of the graduate school of entrepreneurship into six major categories. Those are introduction, entrepreneurship environment analysis and entrepreneurship preparation, entrepreneurship, entrepreneurship management and strategy. Lee and Kim [14] also classified entrepreneurship courses into six modules: entrepreneurship and entrepreneurship mindset, entrepreneurship plan, management skill and strategy, entrepreneurial issues for funding, entrepreneurial issues for growth and development, and special entrepreneurship. They also evaluated the importance of the preference courses of entrepreneurship programs by using the hierarchical analysis process. As a result, the course titled Entrepreneurial Issues for Fund was derived as the most important course. This shows that many people are interested in attracting investment for start-ups and think it is the most important. According to the previous research, entrepreneurship education includes everything from business plan development and to short workshops and seminars designed to address particular dimensions of the topic.

2.2. Importance-Performance Analysis (IPA)

The importance-performance analysis (IPA) is a method of classifying high and low by sorting the scores of importance and satisfaction using a central tendency such as mean value [26]. It is located in four quadrants with high and low importance and satisfaction, and each quadrant can present an effective strategy. The first quadrant represents a high degree of importance and satisfaction, and it can provide a strategy for the maintenance necessity of strength items with 'keep up the good work'. The second quadrant represents a high degree of importance and low satisfaction, which means that the 'concentrate here' needs to be corrected for low satisfaction. The third quadrant implies the use of resources limited to 'low priority' with low importance and low satisfaction, and the fourth quadrant is of low importance and high satisfaction, indicating that there is a need to avoid unnecessary strengths with 'do not overwork'. This IPA analysis method is widely used in e-business, banking industry, tourism management, education, and service quality. Daud et al. [8] proposed the development of curriculum by analyzing the gap between the important characteristics and actuality of knowledge, skills, abilities, and personality of business school graduates through IPA analysis. Moreover, to reduce the gap between educators and students about entrepreneurship education, it is necessary to analyze the importance and satisfaction of entrepreneurship curricula and programs that students perceive, and thus IPA analysis is appropriate for this analysis. Therefore, IPA analysis is suitable for the purpose of this study which aims to improve the quality of entrepreneurship education by analyzing the importance and satisfaction of the entrepreneurship education program and the curriculum.

3. Method

3.1. Classifications for IPA Analysis

In this study, based on the review of the related research, we extracted items for analyzing the importance and satisfaction of the curriculum and program of entrepreneurship graduate school in Korea. The courses used in this analysis were drawn from the study by Hahn and Ko [15] and Lee and Kim [14] and divided into three groups, theory/research, practice, and advanced courses. Theory/Research group includes courses such as entrepreneurship and start-ups, research methodology, entrepreneurial opportunity, and business feasibility analysis, business model, business plan writing, patent law and strategy, entrepreneurship accounting and finance, entrepreneurial marketing, HR strategy and venture growth strategy. The Practice group includes courses such as consulting methodology, case study on entrepreneurship, entrepreneurship capstone and internship program. Also, the advanced group includes technology entrepreneurship, franchise business, the social venture/social entrepreneurship, e-business, and global business. The importance-satisfaction level for each course was measured by a 5-point Likert scale (very likely to very likely) for a total of 23 courses.

The degree of importance and satisfaction for the entrepreneurship graduate school program was divided into 4 parts: network support and partnership, coaching and mentoring/consulting, student support activities, and post-graduate management based on the researches of Jung [12] and Jung and Min [16]. Network support and partnership represents networks relationship between alumni, partnership with external institutions and attracting funds and investment. Coaching and mentoring/consulting includes distinguished professor coaching/mentoring and expert/institution specialized consulting. Student support activities include 'start-up camp / training', 'start-up contest', 'forum/seminar', 'academic conference', and post-graduation management includes systematic support programs after graduation such as education and consulting, communication, and linkage between related projects. These were also measured by 5 points Likert scale for 12 items. The items of the questionnaires were selected and evaluated according to the purpose of the study through the evaluation and discussion of the entrepreneurs and start-up experts. Prior to this survey, a pilot test was conducted for the graduate students in entrepreneurship graduate schools. The final questionnaire was completed by modifying questions according to their opinion.

3.2. The Sample

In this study, we surveyed graduate students and graduates from 10 entrepreneurship graduate schools designated by Korea's Ministry of SMEs and Startups (MSS). The survey used computer assisted self-interviewer (CASI), and conducted phone contact and visiting surveys to improve the response rate. Finally, a total of 600 valid samples were collected and used in analysis. The demographic distribution shows that 494 (82.3%) were male and 106 (17.7%) were female. The number of students attending/graduating was 322 (53.7%) and 278 (46.3%). The Ministry of SMEs and Startups (MSS) in Korea has designated and supported graduate schools in which entrepreneurship education is operated for the purpose of revitalizing entrepreneurship education. Therefore, the sample of this study is suitable and representative for this case study on entrepreneurship education program in Korea.

3.3. Verification of Differences between Curriculum Courses

The paired-samples *t*-test was conducted to verify the difference between the degree of importance and the degree to which students perceive the importance of the curriculum courses in the entrepreneurship graduate school. Table 1 demonstrates the results of its differences of importance and satisfaction. Among the courses of the entrepreneurship graduate curriculum, the most important courses are the following 11 courses, which are rated 4 or more out of 5 on the Likert scale; business model, entrepreneurship opportunity and business feasibility analysis, entrepreneurial marketing, entrepreneurship and start-ups, business planning method, entrepreneurial practice, entrepreneurial consulting methodology, technology entrepreneurship, entrepreneurial Accounting/Finance, Venture Finance, and Investment Promotion. As a result of examining the difference between the average of importance and satisfaction, all the items showed positive (+) value, meaning the degree of importance of entrepreneurship graduate courses were higher than the degree of satisfaction.

Table 1. Result of differences between curriculum courses.

| Attribute Number | Attribute | Mean | | Std. Deviation | <i>t</i> -Value |
|------------------|--|-----------|-------------|----------------|-----------------|
| | | Important | Performance | | |
| 1 | entrepreneurship and start-ups | 4.350 | 4.055 | 0.826 | 8.747 *** |
| 2 | Research Methodology | 3.820 | 3.582 | 0.852 | 6.851 *** |
| 3 | entrepreneurship opportunity business feasibility analysis | 4.411 | 3.948 | 0.907 | 12.508 *** |
| 4 | Business Model | 4.426 | 4.038 | 0.978 | 9.730 *** |
| 5 | business plan writing | 4.333 | 3.946 | 0.988 | 9.590 *** |
| 6 | patent law and strategy | 3.811 | 3.478 | 0.906 | 9.015 *** |
| 7 | Venture Finance and Investment Promotion | 4.011 | 3.560 | 1.011 | 10.940 *** |
| 8 | entrepreneurship accounting and finance | 4.038 | 3.666 | 0.919 | 9.904 *** |
| 9 | entrepreneurial marketing | 4.410 | 3.998 | 0.990 | 10.184 *** |
| 10 | HR strategy | 3.865 | 3.531 | 0.891 | 9.166 *** |
| 11 | venture growth strategy | 3.983 | 3.683 | 0.897 | 8.192 *** |
| 12 | consulting methodology | 4.166 | 3.693 | 1.022 | 11.345 *** |
| 13 | case study on entrepreneurship | 4.138 | 3.746 | 1.015 | 9.453 *** |
| 14 | entrepreneurship capstone | 4.230 | 3.752 | 1.032 | 11.355 *** |
| 15 | internship program | 3.656 | 3.205 | 1.033 | 10.715 *** |
| 16 | technology entrepreneurship | 4.048 | 3.571 | 1.056 | 11.059 *** |
| 17 | Technology Commercialization | 3.993 | 3.545 | 0.976 | 11.254 *** |
| 18 | franchise business | 3.593 | 3.215 | 0.909 | 10.193 *** |
| 19 | social venture/social entrepreneurship | 3.743 | 3.426 | 0.974 | 7.967 *** |
| 20 | e-business entrepreneurship | 3.845 | 3.406 | 0.982 | 10.933 *** |
| 21 | Service entrepreneurship | 3.888 | 3.508 | 0.973 | 9.564 *** |
| 22 | Global entrepreneurship | 3.941 | 3.423 | 1.061 | 11.971 *** |
| 23 | Culture-Contents entrepreneurship | 3.732 | 3.320 | 0.995 | 10.132 *** |

*** $p < 0.001$.

The difference between the degree of importance and the degree to which students perceive the importance of education program in the entrepreneurship graduate school was also analyzed using the paired-sample *t*-test. Table 2 demonstrates the result, showing that the most important items that students perceived were networks relationship between alumni, distinguished professor coaching/mentoring, and communication support after graduation, education and consulting after graduation, linkage between related projects, and partnership with external institutions. A total of 8 items were scored above 4 on the Likert scale. All items also showed positive values for the mean difference between the importance and satisfaction, meaning that the degree of importance of entrepreneurship education program was higher than satisfaction.

Table 2. Result of differences between entrepreneurship programs.

| Attribute Number | Attribute | Mean | | Std. Deviation | t-Value |
|------------------|---|-----------|------------|----------------|------------|
| | | Important | Performanc | | |
| 1 | Networking with alumni | 4.325 | 3.773 | 1.0751 | 12.569 *** |
| 2 | partnership with external institutions | 4.170 | 3.490 | 1.266 | 13.153 *** |
| 3 | Attracting funds and investment. | 4.155 | 3.345 | 1.297 | 15.292 *** |
| 4 | distinguished professor coaching/mentoring | 4.260 | 3.646 | 1.175 | 12.776 *** |
| 5 | expert/institution specialized consulting | 4.171 | 3.506 | 1.203 | 13.534 *** |
| 6 | start-up camp/training | 3.873 | 3.498 | 1.037 | 8.855 *** |
| 7 | start-up contest | 3.696 | 3.320 | 0.936 | 9.856 *** |
| 8 | forum/seminar | 3.888 | 3.450 | 1.069 | 10.035 *** |
| 9 | academic conference | 3.738 | 3.331 | 0.965 | 10.314 *** |
| 10 | education and consulting after graduation | 4.200 | 3.441 | 1.295 | 14.334 *** |
| 11 | Communication after graduation | 4.228 | 3.448 | 1.218 | 15.683 *** |
| 12 | linkage between related projects after graduation | 4.191 | 3.458 | 1.274 | 14.092 *** |

*** $p < 0.001$.

4. Results

The difference in the degree of importance-satisfaction for each entrepreneurial course is shown in the following quadrant graph. Figure 1 shows the subjects considered crucial for understanding unique challenges and opportunities in exploring entrepreneurship today [26]. Developing innovative ideas and business solutions are considered as key to successful business creation. Accounting and financial interests and abilities are recognized as important in technology entrepreneurship's sustainability and long-term growth, but not to the degree of professionalism and satisfaction of related subjects. In addition, there is little interest and satisfaction in newly emerging fields such as e-business establishment, service establishment, and cultural content creation. However, entrepreneurial courses and programs that can cover such changes in the times can still be improved.

The difference in the degree of importance-satisfaction for entrepreneurship programs in graduate schools is shown by their position in Figure 2. The distribution of items for each section is as follows. In the first quadrant, there were 'formation of network between alumni', 'support for partnership with external institutions', 'dedicated professor coaching/mentoring', and 'professional/institutional consulting', and in the second quadrant, there were 'linking funds and investment attraction', 'after-graduation education/consulting support', 'supporting community activation after graduation', and 'supporting business linkage after graduation'. In the third quadrant (low priority), 'start-up competition', 'forum/seminar' and 'academic conference' were located, while 'Founding Camp/Training' was located in the 4th quadrant.

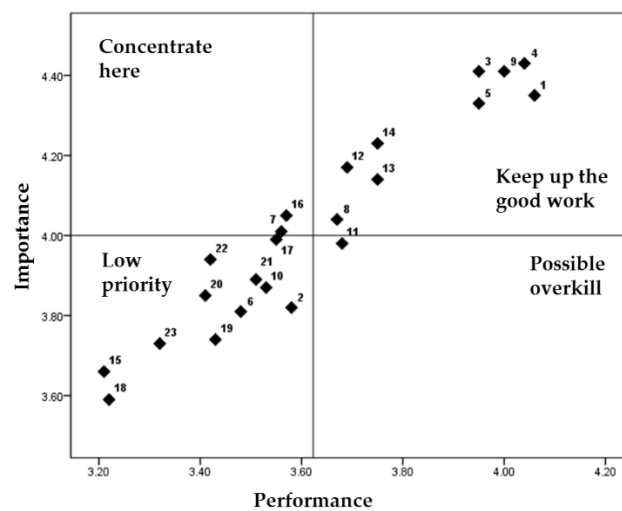


Figure 1. IPA analysis for entrepreneurship courses. Note: 1. entrepreneurship and start-ups; 2. Research Methodology; 3. entrepreneurship opportunity and business feasibility analysis; 4. Business Model; 5. business plan writing; 6. patent law and strategy; 7. Venture Finance and Investment Promotion; 8. entrepreneurship accounting and finance; 9. entrepreneurial marketing; 10. HR strategy; 11. venture growth strategy; 12. consulting methodology; 13. case study on entrepreneurship; 14. entrepreneurship capstone; 15. internship program; 16. technology entrepreneurship; 17. Technology Commercialization; 18. franchise business; 19. social venture/social entrepreneurship; 20. e-business entrepreneurship; 21. Service entrepreneurship; 22. Global entrepreneurship; 23. Culture-Contents entrepreneurship.

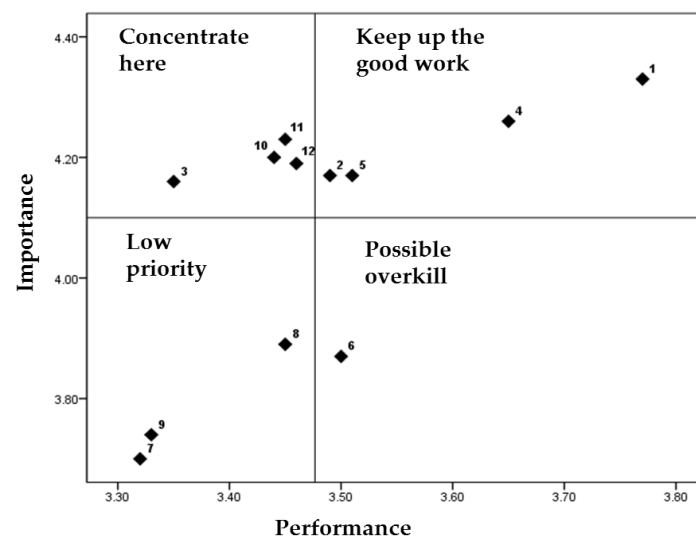


Figure 2. IPA analysis for the Entrepreneurship Education Program. Note: 1. networking with alumni; 2. partnership with external institution; 3. Attracting funds and investment; 4. distinguished professor coaching/mentoring; 5. expert/institution specialized consulting; 6. start-up camp/training; 7. start-up contest; 8. forum/seminar; 9. academic conference; 10. education and consulting after graduation; 11. Communication after graduation; 12. linkage between related projects after graduation.

In addition, Figure 3 and Table 3 show the results of analyzing the importance and satisfaction of the curriculum of the entrepreneurship graduate school by comparing the students and graduates. The results of the students and graduates are slightly different, and the distribution of the items of each section is as follows. For the student group, the courses in the first quadrant are entrepreneurship and start-ups, entrepreneurship opportunity and business feasibility analysis, business model, business

plan writing method, venture finance and investment promotion, venture growth strategy, venture consulting methodology, case study, and entrepreneurship practice, while entrepreneurial marketing and entrepreneurial consulting methodology courses are located in the first quadrant for the graduates along with courses such as entrepreneurship and start-ups, entrepreneurial opportunities and business feasibility analysis, business model, business plan writing and entrepreneurship practice. For students, there are no items in the second quadrant, while graduates have courses in entrepreneurial accounting/finance, technology entrepreneurship, and technology commercialization. In the third quadrant, research methodology, Patent Law and Strategy, Business HR Strategy, Internship/Practice Program, Technology Entrepreneurship, Technology Commercialization, Franchise Business, Social Venture/Social entrepreneurship, e-Business, Service entrepreneurship, global entrepreneurship, culture and content creation are positioned for the student group. On the other hand, the third quadrant for the graduates represents the courses such as research methodology, patent law and strategy, venture finance and investment promotion, entrepreneurial HR strategy, venture growth strategy, entrepreneurship internship program, franchise entrepreneurship, e-business, service and global entrepreneurship. In the fourth quadrant, there are no courses for neither the students nor graduates.

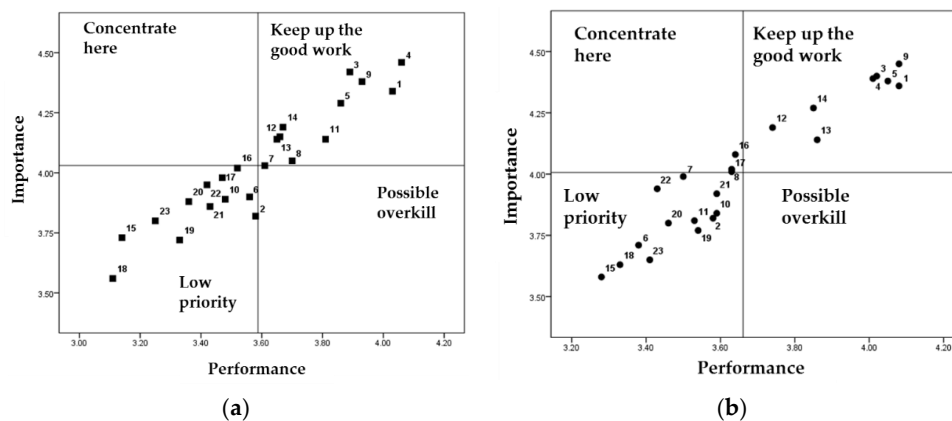


Figure 3. IPA analysis of curricula in entrepreneurship graduate schools: comparison of students and graduates. (a) Students; (b) Graduates.

Table 3. Entrepreneurship curricula: distribution of each section.

| | Students | Graduates |
|-----|---|--|
| I | Entrepreneurship and start-ups, entrepreneurship opportunity and business feasibility analysis, Business model, Business plan writing, Entrepreneurial finance and investment, entrepreneurial accounting/finance, Entrepreneurial marketing, Venture growth strategy, Entrepreneurial consulting methodology, Entrepreneurship case study, Business practice | Entrepreneurship and start-ups, entrepreneurship opportunity and business feasibility analysis, Business model, Business plan writing, Entrepreneurial marketing, Entrepreneurial consulting methodology, Entrepreneurship case study, Business practice |
| II | none | Entrepreneurial Accounting/Finance, Technology Entrepreneurship, Technology Commercialization |
| III | Research Methodology, Patent and Strategy, Entrepreneurship HR strategy, Internship/practical program, Technology entrepreneurship, technology commercialization, Franchise entrepreneurship, social venture/social entrepreneurship, service entrepreneurship, global entrepreneurship, culture content entrepreneurship, e-business entrepreneurship. | Research Methodology, Patent and Strategy, Entrepreneurial finance and investment, Entrepreneurship HR strategy, Venture growth strategy, Internship/practical program, Franchise entrepreneurship, social venture/social entrepreneurship, service entrepreneurship, global entrepreneurship, culture content entrepreneurship. |
| IV | none | none |

In addition, the importance and satisfaction of entrepreneurship programs at the graduate schools were compared between the students and the graduates, and the results are shown in Figure 4 and Table 4. As a result of the analysis, the degree of awareness of the students and graduates about the entrepreneurial program was significantly different. In the first quadrant, students perceived importance of various activities in the entrepreneurship programs, such as forming a network between alumni, linking partnership with external institutions, dedicated professor coaching/mentoring, expert/institutional consulting, support for community activation after graduation, and support for linkage between related projects after graduation. In the case of the graduates, there are formation of alumni network, support for partnership with external institutions, mentoring in the first quadrant. While the students pointed out that the programs that require intensive improvement (the second quadrant) are linked to funds and investment, the graduates have selected specialist/institution specialized consulting, after-graduation education/consulting support, support for community activation after graduation, and support for linkage between related businesses after graduation. For students, entrepreneurship competition, forum/seminar, and academic conference were located in the third quadrant (low priority), and entrepreneurship camp/training was located in the fourth quadrant (do not overwork). For the graduate group, start-up competition and conference are located in the third quadrant and entrepreneurship camp/training and forum/seminar are located in fourth quadrant.

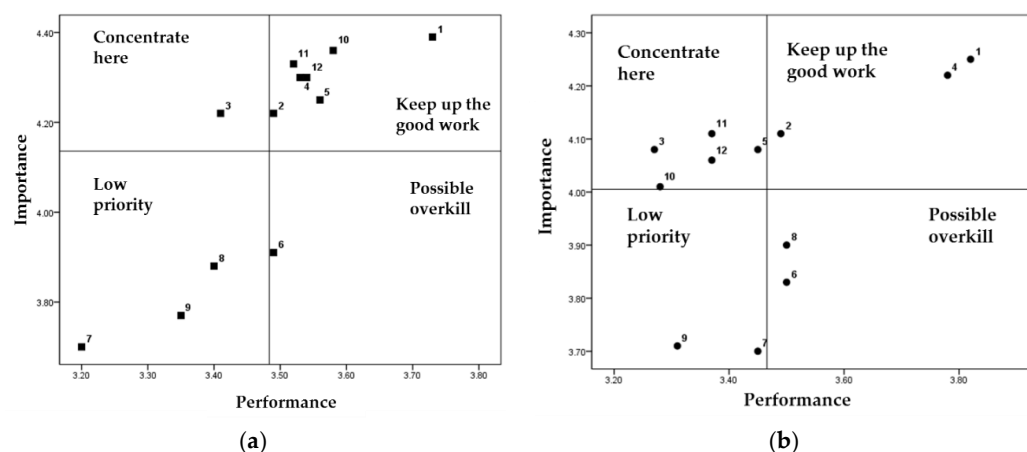


Figure 4. IPA analysis of entrepreneurship programs: comparison of students and graduates. (a) Students; (b) Graduates.

Table 4. Entrepreneurship programs: distribution of each section.

| | Students | Graduates |
|-----|---|--|
| I | Alumni network, partnership with external organizations, dedicated professor coaching/mentoring, Expert/agency professional consulting, after-graduation education/consulting, community activation after graduation, linking related projects after graduation | Alumni network, partnership with external organizations, dedicated professor coaching/mentoring |
| II | Linking funds and investment | fund and investment, Expert/institution specialized consulting, After graduation education/consulting, community activation after graduation, link between related business after graduation |
| III | Entrepreneurship competition, forum/seminar, conference | Entrepreneurship competition, conference |
| IV | entrepreneurship camp/training | entrepreneurship camp/training, forum/seminar |

5. Discussion

The purpose of this study is to analyze the important attributes and satisfaction of the curriculum and the education program for the students and graduates who are in charge of professional education for the activation of entrepreneurship education in order to analyze the difference between the level of importance and the level of satisfaction using the IPA method. Unlike general business schools, the entrepreneurship graduate school provides courses and methods to discover opportunities and challenge risks in an uncertain environment. As the result of IPA analysis, the most important courses to establish a basic concept of entrepreneurship and start-up were to find entrepreneurial opportunity, to analyze business feasibility, business plan writing, practical accounting, finance and marketing. Understanding of venture finance and investment and technology-based entrepreneurship are also considered as important subjects in promoting practical entrepreneurship and entrepreneurial activities. On the contrary, subjects such as venture growth strategy are not recognized as important in the entrepreneurship class.

As far as the entrepreneurship program is concerned, the program of the graduate school of entrepreneurship is important for the alumni network, partnership with external institutions, and coaching/mentoring. This is consistent with a number of reasons for many students and graduates entering graduate school. In addition, it is recognized that attracting funds and investment, and continuing community and education/consulting support after graduation are important for entrepreneurship education programs. Therefore, in order to activate the entrepreneurship education program, it is necessary to search for the development and improvement direction of such a program. On the other hand, entrepreneurship competitions, entrepreneurship camps, or training programs, which are generally common in entrepreneurship graduate schools and related programs, are not of much importance. In other words, the camp and training programs that are being implemented for the harmonization and linkage of students and alumni suggest that there is no need to invest much time and cost. Rather, it is desirable to invite qualified entrepreneurs and lecturers to improve the content and quality of entrepreneurial subjects with high importance.

The importance and satisfaction of entrepreneurship courses and programs that students and graduates perceive differ from group to group. Graduates show that the subject of entrepreneurial accounting/finance, technology entrepreneurship, and technology commercialization is important in light of their experience and needs to be intensively improved. For entrepreneurship-related programs, it is important to provide professional/institutional consulting, after-graduation education/consulting support, community activation support after graduation, and support for linkage between related businesses after graduation, but satisfaction of those programs are low. These results show that, despite the need for networking, consulting, and linking with related projects, it is not supported and managed while doing business after graduating from the entrepreneurship graduate school. Therefore, continuous management and activities are required through post management programs of entrepreneurship graduate schools.

In order to investigate the causes of this difference in importance and satisfaction, additional questions were asked about the improvements required by current students and graduates of the entrepreneurship graduate school. We then performed frequency analysis and χ^2 (chi-square) test to provide insights of the result. Overall, the demand for a variety of curriculum structures and the demand for experienced professional instructors were highest. In particular, the absence of a professional lecturer was the most common problem among the students and graduates. Other requested improvements of students and graduates showed little different priorities. As shown in Table 5, graduates were asked to strengthen their networks with outside organizations, professionalism of teachers, and various curriculum structures. Students requested to expand the range of subjects, teacher expertise, and specialization subjects.

Table 5. A chi-square test of graduate school education programs and curriculum improvements.

| | Students | | Graduates | | Total | |
|--------------------------------------|----------|-------|-----------|-------|-------|-------|
| | N | % | N | % | N | % |
| Various curriculum structures | 54 | 19.4 | 50 | 15.5 | 104 | 17.3 |
| Expansion of specialization courses | 42 | 15.1 | 30 | 9.3 | 72 | 12.0 |
| Faculty Expertise | 52 | 18.7 | 51 | 15.8 | 103 | 17.2 |
| Expansion of internship programs | 14 | 5.0 | 25 | 7.8 | 39 | 6.5 |
| Number of Coaching/Mentoring | 18 | 6.5 | 22 | 6.8 | 40 | 6.7 |
| Number of Expert Consulting Training | 15 | 5.4 | 22 | 6.8 | 37 | 6.2 |
| Number of camps | 6 | 2.2 | 7 | 2.2 | 13 | 2.2 |
| Number of on-campus events | 0 | 0.0 | 12 | 3.7 | 12 | 2.0 |
| Activate alumni association | 12 | 4.3 | 15 | 4.7 | 27 | 4.5 |
| External organization network | 33 | 11.9 | 55 | 17.1 | 88 | 14.7 |
| Follow-up after graduation | 32 | 11.5 | 31 | 9.6 | 63 | 10.5 |
| Others | 0 | 0.0 | 2 | 0.6 | 2 | 0.3 |
| Total | 278 | 100.0 | 322 | 100.0 | 600 | 100.0 |
| χ^2 | 23.818 * | | | | | |

* $p < 0.05$.

As it shows, although the demand for professional entrepreneurship education is increasing due to the revitalization of entrepreneurship, there is still a lack of professional education curriculum and professional instructors. In particular, students recognize that the professionalism of teachers who do not have start-up experience is low. Therefore, the professionalism of entrepreneurial education programs should be improved through the recruitment of teachers with experience of start-ups. In this study, we also confirm the gap between educators and students and find out that the curriculum and program should be changed accordingly.

6. Implications and Conclusions

This study suggests the following implications for the reorganization and improvement of the entrepreneurship curriculum and programs. First, many entrepreneurial courses and programs tend to focus on the financial aspects of business ownership, such as how to plan a business or how to submit proposals to investors. On the other hand, research shows that the success of venture companies starts with entrepreneurial attitude and mind. For example, high self-efficacy, emotional intelligence, and well-developed interpersonal skills are important factors in the success of the company [27]. Therefore, the entrepreneurship curriculum requires development of these personalities and development of skills. Second, the linkage between university education and industry is important to improve the quality and relevance of entrepreneurship education [28,29]. It may be helpful to understand and learn the actual field experience through courses such as business start-ups and case studies. Third, entrepreneurship education needs to focus on areas related to industry and economic growth. It is recommended to provide knowledge and methods to overcome the period of Death Valley by examining various strategic directions according to the growth curve of the venture. Therefore, the educator needs to modify the course to reflect the curriculum to suit the changing economic environment and student needs. This changing economic environment requires entrepreneurship education, including broader market interest and opportunity discovery capabilities, including students from other disciplines.

Fourth, as seen in this study, it is not surprising that networking has proven to be a key role for small business success. Both students and graduates view networking skills as an important factor in their success as an entrepreneur and show that it is necessary to activate an educational

program to support it and to emphasize it as a key factor in entrepreneurial programs. In addition, since entrepreneurs have generally emphasized the usefulness of networking [30], the creation of social networking websites can be effective in building and maintaining relationships with alumni and business partners. Fifth, given the global nature of the market, entrepreneurs need professionals who can solve their challenges from an international perspective. In the face of problems, global knowledge and competence are needed to explore creative thinking, acquisition, and distribution of resources, cross-cultural competencies, and innovative solutions. Sixth, this study shows that the recruitment of professional instructors and the development of various subjects should be prioritized for the development of entrepreneurship education. In addition, experts and educators in each field should work together to improve the quality of program and develop various courses.

Lastly, this study offers practical considerations to the faculty and managers involved in evaluating and developing entrepreneurship education programs. This study emphasizes the importance of reaching consensus on learning outcomes as well as the necessity of an educational consumer (students and graduates) based approach to setting evaluation priorities. Also, this study makes proposals for improving the necessity and importance of entrepreneurship programs. In addition, it is meaningful that this study was evaluated by students and graduates who actually participated in the program evaluation process. This emphasizes the need to develop programs that can be continuously linked to after graduation, as well as the opportunity to receive more relevant research and support in the field, and to develop curriculum and programs for entrepreneurship.

Entrepreneurship education and training have been found to affect technological development and entrepreneurial management and to increase the efficiency of venture firms [31,32]. However, the effectiveness of entrepreneurship education varies according to the students' abilities and skills. There is also a difference in IPA between students who take courses in entrepreneurship and graduates who run business. Graduates may think that what they have learned in the entrepreneurial training course cannot get the skills they need to do real business.

Therefore, the curriculum of entrepreneurship education in universities and graduate schools is operated according to the reality of universities. The existence of a gap between the consumer (students) and the supplier (educators) cannot result in an effective entrepreneurial education. In Korea, as well as in entrepreneurship education worldwide, realistic curriculum coordination is necessary through investigation of these differences.

This study suggests a guideline for the establishment of an entrepreneurship graduate school curriculum by reflecting opinions of the students who are receiving such education. However, this study has limitations, and based on this, we propose related studies in the future. First, because of the nature of case analysis, the results of this study may not be applicable to generic specimens and may be lacking in external validity as they are the result of a particular graduate program. Moreover, since E-mail surveys have been conducted according to the difficulty of distributing and searching the questionnaires, changes to the measurement tools may hinder external validation. Therefore, alternative analysis and survey tools should be considered in future research to reduce external validity and generalization errors. Second, in the present study, we mainly focused on the differences of importance-satisfaction of entrepreneurship courses and programs. In future research, however, it would be meaningful to analyze the importance and satisfaction from the program features perspective to investigate the relationship between unsatisfactory and unimportant courses. Third, although this study was conducted for postgraduates and graduates of representative entrepreneurship graduate schools in Korea, future research needs to examine entrepreneurship programs at other schools or other countries to compare entrepreneurship and SME performance. In addition, since the purpose, background, understanding, and achievement of students attending graduate schools are different, it is necessary to design and customize the courses according to the students' personal information. Therefore, in order to improve students' satisfaction of entrepreneurship education programs, follow-up studies are required considering the various influences of entrepreneurship motivation and choice attributes on entrepreneurial behavior.

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References

1. Kim, S.; Ryoo, H.; Ahn, H. Student customized creative education model based on open innovation. *J. Open Innov. Technol. Market Complex.* **2017**, *3*, 6. [\[CrossRef\]](#)
2. O'Connor, A. A conceptual framework for entrepreneurship education policy: Meeting government and economic purpose. *J. Bus. Ventur.* **2013**, *28*, 546–563. [\[CrossRef\]](#)
3. Walter, S.G.; Block, J.H. Outcome of entrepreneurship education: An institutional perspective. *J. Bus. Ventur.* **2016**, *31*, 216–233. [\[CrossRef\]](#)
4. Cooper, S.; Bottomley, C.; Gordon, J. Stepping out of the classroom learning approach to entrepreneurship education. *Ind. High. Educ.* **2004**, *18*, 11–22. [\[CrossRef\]](#)
5. Mitra, J. Consider velasquez: Reflections on the development of entrepreneurship programmes. *Ind. High Educ.* **2002**, *16*, 191–202. [\[CrossRef\]](#)
6. Jones, C.; English, J. A contemporary approach to entrepreneurship education. *Educ. Train.* **2004**, *46*, 416–423. [\[CrossRef\]](#)
7. Cruz, N.M.; Escudero, A.I.R.; Barahona, J.H.; Leitao, F.S. The effect of entrepreneurship education programmes on satisfaction with innovation behavior and performance. *J. Eur. Ind. Train.* **2009**, *33*, 198–214. [\[CrossRef\]](#)
8. Daud, S.; Abidin, N.; Sapuan, N.M.; Rajadurai, J. Enhancing university business curriculum using an importance-performance approach: A case study of the business management faculty of a university in Malaysia. *Int. J. Educ. Manag.* **2011**, *25*, 545–569. [\[CrossRef\]](#)
9. Fayolle, A.; Gailly, B.; Lassas-Clerc, N. Assessing the impact of entrepreneurship education programmes: A new methodology. *J. Eur. Ind. Train.* **2006**, *30*, 701–720. [\[CrossRef\]](#)
10. Graevenitz, G.V.; Harhoff, D.; Weber, R. The effect of entrepreneurship education. *J. Econ. Behav. Organ.* **2010**, *76*, 90–112. [\[CrossRef\]](#)
11. Coleman, S.; Robb, A. Unlocking innovation in women-owned firms: Strategies for educating the next generation of women entrepreneurs. *J. Women's Entrep. Educ.* **2012**, *1–2*, 99–125.
12. Jung, H.B. A study on the educational program improvement of graduate school of entrepreneurial management. *Korea Bus. Rev.* **2008**, *12*, 109–128.
13. Vesper, K.H.; Gartner, W.B. Measuring progress in entrepreneurship education. *J. Bus. Ventur.* **1997**, *12*, 403–421. [\[CrossRef\]](#)
14. Lee, I.H.; Kim, H.S. A study on the entrepreneurship curriculum development model to systemize entrepreneurship education in entrepreneurial graduate school. *Asia-Pac. J. Bus. Ventur. Entrep.* **2016**, *11*, 131–142.
15. Hahn, J.H.; Ko, U.J. Comparative study of entrepreneurship programs on the graduate schools of Korea and the Us. *J. Vocat. Educ. Res.* **2007**, *26*, 105–131.
16. Jung, J.S.; Min, K.S. The present conditions and improvement of entrepreneurship education program: Focused on educational course in graduate school of entrepreneurship. *Asia-Pac. J. Bus. Ventur. Entrep.* **2008**, *3*, 1–29.
17. Zhang, Y.; Duysters, G.; Cloudt, M. The role of entrepreneurship education as a predictor of university students' entrepreneurial intention. *Int. Entrep. Manag. J.* **2014**, *10*, 623–641. [\[CrossRef\]](#)
18. Millman, C.; Li, Z.; Matlay, H.; Wong, W.-C. Entrepreneurship education and students' internet entrepreneurship intentions. *J. Small Bus. Enterp. Dev.* **2010**, *17*, 569–590. [\[CrossRef\]](#)
19. Murugesan, R.; Jayavelu, R. Testing the impact of entrepreneurship education on business, engineering and arts and science students using the theory of planned behavior. *J. Entrep. Emerg. Econ.* **2015**, *7*, 256–275.

20. Pittaway, L.; Hannon, P.; Gibb, A.; Thompson, J. Assessment Practice in Enterprise Education. *Int. J. Entrep. Behav. Res.* **2009**, *15*, 71–93. [[CrossRef](#)]
21. Dickson, P.H.; Solomon, G.T.; Weaver, K.M. Entrepreneurial Selection and Success: Does Education Matter? *J. Small Bus. Enterp. Dev.* **2008**, *15*, 239–258. [[CrossRef](#)]
22. Linan, F. *Intention-Based Models of Entrepreneurship Education*; University of Seville: Seville, Spain, 2004.
23. Kourilsky, M.L. *Entrepreneurship Education: Opportunity in Search of Curriculum*, Center for Entrepreneurial Leadership; Ewing Marion Kauffman Foundation: Kansas City, MO, USA, 1995.
24. Bechard, J.P.; Toulouse, J.M. Validation of a didactic model for the analysis of training objectives in entrepreneurship. *J. Bus. Ventur.* **1998**, *13*, 317–332. [[CrossRef](#)]
25. Gottleib, E.; Ross, J.A. Made not born: HBS courses and entrepreneurial management. *Harv. Bus. Sch. Bull.* **1997**, *73*, 41–45.
26. Clegg, B.; Birch, P. *Instant Creativity: Simple Techniques to Ignite Innovation and Problem Solving*; Kogan Page: London, UK, 2007.
27. Martila, J.A.; James, J.C. Importance-performance analysis. *J. Market.* **1977**, *41*, 77–79. [[CrossRef](#)]
28. Hynes, B.; Richardson, I. Entrepreneurship education: A mechanism for engaging and exchanging with the small business sector. *Educ. Train.* **2007**, *49*, 732–744. [[CrossRef](#)]
29. Park, J.-H.; Lee, B.; Moon, Y.-H.; Kwon, L.-N. Study for selection of industrial areas suitable to small and medium-sized enterprises (SMEs) in Korea. *J. Open Innov. Technol. Market Complex.* **2016**, *2*, 19. [[CrossRef](#)]
30. Greve, A.; Salaff, J.W. Social networks and entrepreneurship. *Entrep. Theory Pract.* **2003**, *28*, 1–22. [[CrossRef](#)]
31. Elmuti, D.; Khoury, G.; Omran, O. Does Entrepreneurship Education have a Role in Developing Entrepreneurial Skills and Venture's Effectiveness? *J. Entrep. Educ.* **2012**, *15*, 83–98.
32. Cheng, M.Y.; Chan, W.S.; Mahmood, A. The Effectiveness of Entrepreneurship Education in Malaysia. *Educ. Train.* **2009**, *51*, 555–566. [[CrossRef](#)]



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