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Social Entrepreneurship Education as an Innovation Hub for Building an Entrepreneurial Ecosystem: The Case of the KAIST Social Entrepreneurship MBA Program

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Received: 30 September 2020; Accepted: 19 November 2020; Published: 22 November 2020



Abstract: As social problems become more extensive and diverse, one of the most critical capabilities of social entrepreneurs is connecting and aligning various stakeholders. Social entrepreneurs can solve problems better through collaboration with stakeholders, and this leads to sustainable innovation of society. Accordingly, social entrepreneurship education (SEE) programs should be designed and operated to cultivate social entrepreneurs' abilities to enhance connectivity with all relevant entities of the social enterprise ecosystem. Consequently, SEE can form ever-growing communities of social entrepreneurs while functioning as innovation hubs for entrepreneurial ecosystems (EEs) evolving on their own. To this end, this study proposes a design and assessment framework for SEE. The framework emphasizes strengthening internal connectivity among SEE program members and external connectivity with outside entities, including universities, firms, government agencies, civil societies, and natural environments. This framework clarifies how and to whom social entrepreneurs should connect throughout the SEE process. This paper analyzes the case of an MBA degree SEE program in Korea using this framework and identifies directions for further improvement of SEE, contributing to the social entrepreneurship and entrepreneurship education literatures by integrating SEE's key features with social theories of learning and the quintuple helix model for sustainable innovation ecosystems. Practically, our findings provide a useful benchmark to find isolated internal and external entities that need more active interactions to achieve SEE's purposes.

Keywords: social entrepreneurship education; innovation hub; entrepreneurial ecosystem; KAIST social entrepreneurship MBA program; quintuple helix model

1. Introduction

Social enterprises have been noteworthy as a key solution to a variety of social problems within current market economy systems [1]. Although enterprises create economic and social value in the market economy system, they also raise various social problems, such as inequality and environmental pollution [2]. In response, discussions of corporate social responsibility have been widely held among management scholars, and social enterprises that seek solutions to address such problems have attracted considerable interest among policymakers, academics, and practitioners [3]. Social enterprises are organizational entities that create both economic and social values by solving social problems through business mechanisms [4–6]. They utilize the economic value that they create as a resource to solve

social problems and underpin sustainable development. Unlike traditional business organizations that create social value by participating in social projects to complement the core objective of economic value generation, social enterprises focus first on their social mission to create positive social impact and measure the impact to communicate and collaborate with various stakeholders [6].

Social problems are spreading to a wide variety of areas, and the severity of each area is also becoming greater [7]. The damage caused by social problems lies not at the level of certain persons or a particular region but at the level of all humankind, and they threaten not only the convenience of everyday life but also the survival of the planet. It is not possible to solve these diverse and severe social problems through the endeavors of one special person, a certain organization, or even a single country. Accordingly, the most critical factor in the success of social enterprises is the formation of a consensus and collaboration with stakeholders in the social problems that they are trying to solve [8].

In this sense, one of the essential competencies of a social entrepreneur is the alliance-building capability [9]. When nurturing future social entrepreneurs or educating incumbent social entrepreneurs, all of the elements of the curriculum, all extracurricular activities, and all aspects of hardware/software infrastructure design of education programs should be aligned to form an organic social network [10]. At the same time, the literature on social entrepreneurship education (SEE) has mostly discussed the effects of SEE from a microscopic perspective and focused on whether an educated person is attempting to start a social enterprise [11]. Discussions of what makes good SEE, how to maximize the effects of SEE, and what happens after the establishment of a social enterprise still lack an ecosystem-wide perspective. Considering all of the relevant entities of the social enterprise ecosystem enables us to better examine how SEE can cultivate the problem-solving abilities of social entrepreneurs/enterprises, which could ultimately lead to sustainable development of the ecosystem.

Given this background, this paper aims to propose a conceptual framework that can be used to design, analyze, and evaluate SEE programs building upon such an integrative perspective. In order to design this conceptual framework, this paper builds upon two theoretical bases from previous studies: social theories of learning, which emphasize the importance of communities of practice, and the quintuple helix model (QHM), which defines the components of a sustainable innovation ecosystem and describes the process through which innovation occurs. According to this framework, SEE should contribute to forming an organic and self-sustaining social enterprise ecosystem by ensuring connectivity with other major entities that constitute the external environment in which social problems arise. The traditional role of universities was a knowledge storehouse; this role later evolved into a knowledge factory and, in turn, a knowledge hub [12]. In this study, we define the role of SEE as a collaborative hub for the innovation network of social enterprise and startup ecosystems. SEE is viewed as a promising education platform that fosters entrepreneurs who can create business opportunities in the process of discovering and solving social problems and, thus, underpins social sustainability.

In addition, this paper applies this new framework to the case of a SEE program in Korea to check its usability and contribution. As a forefront attempt of SEE, the Social Entrepreneurship MBA Program (KSEMP) of the College of Business at the Korea Advanced Institute of Science and Technology (KAIST) is a full-time MBA program that provides active support, including full scholarships for two years, to foster social entrepreneurs. It is a unique MBA program that requires all students to establish and scale social enterprises to a certain level before graduation and thus aims to contribute directly to the social enterprise ecosystem. The process and the results of KSEMP case analysis shows that the framework is helpful in identifying future directions for further improvement of the program.

This study contributes to expanding the literature on the theoretical framework for the design or evaluation of SEE. The goals and the corresponding roles of SEE can be viewed theoretically from the overall perspective of the social enterprise ecosystem. This paper contributes to expanding the literature on social entrepreneurship, entrepreneurship education, and SEE by integrating SEE's key features with social theories of learning and the QHM for sustainable innovation ecosystems. In addition, the framework developed on this basis can be utilized by stakeholders in the government

and educational institutions that wish to design new SEE programs or improve existing SEE programs through systematic assessment and analyses.

2. Literature Review and Theoretical Basis

As interest in social enterprises and social entrepreneurship has increased, academia has increasingly performed research on SEE. Conducting a literature review on SEE, this section explores the role that SEE should play to achieve its primary purpose and to contribute to the formation of a social enterprise ecosystem that continues to grow. In addition, this paper reviews prior studies of the entrepreneurial ecosystem (EE) to examine the definition and meaning of the EE as the ultimate direction of the social enterprise ecosystem and to investigate what SEE should consider for this purpose.

2.1. Social Entrepreneurship Education (SEE)

Previous studies of SEE have largely addressed educational content, methods, and performance (Table 1). Studies of educational content have ultimately been linked to the purpose of SEE. In general, the main purpose of SEE is to help students to develop sustainable business models that enable them to work with private and public partners to create social value in innovative ways [13]. The literature sharing this view has focused on educating students in how to start a social enterprise [14], while another research stream has paid attention to creating social value by reorganizing human and other resources through social projects, considering the establishment of social enterprises as a secondary concern [15]. In addition, some studies have addressed the differences and challenges of SEE compared to general entrepreneurship education [14,16].

Studies of educational methods have been conducted based primarily on social theories of learning and practice-based wisdom theory. Based on social theories of learning, Howorth et al. [1] argued that learning from peers is more important than formal thinking-based learning. They found that learner identity and psychological safety were important to fostering social entrepreneurship and insisted on developing programs to foster reflection and thinking to prepare social entrepreneurs for their own situations. Hockerts [11] argued that SEE increases the tendency of students to establish social enterprises through an empirical learning process in which students establish a shared community of practice. He found that participation in more practical SEE encourages participants to perceive the need for social support, to foster self-efficacy in entrepreneurship, and to increase students' intentions to start social enterprises. He also verified that the more students participate in empirical learning activities, the greater the learning effects that occur. Zhu et al. [17] addressed the issue of managing competitive logic in social enterprises and designed a curriculum matrix for developing a sustainable business model based on practice-based wisdom theory.

Prior studies measuring the educational performance of SEE have primarily assessed the impact on students' perceptions, attitudes, and intentions. Kirby and Ibrahim [18] investigated Egyptian students and argued that it is necessary to improve their awareness of and attitudes toward social entrepreneurship as a career option. Dobele [19] argued that incorporating SEE into the curricula of universities has impacts at the individual, organizational, and environmental levels. He noted that SEE is essential not only for sustainable social structures, but also for the personal development of individuals. SEE can foster the ability of individuals to respect others' rights and responsibilities and to empathize with others' problems in a competition-based society, providing the basis for achieving social welfare, inclusive growth, and sustainable development through the establishment of a strong community. Because personal development leads to benefits for organizations and society as a whole, universities can confirm the need to provide SEE. Pache and Chowdhury [20] also argued that SEE extends an individual's competence in capturing and evaluating entrepreneurial opportunities; SEE draws considerable attention by providing quality education that contributes to innovation in a student's life through startup-launching opportunities, leading to the development of society.

Table 1. Selected previous studies on social entrepreneurship education.

Research Perspectives	Authors	Findings
Educational content	Jensen [13]	SEE teaches students to work with private and public partners to create social value in innovative ways.
	Brock and Steiner [14]	SEE deals with how to start a social enterprise and make it sustainable.
	Tracey and Phillips [15]	SEE focuses on creating social value by reorganizing human and other resources.
Educational methods	Howorth et al. [1]	Learning from peers is more important than thinking-based learning for fostering social entrepreneurship.
	Hockerts [11]	The empirical learning process is critical to increase the tendency of students to establish social enterprises.
	Zhu et al. [17]	They designed a curriculum matrix for developing a sustainable business model of social enterprises.
Educational performance	Kirby and Ibrahim [18]	SEE can improve students' awareness of and attitudes toward social entrepreneurship as a career option.
	Dobele [19]	SEE is essential not only for sustainable social structures, but also for the personal development of individuals.
	Pache and Chowdhury [20]	SEE extends an individual's competence in capturing and evaluating entrepreneurial opportunities.

The above literature suggests that community building is methodologically important in SEE to facilitate learning from collaboration and competition between students and that the growth of individuals, as part of the educational performance of SEE, is linked to the sustainable development of their society. At the same time, the literature has shown the need for research from a holistic viewpoint that aligns the contents, methods, and performance of SEE. While previous studies of SEE performance have discussed the impacts at the individual, organizational, and environmental levels, most of the research on the contents and methods of SEE has focused on the individual level. However, the contents and methods of education cannot be viewed separately from the purpose or performance goal. Therefore, SEE researchers must seek alignment in content and methods that meets the purpose of such education while maintaining the consistency of the individual, organizational, and environmental levels of performance that SEE aims to achieve.

2.2. Entrepreneurial Ecosystem (EE)

The EE concept is the overarching theoretical basis of this paper. It can provide consistency among the contents, methods, and purposes of SEE to contribute to building a healthier society (environmental-level performance) by fostering social entrepreneurs (individual-level performance) and solving social problems by means of the social enterprises that they build (organizational-level performance). Since the first use of the term “ecosystem” in the entrepreneurship literature by Bahrami and Evans [21], various studies of the EE have been conducted. An EE is a group of systems, networks, or interconnected elements formed by the interaction of entrepreneurial communities or stakeholders with their environment [22]. Spilling [23] similarly used the term “entrepreneurial system” to describe the environmental, institutional, and individual factors that interact to create entrepreneurial performance in a region. In other words, the EE is the regional aggregate of economic, political, cultural, and social factors that support the establishment and growth of innovative enterprises by encouraging early entrepreneurs and other actors to start their own businesses, raise funding, and take high-level risks [24]. This ecosystem includes cultural factors (e.g., supportive culture, entrepreneurial history), social factors (e.g., employees' ability, financial capital, and human networks), physical factors (e.g., universities, infrastructure, and markets), and so on.

Similar terms to EE, such as innovation system, innovation cluster, and knowledge ecosystem, have sometimes been used interchangeably in previous studies. The innovation system concept

was proposed by Freeman [25] and consists of economic, social, political, and institutional factors that affect the creation and diffusion of innovation. In particular, organizations that create and commercialize knowledge play critical roles in the innovation system [26,27]. An innovation cluster consists of groups of interconnected enterprises in a specific sector or industry with commonality and complementarity, which have the advantage of being geographically adjacent to one another [28]. Engel and Del-Palacio [29] further developed this concept to suggest that clusters build a new framework to support a global network among them, rather than existing like isolated islands. They referred to Silicon Valley as a prime example, explaining that entrepreneurs and startups can enjoy benefits from being located near professional institutions that spread best practices for entrepreneurs, such as intellectual property (IP) brokerage companies and venture capital firms. A knowledge ecosystem is an expertise-intensive industry cluster that covers a variety of organizational forms, such as shared values, anchor tenants, and cross-network alignments [30]. In particular, being located close to where knowledge is created decreases the cost of movement of human resources and intangible resources, such as information and ideas. It also promotes the recreation of knowledge that comes from collective knowledge [31,32]. Consequently, participants create and diffuse innovation more rapidly through collective learning [33]. These concepts all claim that enabling more interaction between components through structuring networks and strengthening connectivity can promote the operation and expansion of systems, clusters, and ecosystems.

An EE is an economic community that supports interaction between businesses or individuals, develops their capabilities and roles over time, and aligns itself with the direction set by key companies [34]. However, the EE is not under the control of individual leaders or organizations [35]. Although some organizations might have a greater influence on the EE than others, no organization dominantly controls or governs the EE or its components. In addition, interactions in the EE consist of collaborations and competitions, and the formation of a value network enables the creation of value that a single company cannot create alone [36]. In particular, socio-cultural characteristics create a strong sense of community and implicit rules in the formation of value networks among the constituents of the EE [37,38]. The components of an EE are diverse and complex and include entrepreneurs, investors, mentors, and other resource providers. Moreover, the relationships among the components are dynamic [38].

Universities contribute to the creation and growth of EEs by supporting the establishment of spin-offs or startups through knowledge transfer mechanisms [39]. In particular, in addition to education and research, entrepreneurial universities play a role in promoting the production, diffusion, absorption, and utilization of novel knowledge in surrounding areas by intensively supporting the entrepreneurial activities of researchers and students with close links to research and development (R&D) centers, private companies, science and technology complexes, and government agencies [40,41]. In addition, well-organized entrepreneurial university ecosystems lead to successful business ecosystems [30]. The business ecosystem is naturally built around entrepreneurial universities, since companies utilize innovative ideas and a high level of human resources [42,43] and governments invest in innovative startup companies to grow regional economies [44].

The knowledge spillover theory of entrepreneurship assumes that knowledge creation is a driving force of innovation and economic growth. New knowledge can be formed by reorganizing existing knowledge, which is related to the ability of members to find, obtain, absorb, share, and use knowledge effectively and efficiently [45]. Hence, entrepreneurship is a critical means of spreading new knowledge that ultimately leads to economic growth [46,47]. In explaining the processes of knowledge creation, transfer, absorption, and application, social networks are also instrumental [48]. In this respect, universities, as the key constituents of the EE, can play the role of innovation hubs in an EE and expand the EE by promoting information and knowledge exchange beyond interactions within a specific regional context [12].

The EE concept discussed thus far indicates the orientation of the network of social entrepreneurs or the social enterprise ecosystem. The concept is further reinforced from the perspective of social

entrepreneurship, in which the formation of an ecosystem that connects various entities of society and the natural environment to communities of entrepreneurs and groups of interconnected enterprises creates continuous innovation. Social entrepreneurs need a broader range of stakeholder collaboration compared to ordinary entrepreneurs, who seek unmet consumer needs and recognize them as opportunities, because social entrepreneurs also aim to address the unmet needs of local communities or society [49–51].

By synthesizing the theoretical considerations above, we can present and investigate the connectivity of SEE from two angles.

Internal Connectivity of SEE. From the SEE methodological perspective, building a community of social entrepreneurs that facilitates learning from collaboration and competition among students will contribute to their performance. In addition, the personal performance generated through SEE will lead to the sustainable development of society.

External Connectivity of SEE. The core of an EE is connectivity, which promotes interactions, usually in the form of cooperation and competition among different entities. The SEE of universities, a source of new knowledge creation, can serve as an innovation hub for an EE, being organized by close connections among members of society and enabling the EE to create additional value that each entity cannot create separately [36]. In addition, the value creation capability of the EE continuously grows and evolves.

The link between entrepreneurial universities and business ecosystems is a meaningful research topic that scholars have recently noted [30,52]. Previous studies have made great progress in identifying the individual components of EEs and exploring the connections between them. However, there remains a lack of research on how the SEE of universities, as an innovation hub, interacts with other components to form and develop an EE from a holistic perspective. Shedding light on the role of SEE and analyzing it from the EE perspective will help us to synthesize scattered fragmentary studies and increase understanding of SEE from a holistic perspective.

2.3. SEE Design Framework

The QHM provides an important foundation for determining how and to whom SEE should be connected to function as an innovation hub that constitutes an EE. The QHM, which is an extended version of the triple helix model, is a useful theoretical model for analyzing systems and ecosystems from a macroscopic viewpoint [53]. The triple helix model emphasizes the importance of university–industry–government interactions to create an innovation ecosystem, and the QHM extends the scope of interactions to civil society and the environment [54].

According to the QHM, there is collective interaction and exchange of knowledge among five sub-systems called helices: the education system, the economic system, the political system, civil society, and the natural environment [54]. In the first helix, the education system, in the form of academia, universities, or higher education systems, develops human capital, such as students, teachers, researchers, and academic entrepreneurs, through the spread of knowledge and intellectual exploration. The second helix, the economic system, which consists of industries, companies, service firms, banks, and others, formulates economic capital, such as money, products, technology, entrepreneurship, and the means of production. Third, the political system defines where society is headed and organizes and administers the overall conditions of society with political and legal capital, such as laws, plans, and politicians. As the fourth helix, civil society plays a role in initiating bottom-up innovation in the QHM and supplements the top-down decision making of other social systems. Citizens are involved in the innovation process as lead users and co-creators of new products, services, and solutions. Finally, the natural environment is crucial because it coordinates the priority and urgency of sustainable development by offering environmental capital.

Ultimately, the QHM aims to connect universities, industry, the government, civil society, and the (natural) environment more closely, to encourage active interactions among these five sub-systems and eventually to build a more sustainable society. In particular, knowledge is a core and driving

force expanding the connectivity of these sub-systems for innovation in the QHM [54,55]. Thus, university education programs that create and spread knowledge can act as focal points for connecting the five sub-systems and facilitating interactions among them.

Based on this theoretical background, a framework for designing and analyzing SEE from the EE perspective is derived. On the left, Figure 1 shows the members whom SEE must consider to ensure internal connectivity for community building; on the right, it shows the position of SEE inside an EE, as well as the other entities to which SEE should relate to secure external connectivity. SEE designed based on this framework seeks to build a community of social entrepreneurs that enhances the educational performance of internal members and that serves as an innovation hub by securing contact points with various external entities to form and extend the EE.

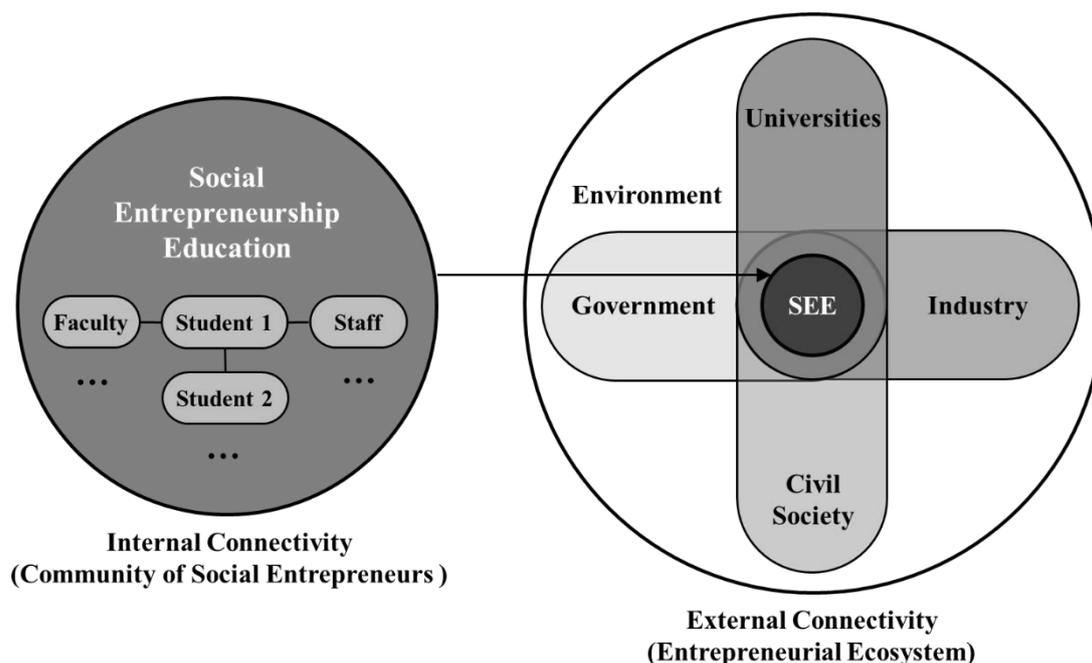


Figure 1. Conceptual framework for social entrepreneurship education design from the entrepreneurial ecosystem perspective.

3. The Case: KAIST Social Entrepreneurship MBA Program (KSEMP)

This paper is largely based on an in-depth case study of a unique higher education program, fully dedicated to teaching and nurturing current and future entrepreneurs who endeavor to solve social problems by establishing for-profit, impact startups. KSEMP is an independent, two-year full-time MBA program within KAIST College of Business in Seoul, Korea.

3.1. Data Collection

Our case study is based on three types of data, which are complementary to each other and ensure objectivity to some extent. First, official online and offline promotional materials provided basic information about the program. Official brochures and websites of KSEMP and its upper-level organizations, KAIST (as a whole university) and its College of Business, as well as those of start-up-related organizations within KAIST including SK Centre for Social Entrepreneurship, Startup KAIST, and K-School, were thoroughly examined. Second, internal operational information was used for deeper observation. As faculty members of KAIST, two of the authors are deeply involved in the program and have direct access to the official minutes of biweekly KSEMP operational meetings and monthly media exposure newsletters from July 2018 to June 2019. Third, interviews and survey results collected as part of a 15-week project in 2018 to formulate the future direction of KSEMP,

assisted by a globally renowned consultancy, were used. Table 2 provides an overview of the three types of data.

Table 2. Three types of data used in this study.

Sources	Description
Public promotion materials *	<p>Based on the following public information describing the KSEMP, the authors described what activities for internal/external connectivity the KSEMP has performed and with whom.</p> <ul style="list-style-type: none"> • Official brochures • Official websites of upper-level organizations (KAIST and KAIST College of Business) • Official websites of start-up-related organizations in KAIST (SK Centre for Social Entrepreneurship, KAIST College of Business Start-up, Start-up KAIST, and KAIST K-School)
Internal operational information	<p>Based on the following inside information, the authors reviewed what activities for internal/external connectivity the KSEMP has performed and planned to perform and with whom. Only the activities and entities that are explicitly mentioned in the following information are addressed.</p> <ul style="list-style-type: none"> • Official minutes of biweekly KSEMP operational meetings (July 2018 to June 2019) • Monthly media exposure newsletters
Interviews ** and surveys	<p>From the results of interviews, surveys, and consultation with various stakeholders, the authors endeavored to interpret the context of the explicitly described information. The following concerns the participants in the interviews (9 July to 5 October 2018) and surveys (2 to 7 August 2018).</p> <ul style="list-style-type: none"> • 22 interviewees <ul style="list-style-type: none"> - Eight professors Dean, College of Business (1) Director, Social Entrepreneurship MBA (1) Director, Institute for Start-up KAIST (1) Others (5) - Five alumni Social enterprise CEO (3) Social enterprise employee (1) Social enterprise researcher (1) - Three related field experts Venture capital firm CEO (1) Impact accelerator CEO (2) - Six members of the anchor firm Chairman (1) C-level manager (2) Executive director (2) Project leader (1) • 60 questionnaire respondents (response rate 57%, i.e., 60 out of 106) <ul style="list-style-type: none"> - 28 alumni - 32 students

Notes: * The website addresses of public promotion materials are shown in Appendix A. ** More details of the interviews are provided in Appendix A.

3.2. The History and Status of KSEMP

KSEMP is a representative Korean SEE program. In collaboration with the SK Group, KAIST College of Business launched KSEMP in 2013 to boost the social enterprise ecosystem in

the country. Compared to the new goal, i.e., to “build an ecosystem where social enterprises can grow for themselves”, which the Korean government set as the 3rd Basic Plan for Social Enterprise Promotion in 2018, KAIST and the SK Group started to prepare for the future much earlier. In 2012, the KAIST College of Business and the SK Group signed the first memorandum of understanding (MOU), drawing a blueprint for the actual collaboration, and the SK Group invested KRW 9 billion (As of September 2020, KRW 1000 equals approximately USD 0.8) for curriculum design, faculty recruitment, and operating systems. In 2016, they signed the second MOU for another five years, with the SK Group investing KRW 12.5 billion to optimize the operation and to improve the performance of KSEMP by 2021. Approximately 45% of the total budget is used for scholarships.

According to its official brochure (<https://www.business.kaist.ac.kr>), KSEMP is “a platform training next-generation entrepreneurs to create innovative values through compassion and enthusiasm toward people and society”, and its educational focus is on expanding the practical management capability of potential social entrepreneurs. KSEMP students must develop competitive and sustainable business models for their social enterprises and use these models to establish and manage a company successfully during this two-year full-time degree program. As an MBA course, KSEMP nurtures the following types of students as social entrepreneurs: (1) those who have expertise in technology, culture, art, and social issues but lack management knowledge and experience; and (2) those who need experience and mindset as entrepreneurs even if they have basic knowledge about business administration.

The program’s curriculum mainly consists of classes related to starting a social enterprise. These classes are different from the classes in academic master programs or general MBA programs, which focus primarily on research abilities for future business scholars or administrative and operational abilities for professional managers. KSEMP classes are designed to equip students to become social entrepreneurs with an appropriate understanding of and attitude toward social problems and to expand their competencies and qualifications to launch and run a startup that pursues rapid financial growth while solving social problems. Table 3 shows the composition and major subjects of the curriculum. While offering fundamental business management and social entrepreneurship classes as mandatory for the students who have diverse experiences as engineers, experts in non-profit organization, designers, artists, and so on, KSEMP offers more specialized courses for those who want to learn more about technology and specific social issues by collaboration with other MBA programs and engineering colleges.

Table 3. KSEMP curriculum.

Courses	Subjects (Credits)	Main Classes
Mandatory Major	Social Entrepreneurship (22.5/48 *)	Social Venture Lean Start-up Social Issue Analysis and Mission Development Social Entrepreneurship Social Venture Ideation Social Venture Business Model
	Business Management (12/48)	Leadership and Organization Management Marketing Financial Management Supply Chain Management
Mandatory General	Statistics (3/48)	Probability and Statistics
Elective /Research	Others (10.5/48)	Special Topics in Social Enterprises Seminar for Social Enterprises Field Study in Social Enterprise **

Notes: * The KSEMP requires 48 credits for graduation. ** During this overseas experiential learning trip, students join local problem-solving projects and even host workshops with local social enterprises. The KSEMP has visited Silicon Valley and San Jose State University (2019), the Cambridge Centre for Social Innovation at the University of Cambridge (2018), the University of Sheffield (2015–2017), Santa Clara University (2014), and the Social Entrepreneur Corps in Nicaragua (2013).

Since 2013, approximately 20 students have been admitted to KSEMP every year, and its graduates have made significant contributions to the Korean social enterprise ecosystem. By the end of 2018, 60 of 66 graduates (91%) had started their own businesses. Among them, 21 had attracted a total of KRW 2.9 billion, including investments and cash prizes, and in 2017, 49 of 66 graduates (74%) collectively generated KRW 17.3 billion of sales (KRW 350 million per company). The largest number of companies generated from KSEMP graduates belongs to the category of culture and arts, followed by education, shared economy, and job creation. Figure 2 shows the 2017 sales distribution of 49 social enterprises (from the first to the fourth cohorts), and Figure 3 shows the categories to which the 78 graduate enterprises (from the first to the fifth cohorts) belong.

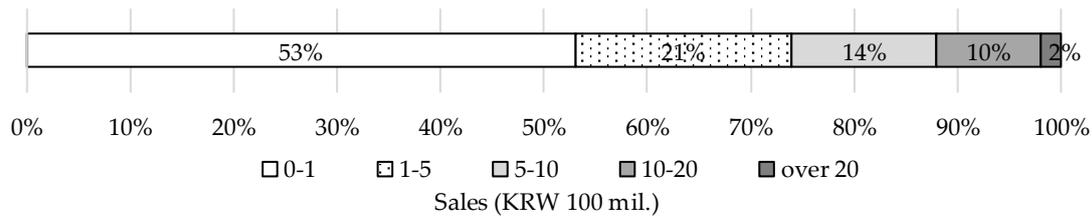


Figure 2. Sales distribution of 49 social enterprises from KSEMP that generated sales in 2017.

Social value of KSEMP is based on the social as well as economic values of these social enterprises having their own clear social missions and objective methods to measure their social impacts. To keep the enterprises from losing their identity as a social enterprise, KSEMP offers many courses and mentoring programs related to social entrepreneurship and coordinates a regular workshop through which the enterprises can develop their own social missions clearly and the methods to measure their social impacts objectively. Specifically, it endeavors to calculate the social impact created by a social enterprise in monetary terms in collaboration with several external experts. The SK Group has been developing an innovative incentive system that rewards social enterprises according to the calculation of their social impact (denoted in Korean won). Currently, three types of methods are normally used for such calculation: direct monetary values created, relative price estimates, and input cost augmentation. Largely due to the diversity and complexity of social problems that KSEMP alumni tackle, it is still at an inchoate phase to quantify the social impact in an objective way.

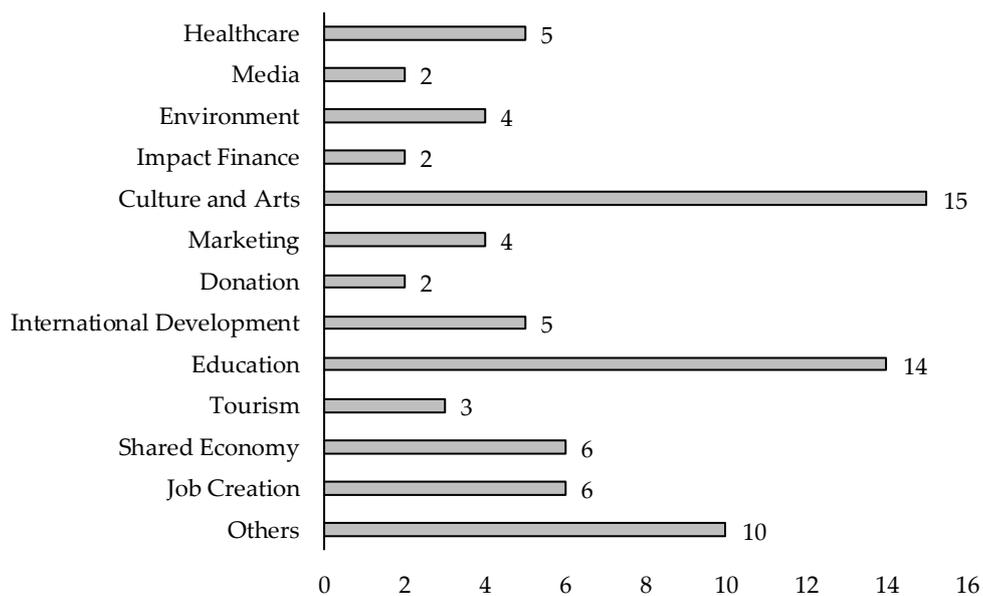


Figure 3. Categories of social enterprises founded by KSEMP alumni.

3.3. Social Enterprise Ecosystem in Korea

From the Social Enterprise Promotion Act in 2007 to the Third Basic Plan for Social Enterprise Promotion (2018–2022) by the Ministry of Employment and Labor in 2018, the Korean government has actively expanded its support policies for social enterprises [56]. In Korea, social enterprises that aim to create social value can be legally certified by the government, and there are various special support programs only for these certified enterprises. To obtain the certification defined by the Social Enterprise Promotion Act, social enterprises should perform business activities, such as manufacturing and selling goods and services while pursuing a social mission, for example, by offering jobs or social services for vulnerable social groups or improving the quality of life of local residents by contributing to the local community [57].

The positive support of the government has continuously increased the size of social enterprises in many ways. From 2007 to 2017, the number of certified social enterprises increased more than 34 times, from 55 to 1877, and the number of employees increased more than 16 times, from 2539 to 41,417 [56]. The average number of employees per company in 2017 was 22, which was less than the number of employees in 2012, 2014, and 2016, i.e., 24, 23, and 24, respectively. This decrease in average employment size means improved productivity as measured by sales per employee, considering the increasing size of sales. From 2014 to 2017, average sales continued to grow more than 60%, from KRW 1.20 billion to KRW 1.93 billion. In 2017, the total sales of all certified social enterprises in Korea amounted to approximately KRW 3.5 trillion, and the number of enterprises achieving sales of more than 10 KRW billion was 40; in 2012, this number was 6. Figure 4 shows the sales distributions of social enterprises in 2012 and 2017.

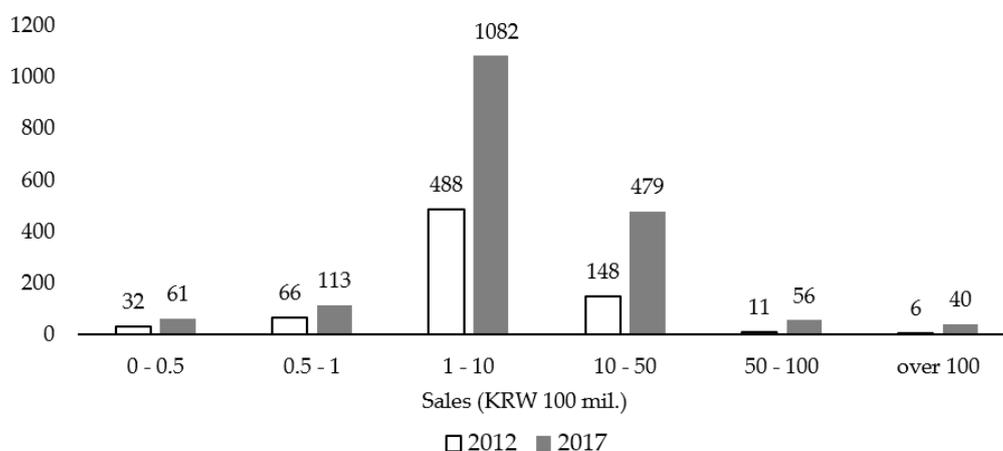


Figure 4. Sales distribution of Korean social enterprises in 2012 and 2017. Source: MEL, The Third Basic Plan for Social Enterprise Promotion (2018–2022), 2018.

However, short-term quantitative growth might be the culmination of social enterprise growth due to strong government support, and such support could not lead to the long-term sustainable growth of the whole ecosystem [56]. The Third Basic Plan for Social Enterprise Promotion demonstrates the limitations of past growth in many ways. Considering that the sales of social enterprises are mainly from purchases by public agencies, the general awareness of social enterprises remained very low. Above all, the inflow of human resources was not sufficient, and advanced education and training programs for developing various types of expertise of existing human resources were not ready [56]. As a result, most social enterprises were classified into the job offering type (67.2%), and other types—social services (6.0%), local community aid (5.7%), hybrid (9.1%), and others (12.0%)—were very limited [56]. While a variety of social issues, such as fine dust, mental illness, climate change, plastic waste, marine pollution, population aging, displaced persons, and gender equality, are becoming more serious in terms of the depth and extent of their influence, and new issues

arise in succession rapidly, the expertise of social entrepreneurs, who represent an alternative to these problems, falls short of expectations.

The Korean government recognized these limitations and set a new goal, i.e., to “build an ecosystem where social enterprises can grow for themselves”, in new plans for social enterprise support [56]. The new goal promotes continuous inflow of new human resources and material resources and expands the connectivity among all of the constituent entities to build an ecosystem in which social enterprises, as the main entity of the ecosystem, can achieve sustainable growth through competition and collaboration. Specifically, the government has a plan to raise an impact fund of as much as KRW 100 billion to invest in social enterprises; to expand the contact points between customers and social enterprises by offering opportunities to launch, work for, and purchase from social enterprises; to encourage collaboration between social enterprises and other social enterprises or large corporations; and to establish an integrated database and platform for seamless information sharing between any entities belonging to the ecosystem [56].

4. KSEMP as an Innovation Hub for the Social Enterprise Ecosystem

Building on the framework developed based on QHM, our case study consists of an internal connectivity analysis and an external connectivity diagnosis of KSEMP. First, we address the characteristics and expected effects of various interactions occurring throughout the curriculum and extracurricular activities among students (social entrepreneurs), the faculty, and the staff. Next, major entities with which KSEMP should cooperate are identified, and their characteristics and the expected effects of the interactions among them are examined.

4.1. Internal Connectivity

Through various interactions among key members, KSEMP can function as a community of social entrepreneurs, not only as an educational program. The social network is the most important asset for social entrepreneurs [10], and the community of social entrepreneurs is a very rare and valuable asset in Korea, where there are not many social enterprises. According to Howorth et al. [1], the psychological stability and the community of practice that members have within the boundaries of school are effective for SEE. In addition, in the process of training to understand and empathize with social issues through SEE, the community is further reinforced [19].

4.1.1. The Community of Student Entrepreneurs

Cohort program. KSEMP is designed to recruit approximately 20 students every year, and they should participate in numerous projects with peers from the same cohort for two years. The students take classes together, regularly participate in workshops to share business progress with all members of KSEMP, enjoy fellowship through regular and irregular recreational events, and share the same physical space (labs and dormitories). Through these activities, each cohort naturally feels a sense of solidarity and implicitly compares itself with other cohorts, and this comparison further strengthens the sense of community. Numerous graduates point to their cohort community as one of the most valuable benefits of KSEMP.

Business model development workshop. Students share their business progress with all members of KSEMP at least once per semester. Participants can deeply understand the social issues that their colleagues are addressing, as well as the problems that they face and the solutions that they conceive through this workshop. Naturally, collaboration and competition among students repeatedly occur in the process of sharing their knowledge, experiences, and accomplishments. Faculty members and outside experts assess the stage (levels 1 to 8) of each student’s business development progress. Scholarships and various business supports are provided based on the results. Since the workshop is the crucial occasion at which students experience the greatest challenge during the semester, the emotional bonds between students become stronger while experiencing the same challenge.

In addition, such an official and regular workshop gives students an opportunity to objectify their business based on advice from multiple experts in various fields.

The Startup Weekend. All of the members of KSEMP, including faculty and staff members, participate in a retreat consisting of special lectures, reciprocal advisory sessions, and recreational programs. Its foremost goal is to strengthen the sense of belonging to the community and to promote partnerships between students. This intensive gathering lasted for one night and two days in the spring semester and for a whole day in the fall semester during our data collection period.

Incubating center. If a student receives a level 5 or higher assessment through the business model development workshop mentioned above, she can move into a shared office or the incubating center with her startup teammates. All KSEMP students are founders of their own startups; they build their teams while developing business models and require a physical space to work together. Since the incubating center holds an irregular seminar to share the know-how of the tenant startups, not only the entrepreneurs, but also their teammates form a larger community to share information, knowledge, and experiences.

Overseas experiential learning trip. This program is also fully sponsored by the SK Group and takes place in the first summer semester. Students gain the field experiences needed to start a social enterprise and related knowledge, and their social entrepreneurship and global competence are strengthened through the projects that they design themselves. Over one or two weeks spent overseas (e.g. the UK, the US, and Latin America), participants form a stronger network while sharing each other's concerns and evoking their identities as social entrepreneurs.

Club activities. As a member of KAIST College of Business, students can participate in a variety of club activities related to technology, sports, music, and religion. They can also choose clubs closely related to their business-related interests, such as strategy, marketing, finance, and media communications. Club activities allow students to broaden their understanding of other members of the community by thinking and talking about topics other than the official curriculum.

4.1.2. Student–Faculty Relationships

The faculty of KSEMP is mainly composed of one director, five tenure-track professors, and three non-tenure-track professors. In addition, students can request a meeting with any faculty member in KAIST through mentoring programs and official classes.

Classes. Classes in the curriculum of KSEMP are official and easy-to-access paths for students to meet faculty members. In classes, students build a community with faculty members by sharing knowledge and opinions about specific subjects.

Mentoring. Mentoring helps students to have closer and more personalized relationships with faculty members. It provides an opportunity for students to share opinions and to obtain the objective advice needed for the step-by-step tasks involved in the process of business model development, such as social mission development, business model ideation, and startup incubation and acceleration. It also helps students to share their personal concerns as entrepreneurs and students as well as business-related problems. Mentors can understand the background and situation of each student to provide more feasible and practical assistance. A student is supposed to meet her primary advisor more than once per month. According to our questionnaire survey, students and alumni chose the faculty mentoring program (36%) as the most useful element of KSEMP (Figure 5). The connectivity between students and the faculty is strengthened while co-working on the problems that students face.

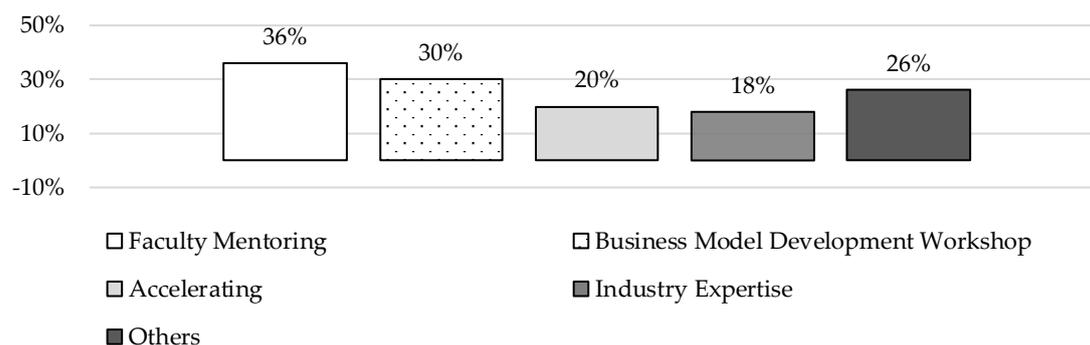


Figure 5. Most useful activities provided by KSEMP.

Online platform. The online platform of KSEMP, recently named ‘KAIST Impact Hub’, enables students to obtain advice from mentors by sharing data and documents related to their businesses. Students must submit specific materials, including a social mission statement, a lean board, a business plan, and customer interview results, on the online platform before the business model development workshop. These materials are reviewed during the evaluation process, and suggestions for the direction of the business development are also provided to students on this platform. In addition, the online platform functions as a database of social enterprises based on all of the materials created through the business development processes of the students. Faculty members can use the platform for lectures, mentoring, and research on social enterprise ecosystems in the long term. In addition to the online platform, frequent communication is conducted through websites that support class management and various formal and informal social network services.

4.1.3. Student–Staff Relationships

KSEMP was co-founded and is jointly operated by KAIST and the SK Group. The KSEMP staff is a key workforce for operating the overall courses and activities, and it consists of one staff member affiliated with the major operations office of KAIST, as well as four staff members in the SK Centre for Social Entrepreneurship established under KAIST College of Business. Staff members continuously communicate with students through various seminars, casual meetings, and online surveys to more deeply understand what entrepreneurs need and to keep up with their requirements.

Communication channel for official support. Seamless communication between students and the staff is very important for the practical operation of KSEMP. For students, staff members are the closest communication node of all of the official support schemes of KSEMP. Staff members play a critical role in collecting and providing important information, such as support programs by external institutions and news about investor relations, awards, and media exposure of the students and alumni.

Customized supports through the online platform. While faculty members use the online platform for mentoring, staff members manage and monitor the database of the platform to provide customized support services according to the stage of each student. For students who have established their social missions and formed an idea for the early stages of their business model, staff members provide information about financial support (KRW 2 million) for market testing. For students who have reached the later stages, staff members provide additional financial support (up to KRW 6 million) to scale up their business and guide them in applying for space at the internal incubating center. Depending on the specific needs of each student, staff members also connect them to outside experts to offer professional services related to law, accounting, taxes, patents, labor, media, and so on.

In addition, faculty and staff members attempt to build a strong community by actively participating in the activities for the community of student entrepreneurs discussed in Section 4.1.1 (e.g., business development workshops, the Startup Weekend, overseas experiential learning trips, and club activities).

4.2. External Connectivity

According to our survey results, the social enterprise ecosystem network (35.5%) was the most satisfactory support provided by KSEMP. Even if KSEMP grows into a community of social entrepreneurs as it increases the interface between internal members and improves relationships, it is still impossible to survive in the broader ecosystem if there is failure to harmonize with the external environment. Social entrepreneurs establish their companies by raising capital from various sources, including charitable funds or government support, and in their business activities, they constantly interact with various stakeholders to address huge social problems [51]. Only when KSEMP interacts successfully with various entities in the Korean social enterprise ecosystem, and hopefully in the global social economy ecosystem as well, can it continue to adapt to the ecosystem through competition and cooperation and ultimately survive, serving as an innovation hub that promotes interactions among various entities [12].

4.2.1. University

KAIST. As part of Vision 2031, “A Global Value-creating Leading University”, KAIST, Asia’s leading educational institution, aims to cultivate future leaders who create social value. The university is expanding its educational mission for scientists and engineers regarding social value and ethics based on the entrepreneurial university model established for itself, and KSEMP is at the heart of such efforts. In addition to KSEMP, KAIST endeavors to create social value through engineering technology, running entrepreneurship education and research programs, such as the K-School, the Institute of Startup KAIST, and the KAIST Centre for Science-based Entrepreneurship. It also cultivates students’ abilities to define and solve problems based on social value and mutual collaboration using the pedagogy of Education 4.0 through classes such as Social Capstone Design, Social Problem Solution Competition, Startup Competition, and Appropriate Technology Projects. This explicit vision set by the university headquarters facilitates the collaboration of many sub-organizations and provides a consistent educational philosophy for various education and research programs.

KAIST College of Business. KAIST College of Business has designed various master’s degree programs with courses that nurture entrepreneurs, entrepreneurial managers, and an entrepreneur-friendly environment. KSEMP is a unique MBA program launched in 2013 for social entrepreneurs who want to start social enterprises. In 2019, KAIST College of Business also established the Entrepreneurship and New Business Development Track and the Centre for KAIST College of Business Startup, and it operates an entrepreneurship minor program. The experiences and infrastructure of KSEMP have contributed to these new efforts and created a synergistic effect with them, for example, bringing talent from various backgrounds into social enterprises built by KSEMP students. Furthermore, KSEMP plans to construct a new online platform that will promote collaboration not only with the College of Business, but also with many other colleges in KAIST and create startup teams consisting of students from various majors. This new platform is expected to help overcome the geographical separation of the College of Business at the Seoul campus from the colleges of technology and engineering located at the main Daejeon campus. KSEMP is never an entirely stand-alone program and provides students with opportunities to take courses and meet students in MSc or MA programs in KAIST and its College of Business.

Alumni network. KAIST has an enormous and strong alumni network in Korea and overseas. In particular, KAIST College of Business has a special alumni network mainly for entrepreneurs and investors. This network sponsors business plan competitions and voluntarily serves as a mentor group for students to establish their own startups. More importantly, the members of this network invest in the companies that KAIST students create or offer business opportunities to them. Of KSEMP alumni, 80.3% showed clear intention to take advantage of the alumni network, according to our survey.

Research network. KSEMP shares industry trends and research on the social enterprise ecosystem with professors at KAIST and various social enterprise experts through regular scholarly forums. KSEMP uses this forum to continuously seek future directions and to forge paths forward. For example,

KSEMP hosted the Korean Society of Strategic Management 2019 fall conference, the theme of which was “Growth Strategy for Social Ventures”. Also sponsored by SK’s Happynarae, the conference was an impactful opportunity to introduce KSEMP to a number of researchers and practitioners, and it laid the foundation for cooperation among universities and corporations to form a social enterprise ecosystem.

Global network. KSEMP collaborates with various global organizations other than Korean universities for SEE. The overseas experiential learning trip and KSEMP alumni targeting foreign markets have played important roles in building bridges between the program and global institutions. For example, collaboration with the Vietnam Social Enterprise Alliance, which visited KAIST College of Business in February 2019, led to the actual output of global networking. KSEMP was able to introduce its practice, as well as the social entrepreneurs, to the official delegation from Ho Chi Minh City University of Technology, Vietnam National University Hanoi, and Tra Vinh University. KSEMP and the Vietnamese visitors discussed KSEMP-born startups’ entry into the Vietnamese market and immediately created an MOU between a specific social enterprise and Tra Vinh Vocational College. Based on this MOU, the company established the first social enterprise in Tra Vinh that would contribute to vocational education and job creation for college students in the region by running an internship program.

4.2.2. Government

Government support. The government plays a crucial role as a funding source for various support projects in the Korean social enterprise ecosystem, and it runs many intermediate organizations to grow the ecosystem. The Korea Social Enterprise Promotion Agency (KoSEA) is a representative organization that runs various support projects. KoSEA officially certifies the governmental qualifications of social enterprises, and only certified enterprises can apply for certain projects. For the 12 months from July 2018 to June 2019 that our data sources cover, KSEMP students were involved in many support projects of KoSEA, Korea Arts Management Service, Korea Creative Content Agency, National Health Insurance Service, the Ministry of Gender Equality and Family, and so on. The Seoul Business Agency under the Seoul Metropolitan Government directly invested in the company of a KSEMP student, which creates jobs for elderly individuals. Many other government organizations, including Seoul Food Startup Center, have also provided KSEMP students with free offices and various shared services.

Government partnership. There are a variety of collaboration cases between KSEMP students and government organizations. KAIST and the Seoul Metropolitan Government collaborated to build Yangjae Innovation Hub in southern Seoul. KSEMP also holds and participates in a forum with government organizations, such as KoSEA and the Gyeonggi Provincial Government, to raise awareness about social enterprises.

Government organizations positively utilize collaboration with KSEMP-born social enterprises to achieve their own goals. The Korea Sports Promotion Foundation operates a sports program to build and strengthen local communities against prejudice toward multicultural families with a sports education startup of a KSEMP alumnus. Through collaboration with KSEMP enterprises, the Seoul Metropolitan Government has created jobs for the younger generation in the resource recirculation industry, and the Namwon City Government has operated a pilot project to help middle-aged workers switch their careers after early retirement. The Ministry of Foreign Affairs and the Ministry of Education operate a program that promotes cultural exchanges to enhance Korea’s national image with a KSEMP company.

Followed by growing attention to KSEMP, the Korea International Cooperation Agency (KOICA) began to sponsor a new master’s degree program within KSEMP in 2019, specializing in the social economy for highly qualified foreign students from developing countries. Moreover, the Busan City Government suggested launching a branch campus in Busan.

4.2.3. Industry

Anchor firm. The co-founder of KSEMP, the SK Group, is one of the largest conglomerates in Korea, and it plays an important role, serving as an anchor firm for KSEMP by connecting its tangible and intangible assets to the research and education of KAIST. Happynarae is the first social enterprise among the affiliates of the SK Group. In 2019, Happynarae's annual turnover was approximately KRW 1.1 trillion, and the total ordinary profit given back to society amounted to approximately KRW 17 billion. It is the largest financial sponsor of KSEMP and supports human resources for operating the overall program. The Centre for Social Value Enhancement Studies runs an incentive program called "Social Progress Credit", which helps many KSEMP enterprises, as well as other social enterprises, to measure their social impact in terms of monetary value. Happynarae rewards social enterprises with cash for the social impact that they create. The Happiness Foundation of the SK Group supports research projects on social enterprises and raises awareness about social enterprises through media and public relations. Numerous affiliates of the SK Group, such as SK Chemical, SK Energy, SK Innovation, SK Magic, SK Network, and SK Telecom, have been attempting to create synergy by sharing their existing infrastructures, experiences, and capabilities with KSEMP startups that have innovative business solutions with social impact. KSEMP students chose the brand power of KAIST (71%), support from the SK Group (44%), and scholarships (44%) as the three most valuable benefits from the program.

Investor community. Among the items on alumni services in our survey, KSEMP alumni chose support for investor attraction the most (69%), followed by human networks (51%), market building (49%), co-working space (26%), and others (5%). For the growth of social enterprise startups, it is essential to raise capital. KSEMP has endeavored to form a strong network of investors so that students can gain access to impact investors. On a regular basis, KSEMP invites influential investors and connects them to a selection of KSEMP companies. It was officially announced that, from July 2018 to June 2019, 10 KSEMP companies (including four alumni companies) attracted investment from various investors. KAIST Venture Investment Holdings (KVI), founded by KAIST and the SK Group, is a good example of a KSEMP partner that invests in social enterprise startups. In 2014–2019, KVI invested in 11 KSEMP companies, including a vegan food manufacturing company, a caregiver matching service platform, and a fintech startup for the younger generation without credit scores.

Corporate partners. KSEMP involves many external investors and industry experts in association with its core activities, such as recruitment, student evaluation, special lecture series, special instances of mentoring (46 external mentors as of August 2020), research projects, database construction, and even strategy planning to secure proper expertise and objectivity. In addition to the SK Group, there are many other industry partners of KSEMP and its students. For example, Shinhan, one of the largest financial groups in Korea, supported a pilot project of a KSEMP company for recruiting disabled individuals, and D.CAMP, founded by the Korea Federation of Banks, supported an eight week education program taught by KSEMP faculty for non-KSEMP talent in the social enterprise ecosystem.

4.2.4. Civil Society

The fourth helix of the QHM, civil society, is the media- and culture-based public [55]. Civil society creates knowledge building upon information and social capital, giving new quality of life to the ecosystem, and media and culture play crucial roles in spreading information and knowledge.

Raising public awareness establishes a firm foundation for the ecosystem [58]. KSEMP has undertaken many efforts related to public relations, such as running a short-term education program for those who are interested in social enterprises ("Social Venture Intensive Program"), holding a one-day event for potential applicants ("Social Venture Boosting Day"), and cooperating with the press through the Happiness Foundation, which has its own media channels. Based on the collected data, from July 2018 to June 2019, more than 300 online news articles related to KSEMP were released, and there will be far more news articles not included in the data. The articles cover numerous topics, including new business introduction, awards, collaboration with different parties, overseas experiential

learning trips, and donations by KSEMP startups. This shared information contributes to the ecosystem directly by promoting business collaboration opportunities and indirectly by attracting capable human resources—e.g., entrepreneurs, employees, customers, researchers, and reporters—to the ecosystem

4.2.5. Environment

According to Carayannis et al. [55], the last helix is the natural environment. Given that challenges to sustainability are surging worldwide, it is becoming more important for the ecosystem. Humankind should proactively continue learning from the environment, which can determine the consequences and processes of any type of innovation. The environment provides such new knowledge as green know-how and can contribute to the innovation of the ecosystem.

KSEMP has many cases of entrepreneurs who are addressing environmental problems, including fine dust, food waste, diaper waste, clothes waste, CO₂ from excessive meat consumption, and the oversupply of milk. KSEMP startups are inventing innovative solutions to these problems, such as outdoor air cleaners, a takeout food sales platform for single-person households, paper sterilization and recycling technology development, milk-based edible clay toys, a vegan community platform, plant-based meats, zero-waste fashion manufacturing, and a fashion goods sharing platform.

4.3. Strengthening the Connectivity

Based on the various interactions analyzed above, this section address directions to improve KSEMP so that it can function better as an innovation hub for the EE. First, from the internal connectivity perspective, although the current cohort system has its own merits, it might be worthwhile to complement the system by encouraging closer collaborations through voluntary groupings into multiple smaller groups and expanding collaborations with members of other cohorts based on the stage of business development or the type of social problem. For example, intensive support of cooperation among entrepreneurs who are addressing the same social problems can actively shape the perception that each entrepreneur is a partner within the community, rather than a competitor. Hiring experts from related fields who can help to solve these social problems as mentors for the cooperating entrepreneurs could lead to dramatic growth of the problem-solving skills of the multiple smaller groups.

With regard to interactions with universities for external connectivity, more active and practical collaboration is needed between the College of Business in Seoul and other colleges in Daejeon to prevent KSEMP from being isolated from the abundant resources of the whole university. Although KSEMP is currently working closely with various organizations within the College of Business, the physical distance between the Seoul and Daejeon campuses results in relatively insufficient collaboration with the colleges of science and engineering. The construction of a new online platform, currently in the planning stage, will be very important for KSEMP to generate various innovative spin-offs using technologies developed by all of the colleges, departments, and institutes in KAIST.

For an expanded collaboration network with global universities, the overseas experiential learning trip should be designed to build a long-term relationship from the planning stage. Continuing and constant interactions with Santa Clara University, the University of Sheffield, the University of Cambridge, and San Jose State University, connected through previous trips, are also needed to avoid wasting this valuable network. In addition to those universities that KSEMP has visited so far, more active relationship building should be attempted with universities in developing countries, which are under more threats by social problems and are willing to work together to solve these problems.

From the perspective of interactions with civil society, continuous efforts should be undertaken to raise public awareness of social enterprises and to correct misconceptions. To rectify the typical stereotype that social enterprises are small-scale businesses that, for example, create a small number of jobs for underprivileged individuals in the job market, it is necessary to build and develop cases of innovative solutions that utilize cutting-edge technology for a broad spectrum of social problems

and examples of brands that are widely known to the public due to their impact in the market. To accomplish this goal, a more growth-oriented culture should be formed in KSEMP, and more challenging experiments should also be conducted to provide intensive support to startups with growth potential, rather than support from an equality perspective.

Concerning external connectivity with the natural environment, it seems that environmental issues are not currently considered the most important issue; rather, in KSEMP, they are formally considered one of many different social problems, although many students voluntarily address such issues. However, considering the impact of issues related to the environment as a source of innovation and as a determinant of human destiny, KSEMP must build an identity that is oriented toward technology and make an explicit commitment to environmental issues. Collaboration with the Graduate School of Green Growth in the KAIST College of Business and other colleges in KAIST, including the Graduate School of Energy, Environment, Water, and Sustainability (EEWS), could help KSEMP to build a technology-oriented identity focused on environmental issues. In addition, forming a research collaboration network with science and engineering colleges in other universities, government-funded research institutes for environmental technology, and non-government organizations and global companies closely related to environmental issues could enhance KSEMP's understanding of such issues and the specific capabilities for managing them.

For effective and efficient information sharing, which is the most important aspect of collaboration, business processes should be closely observed, objectively measured, and systematically managed, and related data should be generated. Hence, KSEMP should emphasize the importance of data analyses and teach skills related to such analyses so that students voluntarily measure their financial performance and social impact based on the data accumulated from their business activities. After all, KSEMP can establish a data hub that collects and integrates such data to create additional value and catalyze its internal and external connectivity, also contributing to the EE.

5. Discussion and Conclusions

As an alternative to social problems that are becoming larger and more diverse, social enterprises must build and maintain solidarity with various stakeholders [9,49,50,59]. In the long term, to confront constantly occurring and continuously worsening social problems, the network of stakeholders should form an organically connected and continuously evolving EE [24,36]. Based on this perspective, SEE programs should be designed and operated to cultivate social entrepreneurs' abilities to enhance connectivity with all of the relevant entities of the social enterprise ecosystem.

To this end, this study proposed a framework for the design and assessment of SEE programs, which could form a constantly growing community of social entrepreneurs while functioning as an innovation hub for the ecosystem that evolves on its own. This framework is based on social theories of learning, which emphasize the importance of communities of practice, and the QHM, which defines the components of a sustainable innovation ecosystem and describes the process through which innovation occurs. These two theoretical bases clarify how and to whom social entrepreneurs should be connected throughout the entire process of SEE. The framework emphasizes strengthening internal connectivity among the members of SEE programs and external connectivity with important entities, such as universities, corporations, government agencies, civil societies, and natural environment.

In this regard, this paper conducted a case analysis of KSEMP using this framework to identify implications for further improvement of SEE programs. There have been various attempts to improve the internal/external connectivity of social entrepreneurs in KSEMP, and these attempts have led to better performance of students, such as finding new business opportunities and attracting additional investments. The case analysis shows that the framework facilitates a systematic approach to investigating whether SEE programs successfully cultivate social entrepreneurs' abilities to connect and align various stakeholders from the perspective of internal and external connectivity. This study contributes to the social entrepreneurship literature and entrepreneurship education literature by integrating the key features of SEE with social theories of learning and by adopting a recent perspective

regarding the function of universities as an innovation hub. In terms of practical contributions, this study provides a useful framework for finding isolated members or disconnected relationships within the community and external entities that require more active interactions and appropriate interaction plans. The framework can be utilized by educational or other types of institutions that seek practical and integrative strategies to launch or operate SEE programs. Government officials who support SEE and relevant stakeholders can confirm their positions within the whole ecosystem and develop measures to expand their connectivity.

This paper presents directions for further research. This study assumed that various components of the innovation ecosystem are connected to form an organic network. By focusing on the intermediary role of SEE as an innovation hub in an EE, however, it excluded relationships that do not directly involve universities, such as government-industry interactions and the interconnectedness between civil society and the environment. Once the data of dyadic interactions between every component are secured, it will also be possible to quantitatively analyze the correlations between the internal and external connectivity of SEE programs and to conduct social network analysis to examine whether a SEE program functions as an innovation hub in certain contexts or not [60]. In addition, the effect of each interaction on the growth or survival of startup companies or the quantitative and qualitative growth of the ecosystem could ultimately be analyzed.

Currently, finding solutions to social problems is the greatest task of humankind. One of the most important roles of university education might be to nurture the social entrepreneurs who will make it possible to find such solutions through solidarity based on strong consensus among stakeholders. Although the KSEMP case itself holds great significance as a valuable benchmark for SEE design and assessment, it is not because KSEMP is perfect or the best in the world. However, there is no way to create a perfect SEE program without constantly seeking unexplored paths and overcoming new challenges. Sharing a variety of examples of continuing challenges worldwide and learning from the success and failure of others can help us to reap the fruits of such efforts efficiently. Herein lies the value of the KSEMP case study. We admit that our analysis should be understood under the context of KSEMP including the national higher education system, industry structure, government policy, cultural background of civil society, and (natural) environmental issues in Korea. Nevertheless, unless the educational institutions are isolated from other parts of the society in a specific country or region, we believe that the case of KSEMP as a hub for interconnected helices of the entrepreneurial ecosystem will serve as a valuable benchmark for the design and assessment of social entrepreneurship education. As social entrepreneurship continues to emerge as a promising alternative to deal with increasing challenges in contemporary society, the practices of and the lessons from KSEMP will add value to enriching the entrepreneurial ecosystem in other contexts as well. We hope that this study catalyzes a variety of subsequent case studies of SEE.

Author Contributions: Conceptualization: M.G.K. and H.S.; methodology: M.G.K. and J.-H.L.; formal analysis: M.G.K. and J.-H.L.; data curation: M.G.K.; writing—original draft preparation: M.G.K. and H.S.; writing—review and editing: J.-H.L. and T.R.; project administration: M.G.K. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by the Happiness Foundation of the SK Group.

Acknowledgments: This research was able to be conducted due to the full and complete support provided by the Happiness Foundation of the SK Group. In many ways, the authors are indebted to the genuine, all-encompassing, and unshakable endeavors of the Happiness Foundation to build a society where everyone can share in happiness.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Website address of the public promotion materials.

Organizations	Website Address
KAIST	kaist.ac.kr
KAIST College of Business	business.kaist.ac.kr
SK Centre for Social Entrepreneurship	sksecenter.kaist.ac.kr
KAIST College of Business Start-up	kcbstartup.kaist.ac.kr
Start-up KAIST	startup.kaist.ac.kr
KAIST K-School	kschool.kaist.ac.kr
KSEMP (official brochure)	business.kaist.ac.kr/_prog/brochure/download.php?mng_no=3&site_dvs_cd=kr

Table A2. Details of the interviews.

	Gender	Female	2
		Male	20
Interviewees (N = 22)	Age	Evenly distributed from 30 s to 60 s	
		Job	Professor
CEO	8		
Corporate Executive	2		
Corporate Employee	1		
NGO Executive	1		
NGO Employee	2		
Length	About 60–80 min		
	Korean		
Language	Korean		
Question type	Open-ended question		

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