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Signals of Social Ventures to Attract Impact Investing

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Abstract

As young social ventures have limited track records, they face a challenge related to establishing their legitimacy to get financial resource from social investors. The information asymmetries between two parties push social ventures to send signals to the social investors which are willing to provide the resources if they are convinced of the organizational legitimacy of the signal senders. In this study, using signaling theory, we examine how young social ventures send signals to social impact investors to acquire investment. Specifically, we investigate both economic and impact signals for five dimensions of social ventures: human capital, social capital, third party certification, business readiness, and technological capacity. Using a South Korean sample of 101 social ventures that have attracted 14 impact investment funds operated by 12 representative domestic impact investment institutions, the impact of the information signals of the venture companies on the attraction of impact investment is quantitatively and qualitatively analyzed. The results of the impact investment attraction effect of economic signals and impact signals in each of the five signal categories were mixed. The hypotheses about the economic signals of the five information categories were largely rejected except for the strategic partners of third-party certification. There was no effect of economic signals regarding human capital, social capital, and technological capacity, which are generally considered important in relation to the capacity of firms. Unlike economic signals, statistically significant results were found for most of the impact signals. It was found that the number of government grants, which is the impact signals of technological capability, the level of preparation for impact creation, and the impact experience of management, had a positive effect on attracting impact investment. As most of the practitioners strongly emphasized the importance of the impact business model integration type, which was newly identified through the FGI with the impact investing venture capitalists in this study, it was found that it had a very distinct effect on the impact investment fund attraction.

Keywords: Signaling; Impact Investing; Social Venture; Social Venture Capital

Expanded abstract

Signals of Social Ventures to Attract Impact Investing

1. Introduction

The resources of the government and charitable foundations are insufficient to solve the climate crisis and social problems caused by the neoliberal economy and reckless globalization. Accordingly, non-profit organizations have introduced a business model of a corporate management method to ensure sustainable financial resources for mission performance, and a change is underway in corporate management that considers social missions. In addition, hybrid organizations called social entrepreneurs and social enterprises began to emerge, trying to solve social issues in a business way. This paper focuses on impact investment that aims not only for financial returns but also for social and environmental returns, taking social ventures that seek to solve social and environmental problems through market and innovation as the main investment target.

Impact investing has received a lot of attention from academia and investment industry practitioners around the world over the past decade (Islam, 2021). In general, impact investing refers to investing money in a company or project with the intention of creating a social impact as well as a financial return (Nicholls, 2010; Hehenberger et al., 2019). Unlike socially responsible investment, which mainly selects investment targets based on E (environment), S (society), and G (governance) for listed companies, impact investing is for unlisted company's equity or debt financing including mezzanines such as convertible bonds and redeemable preferred stocks (Brest & Born, 2013).

There were several historical turning points between the introduction of the concept of impact investing to Korean society and the formation of actual investment institutions. First, as the Social Enterprise Promotion Act went into effect in 2007, the concepts of social economy and social enterprise were introduced to Korean society in earnest, and many social service-type social enterprises were established and certified by the Ministry of Employment and Labor (Lim et al., 2020). Funding for these social enterprises was mainly made through social finance loans or guarantees. After that, social innovation-type social enterprises based on more innovative business models began to emerge, and impact investing institutions focused on equity investment began to work for them (Lim et al., 2020).

The two institutions established to support and promote the venture ecosystem in Korea have introduced a social impact program to their business and selected venture capitals for impact investing. Compared to conventional venture capital's selection of investment target, impact investing institutions' selection criteria can be an interesting research topic. This study is to examine the characteristics of the signaling process to reduce the information asymmetry between impact investment institutions with hybrid characteristics that pursue financial returns (investment profit) and social returns (impact) at the same time and venture companies that are considered to create social impact. Although academic and field interest in impact investing has increased over the past decade, knowledge in this field has not been systematically accumulated (Islam, 2021). There are very few studies on the differences between factors affecting decision-making of impact investment institutions and those of conventional commercial venture capitals as well as between signals that impact investors pay attention to

in the investment decision-making process and signals that those conventional financial investors pay attention to.

How do the economic factors and impact-related factors of venture companies affect investment decisions of impact investors? How do impact investment fund managers judge and provide feedback on each signal sent by venture companies? In order to find answers to these questions, this paper applies the signaling process theory to the effect of economic signals and impact signals sent by venture companies on the attracting of funds from impact investment funds. Using empirical analysis, the purpose of this study is to identify the characteristics of impact investment funds currently created and operated in Korea by comparing them with conventional venture capital funds.

2. Theoretical Background

2.1. Social Venture Funding and Information Asymmetry

In the corporate financing market, sellers are businesses and buyers are investors. For them, the problem of information asymmetry depends on the availability of information about the company and the existence of reliable information. For example, in the case of a listed company, sufficient management performance data exist to verify the company's past performance, and access to the data is usually easy. In the case of companies that are about to go public (IPO), the amount and accessibility of information are lower than those of listed companies, but potential investors can obtain a lot of information through the company's listing review report. The problem is venture companies that have not had a long history. They lack objectively verified information that they can provide to potential investors. In particular, there is little information about their business performance. Scholars call this lack of information faced by start-ups the ‘liability of newness’ (Certo, 2003).

Stiglitz (2002) paid attention to two types of information for which information asymmetry is particularly important: information about quality and information about intent. Information asymmetry becomes important when one party is completely unaware of the other's personality in the case of information about qualities, and when one pays attention to the behavior or intention of another in the case of information about intent (Elitzur & Gravious, 2003). For example, when a venture company asks a potential fund provider to provide funding, funders face great information asymmetry regarding the managerial and moral qualities of the venture, as well as the true intent of the funding request. When the information asymmetry of quality and intention is large, it can cause great cost to economic transaction and contract.

High-quality startups will actively reveal information about what they have without incurring significant costs. However, start-ups with insufficient qualifications will try to hide information about the qualities that are unfavorable to them. Venture capital, a potential investor, will actively collect and select information related to the qualifications of startups as investment

candidates. In this way, information incompleteness and market imperfection will be resolved to some extent by the information activities of both sellers and buyers, but both types of imperfection will eventually exist (Stiglitz, 2002).

2.2. Signaling Process

Startups actively send signals to potential investors that contain information about their qualifications and intentions. Signaling can be viewed as an attempt to fundamentally reduce information asymmetry between two transaction parties (Connelly et al., 2011). However, the sender does not always send an honest signal. The sender can send a false signal that is different from the truth because of the benefits that the sender can get if the receiver accepts it as it is. The sender and receiver of a signal have a conflict of interest because successful deception of a false signal brings costs to the receiver and benefits to the sender (Bird & Smith, 2005). Connelly et al. (2011) arranged the primary elements of signal theory, sender, signal transmission, receiver's reception and interpretation, and feedback according to the time flow of the signal process. Transmission of a signal usually involves the receiver choosing the originator of the signal instead of another alternative. For example, the receiver can choose whether to hire the sender (when the sender is a job seeker), whether to buy (when the sender is a seller), or whether to invest (in case the sender is a fund requesting company) according to the reception of the signal and its interpretation. The usefulness of a signal to the receiver depends on the quality of the sender to be found and how much the signal corresponds or differs (Connelly et al., 2011).

Among the studies of signal theory by business scholars, one of the most prominent studies is the combination of institutional theory and signal theory (Certo, 2003). Institutional theory sees that organizational legitimacy has a decisive effect on corporate performance and survival (Higgins & Gulati, 2003). To gain legitimacy, firms respond to institutional forces from sources such as capital suppliers, consumers and regulators by adopting the same organizational form (DiMaggio & Powell, 1983). Another way companies gain legitimacy in signal theory is through high-profile boards of directors (Certo et al., 2001) or high-profile top management (Lester et al., 2006) to uncover the hidden qualitative aspects of a company, sending it as a signal. Even if it is a signal that attempts to reveal a hidden qualitative aspect, how well the signal conforms to the quality aspect of the sender depends on the nature of the signal. Connelly et al. (2011) express this as signal fit, which indicates the degree of correlation between hidden features and signals. The recipient's attitude or personality also affects the signaling effect. A signal has no effect unless the receiver is actively searching for it or doesn't know what to look for. Not only that, even for the same signal, the effectiveness of the signal may vary depending on how the receiver interprets it. A particular signal that one receiver cares about may not be important to another. For example, conventional financial institutions will be indifferent to signals about the social value creation qualities of loan applicants, but social financial institutions will regard these signals as very important (Lim et al., 2020).

Recipients may receive signals differently than originally intended by senders by weighting them according to what they already judge to be important or by consciously distorting them (Branzei et al., 2004).

The environment in which signals are exchanged also affects all processes of sending, signaling, and receiving. That is, whether a signal is within an organization or between an organization, depending on the signal environment, the signal affects the degree of information asymmetry reduction (Lester et al., 2006).

2.3. Five Categories of Dual Information Signals of Social Ventures

This paper focused on five categories of information signals that general venture capitalists who pursue only financial investment returns through literature research (Colombo, 2021). Because impact investment funds were given the dual goals of financial return and impact creation at the same time, it was believed that these funds would pay attention to both economic and impact signals within each information signal category. It was also inferred that impact investing would prefer CEOs and organizations that can generate both financial returns and impact (Nicholls, 2010; Hehenberger et al., 2019). <Table 1> below summarizes the economic and impact aspects that impact investment funds pay attention to for each of the five categories of information signals that can be found in venture companies' investment proposals.

Table 1. Dual Information Signals in 5 Categories

Information Signals		Economic Aspect	Impact Aspect
Human Capital		Education Industry Career Founding Experience	Impact Related Career
Social Capital	Network	Business Advisory Group	Impact Advisory Group
	3rd Party Endorsement	Strategic Alliance	Certified Social Enterprise / Social Venture
Business Readiness		Business Plan Completeness	Impact Plan Compelateness
Technological Competence		Patents	Government Subsidy

If we examine each of the five categories one by one, we can discover the following facts. First, the CEO of a venture company pursuing a dual mission must have both economic and social characteristics in terms of human capital. Second, among the social capital of venture companies pursuing a dual mission, the economic network and social network, as well as both economic and social aspects, must be equipped with third-party authentication at the same

time. Third, not only business preparation for financial performance but also impact creation must be systematically prepared. Fourth, it must be a technology that is publicly recognized at the same time as having exclusivity as it is protected by a patent even in its technological capabilities. Therefore, in this paper, we established a hypothesis by selecting variables representing the economic aspect and impact aspect in each of the five information signals of venture companies.

2.5. Impact Integration as a Distinctive Signal

We conducted two Focus Group Interviews (FGI) with the executives of an impact investment institution that manages the impact fund to find out the signal that the practitioners consider important. Through the interview with the practitioner group, the researcher discovered a new and important concept. It's about the type of business model that makes an impact. In 4 out of 10 discussion questions of impact investing practitioners who participated in FGI, they emphasized a business model in which impact creation and sales and profits, that is, financial profits, move together. As such, it can be seen that the investment practitioners of impact investment institutions belonging to the research target pool place great weight on the importance of the integrated creation of impact and financial returns. The CEO of an impact investment institution that participated in FGI said, “I think impact funds are the ones that try to see a business model that creates an impact as the company’s business grows. We invest in such companies as much as possible, and try to fill almost all of them with such companies.”

In other words, impact investment institutions prefer social ventures of which business model integrates activities to create impact and to generate financial profits into one, rather than separates them. This view can also be seen in the literature. Battilana and Lee (2014. p. 426) found that a hybrid organizational structure that mixes social and economic aspects in relation to external organizations, culture, organizational composition, workforce composition, and organizational activities of a social enterprise is different for each social enterprise. Battilana et al. (2012) describe the ‘ideal hybrid’ as an organization that is fully integrated and whose activities all generate social value and financial return. They saw that such an ideal hybrid organization had at least two strong characteristics. One is that because the goals are integrated, management is not faced with a choice between mission and profit, and more importantly, it helps solve social problems on a larger scale as a result of the integrated creation of social and financial value. In other words, it enables a virtuous cycle in which generated profits are reinvested into social missions.

Therefore, this paper intends to newly select this concept of an integrated model of impact creation and financial profit creation as a signal that plays an important role in attracting impact investment funds. To this end, we will try to classify the types of impact business models of each of the social ventures under study, and examine the relationship between these types and attracting impact investment funds through regression analysis.

3. Hypotheses

3.1. Human Capital

It has been found in several literature studies that human capital has an important effect on securing the resources needed by venture firms (Cohen & Dean, 2005; Higgins & Gulati, 2006). Among human capital, the CEO's education level (Zimmerman, 2008), past experience in related industries, and start-up experience (Certo et al., 2001) were found to have an effect on the securing of resources for venture companies. If you have worked for a large company in a related industry, this is an economic signal of human capital, and it is considered an important experience to successfully develop the business of a venture company. On the other hand, according to research literature on impact investing, impact investors positively evaluate entrepreneurs' enthusiasm for social change (Miller & Wesley, 2010). This means that they respond positively to signals related to the entrepreneur's prosociality. It can be seen that there is passion for social change if executives have worked for non-profit organizations that carry out specific social missions, have experience working in organizations such as social enterprises, social ventures and impact investment institutions, or have participated in social entrepreneur training courses.

In relation to economic signals of human capital, it is known that the reputation of the school rather than the degree, the reputation of the company rather than the length of career, are generally more qualitatively selective. However, the investment proposals of venture companies used as an aggregation of signal data in this paper have a large deviation in the provision of such information. The proportion of investment proposals that intentionally omitted information on educational background accounted for 21.5% of the total. In some cases, even when the educational background was presented, the specific name of the school was not presented. Therefore, under the constraints of the given information, the best method was to establish a hypothesis on whether the educational background was presented and on the academic degree when the education background was given. In the case where educational background was not presented, it was considered that there was a judgment that it would rather have a negative effect if presented, and this could serve as a kind of signal from the receiver's point of view. Since the information about the degree level went one step deeper than the information about the educational background, it was considered that the value of the signal was greater. Regarding the previous experience of top management, there was a large discrepancy in information in the investment proposal. Those who did not present their work experience accounted for 15.8% of the total. Even in the case of presentation of experience, there were many cases where the name of the company where they worked was omitted. Against this informational constraint, the best thing to do was to establish a hypothesis on whether work experience was presented and on the total working period of the executives when work experience was presented. Taken all together, we propose the following hypotheses.

H1: The presentation of management's educational background in the investment proposal of a venture company will have a positive relationship with the attraction of funds from impact investment institutions.

H1a: (under the condition of presentation of educational background) The education level of venture business executives will have a positive relationship with attracting funds from impact investment institutions.

H2: The presentation of the management's work experience in the investment proposal of a venture company will have a positive relationship with the attraction of funds from impact investment institutions.

H2a: (provided that work experience is presented) The work experience of the venture company's management will have a positive relationship with the attraction of funds from impact investment institutions.

H3: Management's start-up experience in the investment proposal of a venture company will have a positive relationship with the attraction of funds from impact investment institutions.

H4: The pro-social career of the management of venture companies will have a positive relationship with the attraction of funds from impact investment institutions.

3.2. Social Capital

Network Ordinary venture capital investors will look to see if a company's social network includes influential people or institutions in the business field who can help carry out the business (Shane & Cable, 2002). Since start-ups lack internal resources, their success is highly dependent on their ability to access key external resources through their social capital (Baum et al., 2000; Dyer & Singh, 1998). Therefore, in order to successfully conduct business, it is necessary to form not only financial capital but also social capital, that is, a high-quality social network that can support business performance. Burt (1997) stated that social networks allow people to obtain information about objects that are not directly connected to them, and to access more information than they can obtain alone. CEOs of venture companies select influential people who are connected through their social networks and form an advisory group that can provide useful help in various fields needed by venture companies, such as technology, management, HR, and marketing. These signals about social capital contained in investment proposals will have an effect on the company's investment attraction (Fukuyama, 1995; Shane & Cable, 1998).

In general, social networks, which are the social capital of venture companies, are concentrated on business performance or economic aspects in the nature of the network. However, it can be seen that impact investment funds need additionally a different type of network in order to successfully create impact, which is another goal (Hazenberg et al., 2015). Impact investing institutions will look at whether ventures are connected to social networks that can help create social impact (Alvord et al., 2004; Miller & Wesley, 2010; Lim et al., 2020).

However, in the investment proposals collected in this study, there was no case of suggesting an impact advisory group that would help in creating an impact for venture companies.

Third party endorsement Acquiring the necessary resources is a great challenge for start-ups, most of which lack resources and face the liability of newness (Aldrich & Ruef, 2006). By forming strategic alliances with external organizations, new ventures can access socially, technologically and commercially competitive resources that can only be obtained through years of business operation (Baum et al., 2000). What makes this possible is the reputation gained through strategic alliances. Start-ups borrow reputations from more reputable organizations by forming alliances with them (Gulati & Higgins, 2003; Reuer et al., 2012; Stuart et al., 1999). Reputation is very important in that it reduces the uncertainty that promising resource providers face when evaluating companies (Rindova et al., 2005).

With regard to third-party endorsement, most venture capitalists look at how well the venture company is financially and business-connected with external influential organizations, and seek to see if there is partnerships with good business partners that can increase the likelihood of business success (Bapna, 2019; Plummer et al., 2016). These relationships serve as an important signal for the prospects and capabilities of new ventures (Baum & Oliver, 1991), and the fact that strategic alliances exist can overcome disadvantages of startups and increase the legitimacy of ventures (Baum et al. ., 2000; Plummer et al., 2016).

Signs of impact related to third-party endorsement include social enterprise or social venture authentication. The Korea Social Enterprise Promotion Agency defines a social venture as “a company in which entrepreneurs with social entrepreneurship create social and economic values at the same time through innovative technologies or business models that are different from existing ones”. Although it is not a legal certification system, the Ministry of SMEs and Startups and the Korea Technology Guarantee Fund have established standards for social venture identification and are carrying out the certification process. Such certification can be seen as primarily granting justification that the investment in the venture company is suitable for the nature of impact investment. So, in terms of third-party endorsement, we selected key strategic partnerships as economic signals and certified social enterprises or social ventures as impact signals, respectively. The following hypotheses were derived for the economic and impact signals of social capital in consideration of the above literature study and the information constraints of the investment proposal.

H5: The size of the venture business advisory group will have a positive relationship with the attraction of funds from impact investment institutions.

H6: The number of strategic alliances of venture firms will have a positive relationship with the attraction of funds from impact investment institutions.

H7: Social enterprise/social venture certification of venture companies will have a positive relationship with attracting funds from impact investment institutions.

3.3. Business readiness

When a venture capital evaluating the level of completion of the business plan of a venture company, it looks at how specific and plausible the business plan is (Chen et al., 2009). Since it is difficult for venture companies to present objectively verifiable business performance, specific business descriptions and plans are communicated to investors to inform them that the company is worth investing in. Investors can evaluate the preparation level of a venture with the contents of the venture company's business plan and the CEO's enthusiasm through the presentation of the founder's business plan (Chen et al., 2009; Kirsch et al., 2009). During this process, in most cases, the first thing delivered to investors is an investment proposal.

The level of business readiness for the economic aspect of a venture company can be evaluated by the specificity and feasibility of the business plan, but impact investors will also look at how prepared the company is in terms of creating a social impact (Bhatt & Ahmad, 2017). The degree of focus on social mission is different, so that impact investors will examine whether this company clearly recognizes and fully understands the social mission it will create and are sufficiently prepared in terms of not only business but also impact creation. Therefore, in terms of project readiness, the completion of the business plan can be viewed as a signal from the economic aspect, and the completion of the impact plan can be viewed as a signal from the impact aspect. Therefore, impact investors will respond positively to signals related to the company's unique impact description contained in the investment proposal. Based on the above literature study, we propose;

H8: The degree of completion of a venture's business plan will have a positive relationship with the attraction of funds from impact investment institutions.

H9: The degree of completion of the impact plan of venture companies will have a positive relationship with the attraction of funds from impact investment institutions.

3.4. Technological competency

It cannot be denied that the technological capability of a venture is a very important factor in its success. However, since significant information asymmetry exists to accurately assess the technological capabilities of a startup, venture capitalists rely on observable information signals to gauge the intrinsic technological level of the startup (Stuart et al., 1999). A representative observable indicator of a company's technological capability is the company's patent registration or application (Lemley, 2001). When evaluating the technological capability of a venture company, in many cases, it is looked at whether the technology has reached a level that competitors cannot easily imitate or whether it is protected by patents, etc. and has exclusivity (Hsu & Ziedonis, 2013). Therefore, it is highly likely that venture capitals will positively evaluate the technological capabilities of companies for investment proposals that include patent registration and application.

Ordinary commercial investors are interested in how discriminatory the technology possessed by venture companies is or whether they are exclusively protected by patent rights, but impact investors are more interested in how the technology possessed by venture companies promotes social or environmental publicity. Social Entrepreneurs create social value by finding

ways to solve social problems that have not been solved for a long time through innovation and technology (Young, 2006). These solutions are recognized for their public value and in many cases are selected for government support. For example, a venture that developed an electric wheelchair kit that the disabled can use conveniently and inexpensively, a venture that developed a digital educational tool that children in developing countries who cannot attend school can learn on their own, and a venture that have created a power generation project funding platform receive various forms of government support in recognition of the public value of their technology.

Islam et al. (2018) found that the signal that clean energy ventures received government research subsidy had a more positive effect on venture capital funding than clean energy ventures that did not receive subsidy. At this time, it is unknown how many of the venture capital funds that have provided funds have the characteristics of impact investment. However, it can be inferred that the company's technology has more publicity by the fact that it received government research support. Therefore, the impact investor is highly likely to view the fact that the venture has received government subsidies as a positive sign. Therefore, in terms of technological capability, the acquisition of exclusive patents was selected as the signal from the economic aspect, and the acquisition of public subsidies for the technology as the signal from the impact aspect. Based on the above literature study, we propose following two hypotheses.

H10: The number of patents of venture firms will have a positive relationship with the attraction of funds from impact investment institutions.

H11: The number of government subsidies selected by venture companies will have a positive relationship with attracting funds from impact investment institutions.

3.5. Impact and business integration

The concept of 'business model integration related to impact and financial value creation' discovered through FGI is not sent by a venture company as a single signal, how can it act as a signal? This study uses the concept of 'impact and business integration'. This means that impact investing practitioners select, classify, and synthesize relevant signals scattered sporadically in investment proposals to influence investment decision-making. The rationale for this view is as follows. First, it is the fact that in FGI, the practitioners of impact investment institutions have repeatedly expressed a view similar to this concept in such a way that business growth is linked to impact expansion. Second, the 'impact and business integration' is the fact that it appears that the unrealistic assumptions of the signal theory so far are maintained. The structural concepts of the signaling process so far have assumed a single sender, a single signal, and a single receiver. However, in general reality, a number of senders, receivers and signals are involved in the signaling process. This is an important aspect of signal theory that has not caught the attention of researchers. That is, how the receivers meaningfully select, classify, and synthesize these multiple signals (Connelly et al., 2011). In most of the business management literature, the empirical analysis of the signaling process

between investors and companies has been limited to the interpretation and reaction of the receiver to each individual signal. If the significance of the information and meaning contained in a single signal itself is great, the signal's interpretation and reaction to it are meaningful. However, some signals are more important when they are selected and aggregated as a group than when they are scattered sporadically (Balboa & Marti, 2007).

To take a simple example, Zimmerman (2008) found that management's educational and career heterogeneity is a signal that positively influences firm's IPO performance. The signal can be seen as being aggregated. This is because there is no single signal of management background heterogeneity. The actual signaling process of categorizing and synthesizing the heterogeneity of human capital into meaningful signals is much more complex than the single signal process. The need to select, classify, and comprehensively interpret scattered signals becomes greater for venture companies in the early stages of growth. If this venture capital takes on the character of an impact investment institution, the process of selecting, classifying, and synthesizing beyond the interpretation of a single signal will become more complex. The process of synthesizing various signals related to this will soon be visualized as a way to distinguish the types of business models that create dual value.

However, just as investors have in mind the strengths of management's career diversity but do not accurately measure its heterogeneity, so while investors have in mind the strengths of a model that integrates financial value and impact creation, accurately measuring the degree of integration is not easy.

Therefore, this study derived the following hypotheses based on the discussions of the practitioners of impact investment institutions confirmed by the FGI and the above arguments.

Hypothesis 12: The degree of integration of the impact business model of venture companies will have a positive relationship with the attraction of funds from impact investment institutions.

4. Research Methods

Based on the literature study on impact investment and FGI reviewed so far, the following model was designed to study the effect of economic signals and impact signals corresponding to each of the five information signal categories of a company on the attraction of impact investment funds. This paper is to examine which factors of venture companies more influence the investment decision-making of impact investment institutions with hybrid characteristics that pursue social impact and financial return at the same time. As a source of data for analysis, attention was paid to the investment proposals of social ventures that attracted funds from impact investment funds. To this end, 101 investment proposals for venture companies were collected from 12 of the impact investment institutions selected and funded for social impact funds by Korea Venture Investment Corporation (KVIC) and Korea Growth Finance (KGF).

KVIC and KGF, which were created to foster the financial ecosystem of Korean ventures, were affected by the global trend of impact investment. More than 10 additional selected venture

capital managers are entrusted with the management of impact investment funds under similar investment guidelines.

This study uses the economic signals and impact signals of five information signal categories contained in the investment proposals of venture companies that these impact investment fund managers have decided to invest in as basic data. From the 101 investment proposals, variables corresponding to five categories of information signals that influence investment decisions of venture capital investors revealed through literature study by Colombo (2021) were selected and coded. Each of the five information signals was coded into two categories: an economic dimension and an impact dimension. As of the end of September 2021, the total number of investments made by impact investment institutions that decided to invest in these venture companies (including additional investments by the same impact investment institutions) was collected and verified through THE VC (https://thevc.kr/), the website of impact investment institutions, investment proposals of venture companies, and newspaper articles. Using five information signals as explanatory variables in two dimensions, the effect of the dependent variable on the total number of investments by impact investment institutions was examined by multiple linear regression analysis using the least squares method.

4.1 Variables and Measurements

4.1.1. Dependent Variable

The dependent variable was set as the cumulative number of acquiring impact investments. It was measured by the total number of accumulated investments from impact investment institutions, including additional investment from the same impact investment institution, as of the end of September 2021 for ventures that are the subject of this study.

4.1.2. Explanatory Variables

Human Capital

From the economic point of view, as a human capital variable, first, the educational background of management was measured. First, we measured whether the management's educational background was presented in the investment proposal. The reason why the educational background was not presented in the investment proposal was probably due to the venture company's judgment that the information signal would not be effective. A score of 1 was given if educational background was presented, and 0 was assigned if it was not. In order to analyze the effect of management's educational background on the condition of the presentation of educational background in the investment proposal, dummy variables of master's and doctoral degrees were created based on the bachelor's degree in the highest education among executives. Second, management's past work experience was measured. First, we measured whether the management presented past work experience in the investment proposal. A score of 1 was given if work experience was presented, and 0 was assigned if no work experience was presented. Even if there was past work, the reason that it was not presented in the investment proposal was probably because of the venture company's judgment that the

information signal would not be effective. To analyze the effect of management experience, subject to the presentation of experience in the investment proposal, the total number of companies where top management team has previously worked was aggregated.

Third, management's past founding experience was measured. In the investment proposal, it was measured whether the management presented past start-up founding experience. A 1 was given if experience was presented, and 0 if it was not presented. Even if there was a previous startup experience, the fact that it was not presented in the investment proposal was probably due to the venture company's judgment that the information signal would not be effective. In terms of impact signal, as a variable of human capital, management's experience in social impact was measured. Since the social impact pursued by impact investing is deeply related to the perception and intention of the management to solve social problems, it is necessary to check the social impact-related experience of management. As the management's social impact-related human capital, whether any of the executives have experience working in a social enterprise or social venture, have worked at an impact investment-related institution, have completed a social MBA, have worked for a non-profit corporation, and have participated in the social entrepreneur nurturing process was checked. If any one of them appears in the investment proposal, a 1 is given, and if not, a 0 is assigned.

Social Capital

(Network) Since the human network can represent social capital, in terms of economic signal, the variable of social capital was measured by the number of advisors included in the advisory group composed of experts related to the business of venture companies. As for social capital in terms of impact signal, it was examined whether a social network related to social impact was formed, but there were few investment proposals including information on this.

(Third-party Endorsement) Third-party endorsement for venture companies serves as a guarantee of the quality of the company. To measure the linkage with such third parties from an economic point of view, the number of strategic alliance institutions highlighted in the investment proposal was measured. In terms of impact signal for social capital, 1 was given if the fact that the venture company was certified as a social enterprise or social venture was indicated, and 0 otherwise. In the case of venture companies certified as social enterprises or social ventures, social economy networks are naturally formed before and after this process. However, this information signal was judged to be more suitable for the nature of third-party endorsement in terms of impact signal.

Business Readiness

In business readiness, the degree of completion of the business plan can be seen as a signal from the economic aspect, and the degree of completion of the impact plan can be viewed as a signal from the impact aspect. The completeness of the business plan is composed of the eight items: the product and process description, target market/industry analysis description, value proposition, company's comparative advantage, business stage, team introduction, marketing plan, financial and sales model (Timmons & Spinelli, 2007:229; Baron & Shane,

2005: 169) among the business descriptions in the investment proposal. 1 point was given to each of the 8 items, making it a perfect score of 8. From an economic point of view, it is most desirable to evaluate the specificity and feasibility of a business plan in order to measure the readiness of a venture company, but it is very difficult to objectively measure it within an investment proposal. In terms of impact point of view, business readiness was intended to measure the readiness of the impact plan for the impact field that venture companies want to create. To do this, it is checked whether there is a mission statement, whether the social problem to be solved is clearly defined, whether the beneficiaries of the impact the company wants to create are specified, and whether metrics for the impact that the company creates are mentioned. One point was given for each, making a full score of 4 points.

Technological Competency

The economic evaluation of technological capability, which is an important variable for the success of a venture company, is how differentiated and exclusive the technology is. In order to measure technological capability in economic terms, the number of registered and applied patents was measured. In terms of impact, the technological capability of venture companies was evaluated by how publicly recognized and supported the technology is. To this end, we measured the number of times venture companies obtained government subsidies for their technology within the investment proposal.

Impact and Business Integration

For impact investors who want to achieve both the goals of impact and financial value creation, a business model in which the impact that a company creates proportionally increases as the sales of a company's products and services and profits increase is ideal. As we saw earlier, although this business model does not absolutely prevent mission drift, it is a preferred model for impact investment institutions because of its high sustainability as a hybrid organization. However, how to define and measure the degree of integration of the impact business model is a very challenging task. The logic of such integration of impact business models is also revealed in FGI, which includes practitioners of impact investment institutions as participants. A participant said, “I think that it is a natural aspect of social ventures that their business itself grows and the impact increases.” Another participant commented, “In our case, there are no trade-offs and we are looking for models that are very well aligned, where more sales lead to more impact and vice versa.” Based on the above discussion, this study measured the degree of impact and business integration as follows.

When the end consumer of a product or service is both a primary buyer and a beneficiary group that is the target of the impact the company is trying to create, sales and profits and the magnitude of the impact are tightly integrated, so that most business activities are directed towards one of these two goals. Therefore, if the end consumer of products and services is the beneficiary of the impact they want to create and at the same time is the primary purchaser of the products and services, the degree of integration score 5 were given. For example, when the final consumer, beneficiary, and primary buyer are all senior citizens to be cared for (data

base venture company No. 7) and the end consumer, beneficiary, and primary buyer are all union members (data base venture company No. 12).

When the business model has the same as the above and the other model at the same time in which the end consumer is the same as the beneficiary but not the same as the primary buyer, an integration score of 4 is given. This is the case for education business ventures where the end consumer and beneficiary are children's families in developing countries, but the primary buyer is not only children's families in developing countries, but also governments or public institutions (data base venture company No. 4).

When the end consumer and the beneficiary are the same, but the final consumer and the primary buyer are different, a score of 3 was assigned to the degree of integration. Both the end consumer and the beneficiary are patients with rare diseases, but the primary purchaser is a medical institution (data base venture company No. 1).

If the end consumer and the beneficiary do not match, but are identical to the primary buyer, a score of 2 was assigned for integration. The final consumer and primary buyer are working moms, but the beneficiary is career-interrupted female employees working for cleaning service platform company (data base venture company No. 14).

Finally, when the final consumer is not the same as the primary buyer as well as the beneficiary, integration score 1 was given. The final consumer and beneficiary are not specified, and the primary buyer is a Smart Farm, a food distribution company (data base venture company No. 5).

However, it should be noted that this impact business model integration does not mean the qualitative or quantitative aspects of the impact that the business model type creates, that is, social or environmental values. In other words, it does not mean that the ‘alley restaurant food material supply platform’ with a high degree of integration given by type above does not mean that the quality of impact is higher or that it creates more impact than the ‘job cleaning service for women who have lost their careers’. The concept of impact business model integration simply refers to the degree to which financial revenue-generating (ie, increasing sales that does not involve a proportional cost) and impact-generating activities are integrated.

Fair trade can be said to be a business model that creates an important impact. However, when looking at it in terms of impact and integration of business activities and creation, the types can be distinguished. The impact beneficiaries of fair trade are local producers of fair trade products (mainly agricultural products, handicrafts, etc.), and the actual consumers are mainly ethical consumers in developed countries. In order to have a large impact on the beneficiaries, the purchase unit price must be raised, which leads to an increase in the purchase price of ethical consumers in developed countries, which, if other conditions are constant, can cause a decrease in demand and affect sales growth. In other words, it is a business type with a relatively low degree of integration, with sales and impact moving in different directions.

The reason why the degree of integration of the impact business model is important as a signal of impact investing is as follows. From the point of view of an impact investor, it is easy to grasp and understand the business model in terms of the two goals of impact investing, namely, the creation of impact and financial benefits. If it is judged that the potential for business expansion is high because the market has high growth potential and the company has excellent capabilities, the possibility of impact growth also increases, making it a preferred business model for impact investors. Another reason why impact investors prefer this model is that it can be judged that the risk of mission weakening or suspension is relatively small even when changing investors through stake sale.

4.1.3. Control Variables

There are literature studies that show that the location of the headquarters of venture firms has an effect on attracting investment funds for venture firms (Deeds et al., 1997; Higgins & Gulati, 2003). Therefore, in order to control this, a dummy variable was created for the Gyeonggi region and provinces based on Seoul as the headquarters of venture companies (Gulati & Higgins, 2003). In addition, since the higher the company age, the more opportunities for venture companies with investment value to be known to potential investors, the company age was measured as a control variable. The year the company was founded and the year the funding series ended was calculated as a decimal point. As the size of the firm increases, more investment institutions can participate, so the number of employees was measured as a variable of firm size to control this. The gender issue of managers was one of the research topics in the acquisition of financial resources by venture companies (Marlow & Patton, 2005; Minniti, 2009). Gender differences are still an issue related to entrepreneurs' access to financial resources (Orser et al., 2006). To control this, we assigned a value of 1 if the CEO was a male and 0 if it was a female. The higher the funding series stage, the more likely it is a successful venture, so the number of investment institutions is likely to increase. To control this, four dummy variables were used based on the seed stage: Pre A, series A, series B, and series C.

4.2. Results

This study, through literature research, considers five categories of information signals (Colombo, 2021) that general venture capitalists commonly pay attention to, as well as the hybrid nature of impact investing that pursues two objectives: social impact and financial return. The results of analyzing the impact of the identified venture companies' information signals on attracting impact investment were mixed. The hypotheses about the economic signals of the five information categories were largely rejected except for the strategic partners of third-party endorsement. There was no effect of economic signals on human capital, social capital, and technological competency. Even considering the dual attributes of impact investment fund, this was a result far from expected. Due to the non-uniformity of the information presented in the investment proposal, there may be significant signals that could not be caught by the presentation of management education information. If the qualitative aspects of the advisory group were measured in more detail, the results could be different.

Table 2. Descriptive statistics of variables

	variable	N	Min	Max	Mean	S.D.
1	Education	101	0.0	1.0	.782	.415
	Master	79	0.0	1.0	.405	.494
	PhD	79	0.0	1.0	.316	.468
2	Career	101	0.0	1.0	.842	.367
	Total career	85	1.0	24.0	8.600	4.916
3	Founding exper.	101	0.0	1.0	.238	.428
4	Impact career	101	0.0	1.0	.248	.434
5	Advisor size	101	0.0	15.0	1.000	2.293
6	Business readiness	101	3.0	8.0	6.911	1.209
7	Impact readiness	101	0.0	4.0	2.505	1.092
8	No. of patents	101	0.0	46.0	3.535	8.377
9	No. govern.subsidy	101	0.0	5.0	.465	1.016
10	No. stragetic alliance	101	0.0	5.0	.624	1.047
11	SE/SV certification	101	0.0	1.0	.158	.367
12	Impact/bus. integration	101	1.0	5.0	3.119	1.366
13	Company age	101	.2	11.2	3.930	2.413
14	Company size	101	3.0	212.0	33.475	33.328
15	CEO gender	101	0.0	1.0	.851	.357
16	Series Pre A	101	0.0	1.0	.139	.347
17	Series A	101	0.0	1.0	.455	.500
18	Series B	101	0.0	1.0	.238	.428
19	Series C	101	0.0	1.0	.030	.171
20	Kyunggi province	101	0.0	1.0	.139	.347
21	Local	101	0.0	1.0	.168	.376
22	No. of impact funding	101	1.0	5.0	1.733	1.067

However, if some information contained in the investment proposal does not have a meaning beyond the so-called 'ceremonial display' usually expected for investment proposal, such a result may have sufficient likelihood. This is in line with the fact that the completeness of the business plan, which is an economic signal of business readiness, also has no effect on attracting impact investment funds. Nevertheless, it is a discovery that cannot be overlooked to meaningfully see the existence of strategic partners who can directly cooperate and help in the business of venture companies. However, what is interesting is that, unlike the economic signals of the five information categories among the hypotheses of the research model, statistically significant results were found for most of the impact-side signals.

Table 3. Results of regression analyses: Dependent variable – Number of impact funding

Variable	M1	M2	M3	M4	M5	M6	M7	M8
Constant	1,143***	1,124***	,920*	1,098**	1,196**	1,108***	,917**	1,166***
Education		,030						
Master			,189					
PhD			,025					
Career				,079				
Total career					-,006			
Found. exp.						,147		
Impact career							,579**	
Advisor size								-,066
Company age	,127***	,126***	,105**	,123**	,116**	,127***	,108**	,119***
Company size	,010**	,010**	,014***	,010**	,011**	,010**	,009**	,008**
CEO gender	-,350	-,354	-,191	-,355	-,368	-,361	-,294	-,279
Series Pre A	-,204	-,205	-,260	-,208	-,263	-,224	-,090	-,208
Series A	,132	,134	,040	,129	,247	,139	,271	,138
Series B	,043	,041	-,057	,039	,075	,043	,176	,143
Series C	,388	,392	1,405*	,373	,376	,373	,704	,575
Kyunggi prov.	-,100	-,095	-,242	-,095	-,258	-,080	,016	-,079
Local	,185	,184	,147	,178	,185	,202	,122	,266
No. of observ.	101	101	79	101	85	101	101	101
R2	,295	,295	,417	,295	,315	,298	,345	,311
Adjusted R2	,225	,216	,322	,217	,223	,220	,272	,234
F	4,222***	3,760***	4,363***	3,770***	3,406***	3,819***	4,732***	4,060***

Variable	M8	M9	M10	M11	M12	M13	M14
Constant	,996	,629	1,116***	,976**	,913**	1,065***	,091
Bus. plan	,021						
Impact plan		,203**					
No. patents			-,036***				
No. government subsidy				,296***			
No strategic alliance					,236**		
SE/SV certification						,411	
Impact/business integration							,293***
Company age	,128***	,130***	,145***	,117***	,118***	,119***	,126***
Company size	,010**	,010***	,006*	,011***	,009**	,009**	,007**
CEO gender	-,346	-,396	-,308	-,230	-,246	-,386	-,248
Series Pre A	-,197	-,214	-,148	-,260	-,051	-,174	,062
Series A	,133	,185	,199	,118	,227	,208	,228
Series B	,032	,032	,387	-,114	,143	,079	,085*
Series C	,370	,386	,648*	,422	,486	,532	,894
Kyunggi	-,103	-,135	,066	-,207	-,248	-,009	,063
Local	,181	,144	,202	,147	,061	,258	,210
No. observ.	101	101	101	101	101	101	101
R2	,295	,295	,352	,365	,343	,312	,418
Adjusted R2	,217	,216	,280	,295	,270	,236	,353
F	3,767***	3,760***	4,880***	5,182***	4,695***	4,087***	6,456***

p value: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

It was statistically strongly supported that the number of government subsidies, which is an impact signal of technological capability, had a positive effect on attracting impact funds. As most of the practitioners strongly emphasized the importance of the impact and business integration newly identified through the FGI in this study, it was found that it had a very distinct effect on attracting impact investment funds. In summary, as a result of the regression analysis of the research model, impact investment institutions show a more significant response to impact signals than to the economic signals of venture companies. This empirically demonstrates that the impact investment institutions included in the data of this paper actually place more importance on the impact signal than the general venture capital. However, it has been demonstrated that the hybrid nature of impact investment institutions that pursue both impact and financial returns at the same time clearly favor the business model type that integrates the two. This study shows that hypotheses based on literature research only may not sufficiently reflect the actual situation of the field where impact investment is being carried out.

5. Discussion

5.1. Key Findings and Implications

This study sampled 101 venture companies that attracted impact investment funds from 14 impact investment funds managed by 12 representative Korean impact investment institutions and quantitatively analyzed the effect of the information signals of the venture companies on the impact investment fund attraction. Based on the results of this analysis, the implications of the study are summarized as follows.

5.1.1. A Practical Perspective for Fund Attraction of Social Ventures

First, social ventures that want to attract impact investment funds needs to discern which items are effective as signals and which are not effective in writing investment proposals. As a result of this study, the effective impact signals for impact funding were the executive's impact-related experience, the public nature of the technology, and the completeness of the impact plan, and only one effective economic signal was found, that is, the alliance with a reputable strategic partner. What should be paid attention to in sending economic signals is the content related to patents to indicate technological capabilities. Unless a patent is important to a company's competitiveness, there is no need to indicate it. When it comes to presenting patents, even if the venture has many patents, it is better to indicate only a few very important patents. Even in this case, the message of how the patent plays a key role in the company's competitiveness must be clearly communicated.

Second, it is advantageous to match the essential assortment when writing an investment proposal, but to focus the message on items that can differentiate and inform one's own value rather than items that are less differentiated in terms of signal cost. Signal recipients, impact

investing practitioners, are well aware of which signals function to separate high-quality firms from low-quality ones. This can be measured by the difference in the cost of sending the signal. As a result of the study, the signals that were found to be effective, such as the impact experience of management, the number of strategic partners, the degree of completeness of the impact plan, and the number of government subsidies, have a discriminatory cost in sending signals. It is not a signal that can be easily sent at a low cost just because anyone wants it. Third, it is necessary to pay attention to the special signal that impact investing practitioners found through FGI are important to confirm. According to the type of impact and business integration, the statistical significance was confirmed that the type with a high degree of integration was more positive in attracting impact investment funds. The reason this result is important for social ventures is that even if all three types of actors – consumers, beneficiaries, and primary buyers – do not match, the business models are so diverse that there is room to improve the degree of integration by modifying the business models.

For example, if the impact goal of Fair Trade is to create an impact on the consumers of the product in addition to improving the income and quality of life of local producers, the story may be different. If the Fairtrade product is a differentiated and competitive product that can improve the specific health problems of consumers, one of the goals of the two impacts is to match the consumer and the beneficiary, so the degree of integration of the impact and business can be increased. These changes can increase the efficiency of corporate activities because, among various activities of social ventures, marketing activities become both business activities and impact-creating activities. So, this signal is a signal that contains both economic and impact aspects. Impact investors preferred an integrated business model in which activities to increase financial value are activities that create the social and environmental impact that the company is targeting. Therefore, it is important for social ventures to adjust their business models in a direction that can increase the degree of integration between impact and business, and to transmit signals that most corporate activities are activities that create social impact and financial value in an integrated way.

5.1.2. Impact Investment Ecosystem Perspective

Impact investing in Korea is still in its infancy. As of the end of November 2021, compiled by this study, the total size of 13 impact investment funds formed through investment projects of KVIC and KGF was only 221.6 billion won. So far, none of these funds have reached maturity and have been liquidated. Considering that the maturity of the fund is around 10 years, the first fund formed among the above funds was as of March 2018, so the final performance evaluation after liquidation of the fund is not possible until 2028 at the latest. In this situation, it is meaningful that two public institutions established to foster ventures in Korea, a barren land of impact investment, first started the social impact investment project. Nevertheless, it can be said that the need for revitalization of impact investment led by the private sector in Korea is very high in order for the impact investment ecosystem to grow healthy and grow in size. This is because large-scale private capital needs to be mobilized for impact investment in order to solve the social and environmental challenges facing the planet and humans worldwide.

Achieving the Sustainable Development Goals (SDGs) depends on the ability to move large-scale traditional capital towards ESG and impact. Capital that does not take into account its environmental impact and social inequalities and the resulting marginalization will become increasingly vulnerable to performance as well as reputational risks. Conversely, capital that pursues an investment strategy that integrates environmental protection and social goals will not only reduce risks, but will also have greater opportunities for financial, environmental and social benefits.

5.2 Limitations and Future Research

This paper has the following limitations due to the limited scope of research subjects, information sources, and the number of samples. First, because the analysis target was limited to venture companies that attracted impact investment funds at least once, it is not possible to include the venture companies that could not attract the impact funds after being reviewed in the analysis. Second, the social ventures included in the study are very diverse in the industries they are engaged in, and the growth stage seen as a funding series is also distributed from seed investment to series C. Such diversity may harm the regression validity. Third, there is a limitation due to the fact that the main source of information is the investment proposal provided by venture companies to potential investment institutions. In the entire process of venture capital investment decision-making, these information signals are actively filtered, confirmed, and discussed, leading to the final investment decision, but this study has limitations in not reflecting this situation. In addition, there is a limitation in that the level of information in signal items could not be measured by going into a deeper level because the investment proposals presented by venture companies are not composed in a unified form. Fourth, the number of samples in this study is 101 is not big enough to represent the population. Impact investment funds were officially established in Korea around 2018, and considering the number and contract size of impact investment funds, they have not yet reached a sufficient quantitative scale. In addition, there is a limitation in that it is difficult to confirm the effect of the signals in light of the final impact and financial performance results because there are no funds that have been liquidated after the expiration date.

In the future, as the history of impact investing in Korea becomes longer and the number of cases increases, more diverse studies on this topic need to be attempted. First, it is necessary to take a deeper look into the investment decision-making process of impact investment institutions. It is necessary to examine how the information signals of venture companies are deepened, highlighted, and linked through investment briefings, due diligence visits, and interviews with management. In particular, the concept of integrated creation of financial value and impact presented in this study needs to be approached more systematically outside the scope of signal theory. This is because, from the point of view of an impact investment institution, a business model that can pursue both at the same time increases the possibility of investment choice when other conditions are the same.

It is hoped that future studies in the field of application of signal theory to impact investing will overcome the limitations of this study and make progress to a higher level, and this study is a good starting point for academic approaches and practical development of impact investing.

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