

Positioning Social Entrepreneurship Research in the Field of Entrepreneurship Research

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Abstract--Social Innovation (SI) is becoming a more important concept in research and business. Various researches on SI are related to CSR of major companies and management systems of NPOs.

Social Entrepreneurship (SE) stands out in the field of entrepreneurship research, and some social entrepreneurs have changed society for the better.

Firstly, we checked the relations between SI and SE in research fields through citation network analysis in the database of the Web of Science (WoS) provided by Thomson Reuter's, exacting 688 papers including the words "social innovation" or "social entrepreneurship" in the title, abstract, and keywords from WoS. We found that the two clusters are almost completely separate.

Next, we extracted 71,145 papers including the words "venture," "startup" and "entrepreneur" from WoS, and specified five main clusters and 15 sub-clusters (including 19,499 papers) through citation network analysis. Additionally, we examined 265 papers including "social entrepreneurship" in these clusters and sub-clusters.

As a result, we figured out that the 206 papers (78% of the whole SE papers) are concentrated to one sub-cluster (No.1-1) whose average published year is 2011.7, so this sub-cluster is one of "emerging" clusters.

I. INTRODUCTION

Social Innovation (SI) is becoming a more important concept in research and business, but the definition of SI is ambiguous and covers a wide range of research fields. In the 1960s, the activities of enterprises were claimed by some to have a largely negative influence on society. Since then, major companies that have a high-level of social status have paid attention to their reputations with consumers and have balanced the maximization of profits and their contribution to society. In the 1970s, governments responded to the oil shocks by cutting welfare budgets. Since then, non-profit organizations (NPOs) have begun to play more important roles in society ([13], [15], [24], [25]). Various researches on SI are related to the **corporate social responsibility** (CSR) of major companies and the management systems of NPOs ([2], [6], [19], [20]).

Social Entrepreneurship (SE) stands out in the field of entrepreneurship research, and some social entrepreneurs have changed society for the better. They have tackled various social problems in the fields of welfare, community development, environment, and international support for countries in conflict and developing countries by the way of business ([5], [10]). But in research fields, there is no consensus on the definition of SE ([4], [7], [8], [12], [16], [18]).

We are interested in relationships between these two research fields, and applied citation analysis to papers that belong to the two categories. Garfield ([9]) focused on the relationship of citations of papers, developed by those such as Börner et al. ([3]), and their method has become widely used for over-viewing the entirety of research and for clustering information into different fields.

Research Question 1(RQ1): Are there strong relationships between papers on SI and ones on SE?

We checked the positions of SI and SE in the research fields of venture businesses because the number of papers in this field has rapidly increased since the 1990s and more than 1,500 papers have been published every year over the past few years. As it has become more difficult to gain a broad understanding of the research fields of these papers, an academic overview and systemization is becoming increasingly necessary ([14]). In addition, research on venture businesses is an interdisciplinary area that spans a wide range of fields and, as interest in this area grows and research progresses, the topics are becoming further subdivided ([11]). So we have tried to identify the positions of SI and SE in the various fields of venture businesses.

Research Question 2(RQ2): How are the papers on SI and SE recognized and distributed in the various fields of venture businesses?

II. METHODOLOGY

First, the Web of Science (WoS, containing papers from 1900-2015 written in English), a database of papers compiled by Thomson Reuters, was searched for papers that contain each of the two words "social innovation" and "social entrepreneurship" in the title, keywords, or abstract(TESE 1).

In relation to the data on them, with each of the individual papers as nodes and the direct citation relationships as links, a network was constructed to acquire the maximum connected component. Furthermore, upon clustering these using the N-clustered n-method ([22]), several clusters were extracted. From this point on, focus was placed on the main clusters and the keywords that frequently appear in the papers included in each of the clusters were checked and further visualized to prepare an overview of the relative positional relationships between the clusters.

The algorithm employed for the visualization was the "large graph layout" ([1]), which is a drawing method based on the spring model. That is, attraction is assumed between papers (nodes) that have a relationship of mutual citations (links) and repulsion is assumed otherwise, the positions of stable nodes are then calculated and drawn on a coordinate

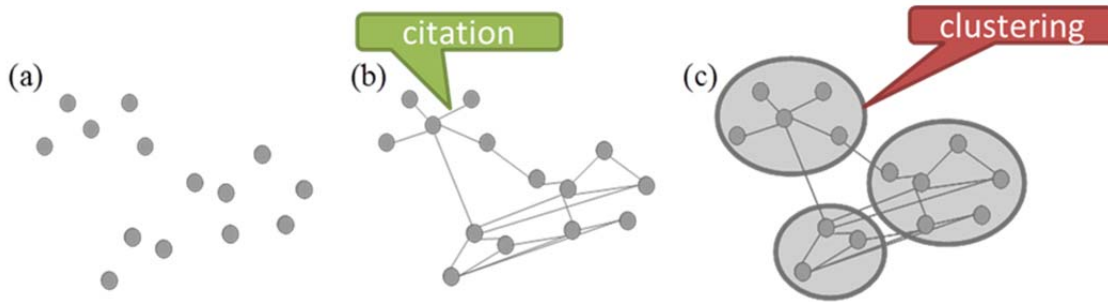


Fig. 1 Steps of citation network analysis

plane. In other words, groups of papers with a strong citation relationship are placed close together in terms of distance while groups of papers without a citation relationship are placed further apart for a program that forms clusters based on groups of papers with a strong relationship on the coordinate plane (Fig. 1).

Furthermore, by displaying nodes and links belonging to the same cluster using the same colour and separating the colours used between different clusters, the relative positional relationships of cluster groups have been visualized in a manner that is easier to understand.

Next, we searched the WoS for papers that contain any of the three words “venture,” “start-up,” and “entrepreneur” or a derivative form of each of them, in the title, keywords, or abstract. Then, by the same way of that clustering, the maximum connected component was acquired and several clusters were extracted. We sought the papers related to “social entrepreneurship” in the title, keywords, or abstract and found which clusters or sub-clusters contained most of them (TEST 2).

III. RESULT

A. TEST 1

As a result, 688 papers that contain either of the two words, “social innovation” or “social entrepreneurship” in the title, keywords, or abstract were extracted from the WoS (Table 1). And 356 papers contained “social innovation”, 355 papers contained “social entrepreneurship”, therefore only 23 papers contained both of the two words.

We also checked the four largest sub-clusters of each cluster and examined keywords that frequently appear in the papers included in each of the sub-clusters, but could not find any valuable features (TABLE 1).

This table showed us little relationship between the two clusters, which means researches on social innovation and researches on social entrepreneurship are almost separated and there are few direct citation relationships between them ([17],[21],[23],[27]). Furthermore, we visualized to prepare an overview of the relative positional relationships between the clusters (Fig. 2, next page) and could easily found less relationship between them.

TABLE 1
TEST 1: NUMER OF PAPERS EXTRACTED FROM THE DATABASE OF THE WEB OF SCIENCE CORE COLLECTION

Search words	Number of extracted papers	Number of extracted papers in sub-clusters	Keywords in sub-clusters
a: social innovation	356		
	a1	33	corporate social
	a2	30	design/innovation park
	a3	26	urban or regional development
	a4	20	creative problem-solving
b: social entrepreneurship	355		
	b1	44	corporate social entrepreneurship
	b2	40	health/welfare
	b3	40	social worker/human service
	b4	36	profit or social enterprise/ public organization
a & b	23		
a or b	688		

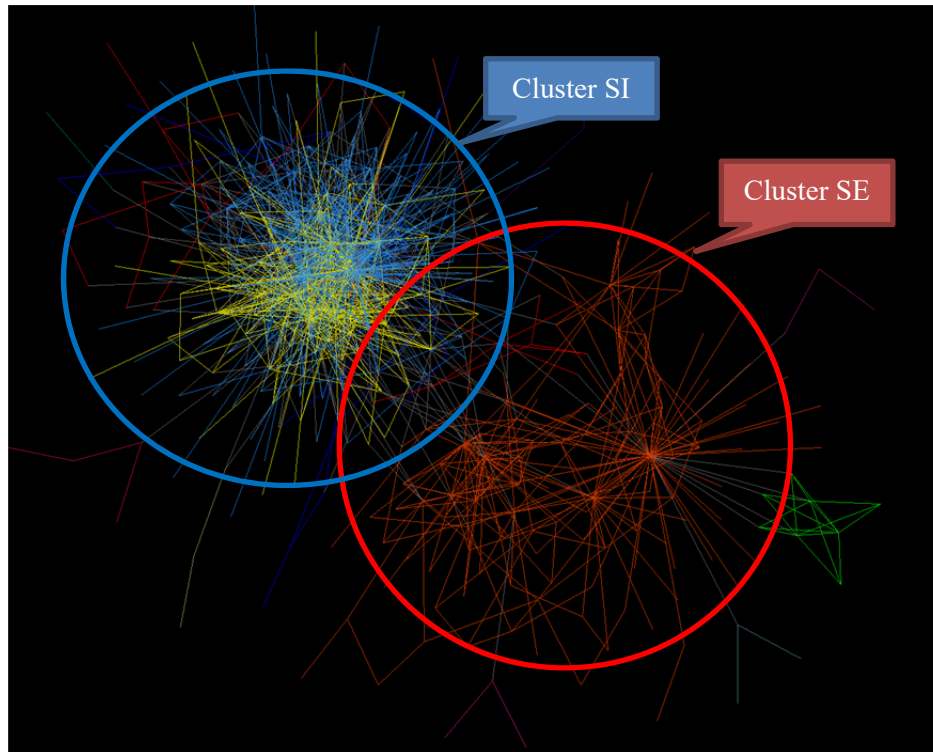


Fig.2 The two clusters(SI & SE) are almost completely separate.

B. TEST 2

As a result, 71,145 papers that contain any of the three words “venture,” “start-up,” and “entrepreneur” or a derivative form of these in the title, keywords, or abstract were extracted from the WoS (Table 2).

Next, in relation to the individual papers as nodes and the direct citation relationships as links, a network was constructed to acquire a maximum connected component of 26,954 papers. Furthermore, 244 clusters were extracted from this component by using the N-clustered n-method. From this

point on, focus was placed on ten clusters that include more than 300 papers (Table 3) and the keywords that frequently appear in the papers included in each of the clusters were checked and further visualized to prepare an overview of the relative positional relationships between the clusters (Fig.3, next page).

Consequently, we further narrow these 244 clusters down to ten cluster lists of 23,933 papers, which account for 88.8% of the maximum connected components of 26,954 papers.

TABLE 2
TEST 2: NUMBER OF PAPERS EXTRACTED FROM THE DATABASE OF THE WEB OF SCIENCE CORE COLLECTION

Search words (* wild letter)	Number of extracted papers	
ventur*	23,442	⇒
venture	18,432	
entre*	38,729	⇒
entrepreneur	11,819	
entrepreneurship	11,532	
entrepreneurial	9,323	
startup*	5,102	⇒
startup	5,102	
start-up*	13,155	⇒
start-up	11,870	

"} "ventur*" or "entre*" or "startup*" or "start-up*" }

71,145

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TABLE 3
CLUSTER STRUCTURE 1 (RED: AVE. DATE AFTER 2008)

Cluster no.	Keywords	# of papers	Average Date
C1	entrepreneurship / firm / venture capital	7,954	2008.0
C2	alliance / joint venture	6,468	2007.0
C3	venture capital / university / IPO	3,086	2007.3
C4	reactor / sludge	1,818	2006.8
C5	immigrant / city / ethnic / urban	1,633	2006.9
C6	apple scab / venturia inaequalis	1,170	1997.2
C7	fuel cell / startup	492	2009.6
C8	venture / flow / cavitation	484	2001.4
C9	shear flow	470	2005.8
C10	farm / informal / Chinese/food	358	2000.8
Maximum connected component (MCC)		26,954	2006.5
Total (C1-10)		23,933	2006.7
Basic subject clusters (BSC: C1-3&5&10)		19,499	2007.3

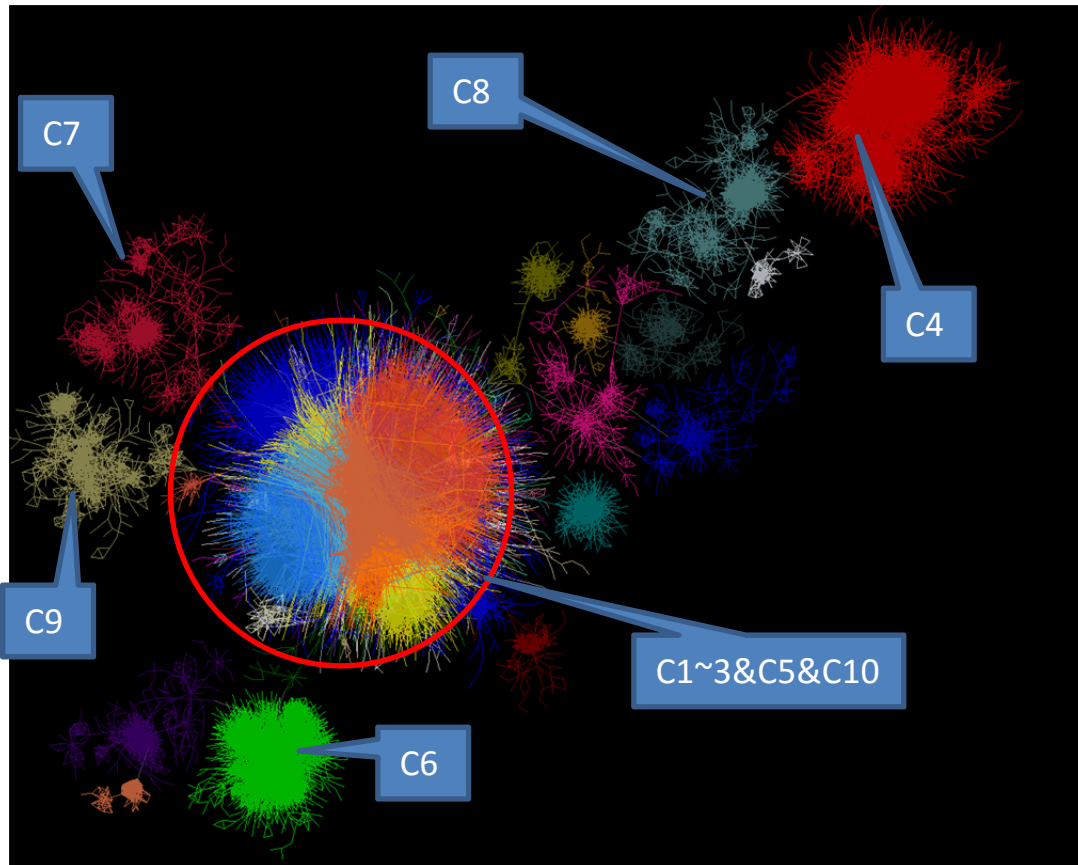


Fig.3 Maximum Connected Component (MCC:26,954papers); ex. "C1" means "Cluster 1"

Furthermore, the fourth cluster when listed in order of those with a greater number of nodes (C4: number of nodes = 1818) was excluded due to being further away from the cluster groups C1 through C3 and having the keywords “reactor” and “sludge” (a term related to hydrodynamics), and the sixth cluster (C6: number of nodes = 1170) was also excluded due to having the keywords “apple scab” and “venturia inaequalis” (a type of disease caused by pests resulting in scratches on apples). The seventh cluster (C7: number of nodes = 492) was excluded due to having the keywords “fuel cell” and “startup” (a kind of car component), the eighth cluster (C8: number of nodes = 484) was excluded due to having the keywords “venture”, “flow”, and “cavitation” (a term related to hydrodynamics), and the ninth cluster (C9: number of nodes = 470) was also excluded due to having the keywords “startup shear flow” (“initial shear flow” being also a term related to hydrodynamics).

Consequently, clusters C1 through C3, C5, and C10 were further examined as “basic subject clusters” (BSC: 19,499 papers, Table 3). It should be noted that, as the papers

belonging to these “basic subject clusters” account for 72.3% of the entirety of the maximum connected components (26,954 papers), this can be considered sufficient for preparing an overview of the academic fields of research in regard to so-called venture businesses.

Furthermore, of these five clusters (Fig. 4, next page), in regard to the three higher-ranking sub-clusters, each was visualized with an overview diagram and topics common to the papers included were presumed from highly frequently appearing keywords (Table 4, after two pages). These will be examined in order from C1, which is the largest cluster.

The papers belonging to C1 cluster cover, for example, the influence that entrepreneurship has on performance in a corporate organization (sub-cluster C1-1), the relationship between entrepreneurship and employment (C1-2), and family business (C1-3). As an approximation, there are a greater number of papers related to the relationship between entrepreneurship and a firm’s performance, how to make use of entrepreneur human resources, and risk money in the involvement with companies and organizations.

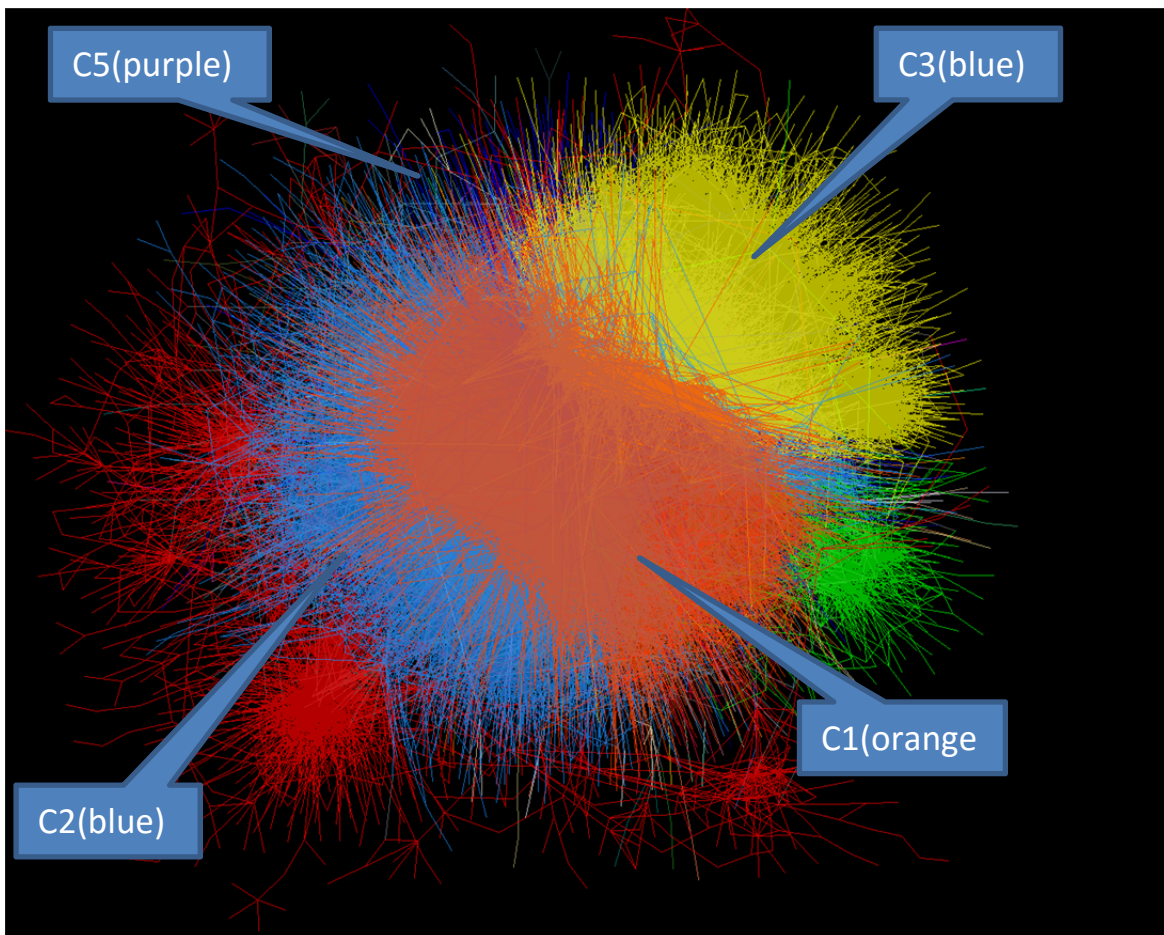


Fig.4 “Basic subject clusters” (BSC: 19,499 papers); ex. “C1” means “Cluster 1”. (“C10” cannot be seen because of the small number of nodes and links)

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TABLE 4
CLUSTER STRUCTURE 2 (RED: AVERAGE DATE LATER THAN 2008; BLUE: EMERGING KEYWORD)

Cluster	Sub-cluster	Topic of the cluster	Keywords	# of papers	Ave. Date	2015	2015 share
C1		Entrepreneur-ship in firms	entrepreneurship / business / firm	7,954	2008.0	721	9.06%
	C1-1	Entrepreneur-ship and performance	institutional / organization / opportunity/ legitimacy / social entrepreneurship	2,788	2009.2	315	11.30%
	C1-2	Entrepreneur-ship and employment	employment / human capital / self / firm formation / regional growth	2,612	2008.6	224	8.58%
	C1-3	Ethnic business and family business	family/ ethnic/ woman/ immigrant/ family business	2,070	2006.3	143	6.91%
C2		Joint venture	alliance / joint venture	6,468	2007.0	412	6.37%
	C2-1	Alliance on joint venture	alliance / joint venture / partner	2,373	2006.3	112	4.72%
	C2-2	Entrepreneurship orientation	entrepreneurship orientation / corporate	2,045	2006.8	147	7.19%
	C2-3	Internationalization	internationalization / export / born global	1,723	2008.4	135	7.84%
C3		Venture capital	venture capital / university / ipo	3,086	2007.3	193	6.25%
	C3-1	Venture capital and corporate governance	venture capital / equity / corporate governance / managerial entrenchment	1,048	2008.3	71	6.77%
	C3-2	University and technology transfer	university / academic / technology transfer	945	2007.9	63	6.67%
	C3-3	Ipo and angel	ipo / angel / underwriting / pricing	550	2004.7	27	4.91%
C5		Urban development and public policy	immigrant / city / ethnic / urban	1,633	2006.9	121	7.41%
	C5-1	Venture business in city	city / urban / governance	364	2007.7	23	6.32%
	C5-2	Policy entrepreneur	policy change / agenda setting	299	2007.2	22	7.36%
	C5-3	Public sector	public health / public administration	127	2004.1	9	7.09%
C10		Agri-food and informal china	farm / informal / chinese/ food	358	2000.8	23	6.42%
	C10-1	Informal china	china / africa / trade / informal	52	2006.8	4	7.69%
	C10-2	Farm and agriculture	farm / food / agriculture	37	2008.9	4	10.81%
	C10-3	Developing country	business group / ict / bpo	35	1997.6	0	0.00%
C1 ~ 3 & 5 & 10				19,499	2007.3	1470	7.54%

Papers that contained the keywords “social entrepreneurship (SE)” were concentrated into C1-1, and the average date of publication of this sub-cluster was February 2009. So this research sector is an emerging research field. We selected papers that contained the keywords “social entrepreneurship,” checked their average date of publication, found the average was July 2011, and also discovered that 206 papers (78% of all SE papers) were concentrated in C1-1.

Only 41 papers contained the keywords “social innovation (SI),” and the average date of publication was relatively close, April 2012. Of these, 41% belong to the sub-sub cluster C1-1, so the papers of SI are distributed more widely than those of SE.

IV. CONCLUSION

Firstly, through TEST 1, we found little relationship between the two clusters, “SI cluster” and “SE cluster,” which means researches on social innovation and researches on social entrepreneurship are almost separate and there are few direct citation relationships between them. SI and SE

have similar influences on society and seem to be the same category, but, in fact, are quite separate research fields.

This fact implies that researchers on SE have much to learn about SI and can involve SI researchers as co-researchers.

Secondly, through TEST 2, we figured out that 206 papers (78% of all SE papers) were concentrated in one sub-cluster (C1-1) whose average published year was 2011.7, so this sub-cluster is an “emerging” cluster. Few papers contain the keywords “social innovation (SI),” and we should research constructive subjects on SE in search of knowledge of SI.

Challenges for future research include clustering the papers in the SI field where we have little knowledge, comparing them with those of the SE field, examining primary papers in Japanese corresponding to these categories to compare and contrast these against clusters of English papers, and checking the dynamic time-series change of these clusters.

We hope that the SI and SE fields improve rapidly.

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