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## **BIBLIOMETRIC ANALYSIS OF STUDIES ON SOCIAL INNOVATION**

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### **Abstract**

The aim of the current study is to examine the scientific publications produced in the field of social innovation (SI) during a period of roughly 40 years through 1975-2018. The analysis based on the bibliometric evaluation of all publications indexed in the Web of Science (WoS) database including "Social Innovation" (SI) phrase in the title, abstract or key words. The research is carried out through parameters including the number of publications in line with the years, authors, journals and country, publication types, citation analyses, collaborations and also concept-topic tendencies. Results indicated that the vast majority of SI studies are published as an "article". Respectively, UK, USA and Italy are the top three leading countries that contribute to the SI literature. Design Journal" is a prominent domain of SI research and the field is multidisciplinary. Findings also demonstrated that Mumford Michael D. is the most productive scholar in the field of SI whereas Swyngedouw E. produced the most cited article in the WOS. Finally, a significant increase in the number of publications published in SI field is remarkable since 2015 which leads the conclusion that the topic has gained momentum in recent years among the academicians.

**Keywords:** *Bibliometric Analysis, Social Innovation, Web of Science*

**JEL Codes:** M10, O35, C89

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## **Introduction**

The field of social innovation (SI) has received rapidly growing interest from the academic and the managerial world during the last two decades since the traditional solutions appear to be inadequate to address deep-rooted social problems. Moulaert and Nussbaumer (2005) criticize that human progress is widely reduced to economic and technological achievements and therefore social innovations are ways to respond to the neglected needs by the traditional forms of private or the public sector (Moulaert and Ailenei, 2005). In their inspiring study “How to innovate: The tools for social innovation” Murray, Mulgan and Caulier-Grice (2008) list 260 methods, processes and examples of social innovation to encourage societal and systemic changes such new sources of energy, redesigning the labour contract, neighbourhood nurseries etc.

Despite its growing popularity and the creation of different models, the concept of SI is weakly conceptualized. The majority of literature on social innovation has largely emerged over management studies, economics, policy studies and political science, urban studies, sociology and social anthropology. It is often used interchangeably with various topics such as social entrepreneurship, and social enterprise. According to Westley and Antadze (2010) social entrepreneurship is concerned with the individual, social enterprise with organisations and SI with systems. Social entrepreneurship and social enterprise are characterised as sub-sets of the broader field of SI (Davies and Simon, 2013; Nicholls and Murdock, 2012). European Union/Young Foundation (2010) also emphasizes while the concepts are overlapping, they are distinct. The concept of social entrepreneurship “is used to describe the behaviours and attitudes of individuals involved in creating new ventures for social purposes, including the willingness to take risks and find creative ways of using underused assets”. Therefore, social entrepreneurs are seen as the change agents for society who seize solutions to social challenges through special traits that linked to creating and innovating new products and ideas (Waasdorp and Ruijter, 2011, Ghalwash et al., 2017; Grimm et al., 2013). Social enterprise, on the other hand, refers to “businesses with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or community” (European Union/Young Foundation, 2010). The term is often used to describe a different way of doing business when compared to traditional enterprises with the aim of achieving greater social benefit (Galera & Borzaga, 2009; Grassl, 2012). Certainly these three concepts are closely

related to each other but social innovation is much broader than either social enterprise or social entrepreneurship since “it transcends sectors, levels of analysis, and methods to discover the processes – the strategies, tactics, and theories of change – that produce lasting impact” (Phills et al., 2008)

Considering the discussion above, there is a need to have a comprehensive picture of global scientific activities in the field of SI to enhance the understanding of the term. With the help of bibliometric analysis the goal of this article is to provide an overview of the publications and identify central aspects and issues of the field. Bibliometric analysis is an advantageous statistical method to review and analyze the intellectual structure, pattern, and development of the academic literature. The rest of the paper is as the following. First section presents a review of the literature through the evolution of SI research. Second section introduces the methodological background about bibliometric analysis and scientific mapping. Third section presents the findings obtained from bibliometric analysis and scientific mapping and interprets the corresponding findings in line with the existing literature. The paper concludes with the recommendations with respect to analysis results and suggestions for future studies.

### **Literature Review and Theoretical Framework**

Before examining what can be “social” in an innovation it would be useful to begin with defining innovation concept. Schumpeter (1934) defined innovations as commercialized inventions created by entrepreneurs for the sake of profit. The prominent difference between SI and business innovation is that the intrinsic motivation of the latter is profit maximization. On the other hand both of them pursue innovation for the creation of a better future (Drucker, 1986; Mumford, 2002; Pol and Ville, 2009). They contribute to each other to enhance either the quality or the quantity of life (Pol and Ville, 2009). For instance, innovations leading to better education, better healthcare services and longer life expectancy can be possible through taking advantage of technological inventions.

Westley and Antadze (2010) define SI as a “complex process of introducing new products, processes or programs that profoundly change the basic routines, resource and authority flows, or beliefs of the social system in which the innovation occurs”. On the other hand, O’Byrne and colleagues (2013) defined SI as the “successful implementation of activities, such as ideas, practices, or objects, through new collaborations

and partnerships, in ways that positively impact society by improving the delivery of public services.” SI come from individuals, groups or organizations, and can take place in the sectors for-profit, non-profit and public sector (Centre for Social Innovation, 2014). It is a process initiated by different stakeholders through an open process of participation, exchange and collaboration with relevant stakeholders, including end-users, thereby crossing organizational boundaries and jurisdictions to improve the quality and community living conditions (Voorberg et al., 2014).

Reviewing the literature reveals that scholars use the term “social” with various meanings in the context of SI which leads the conclusion that the term seems to be inherently subjective. For instance, some scholars proposed that the word “social” highlights that the process of innovation involves a range of societal actors, who carry ideas, focus their energies, mobilise competences and create new complementarities for a social cause (Roome, 2004; Mulgan, 2006). An overview of the researches relating to SI discussion and definitions reveals that to define and clarify the meaning of the SI concept is difficult because it is a “complex, multi-faceted phenomenon that spans a wide range of activities from grassroots social innovations that respond to pressing social demands which are not commercially viable due to market failure, to novel products and services produced by private, third sector, or public sector organizations (or a combination thereof), to new combinations of social practices, attitudes and values and to systemic innovations involving fundamental changes in strategies and policies, organizational structures and institutional frameworks”. In addition there are various uses of the concept “social” such as new forms of social cooperation, collective approaches to delivering these innovations, the role of the civil society at different stages of the social innovation process, and the favourable societal impact of these social innovations (especially underserved populations) (Evers et al., 2014).

SI is also defined by referring to the notion of sustainability-driven innovation in which economic, social and environmental considerations are integrated (Adams et al., 2012) In this vein, a number activities enhancing life quality, protection of health, education and free personal development, solidarity between and within generations and global of scholarly, juridical equality and certainty, protection of safety, cultural and societal values are the most commonly ones that links to the social aspect of sustainability (Piccarozzi, 2017). Recently, Segarra-Oña and colleagues (2017) carried out a bibliometric examination to show the

diffusion and dynamism of the term and found that that keywords appearing more frequently with SI were social entrepreneurship, CSR, social economy, governance, social enterprise, and sustainability which helps to explain that the term social innovation is a matter of responsibility and sustainability. Parra (2013) assumes that “social innovation and social sustainability, as both conceptual constructs and social practices, are not only complementary: both are also mutually reinforcing in their ethical overlays and companions in procuring grounded answers to the question of how to carry out sustainability and in examining those social practices and local capacities leading to sustainable societal transformations”.

Researchers have made considerable efforts to describe and characterize SI concept. For instance Moulaert et al. (2005) stated that SI is appeared in four domains including the field of management science, arts and creativity, territorial and regional studies, political science and public administration. Cajaiba-Santana (2014) use institutional and structuration theory to enhance and contribute the SI literature. Institutional theorists discuss the role that institutions play in producing new ideas and new kinds of social systems, and offers profound knowledge about how new practices mobilized through legitimization activities. On the other hand, structuration theorists claim SI is socially constructed as individuals collectively engage in intentional actions and interactively direct the outcome of their actions.

Ayob, Teasdale, and Fagan (2016) investigated the most influential articles on SI and explore how these have conceptualised the term over the 25-year period between 1989 and 2013 .They conclude there are four main groups of conceptualisation including social relations, societal impact, social relations and societal impact, and social relations and technological innovation. In addition, the authors point that although none of the most influential publications in the first two five-year periods focused on social relations and societal impact, particularly since 2004, 25 of the 39 most influential publications in this 10-year period fall into this category. Murray et al. (2010) highlighted social relations and societal impact approach by defining SI as “new ideas (products, services and models) that simultaneously meet social needs and create new social relationships or collaborations”.

Another review of the SI literature by Van der Have and Rubalacaba (2016; 1928) points to four distinct but interrelated clusters as; (1)Community psychology focused on innovative strategies or

solutions to achieve social change and solve social problems. (2) Creativity research has taken an interest in understanding the process of social innovation and the creation of social relationships and organizations. (3) Social and societal challenges concerned with SI as innovative solutions to social-technical challenges dealing with climate change, energy provision and further sustainability challenges. (4) Local development focused on communities or neighborhoods, cities and regions frequently with a focus on the role of governance and institutions, as well as the participation, inclusion or empowerment of citizens in SI processes. The authors concluded that SI has an important commonality in sharing two ‘core conceptual elements’; a change in social relationships, -systems, or structures, and such changes serve a shared human need or solve a socially relevant problem (1932).

Schachter and Wallace (2015) also examined the evolution in the conceptualization of SI through a search of 2,339 documents and found 251 different definitions of social innovation and pointed three interrelated and inconsistent areas including processes of social change, sustainable development and the services sector. Similarly, Howaldt & Schwartz (2010) discovered a range of social innovations, including of new values, new social processes, the outcome of processes, institutional change and social change. Weerakoon et al., (2016) also examined 949 publications indexed in Scopus from 1966-2015 and identified that SI field is multidisciplinary, with key knowledge clusters residing in urban studies, ecological resilience, transition management, and user innovation. Moreover, the findings of this study indicate rapid growth in the SI literature after 2005 with most contributions from European and North American scholars.

Furthermore, Ruede and Lurtz (2012) concluded the field suffers from conceptual ambiguity via a review of 318 papers, books and book chapters. The researchers established seven discrete categories of SI;

1. “... to do something good for society”
2. “... to change social practices and/or social structures”
3. “... to contribute to urban and community development”
4. “... to reorganize work processes within and across enterprises”
5. “... to imbue technological innovation with cultural meaning and relevance”
6. “... to make changes in the area of social work”
7. “... to innovate by means of digital connectivity”

On the other hand, Westley (2013) has identified six distinctive schools of thought informing SI as a field, including social entrepreneurship, innovation theory, institutional entrepreneurship, socio-technical transitions and multi- and cross-scale interactions, resilience and social-ecological transformation, and social economy. Phillips et al. (2015) via a systematic review of 122 papers concluded that the role of the entrepreneur, the relations of partnership and the importance of the institutional environment are three prominent fields in research on SI. According to Voorberg et. al. (2013) SI has three important features as it particularly stresses to produce sustainable outcomes; that the innovation fundamentally changes relationships between stakeholders; that these outcomes are not by definition related to science and technology driven innovations.

Reviewing the literature exhibits that although SI has become a prominent concept in academic research, it is weakly conceptualized since it is a multi-disciplinary concept embraced in a number of academic disciplines including business and management studies, economics, political science and policy studies, urban studies, sociology and environmental studies. It is used interchangeably with the words such as social entrepreneurship, social enterprise, co-creation, sustainability, sustainable development and corporate social responsibility. Therefore, through a bibliometric review, the current research aims to reveal the general structure of the SI concept and to visualize the trend of global scientific activities in the field. Bibliometric analysis is a quantitative research technique and is considered as exploratory or descriptive studies. Thanks to the bibliometric method statistical analysis of data such as authors, institutions, countries, and journals of the publications is turned into analytical units and then the general structure of the related disciplinary and mutual collaborations among them is possible to uncover((Yalçın and Esen, 2016 p.102).

## **Research Method**

### ***Sample and Data Collection***

This study used the Web of Science (WoS) database to reach highly qualitative publications in the field of SI. During the period of 1975-2018 (March), the publications including “social innovation” term in titles, abstracts and keywords of published works indexed in Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), Conference Proceedings Citation Index-Science (CPCI-S), Conference Proceedings

Citation Index-Social Science & Humanities (CPCI-SSH), Emerging Sources Citation Index (ESCI) was downloaded in appropriate with the bibliometric data. 1196 publications were concluded after duplicates were eliminated and other data cleaning procedures were performed.

### **Analyses**

By the help of bibliometric analysis, researchers examine statistically the country, author(s), and cooperation among authors, citations, institutions, and published years of selected publications and set forth the general structure of a certain discipline using obtained statistical findings. Accordingly, the present study addresses the following key research questions:

- How are publications in relevant to SI can be classified according to document type?
- How is the distribution of the studies related to SI by years?
- Which are the most productive journals, countries and institutions related to SI literature??
- Who are the highly productive authors in relevant to SI in Web of Science (WoS)?
- What are the most highly cited publications in relevant to SI?

### **Findings**

1196 publications are classified according to document types (Table 1) by using publication categorization of Web of Science platform. Accordingly, while %58,53 of the publications are published as “article”, %27,34 are published as “proceedings paper”. In other words, the vast majority of SI studies (% 86) are published as “article” and “proceedings paper” in the field.

**Table 1.** Document Types of Social Innovation Studies

<b>Rank</b>	<b>Document Type</b>	<b>n</b>	<b>%</b>
1	Article	700	58,53
2	Proceedings Paper	327	27,34
3	Editorial Material	50	4,18
4	Book Review	47	3,93
5	Article; Proceedings Paper	41	3,43
6	Review	20	1,67
7	Others	11	0,90
<b>Total</b>		<b>1196</b>	<b>100,00</b>



Table 2 presents the annual production of SI studies during the period of 1975-2018 (March). Since 2015, a significant increase in the number of publications published in SI field is remarkable. 774 of 1196 publications were published after 2015 which leads the conclusion that SI researches have gained momentum in recent years among the academicians.

**Table 2.** Annual Production of Social Innovation Studies (1978-2018 March)

Rank	Publication Year	n	%	Rank	Publication Year	n	%
1	1978	1	0,08	19	2001	1	0,08
2	1979	3	0,25	20	2002	1	0,08
3	1980	1	0,08	21	2003	14	1,17
4	1982	1	0,08	22	2004	3	0,25
5	1983	1	0,08	23	2005	11	0,92
6	1984	1	0,08	24	2006	5	0,42
7	1985	1	0,08	25	2007	21	1,76
8	1986	3	0,25	26	2008	12	1,00
9	1987	2	0,17	27	2009	17	1,42
10	1988	1	0,08	28	2010	38	3,18
11	1991	4	0,33	29	2011	55	4,60
12	1992	1	0,08	30	2012	51	4,26
13	1993	2	0,17	31	2013	72	6,02
14	1994	1	0,08	32	2014	91	7,61
15	1995	1	0,08	33	2015	216	18,06
16	1996	2	0,17	34	2016	257	21,49
17	1999	2	0,17	35	2017	278	23,24
18	2000	2	0,17	36	2018	23	1,92
<b>Total</b>						<b>1196</b>	<b>100,00</b>

According to Table 3, 1196 publications in the data set for the SI literature are available in 725 different sources. “Design Journal” has the highest number of SI articles with 40 articles while “Innovation: The European Journal of Social Science Research” and “The Conference Book of International Conference on Management of Engineering and Technology” is ranked second with 17 publications. “Sustainability” journal is seen in the third place with 15 publications.

**Table 3.** Sources of Social Innovation Studies

Rank	Source Name	n	%
1	DESIGN JOURNAL	40	3,34
2	INNOVATION-THE EUROPEAN JOURNAL OF SOCIAL SCIENCE RESEARCH	17	1,42
3	PORTLAND INTERNATIONAL CONFERENCE ON MANAGEMENT OF ENGINEERING AND TECHNOLOGY (PICMET 2016): TECHNOLOGY MANAGEMENT FOR SOCIAL INNOVATION	17	1,42
4	SUSTAINABILITY	15	1,25
5	ECOLOGY AND SOCIETY	14	1,17
6	CREATIVITY RESEARCH JOURNAL	12	1,00
7	JOURNAL OF HUMAN DEVELOPMENT AND CAPABILITIES	12	1,00
8	VOLUNTAS	11	0,92
9	AMERICAN JOURNAL OF COMMUNITY PSYCHOLOGY	10	0,84
10	JOURNAL OF SOCIAL ENTREPRENEURSHIP	10	0,84
11	DESIGN AND CULTURE	9	0,75
12	TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE	9	0,75
13	ARBOR-CIENCIA PENSAMIENTO Y CULTURA	8	0,67
14	FUTURES	8	0,67
15	INTERNATIONAL JOURNAL OF TECHNOLOGY MANAGEMENT	8	0,67
16	JOURNAL OF BUSINESS ETHICS	8	0,67
17	JOURNAL OF BUSINESS RESEARCH	8	0,67
18	URBAN STUDIES	8	0,67
19	EUROPEAN URBAN AND REGIONAL STUDIES	7	0,59
20	INFORMATION SYSTEMS MANAGEMENT	7	0,59
...	...		
725	ZEITSCHRIFT FUR SOZIOLOGIE	1	0,08
<b>Total</b>		<b>1196</b>	<b>100,00</b>

Table 4 lists the most productive scholars in SI field. Accordingly, Mumford, Michael D. has high number of publications (f=12), respectively Westley, Frances R. is the second (f=9) and Moulaert, Frank (f=8) is the third productive author in the data set.

**Table 4.** The Most Productive Scholars in Social Innovation

Rank	Author Name	f
1	Mumford, Michael D	12
2	Westley, Frances R	9
3	Moulaert, Frank	8
4	Ziegler, Rafael	7
5	Grinberga-Zalite, Gunta	6
6	Manzini, Ezio	6
7	Misuraca, Gianluca	6
8	Gong Miaosen; Moore, Michele-Lee; Oganisjana, Karine; Surikova, Svetlana; Von Jacobi, Nadia	5
9	Dax, Thomas; Fu, Zhiyong; Giglio, Carlo; Handy, Femida; McPhee, Chris; Nemeč, Juraj; Novy, Andreas; Omonov, Zhoomart; Kubanychbekovich Pelka, Bastian; Pitt-Catsouphe, Marcie; Schroeder, Antonius; Shier, Micheal L.; Baltazar Herrera, Maria Elena; Swyngedouw, Erik; Chiappero-Martinetti, Enrica; Tjornbo, Ola; Concilio, Grazia; Tremblay, Diane-Gabrielle	4

Table 5 presents the most highly cited authors and journals related to SI field. “Governance innovation and the citizen: The Janus face of governance-beyond-the-state” by Swyngedouw E. in “Urban Studies” is the most cited article with 493 citations, while “Territorial innovation models: A critical survey” by Moulaert F. and Seika F. is the second with 377 citations. “Business models for sustainable innovation: state-of-the-art and steps towards a research agenda” by Boons and Luedeke-Freund is the third with 243 citations.

**Table 5.** Top 20 Highly Productive and Highly Cited Journals of Social Innovation

Rank	Title	Times Cited	Authors	Journal
1	Governance innovation and the citizen: The Janus face of governance-beyond-the-state	493	Swyngedouw, E	Urban Studies
2	Territorial innovation models: A critical survey	377	Moulaert, F; Sekia, F	Regional Studies
3	Business models for sustainable innovation: state-of-the-art and steps towards a research agenda	243	Boons, Frank; Luedeke-Freund, Florian	Journal Of Cleaner Production
4	Social Entrepreneurship: A Critique and Future Directions	185	Dacin, M Tina; Dacin, Peter A; Tracey, Paul	Organization Science
5	Growing grassroots innovations: exploring the role of community-based initiatives in governing sustainable energy transitions	181	Haxeltine, Alex; Seyfang, Gill	Environment And Planning C-Government And Policy
6	Towards alternative model(s) of local innovation	153	Gonzalez, Sara; Martinelli, F; Moulaert, F; Swyngedouw, E	Urban Studies
7	From spare change to real change - The social sector as beta site for business innovation	150	Kanter, RM	Harvard Business Review
8	Social innovation: Ten cases from Benjamin Franklin	117	Mumford, MD	Creativity Research Journal
9	Designing long-term policy: rethinking transition management	107	Grin, John; Smith, Adrian; Voss, Jan-Peter	Policy Sciences
10	A sociological institutionalist approach to the study of innovation in governance capacity	106	Gonzalez, Sara; Healey, P	Urban Studies
11	A Theory of Transformative Agency in Linked Social-Ecological Systems	84	Bodin, Orjan; Crona, Beatrice; Folke, Carl; Olsson, Per; Schultz, Lisen; Tjornbo, Ola; Westley, Frances R	Ecology And Society

12	Introduction: Social innovation and governance in European cities - Urban development between path dependency and radical innovation	82	Gonzalez, Sara; Martinelli, Flavia; Moulaert, Frank; Swyngedouw, Erik	European Urban And Regional Studies
13	Surmountable Chasms: Networks and Social Innovation for Resilient Systems	79	Moore, Michele-Lee; Westley, Frances R	Ecology And Society
14	Consumer preference programs for individuals who are homeless and have psychiatric disabilities: A drop-in center and a supported housing program	75	Asmussen, SM; Moran, L; Shern, DL; Shinn, M; Tsemberis, SJ	American Journal Of Community Psychology
15	The rise of community wind power in Japan: Enhanced acceptance through social innovation	75	Lida, Tetsunari; Maruyama, Yasushi; Nishikido, Makoto	Energy Policy
16	Conceptual combination: Alternative knowledge structures, alternative heuristics	68	Lonergan, DC; Mumford, Michael D; Scott, GA	Creativity Research Journal
17	Navigating the Back Loop: Fostering Social Innovation and Transformation in Ecosystem Management	67	Biggs, ReINETte; Carpenter, Stephen R; Westley, Frances R	Ecology And Society
18	Social innovation and civil society in urban governance: Strategies for an inclusive city	67	Gerometta, J; Hausermann, HH; Longo, G	Urban Studies
19	The social region - Beyond the territorial dynamics of the learning economy	66	Moulaert, Frank; Nussbaumer, J	European Urban And Regional Studies
20	Why do Social Innovations in Rural Development Matter and Should They be Considered More Seriously in Rural Development Research? - Proposal for a Stronger Focus on Social Innovations in Rural Development Research	57	Neumeier, Stefan	Sociologia Ruralis

Taking into account a geographical distribution of scientific articles, among 20 countries, UK with 170 publications is at the top of the list. Respectively, USA with 154 publications and Italy with 144 publications are the other two leading countries that contribute to the SI

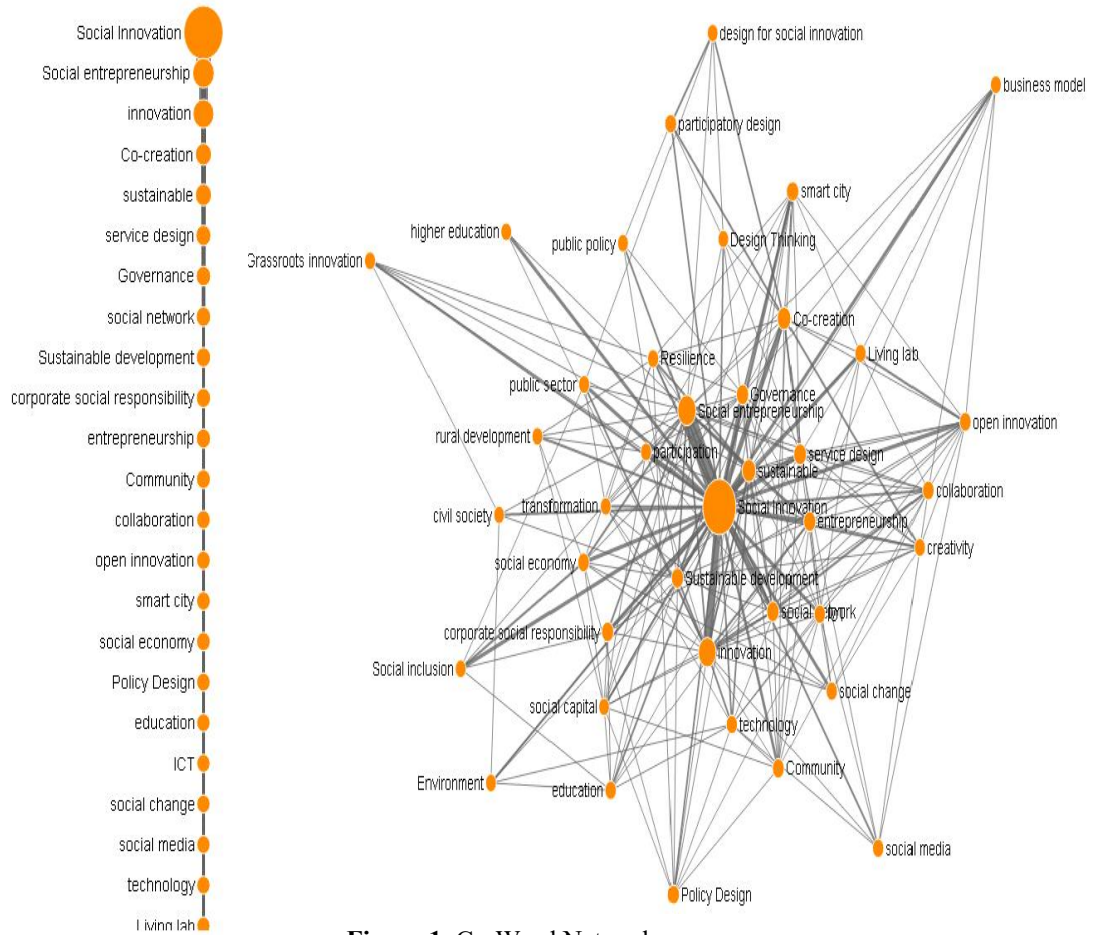
literature. Furthermore, considering the institutions contributed to SI literature (Table 7.) Polytechnic University of Milan is at the top of the list (f=33) followed by University of Waterloo (f=17) and University of Oxford (f=14).

**Table 6.** Social Innovation Studies Literature in Various Countries

Rank	Countries	n	Rank	Countries	n
1	UK	170	11	France	39
2	USA	154	12	Japan	33
3	Italy	144	13	Sweden	27
4	Spain	109	14	Romania	32
5	Canada	74	15	Austria	28
6	Germany	77	16	Finland	24
7	Netherlands	55	17	Turkey	11
8	China	55	18	Portugal	18
9	Australia	47	19	Czech Republic	19
10	Brazil	34	20	South Africa	16

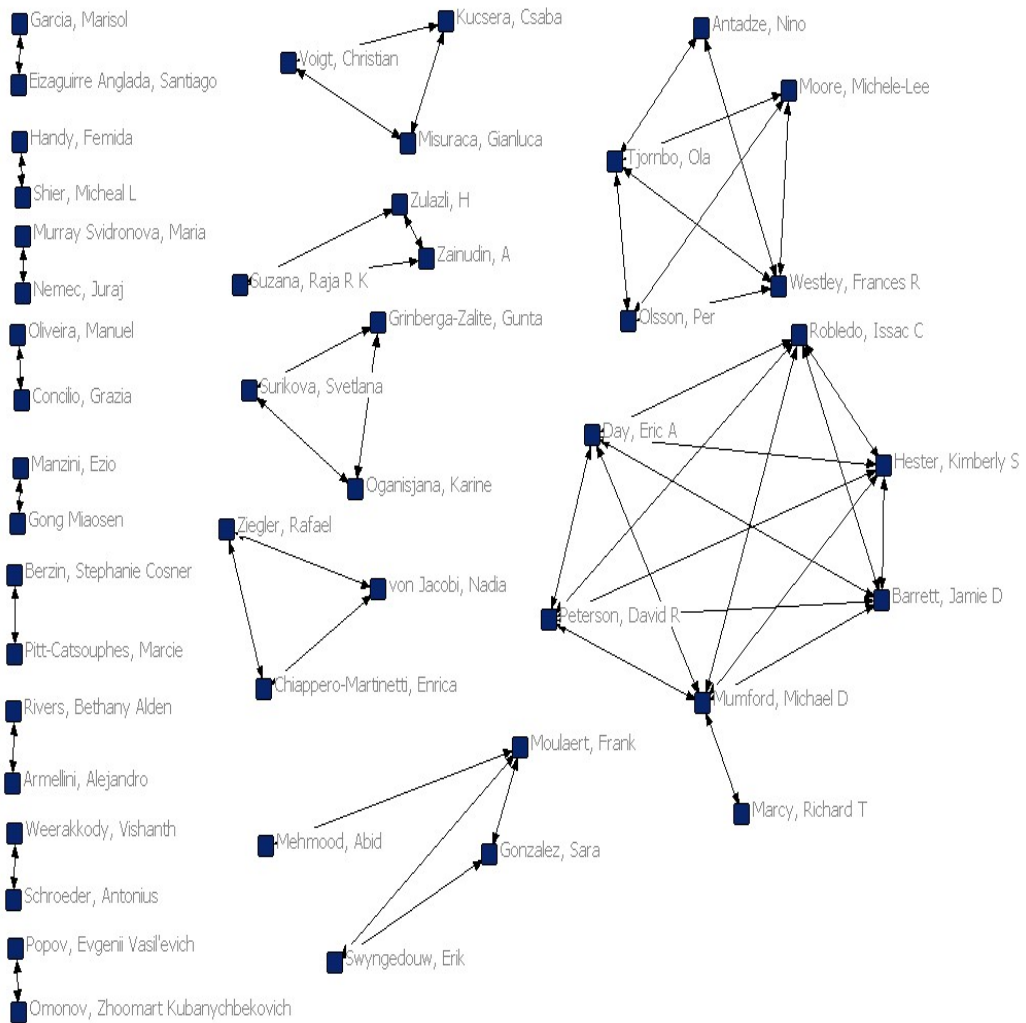
**Table 7.** Top 20 Highly Productive Organizations of Social Innovation

Rank	Organizations	n	Rank	Organizations	n
1	Politecn Milan	33	11	Univ Autonoma Barcelona	8
2	Univ Waterloo	17	12	Univ Toronto	8
3	Univ Oxford	14	13	Aalto Univ	7
4	Univ Oklahoma	12	14	Boston Coll	7
5	Bucharest Univ Econ Studies	10	15	Delft Univ Technol	7
6	Tongji Univ	10	16	Ernst Moritz Arndt Univ Greifswald	7
7	Univ Basque Country	10	17	Latvia Univ Agr	7
8	Univ Manchester	10	18	Tsinghua Univ	7
9	Eindhoven Univ Technol	9	19	Univ Barcelona	7
10	Univ Pavia	9	20	Univ Quebec	7



**Figure 1. Co-Word Network**

Co-word analyzes were carried out in order to see which concepts are investigated with SI. As can be seen in Figure 1, Social Entrepreneurship, Innovation, Co-creation, Sustainable, Service Design, Governance, Social network, Sustainable Development, Corporate Social Responsibility are the focus areas of SI researches. Accordingly, it can be said that the authors of SI field compromise that a sustainable world can be achieved through SI practices.



**Figure 2.** Co-Authorship Network

Finally, scientific collaboration is widely assumed to enhance the quality and impact of scientific research. Figure 2 illustrates the collaboration network between authors in the field of SI. Among these networks, seven major academic collaboration networks including the authors Day, Eric A.; Robledo, Isaac C.; Hester, Kimberley S.; Peterson David R.; Barrett Jamie D.; Mumford Michael D. ve Marcy Richard T. is striking.



### **Conclusion and Discussions**

This study provides a bibliometric overview of SI literature published through 1975-2018 and indexed in the Web of Science database. Results indicated that the vast majority of SI studies are published as “article” and “proceedings paper”. Respectively, UK, USA and Italy are the top three leading countries that contribute to the SI literature. In addition, there are many dedicated institutions contributed to SI researches such as Polytechnic University of Milan, University of Waterloo and University of Oxford. Since 2015, a significant increase in the number of publications published in SI field is remarkable which leads the conclusion that SI researches have gained momentum in recent years among the academicians.

Since there are not many dedicated journals for SI, the concept is investigated in diverse areas such as creativity and innovation, entrepreneurship, sustainable development, urban studies, community psychology and business ethics. “Design Journal” is a prominent domain of SI research and the field is multidisciplinary across research topics including social entrepreneurship, innovation, co-creation, sustainable, service design, governance, social network, sustainable development and corporate social responsibility. Interestingly, the findings of the study demonstrate a difference between the number of publications made by an author and the highly cited authors. For instance, Mumford and Michael D. is the most productive scholar in the field of SI but Swyngedouw E. produced the most cited article in the WOS.

The results of this study do not support Weerakoon et al. (2016) bibliometric overview of SI literature published between 1966 and 2015 and indexed in the Scopus database. According to their research Moulaert, F is the most productive and highly cited author in the field of SI. As the authors conclude, the mismatch between highly published and highly cited journals along with and the lack of strong theoretical development in a dedicated journal may have boosted the existing conceptual ambiguity in this field (Weerakoon et al., 2016, p.15). Consequently, future studies can conduct bibliometric analysis with different databases and sources to advance the field of SI. Moreover, content analysis will contribute to clarify conceptual ambiguity.

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