

Academic research output on social capital: a bibliometric and visualization analysis

Academic
research
output on
social capital

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Abstract

Purpose – This study describes and analyzes the output of academic research on the topic of social capital. The concept of social capital has attracted the interest of scholars from a range of academic disciplines, and it has been applied to explain a variety of phenomena.

Design/methodology/approach – Using the bibliographic approach, I analyzed aggregate data obtained from the Web of Science database. The analyses were carried out using VOSviewer software.

Findings – The results show social capital to be a topic of interest in multiple fields of academic research. The findings highlight the important role that journals, including those from disciplines other than the social sciences, have played in divulging this concept, and show that some countries and institutions are more productive and engage in more collaborative research efforts than others.

Research limitations/implications – The main implications of this study regard research on social capital. The results demonstrate how social capital continues to interest scholars from a variety of academic disciplines. Future bibliometric research should include other sources (literature databases) and be expanded to consider other types of publication.

Originality/value – This paper furthers previous research by exclusively focusing on the concept of social capital. It analyzes the international trend in publications up until the end of 2021, thus expanding the publication period considered in previous studies. The results of this study highlight the relevance of bibliometric tools for assessing research performance.

Keywords Social capital, Bibliometric analysis, Bibliometric mapping, Web of Science database, VOSviewer

Paper type Research paper

1. Introduction

The concept of social capital is studied by researchers from different academic disciplines and has attracted the attention of numerous international organizations (e.g. World Bank, OECD and ILO). Social capital has been used to explain phenomena in many different research areas, including economics and business, social and political sciences, and environmental and health sciences.

The aim of this study was to analyze the trends in academic research on social capital using a bibliographic approach. Bibliometrics is a cross-discipline science that studies bibliographic data using mathematical and statistical tools. This discipline has been facilitated thanks to the increased availability of free software in recent years for computing and visualizing the results of such analyses. Furthermore, this method has been applied in different research areas and for many different topics such as tourism (Leong *et al.*, 2021; Suban, 2022), differences in energy concepts (Hammad *et al.*, 2021), COVID-19 (Viana-Lora and Nel-lo-Andreu, 2022; Soytaş, 2021; Ho *et al.*, 2021), organizational citizenship behavior (Guiling *et al.*, 2022) and social innovation (Martins *et al.*, 2022).



The present analyses focus on the citation structure of documents, and in particular on the examination of those from leading journals. A co-occurrence analysis of author keywords was performed, and the co-citation of references, journals and authors was examined. Finally, co-authorship networks between different institutions and countries were assessed.

2. The concept of social capital

The first academic works to develop and discuss the concept of social capital were [Hanifan \(1916\)](#), [Jacobs \(1961\)](#) and [Loury \(1977\)](#), but it was mainly thanks to the publications by [Bourdieu \(1986\)](#), [Coleman \(1988\)](#) and [Putnam \(1993\)](#) that it started to attract academic interest. The results of these works led to the opening up of different research paths and stimulated animated discussions concerning its definition and measurement.

According to Bourdieu, social capital is “the aggregate of the actual potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition” (1986, p. 248) while Coleman considered social capital as “defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: They all consist of some aspect of social structure, and they facilitate certain actions of individuals who are within the structure” (1990, p. 302). Putnam, on the other hand, chiefly focused on the macro level, since social capital “refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions” (1993, p. 167). In a subsequent study, considering the USA context, Putnam reformulated his first definition as “whereas physical capital refers to physical objects and human capital refers to the properties of individuals, social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense social capital is closely related to what some have called ‘civic virtue’. The difference is that ‘social capital’ calls attention to the fact that civic virtue is most powerful when embedded in a sense network of reciprocal social relations. A society of many virtuous but isolated individuals is not necessarily rich in social capital” (2000, p. 19).

The concept also “refers to friends, colleagues, and more general contacts through whom you receive opportunities to use your financial and human capital” ([Burt, 1992, p. 9](#)), as well as “resources embedded in a social structure that are accessed and/or mobilized in purposive actions” ([Lin, 2001, p. 40](#)), and these definitions fit well in a network perspective for the study of social capital.

Despite the wide variety of explanations, we can uphold the assumption that social capital regards the social benefits arising from social networks. The Cambridge Dictionary of Sociology summarizes the meaning well and states that social capital “arises from relationships between individuals, families, groups, or communities that provide access to valuable benefits and/or resources” ([Manza, 2006, p. 557](#)).

Although social capital produces some benefits, as do economic and cultural capital, the concept still has some dark sides. [Fukuyama \(1995\)](#), [Portes and Sensenbrenner \(1993\)](#) and [Portes \(1998\)](#) were some of the first studies to underline that social capital can also generate negative outputs. For instance, [Fukuyama \(1995\)](#) highlights that the benefits associated with Chinese communities based on kinship, characterized by high levels of trust and solidarity, are not recognized by other Chinese communities, and this may impact economic outcome. In other words, those who do not belong to certain group (e.g. an ethnic or religious community) may perceive to be excluded from the benefits resulting from such membership, and this is one of the criticisms of social capital put forward in [Portes \(1998\)](#). In these cases, the distinction between bonding and bridging forms of social capital plays an important role. The strong enforcement of local norms, such as in a small town or village

where all neighbors know each other and perform favors for each other in a reciprocal manner, can reduce personal freedom due to the high level of social control (Portes, 1998). Thus, considering social capital as a form of social control within a group or community may be seen as an advantage for the individual members but not necessarily for the collective. Portes (1998) proposes many such examples, such as Mafia families in Italy, organized prostitution, and youth gangs.

The multidimensional and interdisciplinary nature of social capital has also triggered a debate about its measurement (Paxton, 1999; Narayan and Cassidy, 2001; Grootaert *et al.*, 2004). For example, in relation to the indicator “trust”, should it be considered a measure of social capital, or is trust a product of social capital? Fukuyama (1995) equates trust with social capital, Putnam (1993) considers trust as a source of social capital, Coleman (1988) considers it as a form of social capital and Lin (1999a, b) sees trust as a collective asset resulting from social capital construed as a relational asset. Other matters of debate include the proxy indicators used, the level at which it is measured, and the absence of a consensus on how to measure social capital.

Despite the lack of clarity on issues pertaining to social capital, which itself might be considered a weakness in the concept, numerous scholars have demonstrated its relevance, and the citation rate of the key papers on social capital is high, further corroborating its relevance and the persisting academic interest in it. Furthermore, the theoretical and empirical applications of social capital have continued to grow over the years. For example, Shen (2016) performed a bibliometric analysis of 118 articles on social capital published by Chinese sociologists between 2000 and 2011 and examined how and why this concept was used. The results show that the use of social capital has contributed to moving the focus of social research from the individual level (i.e. a network-based resources paradigm) to a community level (i.e. trust and civic participation paradigm). Garrigos-Simon *et al.* (2018), on the other hand, considered the trends in the literature with regard to different forms of capital-related sustainability. The authors carried out bibliometric and visualization analyses on 635 documents published up until the end of 2017 and demonstrated the crucial effect that social capital has on the promotion of sustainable policies in combination with other forms of capital (e.g. cultural capital).

Despite these efforts to investigate the generation and use of scholarly content on social capital concept, these studies only focused on some specific issues; for instance, on publications from a precise geographic area (Shen, 2016) or co-authorship network analyses (Akçomak, 2011), or they focused on social capital in a general way and included other forms of capital (Garrigos-Simon *et al.*, 2018). This paper aims to further the previous research by focusing exclusively on social capital and considering the international trend in publications up until the end of the year 2021, thus extending the period compared with previous studies. The following research questions (RQs) are addressed in this study:

- RQ1. From the time the concept of social capital was first introduced into the literature up until 2021, what have been the trends in literature output and citation rate, and what impact have these studies had?
- RQ2. Which literature documents are the most cited and which journals have impacted research into social capital the most?
- RQ3. What semantic network is generated by the author keywords?
- RQ4. How are the resources, authors and co-citation references configured?
- RQ5. What structure best describes the patterns of scientific collaboration between nations' institutions?

3. Materials and methods

This research constitutes a quantitative analysis of the global research trends in social capital based on published academic journals or articles (Boon, 2017), also known as the bibliographic approach (Sooryamoorthy, 2020).

The data used for this analysis come from the Web of Science database (WoS) Core Collection database (<https://clarivate.com/>), a platform that includes other “sub-databases”, namely: Science Citation Index Expanded (since 1985), Social Sciences Citation Index (since 1985), Arts & Humanities Citation Index (since 1985), Conference Proceedings Citation Index–Science (since 1990), Conference Proceedings Citation Index–Social Science & Humanities (since 1990), Emerging Sources Citation Index (since 2015). WoS is an internationally recognized database, which includes the most prestigious journals (Garrigos-Simon *et al.*, 2018; Merigó and Yang, 2017).

In order to identify the documents specifically focused on social capital, only those including the words “social capital” in the title, abstract, author keywords, and “KeyWords Plus” terms were selected. As stated on the Clarivate website, *KeyWords Plus* are index terms automatically generated from the titles of cited articles. KeyWords Plus and author keywords were only included in the database from 1991 onward. The year 2022 was excluded from the query string.

The query string brought up a total of 23,029 documents, which included a wide range of document types, including review articles, early access articles and other associated data. Data collection took place on January 5, 2022. The final sample was limited to peer-reviewed articles since this type of publication is subject to a revision process. The final sample analyzed consisted of 720 peer-reviewed articles.

The following bibliometric indicators were used to analyze and represent the final dataset: the total number of publications, used to assess productivity; the total number of citations, to provide insight into the relevance of an author, institution or country in that research field (Merigó and Yang, 2017; Merigó *et al.*, 2015); and the h-index, a measure of the impact and productivity of a researcher based on how frequently his/her publications have been cited (Jacsó, 2009).

The number of documents with a citation rate above a certain threshold was used as an indicator of its level of influence; the ratio of citations/documents was used to quantify the impact of each document; and the impact factor of each journal as stated on the WoS (Cancino *et al.*, 2017) was used to measure its dissemination power (Blanco-Mesa *et al.*, 2017).

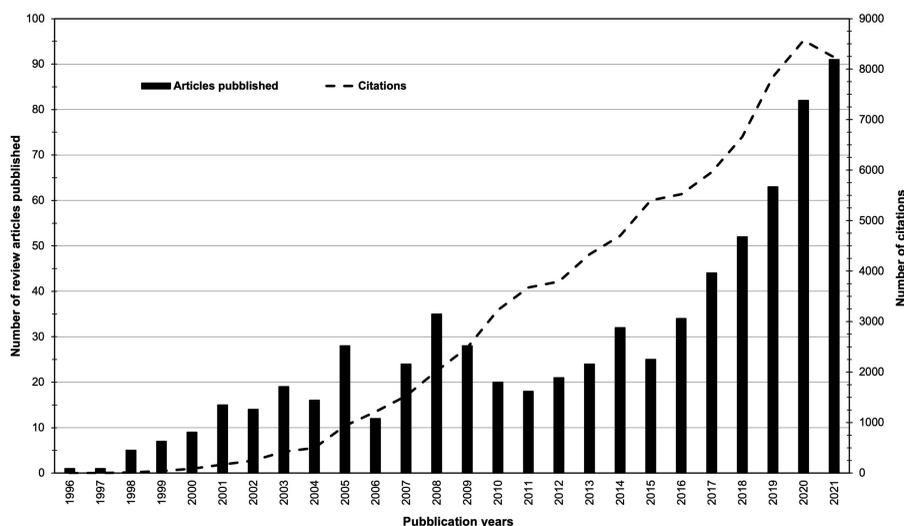
This research used VOSviewer software, version 1.6.18 (<https://www.vosviewer.com/>), to create and visualize maps of the bibliographic data. VOSviewer is widely used in bibliometric research (e.g. van Eck and Waltman, 2010, 2014) and it provides a visual representation of the structure and networks of authors, journals, universities and countries. In this study, VOSviewer was specifically used to examine the co-occurrence of author keywords (i.e. those appearing below the abstract), co-authorships, the number of co-authors among the most productive sources, and co-citations, namely when two articles received a citation from the same third document, source, author and reference. In addition, it was used to investigate the co-authorship networks of institutions and countries.

4. Results

4.1 Status and evolution of social capital academic publications

This first section focuses on the analysis of the number of peer-reviewed articles published, the annual citation rate and the leading journals in social capital research.

4.1.1 The state of the art. The first publications appearing in WoS addressing social capital occurred in 1996, however, one of the first works on the application of social concept was published back in 1916 (Hanifan, 1916). Since 1996, research on social capital increased exponentially. Figure 1 shows the annual number of peer-reviewed articles



Source(s): Own elaboration based on data from WoS

Figure 1. Number of peer reviewed articles on social capital published per year (according to WoS) and the respective annual citation rates

published and the correlated citation levels. While the trend in the publication rate in the first decade of the twenty-first century was irregular (for example, the publication rates for the years 2004, 2006 and 2009 were lower compared with the respective previous years), from 2011 onward, the trend in social capital research was one of the constant growth, with the exception of 2015. This positive trend is most notable from 2016. This finding shows that, over this time period, social capital has continued to attract increasing numbers of researchers.

Table 1 shows the trend in citation frequency for research papers on social capital according to the WoS database. Of the most frequently cited papers, 2 were cited more than 3,000 times (0.28%), 12 were cited between 1,000 and 3,000 times (1.67%), 17 were cited between 500 and 1,000 times (2.36%) and 27 were cited between 250 and 500 times (3.75%). Papers cited less than ten times made up 40.28% of the sample. The h-index of the overall sample is 120, which means that 120 documents are cited more than 120 times. This offers an overview of the general trend in social capital research since 1996.

Number of citations	Number of articles	Accumulated number of articles	% articles	% accumulated articles
$n \geq 3,000$	2	2	0.28	0.28
$1,000 \leq n < 3,000$	12	14	1.67	1.94
$500 \leq n < 1,000$	17	31	2.36	4.31
$250 \leq n < 500$	27	58	3.75	8.06
$100 \leq n < 250$	78	136	10.83	18.89
$50 \leq n < 100$	83	219	11.53	30.42
$25 \leq n < 50$	84	303	11.67	42.08
$10 \leq n < 25$	127	430	17.64	59.72
$n < 10$	290	720	40.28	100.00
Total	720			

Source(s): Own elaboration based on data from WoS

Table 1. General citation structure of research published on social capital according to WoS data

The concept of social capital is applied in many fields of sociological research. **Figure 2** indicates the top ten subject areas of social capital research according to the WoS classification. Approximately 27% of the papers address issues pertaining to Business Economics, whereas 13.75% were related to Public Environmental Occupational Health, 11.25% were in the field of Environmental Sciences Ecology, 8.75% were in Sociology and 7.78% were published within the sphere of Psychology.

The WoS database offers additional information on publication trends, such as the number of papers published by an author. It reports Kawachi I. to be the author with the highest number of publications on social capital (six papers), followed by Hitt M.A. and Welch V., both with four papers each.

According to WoS, the academic institutions most involved in social capital research are the Universities of London (5.28% of the 720 papers published), followed by Harvard University (2.78%) and the University of California System (2.63%).

Almost all the articles are published in English (96.66%). The other languages used are Spanish (six papers), German, Russian and Turkish (three papers each) and Chinese, Czech and Portuguese (two papers each). The language was unspecified in three papers.

Over a third of articles published (36.38%) came from authors based in the USA, 20% were from England and 10.55% came from Australia. A total of 4.16% papers had authors based in China, whereas both Germany and Spain contributed to 3.61% of publications, and Italy produced 3.19%.

The most productive publisher was Elsevier, which accounted for 17.91% of all papers. The second and third in the ranking were Wiley (14.28%) and Sage (13.61%), closely followed by Taylor & Francis (10.69%) and Springer Nature (8.61%).

4.1.2 The most influential papers in social capital research. **Table 2** presents the most cited peer-reviewed articles (those with more than 800 citations). The number of times a paper is cited indicates not only the quality of a publication but also its attractiveness and influence within a research field ([Garrigos-Simon et al., 2018](#)).

The most cited research article on social capital is [Nahapiet and Ghoshal \(1998\)](#) published in *Academy of Management Review*. At the time of the present analysis, the above paper had

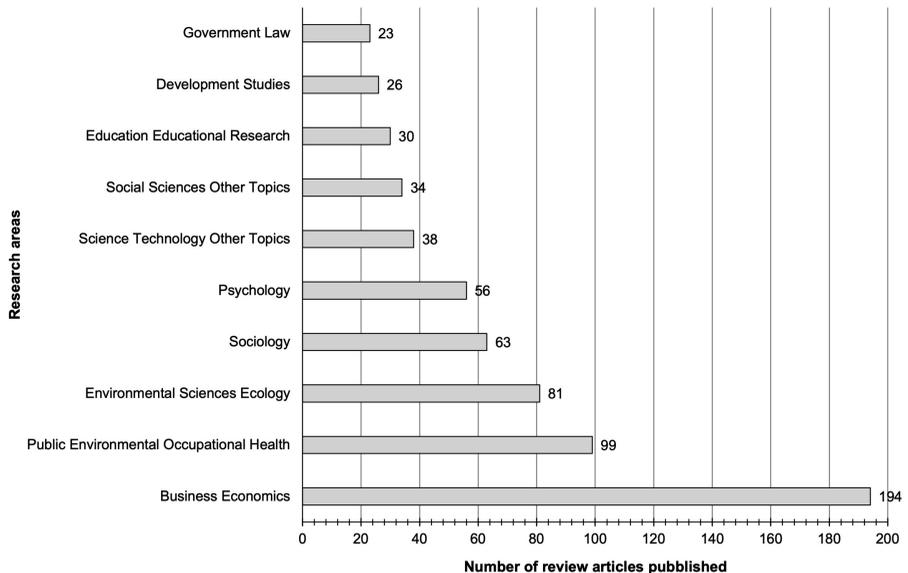


Figure 2.
Distribution of articles on social capital according to research areas

Source(s): Own elaboration based on WoS

R	Title	Author	Journal	Year	TC	C/Y
1	Social capital, intellectual capital, and the organizational advantage	Nahapiet, J; Ghoshal, S	<i>Academy of Management Review</i>	1998	7,833	326.38
2	Social capital: Prospects for a new concept	Adler, PS; Kwon, SW	<i>Academy of Management Review</i>	2002	4,397	219.85
3	Adaptive governance of social-ecological systems	Folke, C; Hahn, T; Olsson, P; Norberg, J	<i>Annual Review of Environment and Resources Scandinavian Political Studies</i>	2005	2,706	159.18
4	E pluribus unum: Diversity and community in the twenty-first century – the 2006 Johan Skytte Prize Lecture	Putnam, Robert D	<i>Journal of Management Information Systems</i>	2001	2,089	99.48
5	Knowledge management: An organizational capabilities perspective	Gold, AH; Malhotra, A; Segars, AH	<i>Academy of Management Review</i>	2005	1,954	114.94
6	Social capital, networks, and knowledge transfer	Inkpen, AC; Tsang, EWK	<i>American Journal of Community Psychology</i>	2008	1,949	139.21
7	Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness	Norris, Fran H; Stevens, Susan P; Pfefferbaum, Betty; Wyche, Karen F; Pfefferbaum, Rose L	<i>World Bank Research Observer</i>	2000	1,626	73.91
8	Social capital: Implications for development theory, research, and policy	Woolcock, M; Narayan, D	<i>Annual Review of Psychology</i>	1999	1,538	66.87
9	Trust and distrust in organizations: Emerging perspectives, enduring questions	Kramer, RM	<i>Strategic Management Journal</i>	2001	1,455	69.29
10	Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms	Yli-Renko, H; Autio, E; Sapienza, HJ	<i>Journal of Management</i>	2003	1,429	75.21
11	The network paradigm in organizational research: A review and typology	Borgatti, SP; Foster, PC	<i>Annual Review of Sociology</i>	2000	1,171	53.23
12	Volunteering	Wilson, J	<i>Annual Review of Environment and Resources</i>	2007	1,065	71.00
13	Adaptation to environmental change: Contributions of a resilience framework	Nelson, Donald R; Adger, W. Neil; Brown, Katrina	<i>Academy of Management Review</i>	1999	1,002	43.57
14	Organizational social capital and employment practices	Leana, CR; Van Buren, HJ	<i>Strategic Management Journal</i>	2001	988	47.05
15	Internal capabilities, external networks, and performance: A study on technology-based ventures	Lee, C; Lee, K; Pennings, JM	<i>Journal of Environmental Psychology</i>	2011	900	81.82
16	Place attachment: How far have we come in the last 40 years?	Lewicka, Maria	<i>Leadership Quarterly</i>	2000	874	39.73
17	Leadership development: A review in context	Day, DV	<i>Annual Review of Sociology</i>	2001	867	41.29
18	Social implications of the internet	DiMaggio, P; Hargittai, E; Neuman, WR; Robinson, JP	<i>Journal of Management Studies</i>	2007	819	54.60
19	The development of organizational social capital: Attributes of family firms	Arregle, Jean-Luc; Hitt, Michael A.; Sirmon, David G.; Very, Philippe				

Source(s): Own elaboration of data from WoS. R: Ranking; TC: Total Citations; C/Y: Citation per year

Table 2.
The most cited papers
(more than 800
citations) in social
capital

been cited 7,833 times, with an average citation rate of 326.38 citations per year. The paper shows how intellectual capital is embedded in social relations and in the structure of these relations; for example, how social capital can reduce transaction costs by economizing on information and coordination costs. According to the authors, social capital plays a relevant role since the differences in performance between firms are based on their ability to create and exploit social capital (Nahapiet and Ghoshal, 1998).

The other most cited documents are the following: Adler and Kwon (2002) with 4,397 citations; Folke *et al.* (2005) with 2,706 citations; Putnam (2007) with 2,352 citations and Gold *et al.* (2001) with 2,089 citations. However, if we consider the annual citation rate – calculated by dividing the total number of citations by the number of years the journal has been published – the ranking presented in Table 2 changes. For example, the paper by Norris *et al.* (2008) and seventh in the ranking according to total citations, has a higher annual citations rate than the paper ranked fifth overall by Gold *et al.* (2001): 139.21 citations per year vs. 99.48, respectively. This metric is also very useful for assessing the yearly impact of a journal. The documents presented in Table 2 all have more than 30 citations per year, although they vary greatly with regard to authorship and content.

Finally, considering the names of the journals publishing the most cited papers on topics involving social capital, we can notice that many different research areas are involved, including information systems, health care development, children and youths from racial minorities, and employment practices. However, we must bear in mind that this list only considers scientific journals.

4.1.3 The leading journals in social capital research. The 720 identified articles on social capital were published in 481 different journals. The three main categories of publications are management (132 articles, 18.33%), public environmental occupational health (99 articles, 13.75%) and business (92 articles, 12.78%), followed by sociology (63 articles, 8.75%), environmental sciences (56 articles, 7.78%) and environmental studies (49 articles, 6.80%). The other categories make up less than 5% of publications.

The 20 most influential journals are presented in Table 3. The journals are ranked according to the number of articles they have published on the topic of social capital.

Up until the year 2021, only 2 journals had published more than 15 articles on social capital, 16 had published 5 or more, and the remainder (463) had published just 1 document. Specifically, the top four sources of social capital publications were *Social Science Medicine* and *Sustainability*, each accounting for 2.36% of all articles ($n = 720$) published on social capital, followed by *BMC Public Health* and *International Journal of Environmental Research and Public Health*, each accounting for 1.11% of articles. Thus, these four journals published 6.94% ($n = 50$) of all research documents pertaining to the topic of social capital. On the other hand, considering the top ten journals ranked according to the number of publications on social capital, they accounted for 12.08% ($n = 87$) of all research documents on this topic.

The journal *Social Science Medicine*, in addition to being one of the two journals with the greatest number of papers published in this field (the other being *Sustainability*), is the most influential journal with an h-index (H-SC) of 16.

Regarding the top 20 journals, those with the highest proportion of articles dedicated to the topic of social capital (column % AP-SC, Table 3) are *International Journal of Management Reviews*, with just 1.61% of its articles dedicated to social capital, followed by *Annual Review of Environment and Resources* (1.16%), *Journal of Intellectual Capital* (1.10%) and *International Small Business Journal Researching Entrepreneurship* (1.02%). For the remaining 16 journals, less than 1.0% of their published articles were on the topic. The top five journals listed in Table 3 dedicated less than 0.05% of their publications to social capital, revealing the current scarcity of research on the topic and the potential scope for more research to be directed into this field.

Rank	Journal	AP-SC	H-SC	TAP	TC-SC	AC-SC	PC-SC	%AP-SC	IF	≥500	≥200	≥100	≥50
1	<i>Social Science Medicine</i>	17	16	15,118	2,899	2,858	170.53	0.11	5.379	2	2	3	5
2	<i>Sustainability</i>	17	5	41,223	97	98	5.71	0.04	3.251				
3	<i>BMC Public Health</i>	8	6	18,191	473	470	59.13	0.04	3.295	1	1		2
4	<i>International Journal of Environmental Research and Public Health</i>	8	3	35,733	177	177	22.13	0.02	4.614			1	
5	<i>Journal of Management</i>	7	7	1932	2,936	2,911	419.43	0.36	13.508	2	2	1	3
6	<i>International Journal of Management Reviews</i>	7	6	436	897	855	128.14	1.61	8.958	1	1	2	
7	<i>Annual Review of Sociology</i>	6	6	887	3,062	3,039	510.33	0.70	10.032	2	3	1	
8	<i>Entrepreneurship Theory and Practice</i>	6	6	899	751	699	125.17	0.67	9.993	1	1	3	1
9	<i>International Small Business Journal</i>	6	6	587	267	256	44.50	1.02	6.413				2
10	<i>Researching Entrepreneurship</i>												
10	<i>Academy of Management Review</i>	5	5	1,266	16,221	12,494	3,244.20	0.39	13.865	5			
11	<i>BMJ Open</i>	5	4	22,774	24	24	4.80	0.02	3.006				
12	<i>Corporate Governance: An International Review</i>	5	4	814	712	677	142.40	0.61	5.660	1			1
13	<i>Health Place</i>	5	3	2,400	101	101	20.20	0.21	4.931				1
14	<i>International Journal of Human Resource Management</i>	5	5	2,995	76	75	15.20	0.17	5.546				
15	<i>Journal of Management Studies</i>	5	5	1837	1,475	1,464	295.00	0.27	9.720	1	2		1
16	<i>Leadership Quarterly</i>	5	4	1,197	1,042	1,035	208.40	0.42	9.924	1			1
17	<i>Annual Review of Environment and Resources</i>	4	4	346	4,240	3,911	1,060.00	1.16	17.909	2	1		
18	<i>International Journal of Disaster Risk Reduction</i>	4	4	2,477	87	86	21.75	0.16	4.842				
19	<i>Journal of Cleaner Production</i>	4	3	27,345	68	71	17.00	0.01	11.072				
20	<i>Journal of Intellectual Capital</i>	4	4	364	90	88	22.50	1.10	7.198				

Source (s): Own elaboration based on WoS data. AP-SC: number of articles published on social capital; H-SC: journal H-index; TAP: total number of articles published by the journal; TC-SC: total citations on social capital; AC-SC: number of articles in which social capital is cited; PC-SC: average numbers of citations made by an article on social capital; %AP-SC: percentage of articles published on social capital (AP-SC/TAP); IF: impact factor; ≥500, ≥200, ≥100 and ≥50: number of articles with more than 500, 200, 100 and 50 citations, respectively

Table 3.
Journals ranked
according to the
number of publications
on social capital

The journals publishing the most cited articles on social capital (column PC-SC of [Table 3](#)) are *Academy of Management Review* (3,244.20), *Annual Review of Environment and Resources* (1,060.00), *Annual Review of Sociology* (510.33) and *Journal of Management* (419.43). The results are significantly affected by the five documents published in the *Academy of Management Review* which boast the highest number of citations, although this journal has dedicated less than 0.5% of its articles to social capital (up until 2021). Only two of the top five journals have published documents with more than 500 citations.

4.2 The analysis of author keywords

This section presents the results of the author keywords analysis. Only the keywords indicated by the authors and specified below the abstract were considered. This analysis permits us to identify the topics considered to be the most important by authors of research into social capital.

The keywords analysis was developed using the co-occurrence tool offered by the software VOSviewer, which assesses pairs of keywords appearing together in the same article. The tool counts the number of documents in which two keywords appear together (a method used for binary counting). No weight was applied.

A total of 2,018 keywords were identified in the 720 documents. When a threshold of five co-occurrences was applied, only 69 keywords met the threshold (fractional counting method), meaning that only 69 keywords appeared five or more times; for each of these, the total strength of the co-occurrence links with other keywords was calculated.

[Table 4](#) reports the keywords that occurred in at least 7 of the 720 documents related to social capital, the total link strength (the number of publications in which 2 of the 2,018 keywords identified occurred together; i.e. the keyword listed plus one other), and the cluster number, which is provided by default by the VOSviewer software based on closely related nodes.

[Figure 3](#) presents the representation of the most frequent keywords that co-occur. The larger the node (filled circle) and keyword font size, the stronger the link; in other words, the greater the number of documents in which the keywords co-occur. Thus, the more frequent that keywords co-occur, the closer they are in the visualization, and the thicker the lines between the two terms, the more frequent the co-occurrence. The most frequent keywords are social capital, systematic review and social network.

The lines connecting the “social capital” node are thickest toward those for the keywords “social network” (15.78), “systematic review” (12.92) and “trust” (11.08). Each of these nodes has a link strength greater than 10.

The 69 keywords generated nine clusters, indicated by different colors. Keywords in the same color suggest a similar topic being addressed by the publications in which these keywords are used. Appropriate labels for the nine clusters could be allocated by analyzing the keywords involved in each cluster.

The red cluster (cluster 1, 11 items) is led – according to occurrence frequency (i.e. number of publications) – by the words “health” and “public health”. These words describe the medical dimension of social capital. The word COVID-19 is also included in this cluster. The green cluster (cluster 2, 10 items) is led by the keywords “climate change”, “resilience” and “sustainability”, and depicts the interest that social capital has in relation to environmental issues. The blue cluster (cluster 3, 10 items) is led by the term that occurs in the highest number of documents, that is, “review”, followed by “mental health”. The first recalls the methodological aspect of the documents involved, i.e. literature reviews, whereas the second refers to a dimension of the study population. The keyword “depression” also occurs in this cluster and is related to this latter feature. The yellow cluster (cluster 4, 9 items) is led by the keyword “social capital”. The purple cluster

Rank	Keyword	No. of documents in which the keyword occurred	Total link strength of co-occurrences	Cluster
1	Social Capital	265	172	4
2	Systematic Review	36	30	5
3	Social Networks	31	26	8
4	Trust	19	18	9
5	Health	18	16	1
6	Human Capital	17	12	4
7	Public Health	15	14	1
8	Social Support	15	12	5
9	Review	14	9	3
10	Community	13	13	7
11	Gender	13	11	6
12	Social Network	13	12	5
13	Literature Review	12	11	6
14	Mental Health	10	8	3
15	Climate Change	9	4	2
16	Innovation	9	8	4
17	Networks	9	5	4
18	Performance	9	8	6
19	Resilience	9	8	2
20	Social Cohesion	9	9	6
21	Social Determinants of Health	9	7	8
22	Sustainability	9	8	2
23	Built Environment	8	7	1
24	Entrepreneurship	8	4	4
25	Equity	8	8	1
26	Social Media	8	7	5
27	Sustainable Development	8	6	2
28	Civil Society	7	6	6
29	COVID-19	7	4	1
30	Meta-Analysis	7	7	5
31	Poverty	7	6	7
32	Socioeconomic Status	7	7	3

Source(s): Own elaboration based on data from WoS

Table 4.
The top 32 author keywords, the number of documents in which each keyword occurred, the link strengths of keyword co-occurrences and the cluster number

(cluster 5, 8 items) describes the “systematic review” approach, and it includes other specific terms used to describe social capital such as “social support”, “social network”, “bonding social capital” and “bridging social capital”. The cluster in light blue (cluster 6, 7 items) is led by keywords “gender” and “literature review” and describes the interest that social capital has with the gender dimension. The orange cluster (cluster 7, 7 items) focuses on the community dimension, being led by the word “community”. The second to last cluster, shown in brown, (cluster 8, 5 items) considers the social network aspects of social capital, while the last group, in pink (cluster 9, 2 items), focuses on the dimension “trust”.

By plotting the co-occurrences of keywords appearing alongside “social capital” according to the average number of documents published per year, we can notice how the predominant study themes changed over the years. This is evident in Figure 4, where it is possible to notice a new topic that involved social capital, such as, for example, the word COVID-19 located on the right side of the social capital word.

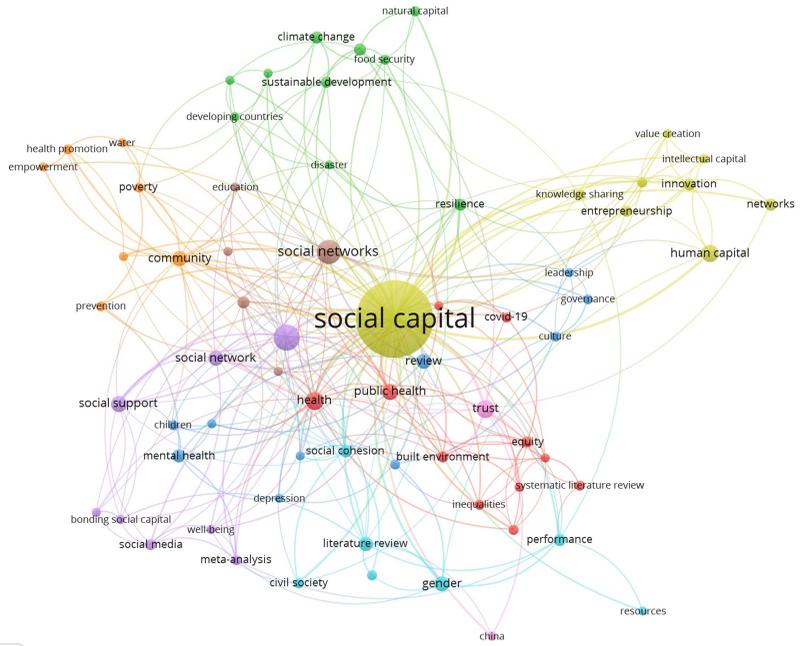


Figure 3.
Co-occurrence network
of author keywords
related to social capital



Source(s): Own elaboration based on data from WoS

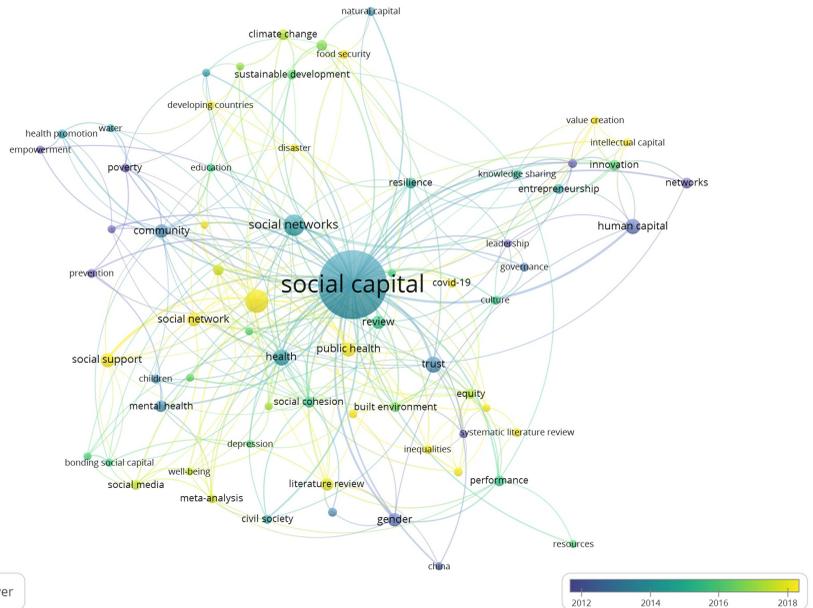


Figure 4.
Co-occurrence network
for keywords related to
“social capital”
according to the
average annual
publication number



Source(s): Own elaboration based on data from WoS

Management Review (861 citations, 263 links and 793.00 total link strength) and *Administrative Science Quarterly* (656 citations, 255 links and 599.14 total link strength). One of the two smaller clusters is located just outside this green cluster. It is shown in purple and consists of four journals still related to the topic of management but focused on Asia. The lead journal is *Asia Pacific Journal of Management* (68 citations, 103 links and 58.69 total link strength). The most populated cluster shown in red (90 journals) is led by *World Development* (297 citations, 246 links and 249.94 total link strength); this cluster covers the broadest range of topics since it includes journals publishing on development, environmental and ecological issues, as well as sustainability, economics and urban topics.

4.3.2 *Authors co-citation network.* Figure 6 presents the results of the main analysis of the co-citation of authors. The analysis included the top 181 most cited authors from the overall total of 38,830. The threshold applied was 20 citations.

The most cited authors, represented by the larger nodes in the figure, are Putnam, Burt, Portes and Coleman. They are clustered into five different groups. An additional, smaller cluster is also present, shown in purple, containing only five authors.

The most populated cluster, represented in red, contains a total of 67 authors. The most cited authors in this cluster are Burt (283 citations, 173 links and 260.94 total link strength), Granovetter (115 citations, 164 links and 111.98 total link strength) and Nahapiet (112 citations, 154 links and 110.17 total link strength). The second most populated cluster is that shown in green in green (46 authors), led by Putnam (343 citations, 180 links and 318.16 total link strength) followed by Woolcock (121 citations, 171 links and 117.11 total link strength), Fukuyama (107 citations, 167 links and 102.53 total link strength) and Ostrom (99 citations, 142 links and 86.18 total link strength). The blue cluster (38 items) is most influenced by Portes (279 citations, 178 links and 249.10 total link strength), Kawachi (150 citations, 109 links and 127.32 total link strength) and Sampson (116 citations, 105 links and 90.36 total link strength). The yellow cluster (25 items) is led by Coleman (226 citations, 179 links and 219.19 total link strength), Lin (176 citations, 176 links and 164.36 total link strength) and Bourdieu (142 citations, 176 links and 136.39 total link strength).

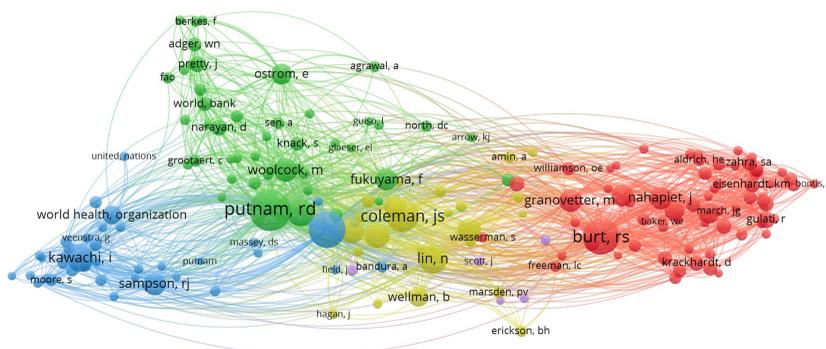


Figure 6.
Network of co-cited
authors publishing on
the topic of social
capital



Source(s): Own elaboration based on data from WoS

This analysis suffers from the occurrence of double-barrelled names because in some cases the authors were reported with both names, whereas in others only the first was used.

4.3.3 *Reference co-citation network.* The co-citation of references identifies the main research themes concerning social capital. In the analysis, a threshold of ten citations was established as the minimum number of citations of a cited reference. Only 189 references of the 57,626 cited references met this threshold, and they are represented in Figure 7. In this figure, the size of the node is proportional to how frequently a document was cited, and the distance between two sources is proportional to the co-citation frequency (i.e. when two citations appear together in the reference list of the same documents).

The paper “Social Capital in the Creation of Human Capital” by Coleman (1988) is the most cited document (183 times; 184 links) and it has the highest values for strength of links. The second and third most cited documents are the book by Putnam (2000) *Bowling Alone* and the paper entitled “Social Capital: Its Origins and Applications in Modern Sociology” by Portes (1998), cited 125 and 124 times, respectively (176 links and 121.00 total strength of links vs. 175 links and 120 total strength of links, respectively). The fourth most cited document is another book by Putnam *Making democracy work* (1993), cited 122 times (163 links and 116 total strength of links). This is followed by Nahapiet and Ghoshal paper “*Social Capital, Intellectual Capital, and the Organizational Advantage*” (1998), cited 103 times (161 links and 102.00 total strength of links), and the book by Coleman (1990) *Foundation of Social Theory*, cited 101 times (183 links and 100 total strength of links).

These documents are clustered in four groups according to how closely the nodes are related to each other. The red cluster contains 88 documents and is led by Nahapiet’s and Ghoshal (1998) study, followed by Adler and Kwon (2002) and Burt (1992). The green cluster, in green, contains 46 items and is led by the studies by Coleman (1990) and Putnam (1993, 2000) as well as those by Woolcock (1998). The blue cluster is led by Portes (1998) and Bourdieu (1986). Finally, the yellow cluster, with 13 documents, is led by Coleman (1988) and contains the first study ever published on social capital, authored by Granovetter (1973).

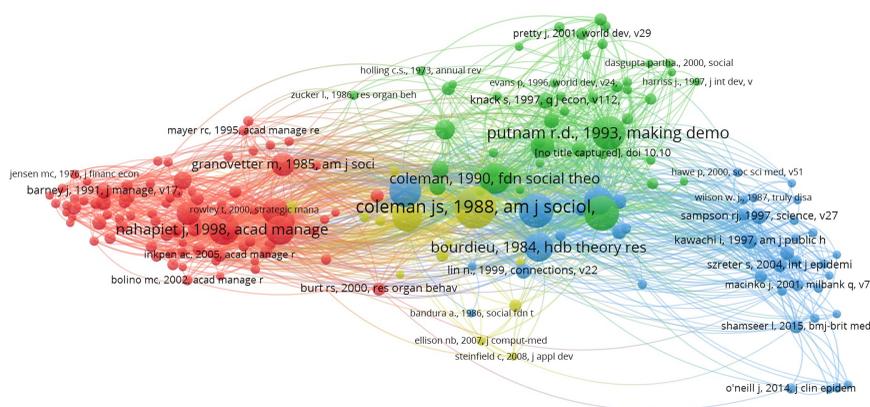


Figure 7.
Co-citation of cited
references on social
capital



Source(s): Own elaboration based on data from WoS

4.4 Co-authorship networks among institutions and countries

This section presents the results of the bibliometric networks based on co-authorships involving different research institutions and countries that are linked to each other based on the number of publications they have jointly authored. This allows us to identify the behavior of research teams and their research networks, as well as the structure of scientific collaboration patterns among nations (Reyes-Gonzalez *et al.*, 2016). In this analysis, the size of the nodes in Figures 8 and 9 symbolizes the level of influence of the institutions and countries,

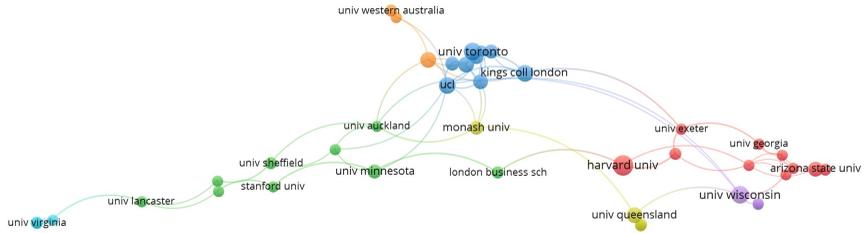


Figure 8.
Co-authorship network
of research institutes
publishing documents
on social capital
research



Source(s): Own elaboration based on data from WoS

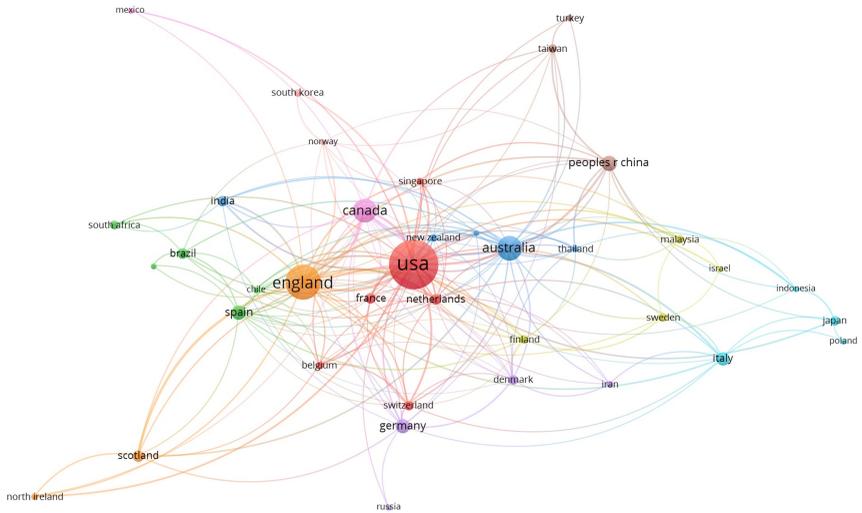


Figure 9.
Co-authorship network
according to country of
origin for documents
on social capital
research



Source(s): Own elaboration based on data from WoS

respectively, while the thickness of the lines and the distance between nodes represent the degree of collaboration (Garrigos-Simon *et al.*, 2018). Since the analysis for co-authors did not produce any statistically significant results, the data are not presented.

4.4.1 Results from the analysis of the co-authorships networks of institutions. Figure 8 shows the 44 most influential institutions considering the 929 that met the minimal threshold of five documents published on social capital. At the top of the ranking, the three leading universities are Harvard University (14 documents, 4,429 citations), the University of Wisconsin (11 documents, 704 citations) and the University of Toronto (11 documents, 230 citations). These are followed by three organizations that all have ten co-authored documents, they are University College London (294 citations), King's College London (577 citations) and the University of Cambridge (604 citations).

VOSviewer revealed seven clusters, each represented by a different color. Only three of these clusters include more than five organizations. The others are composed of few than five organizations. The red cluster on the left-hand side of the visualization is led by Harvard University, while the blue cluster in the middle upper of the image is led by the University of Toronto, and the green cluster on the right-hand side is led by the London Business School.

4.4.2 Results from the analysis of the co-authorship networks of countries. With regard to research collaborations between countries, the USA and England were found to be the two most productive countries in terms of co-authored publications involving social capital (260 and 142 documents, respectively), as similarly revealed in previous studies (Garrigos-Simon *et al.*, 2018; Patrick and Hee, 2020). These two nations are in the center of Figure 8, in which the 38 countries that meet the threshold of five co-authored documents are shown (out of the total of 77 countries which have published on the topic of social capital). The next most influential countries were found to be Australia, Canada and the People's Republic of China, and only after these nations do the first European countries appear, starting with Germany, Spain and then Italy. The nations characterized by close collaborative ties can be grouped into ten clusters, each represented in a different color in Figure 9. Once again, the clusters involving five or more countries are few (only three).

Considering the citation trend, the most cited countries are again the two most productive: the USA and England. These are followed by Canada, Sweden, Singapore and Finland.

5. Implications and discussion

The aim of this study was to provide a detailed description of the output of academic research on social capital from its introduction into the literature up until the end of 2021.

Although the concept was first introduced in 1916 by Hanifan, it only came into common use in the 1990s, from when it then increased hand-in-hand with the number of publications on social capital, confirming the growing interest in the concept.

Publications addressing social capital have been produced in different areas of academic research. According to data sourced from WoS, the largest number of papers on social capital relate to the realm of business and economics, whereas the field of sociology – the field in which the concept was first developed – is only the fourth most prolific in terms of the number of documents published. The most productive scholars are Kawachi I., who published six papers on social capital, followed by Hitt M.A. and Welch V., both with four papers each. The most productive institutions are the Universities of London, followed by Harvard University and the University of California System. Thus, the most productive geographic regions in terms of the paper output are the USA followed by the UK, and the dominant language is English, confirming previous findings (Garrigos-Simon *et al.*, 2018). The publisher which has allocated most space to peer-reviewed papers on social capital is Elsevier.

Approximately 2% of the papers encompassing the issue of social capital had 1,000 or more citations at the time of this study. However, the majority of the papers examined (approximately 60%) had been cited at least ten times.

The most influential publications (all of them are research papers), according to the number of citations, are “Social capital, intellectual capital, and the organizational advantage” by Nahapiet and Ghoshal (1998) and “Social capital: Prospects for a new concept” by Adler and Kwon (2002), both published in the *Academy of Management Review*; “Adaptive governance of social-ecological systems” by Folke *et al.* (2005), published in the *Annual Review of Environment and Resources*; “E pluribus unum: Diversity and community in the twenty-first century – the 2006 Johan Skytte Prize Lecture” by Putnam (2007), published in *Scandinavian Political Studies*; and “Knowledge management: An organizational capabilities perspective” by Gold *et al.* (2001), published in *Journal of Management Information Systems*. The annual citation frequency also provides some information about the popularity of a given topic at any one time.

The range of journals in which the studies were published confirms, once again, that the concept of social capital has not remained within the social sciences, but has impacted different research fields, such as management, business and environmental studies.

The leading journals on social capital issues according to the number of papers on the topic published are *Social Science Medicine* and *Sustainability*. Other journals dedicating space to social capital include *BMC Public Health* and *Journal of Environmental Research and Public Health*. However, if we consider the influence of journals with respect to the total number of papers they publish on social capital on an annual basis, the most influential are *International Journal of Management Reviews*, *Annual Review of Environment and Resources*, *Journal of Intellectual Capital* and *International Small Business Journal Researching Entrepreneurship*.

The leading journals according to the number of times their articles dealing with social capital are cited are *Academy of Management Review*, *Annual Review of Environment and Resources*, *Annual Review of Sociology* and *Journal of Management*.

The semantic network considering author keywords indicated the most frequent keyword to be social capital. Other relevant keywords are systematic review, social networks and trust. With the exception of the term “systematic review”, the other two terms concern concepts closely related to social capital, and at times may even be used in the literature as synonymous of social capital – although not in a fully correct way. This analysis also stresses the close relationship between social capital and other areas of research, such as health (fifth in the list of co-occurrences), and the importance of human capital as well as public health and social support. The main words connected to social capital within the same cluster of the co-occurrence network include human capital, innovation, networks and entrepreneurship; these words underscore how tightly the social dimension is connected with human relationships and how it can impact innovative entrepreneurship – a benefit of social capital – as suggested by Portes (1998).

The initial lines of research into social capital concerned community issues and the issue of gender differences in addition to the previously cited human capital topics. However, over time research into social capital has branched into other fields, such as social networks, sustainable development issues and innovation. The co-occurrence analysis also indicated an increase in the relevance of the relationships between social capital and other recent phenomena such as the COVID-19 pandemic.

The configurations that emerge from the analysis of journal co-citations indicate the presence of six clusters of journals. The *AJS* leads the cluster related to sociology, while *Social Science & Medicine* leads the group concerning topics of social health. The *Strategic Management Journal* leads the cluster focused on management issues. The cluster containing the highest number of journals is led by the journal *World Development* – which published the

Garrigos-Simon *et al.* (2018) bibliometric study on social capital. This cluster has a multidisciplinary nature since it concerns journals related to development, the environment, ecology, sustainability, economics and urban topics.

The co-citation analysis yielded five clusters of authors, in agreement with Garrigos-Simon *et al.* (2018), although the structure of the clusters is slightly different. The biggest cluster is led by Burt and includes authors such as Granovetter and Nahapiet. The second biggest is led by Putnam, the most cited author, and also includes Woolcock, Fukuyama and Ostrom. The third is led by Portes and includes Kawachi and Sampson, and the last group is represented by Coleman, Lin and Bourdieu. This co-citation analysis reveals that alongside the authors who contributed the most to the definition of social capital, other scholars, less well-known in the social sciences, have also made important contributions and stimulated the debate on social capital.

The results of the co-citation of references analysis underline that the paper entitled “Social Capital in the Creation of Human Capital” by Coleman (1988) is the most cited publication, followed by the book by Putnam (2000) *Bowling Alone*, and the paper by Portes (1998) published with title “Social Capital: Its Origins and Applications in Modern Sociology”. The next most cited documents are Putnam’s book *Making democracy work* (1993), the paper “Social Capital, Intellectual Capital, and the Organizational Advantage” by Nahapiet and Ghoshal (1998), and Coleman’s *Foundation of Social Theory* (1990).

The structure of co-authorship analysis shows the most collaborative institutions to be all based in the USA. High levels of collaboration are also present among some of the UK universities, while the European institutions, for example, appear to be lacking in collaborative efforts addressing social capital. Similarly, the analysis confirms the most collaborative nation to be the USA, as underlined by Garrigos-Simon *et al.* (2018), followed by universities from the UK. Interestingly, the People’s Republic of China was the only country in Asia to feature among the ten most collaborative countries. The most cooperative nations within Europe are Germany, Spain and Italy.

6. Conclusions, limitations and future scope

This study contributes to the existing relevant literature by including the most recent publications on social capital and it demonstrates how this concept is continuing to attract the interest of scholars from a variety of academic fields. The findings confirm the important role of the scholars who developed the concept and identify the names of those who continue to make significant contributions to our understanding of social capital. The study also confirms that social capital has become a relevant topic considered in a range of disciplines and research areas besides the social sciences, namely the COVID-19 pandemic, climate change and sustainability. Accordingly, a wide range of journals from academic fields of research outside that of sociology have started to publish articles addressing the topic of social capital. The research also confirmed that researchers from certain countries collaborate together more than others, and that some individual scholars also participate more so in collaborative work. The results also confirm the validity and usefulness of bibliometric tools for measuring the performance of research addressing the topic of social capital.

This study was limited to the analysis of data sourced from WoS, and in some cases, the same keywords were used both in singular and plural forms. Furthermore, some papers used both names for authors with double-barrelled names, whereas others used only the first of the two names. These features could be considered as limitations of the present study and should be investigated in further research, which could also be developed using different bibliographic software and include data from different databases as well as different kinds of publications and not only peer-reviewed papers.

Future research should also focus on publications produced within Asia since the signs that emerged in the present work indicate a growing trend for publications on social capital from the countries and journals located in that geographic area.

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