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Retrospective overview of the journal *venture capital* using bibliometric approach

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ABSTRACT

The journal *Venture Capital (VC)* is a well-established highly reputed academic outlet specializing in research on entrepreneurial finance conducted from various methodological standpoints, on a global basis. This study uses bibliometrics to analyze the journal's impact, prominent topics, most frequent authors, and their affiliated institutions. Between 1999 and 2021, *VC* published 385 documents receiving 9,892 citations. About 62% of *VC* papers have more than 10 citations each. Some of the notable themes which may offer future scope for publications include crowdfunding platforms, equity crowdfunding, government venture capital, private equity firm and investment, entrepreneurial finance, market failure, and female entrepreneurship.

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Introduction

The evolving venture capital industry provides equity financing opportunities to growing entrepreneurial ventures, globally. They contribute in innovation, industry renewal, job creation, and economic growth by providing financial and managerial expertise. Companies backed by venture capital are the drivers of modern economies (Greene et al. 2001).

However, despite the continuing relevance of the venture capital industry, over the last decade, the growing emergence of alternative sources of early-stage funding can be observed, which is radically changing and reshaping the start-up eco-system, with dramatic implications for the entrepreneurial finance literature. These alternative sources of funding involve a variety of players, including incubators, accelerators, science and technology parks, university-affiliated seed funds, corporate seed funds, business angels – including “super-angels”, angel groups, business angel networks and angel investment funds – and both equity- and debt-based crowdfunding platforms. Each of these investors has unique risk-return profiles and investment philosophies, their own investment

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practices and preferred exit options. This creates major challenge for scholars, as well as for practitioners and policymakers, to design a linear and well-structured start-up financing path that includes all of these new actors (Bonini and Capizzi, 2019).

Having realized the crucial role of start-up companies to achieve in modern economies economic growth alongside with overall employment and social welfare, the journal *Venture Capital (VC)* publishes high quality, peer-reviewed, and multidisciplinary research related to venture capital and entrepreneurial finance from a numerous methodological and epistemological standpoint. Colin Mason (University of Glasgow, UK) and Richard Harrison (University of Edinburgh, UK) are the founding editors of the journals. Its current Editor-in-Chief is Vincenzo Capizzi (Università del Piemonte Orientale, Italy), with Cristiano Bellavitis (Syracuse University, US) and Sofia Johan (Florida Atlantic University, US) completing the Editorial Team.

VC features among the Q1 list of journals in Scimago's journal ranking. Its source normalized impact per paper (SNIP) score – which measures the average citation impact of a journal's publications – is 1.392. Given that a journal with a SNIP of 1.0 has the median number of citations for journals in that field, VC has a greater than average citation impact. It is rated in the Australian Business Dean Council (ABDC) 2021 journal ranking and the Association of Business Schools (ABS) Academic Journal Guide (AJG) 2018 and indexed in EBSCO, Social Science Citation Index (SSCI), and Scopus.

Between 1999 and 2021, the journal has published over 385 articles. The h-index of the journal is 52 indicating that 52 of its papers are cited at least 51 times. Its g-index of 76 highlights that among the top-cited articles published in VC, 76 receive at least 5,776 citations (76^2). The 2020 impact factor of the journal is 3.000, which means that, on average, its papers published in 2018 and 2019 received 3.000 citations each in 2020.

The journal bears its academic significance by publishing some of the notable works on entrepreneurial finance. For example, Carter et al. (2003) systematically overview the attributes of women business owners and their equity financing strategies. Belleflamme, Lambert, and Schwiendbacher (2013) noted the drivers of fundraising success and investigated the characteristics of individual crowdfunding practices. Frydrych et al. (2014) explored the practices of crowdfunding. Lehner (2013) offers an extensive review of the literature on social ventures and crowdfunding. Van Osnabrugge (2000) compares the investment criteria and procedures of business angels (BAs) and venture capitalists (VCs). Even so, it is intriguing to note that despite such substantive academic contributions, none has so far attempted to provide a bibliometric assessment of the journal. This is a missed opportunity to determine the academic contours of the journal, its evolution, impact and emerging research frontiers.

For example, applying bibliometric techniques, Pattnaik et al. (2021) provide a comprehensive overview of economic modelling research in the *Journal of Economic Modelling*. Pattnaik, Kumar, and Burton (2021) tracked the thematic evolution and structure of the *Australian Accounting Review* and mapped its way forward. Baker, Kumar, and Pattnaik (2020d) unveiled the social and intellectual structure presented in the twenty-five years of the *Journal of Corporate Finance (JCF)* and Baker, Kumar, and Pattnaik (2020b) present the factors responsible for enhancing the academic impact of scientific sources. On similar Baker et al. (2021a); (2021b)) provided retrospective review of *International Review of Financial Analysis* and *Journal of Futures markets* respectively. Reflecting on such ongoing attempts to draw the trajectory and impact of academic outlets, it is imperative

to identify the core contributors, their affiliations, and most importantly the themes presented in VC between 1999 and 2021. As pointed out by Khan et al. (2021), timely assessment of academic outlets is essential to project its way forward.

Given the scope of this study, a narrative assessment would be cumbersome (Tranfield, Denyer, and Smart 2003). Therefore, we propose to apply quantitative techniques to articulate VC's academic accomplishments over the years. We adopted the bibliometric method as per the guidelines provided by Donthu et al. (2021a). Similar approach is used by Kumar et al. (2021a), (Kumar et al. 2021b) in their studies. Utilizing bibliometrics, this paper addresses the following research questions (RQs):

RQ1. What trends are evident in VC's publications?

RQ2. What themes are prolific in VC articles and which of them offer future scope?

RQ3. How do the prolific themes in VC converge intellectually?

This study will help extant and potential contributors to the VC gain a comprehensive overview of the *Journal* which may help them position their future submissions more effectively. Moreover, our descriptive analysis can assist in the orientation of future policy decisions regarding the scholarly direction and impact of the journal.

Data and method

Bibliographic data for this study is obtained from Scopus which invariably is the largest multidisciplinary database of peer-reviewed literature in social sciences (Baker, Kumar, and Pattnaik 2020a, 2020b, 2020c; Pattnaik et al. 2021; Baker et al. 2021a; Baker, Kumar, and Pandey 2021b). It is widely recognized and used for quantitative analyzes (Pattnaik et al., 2020; Goodell et al, 2021). However, such metadata is prone to ambiguity largely following the multiple representations in authors' names, their affiliations, journal volume and issue numbers, and page numbers (Baker et al. 2021a; Baker, Kumar, and Pandey 2021b). Similar approach is used by earlier work of (Donthu et al. 2021a, 2021b, 2021c, 2021d) in their work while analysing the corpus of various journals. Therefore, any analysis of such data must precede substantial manual cleaning.

For this study, we have cleaned the multiple representation of authors' affiliations. Applying natural language processing (NLP), we processed the themes represented in VC's titles, abstracts, and keywords. Multiple representation of terms are unified following previous studies such as, Pattnaik et al. (2021). Hence, the results presented in this study are authentic and reliable.

Performance analysis

The performance analysis of VC, its authors, and their affiliations are processed using Microsoft (MS) Excel. We investigate the publication trend, authorship pattern, citation structure, influence, impact, activity, and productivity of VC and its stakeholders using a number of quantitative variables (Pattnaik et al., 2020). For example, total publications (TC) indicate the academic contribution of VC, its authors and their affiliations. Total citations (TC) suggest the academic influence and impact (Kumar, Pandey, and Mukherjee 2021; Kumar et al. 2021a, 2021b) of VC articles, its authors, and their affiliations. The number of cited publications (NCP)

quantifies the count of influential VC articles while total citations per publication (TC/TP) indicate average impact (Pattnaik et al., 2021; Kumar et al. 2021c). Further, we use the h and g indexes to measure the number of influential and impactful research, respectively. Conversely, the variables, number of active years (NAY) and productivity per active year (PAY) denote the scientific activity and productivity in this study (Pattnaik et al. 2020; Pattnaik et al. 2021; Pattnaik, Kumar, and Burton 2021; Pattnaik, Kumar, and Vashishtha 2020).

Following Stremersch, Verniers, and Verhoef (2007) and Valtakoski (2019), academic quality of VC articles is denoted by its number of contributing authors (NCA). According to Acedo et al. (2006) and Baker et al. (2020d), modern research is highly collaborative due to the rising demand for methodological complexities and enhanced specialisations. Therefore, we use the variable, collaboration index (CI) and collaboration coefficient (CC) to demarcate the extent of co-authorship covered in VC while the variables number of sole-authored and co-authored articles (SA and CA) present a count of sole-authored and co-authored articles in the journal.

Alongside with such extensive quantitative indications, we also explore the thematic diversity in VC articles over the years.

Thematic analysis

Thematic analysis in this study is carried out using the co-occurrence analysis (Pattnaik, Kumar, and Burton 2021; Pattnaik et al. 2021). Callon et al. (1983) contend that frequent co-appearance of themes depict thematic convergence. Co-occurrence analysis in bibliometric studies is frequently functionalized on keywords as in many cases authors use keyword to depict important themes (Valtakoski 2019). However, in many cases, authors do not report keywords and so we identify the main themes in VC outputs using NLP to the articles' titles, abstracts, and keywords. All the n -gram terms presented in at least 5 VC articles are considered for further analysis (Pattnaik et al. 2021).

NLP in VOS facilitates the identification of nouns which are later processed for identifying topics. For example, we converted many plural terms to their singular form, e.g., "venture capitalists" to "venture capital" and "equity markets" to "equity market." Conversely, short forms were expanded to their full versions, e.g., "PE" to "private equity". Such strategies enabled us obtain a uniform set of VC terms which are visualized using Gephi application.

Results

Our first research question (RQ1) investigates the performance of VC, its authors, and their affiliations. Table 1 summarizes VC's publications indexed in the Scopus database. Academic contributions in VC rose up to 385 specialized works on venture capital and other relevant themes (TP: 385), largely co-authored (CA: 295), contributed by 634 different authors (NAA: 634). About 94% of the research is considered impactful (NCP: 362 of TP: 385). On average, a VC article is cited 26 times (TC/TP: 26) which accumulates to 9,892 total citations on the search date. The academic influence of VC is evident in its h -index of 52 while its g -index suggests the journal's academic impact extended by its 76 top-cited articles. The journal has been active for 23 years publishing about 17 specialized articles year on year (NAY: 23 and PAY: 17).

Table 1. Journal overview.

<i>Panel A. Descriptive statistics</i>	Metric
Total publications (TP)	385
Number of cited publications (NCP)	362
Total citations (TC)	9,892
Average citations (TC/TP)	26
<i>h</i> -index	52
<i>g</i> -index	76
<i>i</i> -10	240
<i>i</i> -100	13
Number of active years (NAY)	23
Productivity per active year (PAY)	17
<i>Panel B. Co-authorship information</i>	
Number of contributing authors (NCA)	866
Number of affiliated authors (excludes repetitions) (NAA)	634
Authors of single-authored documents (ASA)	81
Authors of co-authored documents (ACA)	574
Single-authored documents (SA)	90
Co-authored documents (CA)	295
Collaboration index (CI)	1.25
Collaboration coefficient (CC)	0.56
Average authors per co-authored article	2.63

Note: This table shows an overview on the journal’s publication and co-authorship information.

As shown in [Table 2](#), the academic contributions in VC peaked at 24 articles in 2002 of which about 75% are co-authored (TP: 24; CA: 18). Co-authorship offer the scope of presenting intriguing ideas and complex methodologies arising from the blend of scholarly acumen (Kumar et al. [2021a](#), [2021b](#); Pattnaik et al. [2021](#)). Stated differently, collaborations among the contributing authors have served as the backhand support to the qualitative multi-authored publications in VC (Acedo et al. [2006](#); Baker, Kumar, and Pattnaik [2020a](#), [2020b](#), [2020c](#), [2020d](#)). Simultaneously, in terms of the annual collaborative index, 2019 leads overall (ACI: 1.9). The figure indicates that a lead VC contributor consults with about 2 other scholars to contribute an article in VC. The academic popularity of VC reflects in its number of new authors peaking at 41 in 2001 (GA: 41). Simultaneously, in terms of citations, which vary with time (Baker, Kumar, and Pattnaik [2020b](#)), the 18 cited articles in 2003 received about 956 citations by 2021. Such an indicator suggests that those articles published in 2003 have triggered more future research in the broader academic domain. Simultaneously, the *h*-index of the journal peaked at 52 in 2012 while its *g*-index of 76 soared two years later in 2014. The *i*-10 index of the journal peaked in 2002 with 18 of VC articles receiving at least 10 citations in Scopus by 2020. Conversely, the *i*-100 index suggests that 3 of the papers published in 1999 and 2013 receive at least 100 Scopus citations. Further, we found the publication activity in VC is stabilizing at 17 articles since 2015. Thus, VC depicts an all-inclusive growth in authorship, publication, citation, influence, and impact between 1999 and 2021.

[Table 3](#) furnishes data about the most prolific VC authors. On investigation, R. T. Harrison emerged as the highest contributor with 12 VC articles followed by the C. Mason and M. Wright contributing 11 articles, each. As presented in the table, D. Cumming is the top contributor of sole-authored articles (SA: 3) while Harrison and Wright share the top slot of co-authored articles (CA: 11). Interestingly, in terms of the collaboration index, M. M. Hart leads the table (CI: 3.80) for associating with about 4

Table 2. Trend in VC.

Year	TP	SA	CA	NCA	CNA	GA	AACA	ACI	ACC	TCP	TC	C/CP	h	g	i-10	i-100	PAY
1999	18	9	9	31	29	29	2.4	0.7	0.42	18	928	52	16	18	17	3	18
2000	18	6	12	33	57	28	2.3	0.8	0.45	18	661	37	23	36	14	1	18
2001	20	3	17	48	98	41	2.6	1.4	0.58	19	641	34	27	46	14	2	19
2002	24	6	18	51	135	37	2.5	1.1	0.53	24	858	36	32	53	18	1	20
2003	18	6	12	40	162	27	2.8	1.2	0.55	18	956	53	40	60	16	1	20
2004	18	3	15	41	191	29	2.5	1.3	0.56	18	499	28	42	62	15	0	19
2005	14	6	8	27	206	15	2.6	0.9	0.48	14	426	30	43	64	11	0	19
2006	19	3	16	44	236	30	2.6	1.3	0.57	19	525	28	46	65	13	0	19
2007	16	1	15	42	259	23	2.7	1.6	0.62	16	400	25	47	66	12	0	18
2008	17	5	12	31	278	19	2.2	0.8	0.45	17	737	43	50	69	16	1	18
2009	18	6	12	35	305	27	2.4	0.9	0.49	17	327	19	50	69	11	0	18
2010	16	2	14	42	337	32	2.9	1.6	0.62	16	395	25	50	70	12	0	18
2011	16	8	8	27	357	20	2.4	0.7	0.41	16	191	12	50	70	12	0	18
2012	16	2	14	35	383	26	2.4	1.2	0.54	16	319	20	52	70	11	0	18
2013	16	2	14	39	412	29	2.6	1.4	0.59	16	712	45	52	74	9	3	18
2014	17	4	13	45	448	36	3.2	1.6	0.62	17	461	27	52	76	8	1	18
2015	16	6	10	31	471	23	2.5	0.9	0.48	16	202	13	52	76	7	0	17
2016	16	2	14	41	497	26	2.8	1.6	0.61	16	201	13	52	76	8	0	17
2017	16	2	14	46	537	40	3.1	1.9	0.65	16	177	11	52	76	6	0	17
2018	16	1	15	41	569	32	2.7	1.6	0.61	13	132	10	52	76	4	0	17
2019	15	2	13	36	586	17	2.6	1.4	0.58	14	109	8	52	76	4	0	17
2020	15	4	11	35	612	26	2.8	1.3	0.57	6	33	6	52	76	2	0	17
2021	10	1	9	25	634	22	2.7	1.5	0.60	2	2	1	52	76	0	0	17

Note: This table reveals the annual trend on VC's publications, co-authorship pattern, citation structure, influence, impact, activity, and productivity. Here, TP = total publications, SA = sole-authored, CA = co-authored, NCA = number of contributing authors, CNA = cumulative number of affiliated authors, GA = growth in authorship, AACA = average authors per co-authored article, ACI = annual collaboration index, ACC = annual collaboration co-efficient, TCP = total cited publications, TC = total citations, C/CP = citations per cited publication, h = h-index, g = g-index, i-10 = i-10 and i-100 = indices suggesting the number of publications cited at least 10 and 100 times, respectively, and PAY = productivity per active year.

authors for contributing an article in VC. However, in terms of research influence denoted by the number of citations, C. Brush garners the highest number of citations (TC: 652) although P. G. Greene leads with the highest average citations per cited publication (C/CP: 120). In terms of the research impacts denoted by the h and g indices, Harrison tops the table. Ten of the articles contributed by Harrison and Mason receive at least 10 citations (i-10 index: 10, each) while three of the articles by Brush and Greene receive at least 100 citations (i-100 index: 3). However, M. Wright has been the most long serving author by contributing at least 1 article in 9 of the 23 years of VC (NAY: 9) while the productivity per active year of H. D. Park is the highest in VC (PAY: 2.0). Thus the journal has attracted notable entrepreneurial finance authors over the years.

Table 4 sketches the data concerning VC authors' institutional affiliations. Authors affiliated to the University of New Hampshire in Durham emerged as the top contributors of total and co-authored publications (TP: 14 and CA: 12) followed by the University of Nottingham and York University which hold the second position (TP: 11, each). Although the University of Nottingham dominated with the highest number of contributing authors (NCA: 36), Babson College records the highest collaboration index and collaboration coefficient (CI: 2.8 and CC: 0.73). In terms of publication impact, contributions from the University of New Hampshire lead the table with the highest total cited publications (TCP: 12), total citations (TC: 611), average citations (C/CP: 51), h, g, and i-10 indices (h: 10, g:12, and i-10: 10). However, contributions from VC authors' affiliated to the Harvard University lead with the highest number of publications cited at least 100 times (i-100: 3).

Table 3. Top authors contributing to VC.

Author	TP	SA	CA	NCA	AACA	ACI	ACC	TCP	TC	C/CP	h	g	i-10	i-100	NAY	PAY
Harrison R.T.	12	1	11	28	2	1.3	0.57	12	462	39	10	12	10	0	8	1.5
Mason C.	11	1	10	23	2	1.1	0.52	11	434	39	10	11	10	0	8	1.4
Wright M.	11	0	11	37	3	2.4	0.70	11	373	34	9	11	9	0	9	1.2
Cumming D.	8	3	5	13	2	0.6	0.38	8	228	29	7	8	6	0	7	1.1
Riding A.	8	1	7	21	3	1.6	0.62	8	268	34	6	8	4	1	8	1.0
Sohl J.E.	8	2	6	16	2	1.0	0.50	6	383	64	6	6	6	1	8	1.0
Aernoudt R.	7	3	4	13	3	0.9	0.46	6	159	27	5	6	5	0	5	1.4
Landström H.	7	0	7	18	3	1.6	0.61	7	196	28	6	7	6	0	6	1.2
Brush C.	6	0	6	26	4	3.3	0.77	6	652	109	6	6	6	3	6	1.0
Greene P.G.	5	0	5	23	5	3.6	0.78	5	600	120	5	5	5	3	5	1.0
Lehner O.M.	5	1	4	12	3	1.4	0.58	5	335	67	5	5	3	1	4	1.3
Murray G.	5	2	3	11	3	1.2	0.55	4	244	61	4	4	4	0	4	1.3
Sørheim R.	5	1	4	10	2	1.0	0.50	5	137	27	4	5	3	0	5	1.0
Whittam G.	5	0	5	14	3	1.8	0.64	5	205	41	4	5	4	0	4	1.3
Baldock R.	4	1	3	9	3	1.3	0.56	4	134	34	4	4	4	0	3	1.3
Block J.	4	0	4	12	3	2.0	0.67	4	135	34	4	4	2	0	4	1.0
Cressya R.	4	0	4	12	3	2.0	0.67	4	71	18	3	4	2	0	4	1.0
Dolvin S.D.	4	1	3	8	2	1.0	0.50	4	44	11	4	4	2	0	4	1.0
Hart M.M.	4	0	4	19	5	3.8	0.79	4	565	141	4	4	4	3	4	1.0
Johan S.	4	0	4	8	2	1.0	0.50	4	136	34	3	4	3	0	4	1.0
Lahti T.	4	2	2	7	3	0.8	0.43	4	55	14	4	4	2	0	3	1.3
North D.	4	0	4	11	3	1.8	0.64	4	108	27	4	4	3	0	4	1.0
Parhankangas A.	4	0	4	10	3	1.5	0.60	4	71	18	4	4	4	0	4	1.0
Park H.D.	4	0	4	12	3	2.0	0.67	3	29	10	2	3	1	0	2	2.0

Note: This table summarizes the publications, authorship pattern, influence, impact, activity, and productivity of the top contributions authors in VC. Here, TP = total publications, SA = sole-authored articles, CA = co-authored articles, NCA = number of contributing authors, AACA = average authors per co-authored article, ACI = annual collaboration index, ACC = annual collaboration co-efficient, TCP = total cited publications, C/CP = citations per cited publication, h = h-index, g = g-index, i-10 = i-10 index, i-100 = i-100 index, NAY = number of active years, and PAY = productivity per active year.

Conversely, authors’ affiliated to the York University have been most active (NAY: 10) contributing at least 1 article in each active year (PAY: 1). Thus, VC has attracted notable scholars affiliated to reputed institutions to contribute their notable scholarly discourse in entrepreneurial finance research over the years.

Of note, scholarly contributions from 44 nations feature in VC articles between 1999 and 2021. Such feature essentially highlights the diverse global perspectives noted in VC. Table 5 lists the top authors’ affiliating nations. Like in most other scholarly discourse presented in earlier works (Baker, Kumar, and Pattnaik 2020a, 2020b; Baker et al. 2021a; Baker, Kumar, and Pandey 2021b; Pattnaik et al. 2021), authors’ affiliated to the United States dominate in most parameters (TP: 113; CA: 97; NCA: 286; TCP: 108; TC: 3145; i-100: 6; NAY: 23 and PAY: 5) followed by the United Kingdom. Interestingly, authors’ affiliated to China are highly collaborative (CI: 2.7 and CC: 0.73) suggesting multi-authorial diverse perspectives on venture capital research. In conclusion, although VC has largely been dominated by authors’ from the United States and the United Kingdom; representation of other countries point towards the journal’s increasing effort towards internationalisation in its content.

Table 6 shows the sources of knowledge creation and knowledge dissemination of VC. It enlists the key sources cited in VC along with the sources frequently citing the articles published in the journal. Among the top cited sources the *Journal of Business Venturing* tops the table with 1760 total citations followed by VC itself cited 1368 times in its own publications. Interestingly, about 92% of the top cited sources are rated 3 and above in

Table 4. Top authors' affiliating institutions contributing to VC.

Institution	TP	SA	CA	NCA	AACA	CI	CC	TCP	TC	C/CP	h	g	i-10	i-100	NAY	PAY
University of New Hampshire-Durham	14	2	12	30	2	1.1	0.53	12	611	51	10	12	10	2	9	2
University of Nottingham-Nottingham	11	0	11	36	3	2.3	0.69	11	374	34	9	11	9	0	8	1
York University-Toronto	11	2	9	22	2	1.0	0.50	11	318	29	9	11	9	0	10	1
Lund University-Lund	9	2	7	20	3	1.2	0.55	9	326	36	8	9	8	0	6	2
University of Edinburgh-Edinburgh	9	1	8	22	3	1.4	0.59	9	349	39	7	9	6	1	7	1
Babson College-Babson Park	8	1	7	24	3	2.0	0.67	8	491	61	7	8	7	2	6	1
Erasmus University-Rotterdam	7	0	7	17	2	1.4	0.59	7	211	30	5	7	4	0	6	1
Helsinki University of Technology-Helsinki	7	0	7	17	2	1.4	0.59	7	306	44	7	7	7	0	5	1
Norwegian University of Science and Technology-Trondheim	7	2	5	13	2	0.9	0.46	7	188	27	5	7	4	0	6	1
University of Strathclyde-Glasgow	7	2	5	12	2	0.7	0.42	7	209	30	6	7	6	0	4	2
Harvard University	6	0	6	21	4	2.5	0.71	6	551	92	5	6	5	3	5	1
Queen's University-Belfast	6	0	6	15	3	1.5	0.60	6	180	30	5	6	4	0	3	2
University of Ottawa-Ottawa	6	1	5	14	3	1.3	0.57	6	110	18	4	6	2	0	5	1
Chalmers University of Technology	5	2	3	9	2	0.8	0.44	4	86	22	4	4	4	0	4	1
Middlesex University-London	5	0	5	12	2	1.4	0.58	5	117	23	5	5	3	0	4	1
University of Birmingham-Birmingham	5	0	5	15	3	2.0	0.67	5	34	7	3	5	2	0	4	1
University of Exeter-Exeter	5	1	4	12	3	1.4	0.58	4	190	48	4	4	4	0	4	1
University of Oslo	5	0	5	14	3	1.8	0.64	5	108	22	5	5	4	0	4	1
University of Southampton	5	1	4	10	2	1.0	0.50	5	123	25	3	5	3	0	4	1
Babson College-Wellesley	4	0	4	15	4	2.8	0.73	4	193	48	4	4	4	0	4	1
Butler University-Indianapolis	4	1	3	8	2	1.0	0.50	4	44	11	4	4	2	0	4	1
Carleton University-Ottawa	4	0	4	11	3	1.8	0.64	4	262	66	4	4	4	1	4	1
Hanken School of Economics-Helsinki	4	2	2	7	3	0.8	0.43	4	55	14	4	4	2	0	3	1
London Business School-London	4	1	3	9	3	1.3	0.56	4	247	62	4	4	4	0	3	1
University of Glasgow-Glasgow	4	0	4	10	3	1.5	0.60	4	139	35	4	4	4	0	4	1
University of Lyon-Lyon	4	0	4	11	3	1.8	0.64	2	15	8	1	2	1	0	2	2
University of Oxford-Oxford	4	0	4	11	3	1.8	0.64	4	149	37	4	4	2	0	3	1
University of Texas-Dallas	4	0	4	12	3	2.0	0.67	2	26	13	1	2	1	0	2	2

Note: This table summarizes the publications, authorship pattern, influence, impact, activity, and productivity of the top VC authors' affiliating institutions. Here, TP = total publications, SA = sole-authored articles, CA = co-authored articles, NCA = number of contributing authors, AACA = average authors per co-authored article, ACI = annual collaboration index, ACC = annual collaboration co-efficient, TCP = total cited publications, C/CP = citations per cited publication, h = h-index, g = g-index, i-10 = i-10 index, i-100 = i-100 index, NAY = number of active years, and PAY = productivity per active year.

Table 5. Top authors' affiliating nations contributing to VC.

Country	TP	SA	CA	NCA	AAACA	CI	CC	TCP	TC	C/CP	h	g	i-10	i-100	NAY	PAY
United States	113	16	97	286	3	1.5	0.60	108	3145	29	30	52	68	6	23	5
United Kingdom	96	26	70	218	3	1.3	0.56	94	3081	33	34	52	70	3	23	4
Canada	36	5	31	84	3	1.3	0.57	34	786	23	15	27	21	1	18	2
Germany	29	3	26	76	3	1.6	0.62	26	604	23	13	24	17	1	15	2
Sweden	27	7	20	56	2	1.1	0.52	25	767	31	16	25	19	1	17	2
Belgium	19	4	15	46	3	1.4	0.59	18	612	34	11	18	12	1	13	1
France	17	3	14	41	3	1.4	0.59	14	358	26	8	14	6	1	10	2
Netherlands	17	0	17	42	2	1.5	0.60	16	335	21	9	16	9	0	14	1
Australia	15	4	11	32	3	1.1	0.53	15	339	23	10	15	10	0	8	2
Finland	14	2	12	34	3	1.4	0.59	14	444	32	12	14	12	0	10	1
Norway	13	2	11	29	2	1.2	0.55	13	374	29	9	13	9	0	10	1
India	11	3	8	29	3	1.6	0.62	9	399	44	6	9	4	2	10	1
Italy	10	2	8	23	3	1.3	0.57	9	173	19	8	9	8	0	8	1
Switzerland	8	1	7	17	2	1.1	0.53	7	164	23	6	7	5	0	7	1
Spain	7	0	7	16	2	1.3	0.56	6	131	22	5	6	5	0	7	1
Ireland	6	0	6	15	3	1.5	0.60	5	49	10	3	5	1	0	3	2
Brazil	5	1	4	12	3	1.4	0.58	5	143	29	4	5	2	1	3	2
Israel	4	1	3	8	2	1.0	0.50	4	52	13	4	4	2	0	4	1
Japan	4	2	2	7	3	0.8	0.43	4	84	21	4	4	3	0	3	1
New Zealand	4	0	4	10	3	1.5	0.60	4	38	10	4	4	1	0	4	1
Singapore	4	0	4	11	3	1.8	0.64	4	152	38	4	4	4	0	4	1
Argentina	3	1	2	8	4	1.7	0.63	2	24	12	2	2	1	0	3	1
Austria	3	2	1	5	3	0.7	0.40	3	276	92	3	3	3	1	3	1
China	3	0	3	11	4	2.7	0.73	2	18	9	2	2	1	0	3	1
Denmark	3	2	1	6	4	1.0	0.50	3	62	21	3	3	3	0	3	1
Hong Kong	3	0	3	8	3	1.7	0.63	3	73	24	2	3	2	0	3	1
Luxembourg	3	1	2	9	4	2.0	0.67	3	47	16	3	3	1	0	3	1
Malaysia	3	0	3	10	3	2.3	0.70	3	22	7	3	3	1	0	3	2
Chile	2	0	2	6	3	2.0	0.67	2	35	18	2	2	2	0	2	1
Hungary	2	1	1	4	3	1.0	0.50	2	27	14	2	2	1	0	2	1
Bulgaria	1	0	1	4	4	3.0	0.75	1	38	38	1	1	1	0	1	1
Cyprus	1	0	1	3	3	2.0	0.67	1	4	4	1	1	0	0	1	1
Ghana	1	0	1	3	3	2.0	0.67	1	37	37	1	1	1	0	1	1
Jordan	1	0	1	2	2	1.0	0.50	1	7	7	1	1	0	0	1	1
Kazakhstan	1	0	1	2	2	1.0	0.50	1	1	1	1	1	0	0	1	1
Lebanon	1	1	0	1	2	0.0	0.00	1	8	8	1	1	0	0	1	1
Mexico	1	0	1	2	2	1.0	0.50	1	25	25	1	1	1	0	1	1

(Continued)

Table 5. (Continued).

Country	TP	SA	CA	NCA	AACA	CI	CC	TCP	TC	C/CP	h	g	i-10	i-100	NAY	PAY
Portugal	1	1	0	1		0.0	0.00	1	40	40	1	1	1	0	1	1
Russian Federation	1	1	0	1		0.0	0.00	1	11	11	1	1	1	0	1	1
Slovenia	1	0	1	2	2	1.0	0.50	1	2	2	1	1	0	0	1	1
Taiwan	1	0	1	3	3	2.0	0.67	1	1	1	1	1	0	0	1	1
Tanzania	1	0	1	3	3	2.0	0.67	1	11	11	1	1	1	0	1	1
Thailand	1	0	1	2	2	1.0	0.50	1	29	29	1	1	1	0	1	1
Viet Nam	1	0	1	2	2	1.0	0.50	1	29	29	1	1	1	0	1	1

Note: This table summarizes the publications, authorship pattern, influence, impact, activity, and productivity of the top VC authors' affiliating nations. Here, TP = total publications, SA = sole-authored articles, CA = co-authored articles, NCA = number of contributing authors, AACA = average authors per co-authored article, ACI = annual collaboration index, ACC = annual collaboration co-efficient, TCP = total cited publications, C/CP = citations per cited publication, h = h-index, g = g-index, i-10 = i-10 index, i-100 = i-100 index, NAY = number of active years, and PAY = productivity per active year.

Table 6. Top cited and citing sources.

R	Top cited sources	TC	CABS' AJG	ABDC	Top citing sources	TC	CABS' AJG	ABDC
1	Journal of Business Venturing	1760	4	A*	Venture Capital: An International Journal of Entrepreneurial Finance	299	2	B
2	Venture Capital: An International Journal of Entrepreneurial Finance	1368	2	B	Small Business Economics	145	3	A
6	The Journal of Finance	547	4*	A*	Journal of Business Venturing	113	4	A*
3	Journal of Financial Economics	482	4*	A*	Entrepreneurship, Theory and Practice	96	4	A*
4	Entrepreneurship, Theory and Practice	462	4	A*	Journal of Small Business Management	72	3	A
5	Small Business Economics	427	3	A	International Journal of Entrepreneurship and Small Business	60	2	NA
7	Strategic Management Journal	324	4*	A*	International Journal of Entrepreneurial Behavior and Research	58	2	B
8	Academy of Management Review	316	4*	A*	Sustainability Switzerland	57	NA	NA
9	Academy of Management Journal	301	4*	A*	International Entrepreneurship and Management Journal	49	1	C
10	Frontiers of Entrepreneurship Research	232	NA	NA	Journal of Small Business and Enterprise Development	49	2	C
11	Administrative Science Quarterly	201	4*	A*	The Journal of Private Equity	47	NA	C
12	International Small Business Journal	200	3	A	International Journal of Gender and Entrepreneurship	45	2	C
13	Research Policy	188	4*	A*	Journal of Business Research	45	3	A
14	Entrepreneurship and Regional Development	176	3	A	Technological Forecasting and Social Change	40	3	A
15	Journal of Small Business Management	168	3	A	Journal of Business Venturing Insights	38	NA	A
16	Management Science	168	4*	A*	Entrepreneurship and Regional Development	35	3	A
17	Journal of Management Studies	152	4	A*	Research Policy	32	4*	A*
18	Journal of Management	133	4*	A*	International Small Business Journal	31	3	A
19	Journal of Corporate Finance	129	4	A*	Journal of Technology Transfer	31	2	B
20	Financial Management	116	3	A	Journal of Corporate Finance	30	4	A*
21	Journal of Banking and Finance	111	3	A	International Journal of Entrepreneurial Venturing	29	1	NA
22	Regional Studies	111	3	A*	Journal of Small Business and Entrepreneurship	29	1	C
23	Harvard Business Review	96	3	A	International Journal of Entrepreneurship and Innovation Management	27	1	C
24	The Review of Financial Studies	96	4*	A*	International Small Business Journal	24	3	A
25	Organization Science	89	4*	A*	Technovation	22	3	A

Note: This table shows the top-cited and citing sources of VC. Here, TC = total citations, CABS' AJG = Chartered Association of Business Schools' Academic Journal Guide, and ABDC = Australian Business Deans Council.

CABS' AJG list of 2018. Such indication suggests that the knowledge emanating out of VC articles have proven academic rigour. Conversely, excluding VC for citing itself, the sources which frequently refer to the knowledge base of the journal are the *Small Business Economics* (TC: 145) and the *Journal of Business Venturing* (TC: 133). Such indicators reveal that the journal is widely accepted among its peers possibly for publishing original contents which are frequently referred to in other reputed outlets bearing high quality ratings in CABS' AJG and ABDC.

Table 7 details the citation levels of the most popular VC articles. Carter et al. (2003) is the top-cited work with 221 citations followed by Belleflamme, Lambert, and Schwienbacher (2013), Frydrych et al. (2014), Lehner (2013), and Van Osnabrugge (2000) cited 210, 204, 186, and 178 times on the search date in Scopus, respectively. A thorough analysis of the articles reveal that, VC has largely been influential in disseminating knowledge on: *angel investing* (see e.g., Politis 2008; Freear, Sohl, and Wetzel 2002; Paul, Whittam, and Wyper 2007), *crowdfunding* (see e.g., Belleflamme, Lambert, and Schwienbacher 2013; Frydrych et al. 2014; Lehner 2013; Tomczak and Brem 2013; Lehner and Nicholls 2014), *equity market* (see e.g., Sohl 1999), *financial, human, and social capital* (e.g., Brush et al. 2002; Carter et al. 2003), *informal investing* (e.g., Bygrave et al. 2003), *investment decision* (e.g., Clark 2008), *private investor* (e.g., Feeney, Haines, and Riding 1999), *social venture* (e.g., Lehner 2013; Lehner and Nicholls 2014), *venture capital* (e.g., Block and Sandner 2009; Gabrielsson and Huse 2002; Greene et al. 2001; Harrison and Mason 2000; Madill, Haines George H, and Rlding 2005; Manigart, Baeyens, and Van Hyfte 2002; Maula, Autio, and Murray 2005; Shepherd and Zacharakis 2001, 1999; Van Osnabrugge 2000), and *women entrepreneurship* (see e.g., Carter et al. 2003; Treichel and Scott 2006).

Thematic structure analysis

In response of our RQs 2 and 3, we investigate the themes and thematic structure presented in VC articles. Table 8 reveals the major VC themes analysed in forms of their occurrences (OC) depicting academic contributions, average citations (AC) indicating academic impact, and contemporary relevance presented in form of average publication year (APY). Venture capital(ist) is the most frequently appearing theme followed by entrepreneurial finance, and new venture. Social capital, equity capital, and investment opportunity are highly impactful in terms of average citations while crowdfunding platform, government venture capital, and PE firm are among the most concurrent topics offering future publication scope in the journal.

Table 9 summarizes the 8 thematic clusters arrived through the co-occurrence analysis of themes featuring in at least 5 VC articles while Figure 1 visualizes the thematic map.

Cluster 1 – the first cluster depicts 17 themes appearing at least 5 times in VC articles published between 1999 and 2021. The themes noted are equity finance, small business, economic growth, business plan, financial crisis, funding gap, private investor, angel network, access to finance, finance gap, government policy, medium sized enterprise, market failure, female entrepreneur, business model, start-up capital, and technology-based venture. Equity finance and small business are frequently occurring topics while start-up capital and private investor are highly influential topics. However, based

Table 7. Top articles.

Author	Title	TC
Carter et al. (2003)	"Women entrepreneurs who break through to equity financing: The influence of human, social and financial capital"	221
Belleflamme, Lambert, and Schwienbacher (2013)	"Individual crowdfunding practices"	210
Frydych et al. (2014)	"Exploring entrepreneurial legitimacy in reward-based crowdfunding"	204
Lehner (2013)	"Crowdfunding social ventures: a model and research agenda"	186
Van Osabrugge (2000)	"A comparison of business angel and venture capitalist investment procedure s: An agency theory-based analysis"	178
Greene et al. (2001)	"Patterns of venture capital funding: Is gender a factor?"	160
Shepherd and Zacharakis (2001)	"The venture capitalist-entrepreneur relationship: Control, trust and confidence in co-operative behaviour?"	129
Sohl (1999)	"The early-stage equity market in the USA"	128
Shepherd and Zacharakis (1999)	"Conjoint analysis: A new methodological approach for researching the decision policies of venture capitalists"	125
Brush et al. (2002)	"The role of social capital and gender in linking financial suppliers and entrepreneurial firms: A framework for future research"	117
Feeney, Haines, and Riding (1999)	"Private investors' investment criteria: Insights from qualitative data"	115
Clark (2008)	"The impact of entrepreneurs' oral 'pitch' presentation skills on business angels' initial screening investment decisions"	111
Tomczak and Brem (2013)	"A conceptualized investment model of crowdfunding"	110
Bygrave et al. (2003)	"Executive forum: A study of informal investing in 29 nations composing the Global Entrepreneurship Monitor"	97
Politis (2008)	"Business angels and value added: What do we know and where do we go?"	92
Lehner and Nicholls (2014)	"Social finance and crowdfunding for social enterprises: a public-private case study providing legitimacy and leverage"	91
Maula, Autio, and Murray (2005)	"Corporate venture capitalists and independent venture capitalists: What do they know, who do they know and should entrepreneurs care?"	90
Freear, Sohl, and Wetzel (2002)	"Angles on angels: Financing technology-based ventures-a historical perspective"	88
Block and Sandner (2009)	"What is the effect of the financial crisis on venture capital financing? Empirical evidence from US internet start-ups"	87
Harrison and Mason (2000)	"Venture capital market complementarities: The links between business angels and venture capital funds in the United Kingdom"	87
Paul, Whittam, and Wyper (2007)	"Towards a model of the business angel investment process"	82
Madill, Haines George H, and Riding (2005)	"The role of angels in technology SMEs: A link to venture capital"	79
Gabrielson and Huse (2002)	"The venture capitalist and the board of directors in SMEs: Roles and processes"	78
Manigart, Baeyens, and Van Hyfte (2002)	"The survival of venture capital backed companies"	77
Treichel and Scott (2006)	"Women-owned businesses and access to bank credit: Evidence from three surveys since 1987"	77

Note: This table shows the top cited articles published in VC between 1999 and 2021. Here, TC = total citations in Scopus on the search date.

Table 8. Top themes.

Theme	Cluster	OC	AC	APY
Equity finance	1	20	38	2008.1
Small business	1	20	23	2006.4
Economic growth	1	12	19	2008.7
Business plan	1	10	25	2007.3
Financial crisis	1	10	34	2012.1
Funding gap	1	10	44	2008.3
Private investor	1	10	48	2004.6
Angel network	1	9	21	2008.6
Access to finance	1	8	22	2011.4
Finance gap	1	8	22	2011.5
Government policy	1	8	29	2004.4
Medium sized enterprise	1	8	16	2009.4
Market failure	1	7	13	2012.6
Female entrepreneur	1	6	28	2012.3
Business model	1	5	17	2011.0
Start-up capital	1	5	55	2005.8
Technology based venture	1	5	27	2010.4
Venture capital(ist)	2	102	26	2006.8
Initial public offering	2	24	11	2009.4
Information asymmetry	2	23	16	2012.0
Venture capital investment	2	23	33	2008.3
Public policy	2	22	19	2009.0
Technology based firm	2	14	28	2005.9
Venture financing	2	12	29	2011.8
Agency theory	2	9	50	2009.2
Institutional investor	2	9	18	2007.9
New technology	2	9	33	2005.4
Venture capital investment	2	9	12	2010.6
Entrepreneurial firm	2	8	33	2008.6
Venture capital financing	2	8	63	2007.5
Going public	2	7	9	2008.3
Adverse selection	2	6	18	2009.0
Agency cost	2	6	25	2010.7
Moral hazard	2	6	4	2015.0
Non venture capital	2	6	26	2007.7
Successful exit	2	6	11	2013.3
External financing	2	5	26	2009.4
Government venture capital	2	5	18	2016.2
Entrepreneurial finance	3	44	19	2013.9
Angel investor	3	22	25	2008.6
Investment decision	3	20	27	2011.4
Angel investment	3	20	41	2010.8
Due diligence	3	17	35	2008.1
Investment process	3	15	41	2009.5
Angel investing	3	14	21	2011.4
Angel market	3	14	41	2007.4
Investment activity	3	10	27	2009.9
Angel group	3	8	22	2011.0
Emerging financial market	3	8	15	2005.9
Early stage business	3	6	13	2010.5
New venture	4	41	32	2008.5
Informal venture capital	4	28	46	2005.6
Venture capital market	4	28	41	2004.3
Informal investor	4	18	36	2006.1
Informal investment	4	12	39	2006.3
Investment criteria	4	12	54	2004.9
Entrepreneurial venture	4	11	33	2009.0
Risk capital	4	11	26	2006.8
Investment behavior	4	7	36	2006.9
Business start ups	4	5	51	2004.4
Financial support	4	5	21	2006.0

(Continued)

Table 8. (Continued).

Theme	Cluster	OC	AC	APY
Venture capital fund	5	24	28	2008.9
Corporate venture capital	5	13	19	2012.5
Venture capital investor	5	12	39	2005.3
Equity capital	5	8	83	2002.3
Financial capital	5	8	44	2012.4
Social capital	5	7	89	2003.4
Young firm	5	5	21	2010.8
Equity market	6	12	30	2007.3
Investment strategy	6	9	20	2008.2
Private equity investment	6	8	12	2014.1
Investee company	6	6	20	2010.5
PE firm	6	6	3	2016.2
Capital structure	6	5	15	2007.4
Economic impact	6	5	12	2009.2
Firm performance	6	5	38	2009.6
Investment risk	6	5	38	2007.6
Management buyout	6	5	36	2006.0
Venture capital industry	7	23	24	2005.4
Venture capital firm	7	22	35	2004.8
Economic development	7	9	15	2005.0
Institutional theory	7	8	21	2011.9
Investment opportunity	7	6	67	2009.7
Investment performance	7	6	9	2007.8
Investment preference	7	6	39	2003.0
Investment return	7	6	52	2007.8
Seed capital	7	6	50	2003.2
Policy maker	8	14	27	2011.1
Human capital	8	13	32	2010.3
Crowdfunding platform	8	10	33	2018.1
Equity crowdfunding	8	10	17	2017.8
Early stage finance	8	9	32	2006.4
Social network	8	8	45	2013.0

Note: This table shows the top VC themes featuring between 1999 and 2021. Here, OC = occurrence, AC = average citations, and APY = average publication year.

on APY, market failure and female entrepreneur offer scope for future publications. As per [Table 9](#), the articles representing the cluster include [Carter et al. \(2003\)](#), [Sohl \(1999\)](#), and [Feeney, Haines, and Riding \(1999\)](#) cited 221, 128, and 115 times on the search date, respectively.

Cluster 2 – the second cluster is the core VC cluster depicting 21 themes noted as venture capital(ist), initial public offering, information asymmetry, venture capital investment, public policy, technology-based firm, venture financing, agency theory, institutional investor, new technology, venture capital investment, entrepreneurial firm, venture capital financing, going public, adverse selection, agency cost, moral hazard, non-venture capital, successful exit, external financing, and government venture capital. Venture capital(ist) is the most common topic appearing in 102 VC articles followed by initial public offering. Venture capital financing receives the highest average citations of 63 followed by 50 average cites to agency theory. However, based on APY, government venture capital (APY: 2016.2) and moral hazard (APY: 2015.0) offer publication scope in the journal. As per [Table 9](#), the top-cited articles representing the cluster include [Frydrych et al. \(2014\)](#), [Van Osnabrugge \(2000\)](#), and [Greene et al. \(2001\)](#) cited 204, 178, and 160 times, respectively.



Table 9. Summary of thematic clusters.

Cluster	Theme	Author	Title	TC
1	Equity finance, small business, economic growth, business plan, financial crisis, etc.	Carter et al. (2003)	"Women entrepreneurs who break through to equity financing: The influence of human, social and financial capital"	221
2	Venture capitalist, initial public offering, information asymmetry, venture capital, public policy, etc.	Sohl (1999)	"The early-stage equity market in the USA"	128
		Feeney, Haines, and Riding (1999)	"Private investors' investment criteria: Insights from qualitative data"	115
		Frydrych et al. (2014)	"Exploring entrepreneurial legitimacy in reward-based crowdfunding"	204
		Van Osnabrugge (2000)	"A comparison of business angel and venture capitalist investment procedure s: An agency theory-based analysis"	178
3	Entrepreneurial finance, angel investor, investment decision, angel investment, due diligence, etc.	Greene et al. (2001)	"Patterns of venture capital funding: Is gender a factor?"	160
		Brush et al. (2002)	"The role of social capital and gender in linking financial suppliers and entrepreneurial firms: A framework for future research"	117
4	New venture, informal venture capital, venture capital market, informal investor, informal investment, etc.	Clark (2008)	"The impact of entrepreneurs' oral 'pitch' presentation skills on business angels' initial screening investment decisions"	111
		Tomczak and Brem (2013)	"A conceptualized investment model of crowdfunding"	110
		Shepherd and Zacharakis (1999)	"Conjoint analysis: A new methodological approach for researching the decision policies of venture capitalists"	125
		Bygrave et al. (2003)	"Executive forum: A study of informal investing in 29 nations composing the Global Entrepreneurship Monitor"	97
5	Venture capital fund, corporate venture capital, venture capital investor, equity capital, financial capital, etc.	Politis (2008)	"Business angels and value added: What do we know and where do we go?"	92
		Maula, Autio, and Murray (2005)	"Corporate venture capitalists and independent venture capitalists: What do they know, who do they know and should entrepreneurs care?"	90
		Harrison and Mason (2000)	"Venture capital market complementarities: The links between business angels and venture capital funds in the United Kingdom"	87
6	Equity market, investment strategy, private equity (PE) investment, investee company, PE firm	Maula, Autio, and Murray (2003)	"Prerequisites for the creation of social capital and subsequent knowledge acquisition in corporate venture capital"	75
		Freear, Sohl, and Wetzel (2002)	"Angles on angels: Financing technology-based ventures-a historical perspective"	88
		Jones and Jayawarna (2010)	"Resourcing new businesses: Social networks, bootstrapping and firm performance"	72
		Brush et al. (2006)	"The use of bootstrapping by women entrepreneurs in positioning for growth"	67
7	Venture capital industry, venture capital fund, economic development, institutional theory, investment opportunity, etc.	Gabrielsson and Huse (2002)	"The venture capitalist and the board of directors in SMEs: Roles and processes"	78
		Murray (1999)	"Early-stage venture capital funds, scale economies and public support"	69
8	Policy maker, human capital, crowdfunding platform, equity crowdfunding, early stage financing, etc.	Lockett and Wright (1999)	"The syndication of private equity: Evidence from the UK"	68
		Paul, Whittam, and Wyper (2007)	"Towards a model of the business angel investment process"	82
		Mason and Harrison (2008)	"Measuring business angel investment activity in the United Kingdom: A review of potential data sources"	72
		Cumming and Johan (2013a)	"Demand-driven securities regulation: evidence from crowdfunding"	66

Note: This table summarizes the eight thematic clusters in the journal of VC. Here, TC = total citations.

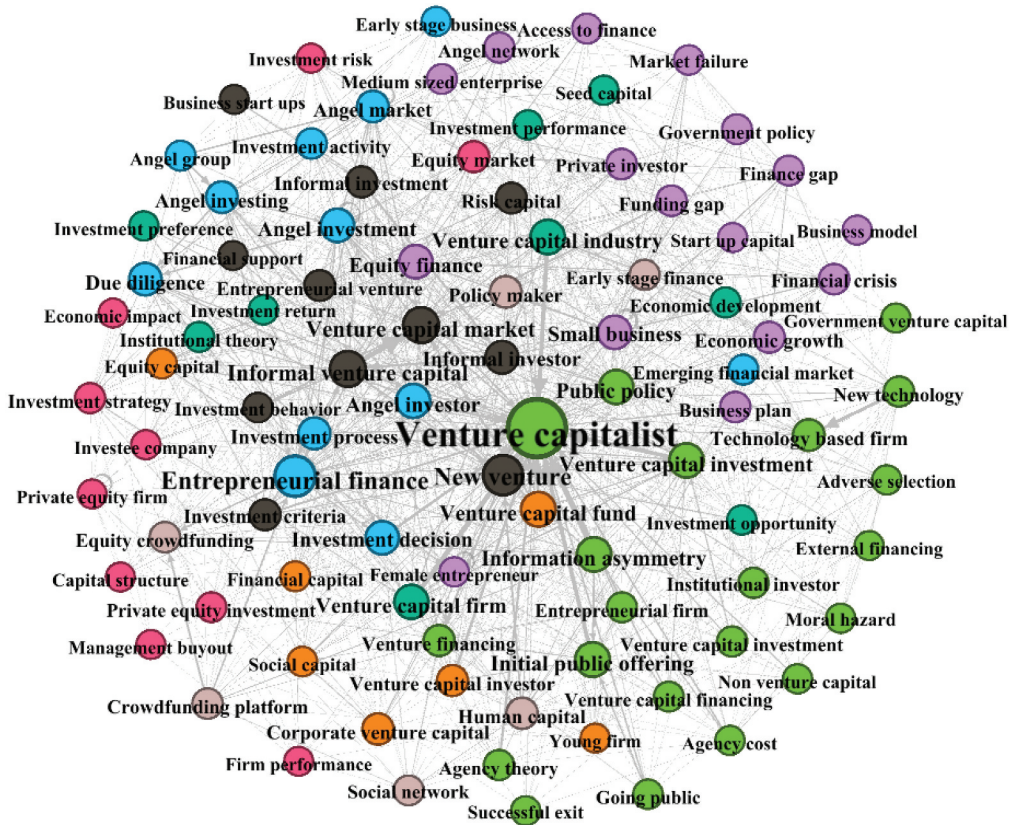


Figure 1. The thematic map of VC articles. The figure represents the thematic clusters 1 (purple nodes), cluster 2 (green nodes), cluster 3 (blue nodes), cluster 4 (black nodes), cluster 5 (Orange nodes), cluster 6 (red nodes), cluster 7 (deep green nodes), and cluster 8 (suave nodes). It indicates the networking relations among leading co-occurring themes in VC publications between 1999 and 2021. Each node represents a theme, with the size of the nodes depicting the latter's academic significance i.e., the frequency of its occurrence. The line/arrow linking the nodes reflects co-occurrence among the themes; a higher level is reflected in greater thickness in lines/arrows. Direction of the link is an indicator of the thematic order, a standard output of the Gephi application, and may not bear any significant implication as majority of the authors do not maintain any thematic order per se.

Cluster 3 – the third cluster presents 12 themes noted as entrepreneurial finance, angel investor, investment decision, angel investment, due diligence, investment process, angel investing, angel market, investment activity, angel group, emerging financial market, and early stage business. Entrepreneurial finance is the most frequent topic of the cluster followed by angel investor. On the basis of average citations, angel investment, investment process, and angel market are most influential. Conversely, entrepreneurial finance (APY: 2013.9), angel investing (APY: 2011.4) and investment decision (APY: 11.4) may offer scope for future publications in the journal. As per Table 9, some of the notable works of the cluster are Brush et al. (2002), Clark (2008), and Tomczak and Brem (2013) cited 117, 111, and 110, respectively.

Cluster 4 – the fourth thematic cluster consists of 11 themes noted as new venture, informal venture capital, venture capital market, informal investor, investment criteria, entrepreneurial venture, risk capital, investment behaviour, business start-ups, and

financial support. New venture is most frequently deliberated theme of the cluster followed by informal venture capital and venture capital market. The average citation indicator suggests that investment criteria and business start-ups are highly influential topics of the journal. However, the cluster appears to be maturing with all the topics bearing APY score less than 2009.0. As per [Table 9](#), some of the notable works of the cluster include Shepherd and Zacharakis (1999), Bygrave et al. (2003), and Politis (2008) cited 125, 97, and 92 times, respectively.

Cluster 5 – the fifth thematic cluster presents 7 VC themes such as venture capital fund, corporate venture capital, venture capital investor, equity capital, financial capital, social capital, and young firm. Among all the themes represented, venture capital fund is most frequent followed by corporate venture capital. However, on the basis of average citations, social capital and equity capital are among the highly influential academic debates presented in VC while corporate venture capital and financial capital may offer scope for future publication in the journal. As presented in [Table 9](#), some of the influential works representative of the cluster include Maula, Autio, and Murray (2005), Harrison and Mason (2000), and Maula, Autio, and Murray (2003) cited 90, 87, and 75 times, respectively.

Cluster 6 – the sixth thematic cluster presents 10 VC themes noted as equity market, investment strategy, private equity investment, investee company, PE firm, capital structure, economic impact, firm performance, investment risk, and management buyout. Equity market is the most frequent topic of the cluster followed by investment strategy while firm performance and investment risk are most impactful deliberations. On the basis of APY, PE firm and private equity investment may offer lucrative opportunities for future submissions in the journal. Conversely, some of the notable works of the cluster are Freear, Sohl, and Wetzel (2002), Jones and Jayawarna (2010), and Brush et al. (2006) cited 88, 72, and 67 times, respectively.

Cluster 7 – the seventh thematic cluster indicates 9 VC themes noted as venture capital industry, venture capital firm, economic development, institutional theory, investment opportunity, investment performance, investment preference, investment return, and seed capital of which venture capital industry and venture capital firm are most frequent while investment opportunity and investment return are highly influential deliberations. On the basis of APY, empirical investigations on institutional theory may offer future publication scope in the journal. Some of the notable works of the cluster include Gabrielsson and Huse (2002), Murray (1999), and Lockett and Wright (1999) cited 78, 69, and 68 times, respectively.

Cluster 8 – the eighth and final thematic cluster suggest 6 VC themes noted as policy maker, human capital, crowdfunding platform, equity crowdfunding, early stage finance, and social network. Academic debates on policy makers and human capital are highly frequent while social network and crowdfunding platform are most influential topics. On the basis of APY, empirical investigations on institutional theory may offer future publication scope in the journal. Some of the notable works of the cluster include Paul, Whittam, and Wyper (2007), Mason and Harrison (2008), and Cumming and Johan (2013b) cited 82, 72, and 66 times in Scopus, respectively.

Conclusions

Our study offers a bibliometric retrospective of the journal of VC between 1999 and 2021. Below are key findings from our study.

Over the years, VC published 385 documents receiving 9,892 citations in Scopus as on the search date. The findings show growth in specialized research publications and academic influence presented in form of citations. About 62% (240 of 385) VC papers have more than 10 citations each. A considerable portion of the publications in VC, about 77%, are collaborative in nature suggesting high academic rigour. Among the most cited publications, Carter et al. (2003) occupies the top position with 221 citations followed by Belleflamme, Lambert, and Schwienbacher (2013) cited 210 times. Venture capital(ist) is by far the leading theme in VC in terms of total publications, also leveraging on a chronological advantage when compared to recent research topics, while social capital is highly influential in terms of highest average citations.

The top VC contributors are Harrison, Mason, and Wright. The top institutions affiliated with VC authors are University of New Hampshire, University of Nottingham, and York University. Although VC authors are most commonly affiliated with the United States and the United Kingdom, articles affiliated to 44 nations appear in the journal between 1999 and 2021.

Thematic analysis groups the frequently appearing VC topics into eight clusters. Some of the notable themes which may offer future scope for publications include crowdfunding platform, equity crowdfunding, government venture capital, PE firm, private equity investment, entrepreneurial finance, market failure, and female entrepreneurship.

In conclusion, between 1999 and 2021, VC has emerged as an important academic outlet disseminating global wisdom on entrepreneurial finance as documented by its growth in the number of publications and citations. The current study offers useful insights about VC's growth and development trajectory. Its primary contribution is providing an in-depth analysis of VC's content, which may help its global readers gain a comprehensive overview of the journal's evolution and the editorial board members to shape VC's editorial policy and future strategy. Its key limitation is restricting the source of bibliographic data to Scopus. Including data from other sources may alter the results justifying additional future endeavours of similar or more sophisticated nature.

Furthermore, it's crucial taking into accounts the significant impact of some research topics truly actual and, because of that, not adequately considered by the kind of longitudinal bibliometric analysis carried on in this paper. That's the case of the following themes: a) the impact of the different actors of the entrepreneurial ecosystem on startups' growth trajectories; b) the role of sustainable finale within the startup ecosystem; c) the impact of big data and machine learning on investors' decision making processes.

Further, authors may also consider such themes as "venture capital and cleantech" (Bianchini and Croce 2022), "law and venture capital" (Cumming and Johan, 2013b), "innovation and venture capital" (Kenney and Zysman 2019), and "fintech and venture capital" (Allen, Xian, and Jagtiani 2021) in their future submissions to the journal.

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