

From the periphery to the centre: a bibliometric review of global virtual teams as a new ordinary workplace

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Note: Table 2 is missing from this version of document.

Abstract:

Purpose This study aims to offer a bibliometric analysis of the already substantial and growing literature on global virtual teams (GVTs).

Design/methodology/approach Using a systematic literature review approach, it identifies all articles in the Web of Science from 1999 to 2021 that include the term GVTs (in the title, the abstract or keywords) and finds 175 articles. The VOSviewer software was applied to analyze the bibliometric data.

Findings The analysis revealed three dialogizing research clusters in the GVTs literature: a pioneering management information systems and organizational cluster, a general management cluster and a growing international management and behavioural studies cluster. Furthermore, it highlights the most cited articles, authors, journals and nations, and the network of strong and weak links regarding co-authorships and co-citations. Additionally, this study shows a change in research patterns regarding topics, journals and disciplinary approaches from 1999 to 2021. Finally, the analysis illustrates the position and centrality in the network of the most relevant actors.

Practical implications The findings can guide management practitioners, educators and researchers to the most meaningful clusters of publications on GVTs, and help navigate and make sense of the vast body of the available literature. The importance of GVTs has been growing in the past two decades, and Covid-19 has accelerated the trend.

Originality/value This study provides an updated and comprehensive systematic literature review on GVTs. To the best of the authors' knowledge, it is also the first systematic literature review and bibliometry on GVTs. It concludes by suggesting future research paths.

Keywords: global virtue teams | systematic literature review | bibliometry | virtual teams | Covid-19 | online work

Article:

1. Introduction

A global virtual team (GVT), a workgroup whose members are dispersed around the planet and rely on online tools for communication, is an evolutionary form of team organization made widespread by globalization and enabled by advances in information and communication technology (Jarvenpaa and Leidner, 1999) . The term “virtual team” appeared in the literature in the mid-1980s (Miles and Snow, 1986) and became increasingly popular in the early 1990s as the advent of the internet made electronic communication tools ubiquitous (Davidow and Malone, 1992). However, the seminal article on GVTs, which truly popularized the term, was a 1999 publication of a study exploring the challenges of creating and maintaining trust in a GVT whose members transcend time, space and culture (Jarvenpaa and Leidner, 1999).

Therefore, GVTs are workgroups that face a combination of three distinct challenges: working as a team, whose team members are dispersed globally across cultures and time zones, and thus relying on “virtual” electronic communication tools. Each challenge is a serious one and has been the object of the extensive literature on its own, but all three of them at the same time are what makes the GVT work environment so difficult and worth investigating.

The growing ubiquity of GVTs has attracted research interest. From 1999 to 2020, there was a more than tenfold increase in articles on the subject, as recorded by Web of Science (from now on WoS), Scopus and Google Scholar (Table 1). The number of citations of the GVT literature has also increased rapidly. From the 175 articles about GVTs published between 1999 and 2020 on WoS (list of the 175 articles and citations in Table 2), there are 6,822 citations in total, growing rapidly since 1999 (Figure 1).

Even before the COVID-19 pandemic, GVTs were becoming commonplace in all kinds of organizations, from non-profit non-governmental organization to for-profit corporations.

Table 1. Number of articles (keyword: “global virtual team*”)

Year	Web of Science	Scopus	Google Scholar
2020	14	13	287
2019	12	12	283
2018	10	7	252
2017	17	11	285
2016	13	11	289
2015	14	3	277
2014	6	4	274
2013	11	10	233
2012	7	9	244
2011	14	8	245
2010	2	6	255
2009	8	9	249
2008	5	5	223
2007	7	6	201
2006	6	7	149
2005	4	5	140
2004	6	3	124
2003	1	3	111
2002	1	5	71
2001	4	2	40

2000	1	1	29
1999	1	1	11

For example, one survey revealed that up to 87% of white-collar workers in Organisation for Economic Co-operation and Development countries at least occasionally complete projects in GVTs (CultureWizard, 2018). The lockdowns and travel bans of 2020 had greatly accelerated the shift towards telework and GVTs, forcing most employees to learn how to use such tools as Zoom and Dropbox. The reliance on virtual teams in general, and GVTs in particular, is likely to continue growing – leading to continued interest in the topic from the researchers. The post-pandemic research on GVTs is likely to be more intense and qualitatively different, reflecting the fast-changing nature of the virtual workplace and international travel, and it appears we are now at a juncture when we must take stock of the past research, review the extant literature as a foundation for future scholarship in the area (Marinov and Marinova, 2020). This is precisely what this study is set to achieve.



Figure 1. Citations by year on Web of Science

Our review makes several contributions to the literature. First, it better connects GVTs to the International business (IB) literature. Second, it is systematic and shows how the field has evolved over time, providing a more dynamic view of the discipline.

We review the GVTs literature over a period of 22 years (1999–2021) to answer the following research questions:

- RQ1. What research clusters or patterns dominate in the bibliometric of GVTs?
- RQ2. How have these research clusters developed?
- RQ3. Who and what are the most influential articles and authors?
- RQ4. What are the promising future research avenues?

The remainder of the manuscript is organized as the following. First, we explain the bibliometric research tool and methodology. Next, we report the results of our analyses that identified the

research clusters and the most influential articles, authors, universities and journals. Finally, we discuss the implications of our bibliometric analysis and provide future research directions.

2. Methods

We systematically examined all articles from 1999 to 2021 in the WoS that use the term “global virtual team*” in the title, abstract or author keywords and identified 175 articles, which formed the analytical database. Note that our search term did not include “GVT”. This abbreviation is commonly used in other disciplines and denotes different terms (e.g. graft-versus-tumour in medicine). A general search for papers containing the word “GVT” in the paper title, abstract or keywords yields thousands of hits, with almost all of them referring to topics irrelevant to “global virtual team*”. However, based on our careful inspection of numerous papers on “global virtual team*”, even those publications that used “GVT” in the title used the full term (i.e. “global virtual team*” in keywords and/or abstract). Therefore, our search in the WoS database was limited to the publications that used the term “global virtual team*” in the publication title or provided keywords or the abstract. We posed no limits to language or research areas for search boundaries: 173 articles are written in English, 1 in Spanish and 1 in Portuguese. The date of extraction from WoS is 15 June 2021.

GVT is an interdisciplinary subject. For the search terms, we used “global virtual team*”. We searched for articles from 1985, but the first GVT article on WoS, based on our research string, was published in 1999 (Jarvenpaa and Leidner, 1999). We drafted a map of the articles using a bibliometric method that demonstrates interconnections between articles. We can identify the research topics through the map by examining the frequency of citations or co-citations. The assumption is that an article published in an academic journal is grounded in similar articles that have already been published (Van Raan, 2012). Therefore, co-citation analysis can reveal similarities in a specific research topic, allowing the identification of key research streams and links among articles.

Our method consists of bibliometric analysis (Broadus, 1987; Zupic and Čater, 2015), and we use this technique to conduct four network analyses: citation; co-authorship; co-citation; and co-occurrence analysis. Our software tool is VOSviewer, a popular tool for bibliometric analysis in IB (Bahoo et al., 2021).

In VOSviewer, a citation link is between two items where one item is citing the other. VOSviewer treats citation links as undirected. Hence, it does not distinguish between a citation from item X to item Y and a citation in the opposite direction. A bibliographic coupling link is between two items that cite the same document. A co-citation link links two items cited by the same document. Citation links can adopt as the unit of analysis: authors, journals, articles, universities and countries. Co-citation links can adopt as the unit of analysis: cited authors, journals and articles. Only one link between two items is allowed in VOSviewer. VOSviewer will combine multiple links into a single link between the same pair of items. The strengths of all the individual links between two items will be equal to the strength of the combined link (Nees and Waltman, 2020).

A positive numerical value measures the strength of each link, and the stronger the link, the higher the value. For instance, the strength of a link may indicate the number of citations two researchers have co-cited (in the case of co-citation links). A network is a group of items that are connected by links (Nees and Waltman, 2020).

The number of links of an item and the total strength of the links measure the relevance and centrality of an item in the network. For example, in the case of co-authorship links between researchers, the links attribute indicates a researcher's number of co-authorship links with other researchers. Likewise, the total link strength attribute indicates the total strength of the co-authorship links of a given researcher with other researchers (Nees and Waltman, 2020).

Items are visualized by labels and circles in the network maps. The item's weight determines the size of the label and the circle of an item. The higher the weight of an item, the larger the label and the circle of the item. To avoid overlapping labels, the labels of the less relevant items may not be displayed. Depending on the map, the colour of an item is determined by the cluster to which the item belongs or the average score, such as the publication date or the number of citations. Lines between items represent links. By default, 1,000 lines are displayed at most, representing the 1,000 strongest links between items (Nees and Waltman, 2020).

3. Results

3.1 Bibliometric analysis

3.1.1. Citation analysis: key journals, authors, countries, universities and articles. Using these VOSviewer, we ranked the most influential journals, authors, countries, universities, articles and networks for the topic of GVTs. The 175 articles reviewed here were published in 101 different journals. We ranked the top 14 journals with the largest number of articles published on the topic (Table 3) and mapped the number of articles in each journal on the topic to the citation network (Figure 2). The Journal of International Management emerges as the most influential, followed by the IEEE Transactions on Professional Communication and the Journal of Management Information Systems for the number of published articles. The map (Figure 2) reveals a management cluster of citations around the Journal of International Management and an information management cluster around the IEEE Transactions on Professional Communication and the Journal of Management Information Systems. A smaller cluster of educational research journals (Journal of Teaching in International Business, Academy of Management Learning, Educational Research for Policy and Practice) and Organization Science connect the two main research areas.

Table 3. Journals with the largest number of articles published on GVTs

Name of journal	No. of articles
Journal of International Management	9
Journal of Management Information Systems	7
IEEE Transactions on Professional Communication	7
IEEE PCS Professional Engineering Communication Series	3
International Virtual Teams Engineering Global Success	3
Information Management	4
Journal of Teaching in International Business	4
Leading Global Teams Translating Multidisciplinary Science to Practice	4
Organizational Dynamics	4
Team Performance Management	4
International Journal of Cross Cultural Management	3
International Journal of Human Resource Management	3
Journal of Business Research	3
Organization Science	3

Figure 3 reports the same citation network as Figure 2 but weighted by the “number of citations” per journal – as opposed to the “number of publications” per journal that we have in Figure 2 – and the “average publication year” of the articles, as opposed to the “average number of citations per article reported in Figure 2. In Figure 3, Organization Science emerges as the leading journal for the number of citations, mainly because of not recent articles, with an average publication date of around 2005 (Figure 3). The average publication date appears to be inversely related with the cumulative average number of citations per journal. For all figures, the score grows as colour shifts from deep blue to yellow, with green being the median score. Therefore, results suggest that GVTs literature originates in organizational studies, and this research area has been acting as a bridge between the two main and growing streams of research in IB and IT studies.

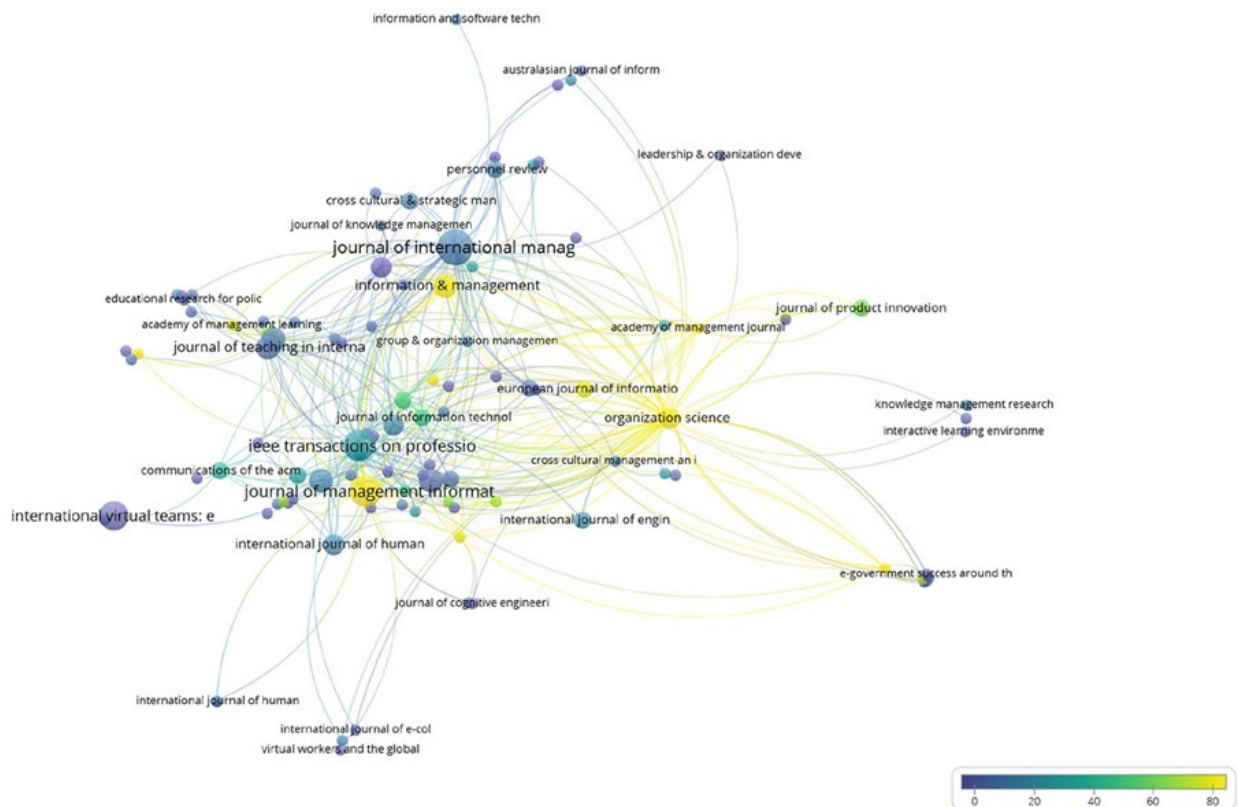


Figure 2. Citations: the journal is the unit analysis (size of circles depending on the number of published articles on the topic by the journal; colour depending on the average citation on WoS of the journal)

Concerning authors, 421 authors wrote the 175 articles in our sample. Figure 4 illustrates the authors who published more on the topic, the average citation of their articles and the citation networks among them, which is helpful for editors and prospective researchers for future projects. Figure 5 has the same logic as Figure 4, but in Figure 5, different colours represent the “average publication year” of the articles of the author (as opposed to the “average citations” of the author’s articles that colours represent in Figure 4): score grows as colour shifts from deep blue to yellow, with green being the median score. Naturally, the comparison between Figures 4 and 5 (just as for the comparison between Figures 2 and 3) reveals that the oldest the average publication date, the more citations it has accumulated. Two main clusters of authors emerge: one that was very active

15–20 years ago in organizational science and one that is very active today in IB research (Figure 5).

Concerning countries, the USA reports the highest number of articles (100 of 175) and scores higher than average (54.6) as the “average citations for publication” (Figure 6). Australia follows with 18 publications and 20.9 citations per publication; England is third with 13 publications and 10 citations per publication; lastly, China is fourth with 11 publications and 48.4 citations per publication (Figure 6).

The leading role of the USA does not change if we look at the total number of citations: the USA leads with 5,451 citations; France is second with 1,380 citations; China is third with 532 citations; Canada is fourth with 427 citations; Australia is fifth with 376 citations; and the average publication year of publications from the USA is around the average (Figure 7).

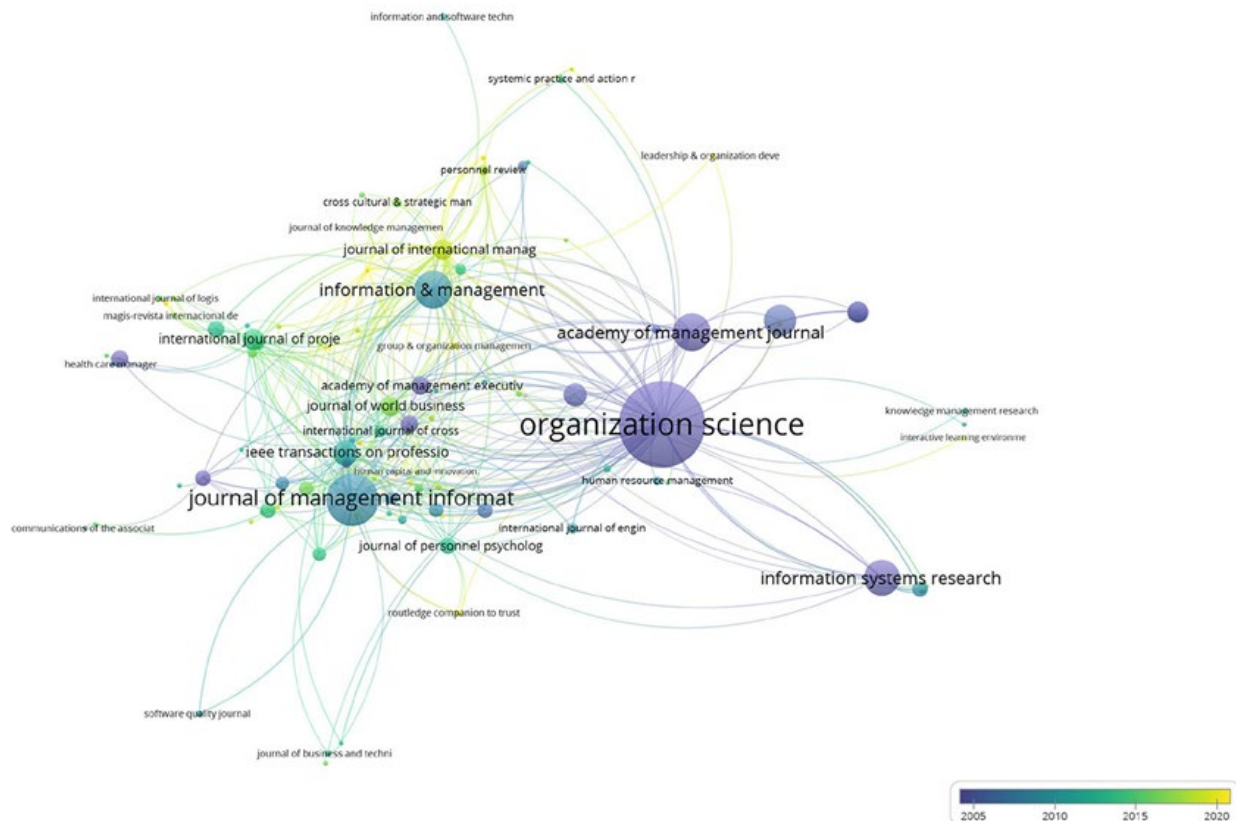


Figure 3. Citations: the journal is the unit analysis (size of circles weighted for the number of citations on WoS of the journal; colour depending on the average publication year of articles in the journal)

The total link strength of the USA is 795; followed by France with 238; Australia with 235; and China with 152 (Figures 6 and 7).

Regarding the 272 universities where an author publishing a paper is affiliated, 65 meet the threshold of 2 articles, and the University of North Carolina is the first in the list with 12 articles and 807 citations, occupying a very central role in the network (Figure 8).

As for the most influential articles, Figure 9 maps the citation network and confirms that Jarvenpaa and Leidner (1999) is the most cited one in WoS (1,195 citations) and the most connected to the 175 that form the object of this study (66 links), followed by Maznevski and Chudoba (2000) (771 citations; 52 links), Montoya-Weiss et al. (2001) (398 citations; 28 links),

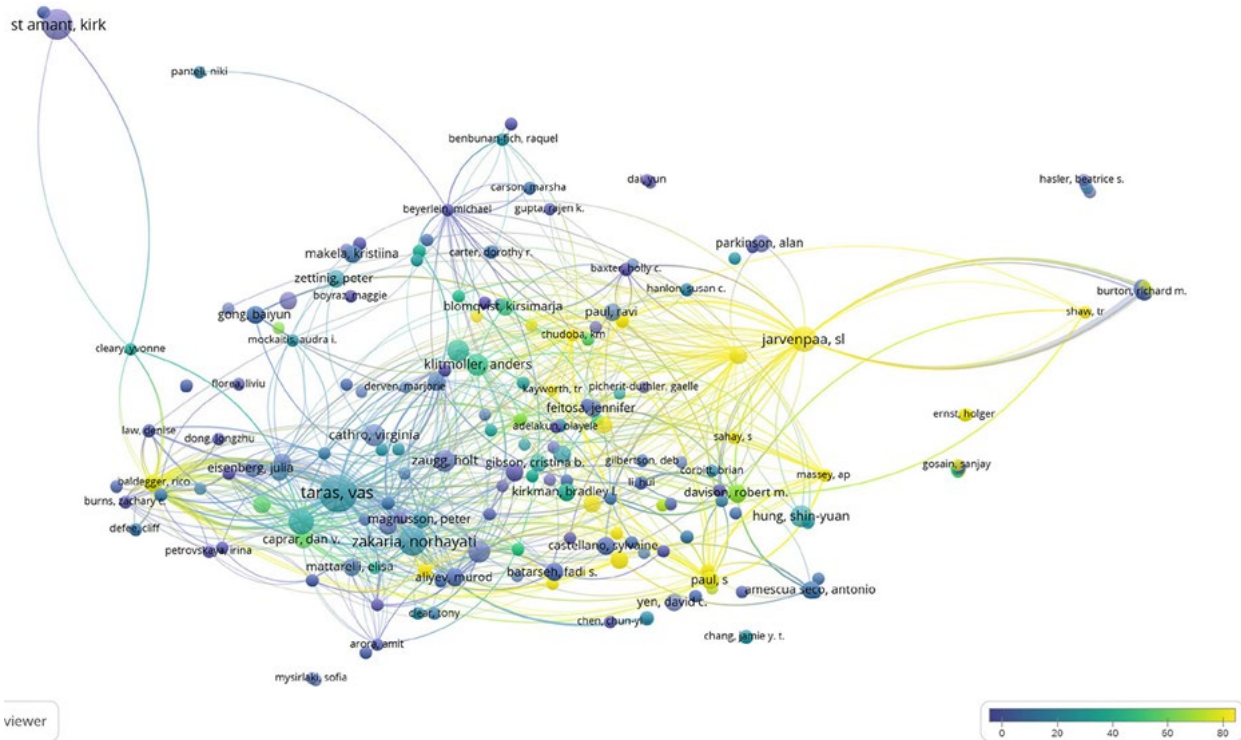


Figure 4. Citations: the author is the unit analysis (size of circles weighted for the number of published documents on WoS on the topic by the author; colour depending on the average citations on WoS of the author)

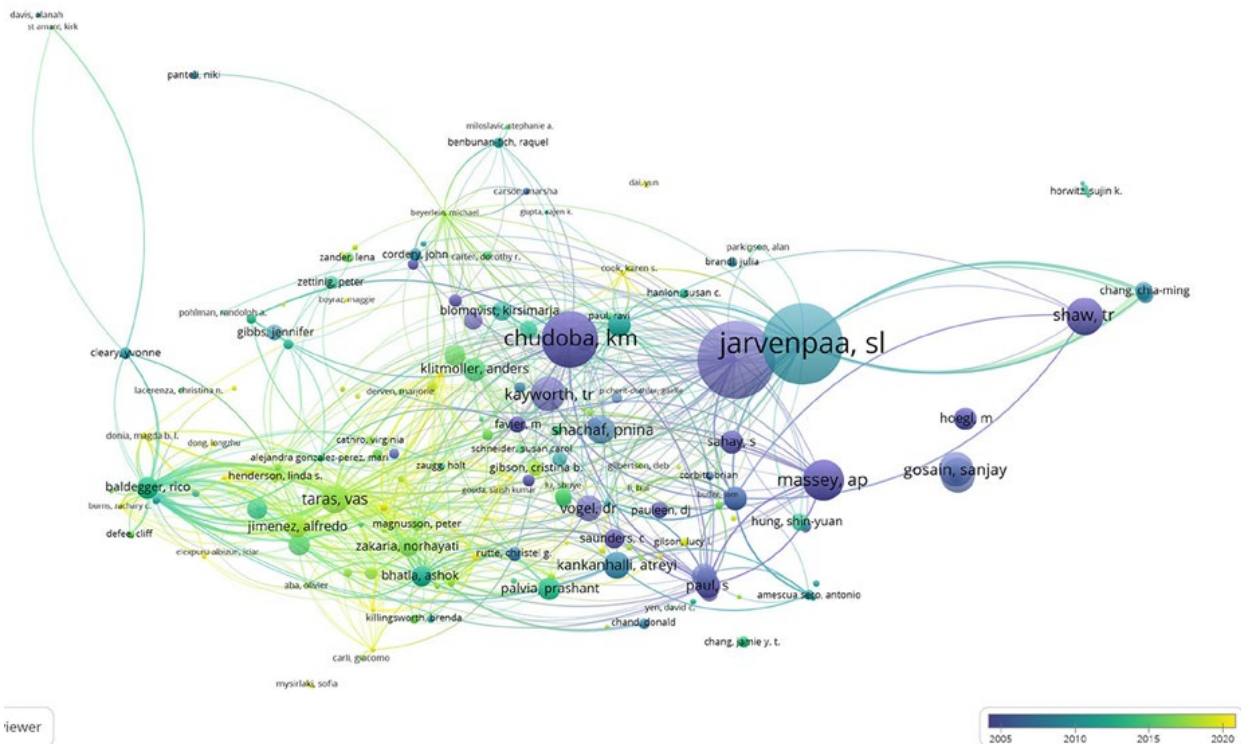


Figure 5. Citations: the author is the unit analysis (size of circles weighted for the number of citations on WoS per author on the topic; colour depending on the average publication year of articles by the author)

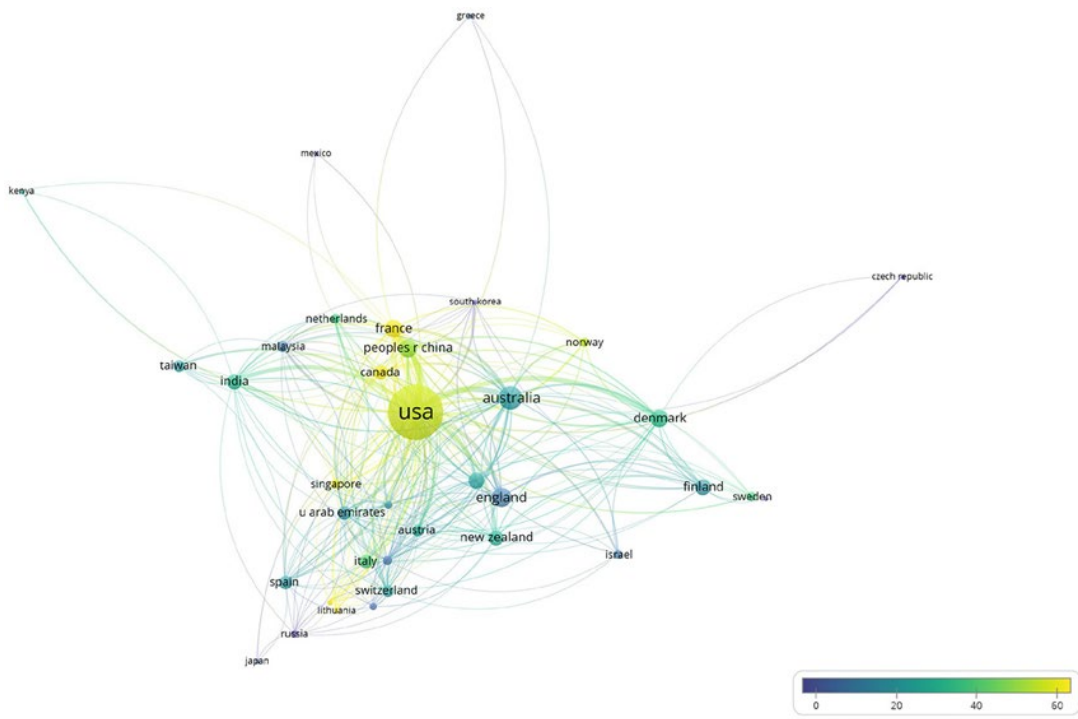


Figure 6. Citations: the country is the unit analysis (size of circles weighted for the number of documents on WoS from the country; colour depending on the average number of citations on WoS of articles from the country)

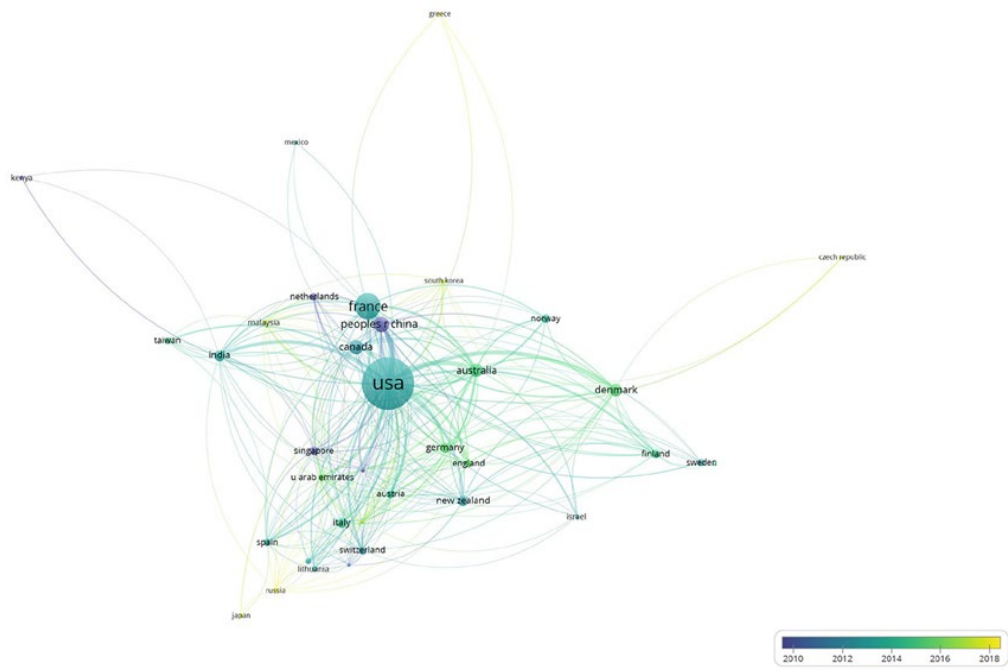


Figure 7. Citations: the country is the unit analysis (size of circles weighted for the number of cited documents on WoS from the country; colour depending on the average publication year of articles from the country)

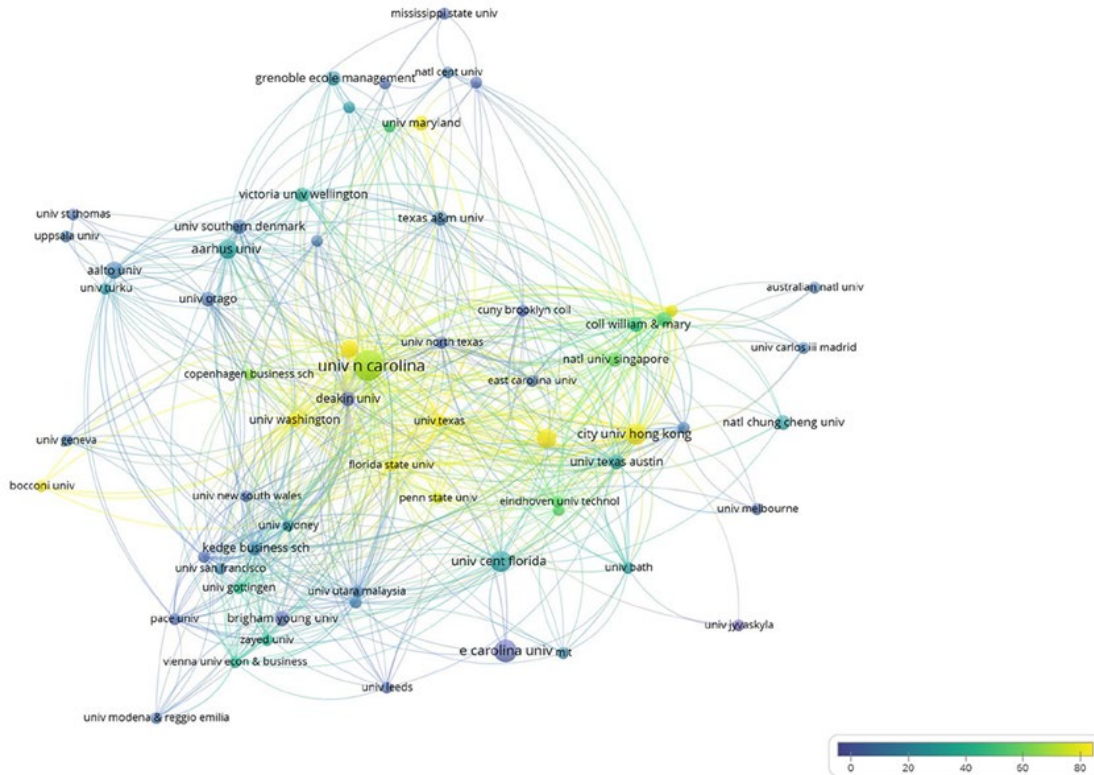


Figure 8. Citations: university is the unit analysis (size of circles weighted for the number of documents on WoS from the university; colour depending on the average citation of articles on WoS)

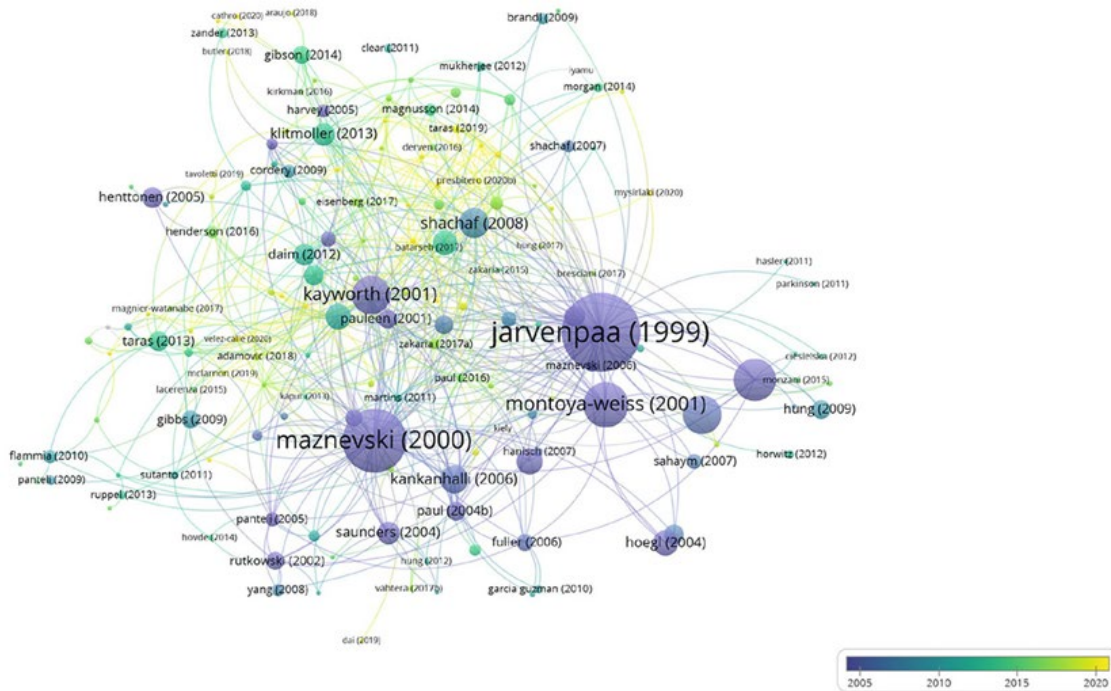


Figure 9. Citations: article is the unit analysis (size of circles weighted for the number of citations on WoS of the article; colour depending on the average publication date)

Jarvenpaa et al. (2004) (345 citations; 17 links), Stewart and Gosain (2006) (290 citations; 2 links), Kayworth and Leidner (2001) (288 citations; 24 links) and Shachaf (2008) (172 citations; 23 links). It emerges that the most cited paper was published in 1999, and it is not located at the centre of the network. A new area of more recent papers emerges, which are more linked to each other, occupying a focal point in the network but do not have as many citations as the previous articles that opened the research on this topic (the green and yellow areas in Figure 9).

They are mainly in the IB area: Jimenez et al. (2017) (25 links), Klitmøller and Lauring (2013) (22 links) and Taras et al. (2013) (14 links) are some of the most representative.

3.1.2 Co-authorship networks: authors, countries and universities. Concerning co-authorship networks, Figure 10 highlights the number of published articles by each author on the topic (size of circles) and the “average citation of each article” (as before score grows as colour shifts from deep blue to yellow, with green being the median score): two authors are at the centre of the co-authorship network with 9 (Vas Taras; 202 citations) and 4 (Alfredo Jimenez; 125 citations) articles, respectively, and an average citation per article of 22.4 and 31.25, respectively; the thick yellow network at the left side is originated by a single paper (Taras et al., 2013) having 76 citations, both of them as co-authors and 18 other co-authors (Figure 10). The co-authors with the highest link strength are Vas Taras, 48, Alfredo Jimenez, 33 and Dan Caprar, 22.

Figure 11 has the same logic, but the size of circles is weighted for the number of citations (as opposed to the number of articles that we have in Figure 10), and colours describe the average publication year of articles per co-author: the situation is unchanged with respect to Figure 10, but the less recent publication date of the highly quoted Taras et al. (2013)

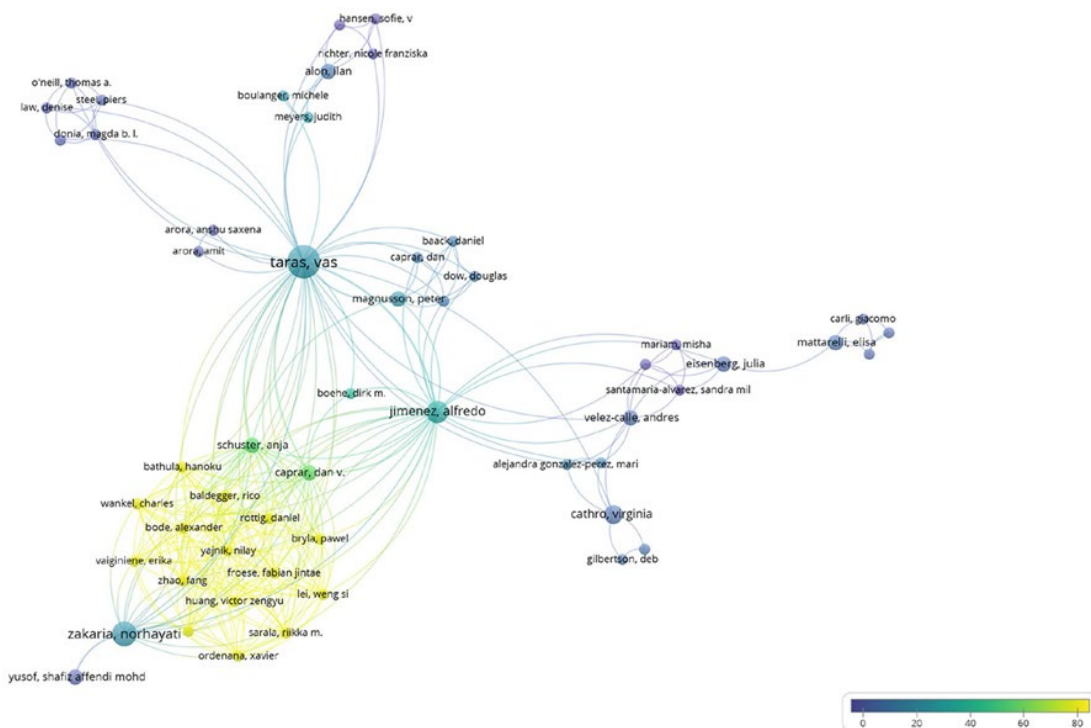


Figure 10. Co-authorship: the author is the unit analysis (size of circles weighted for the number of published articles on WoS on the topic by the author; colour depending on the average citation)

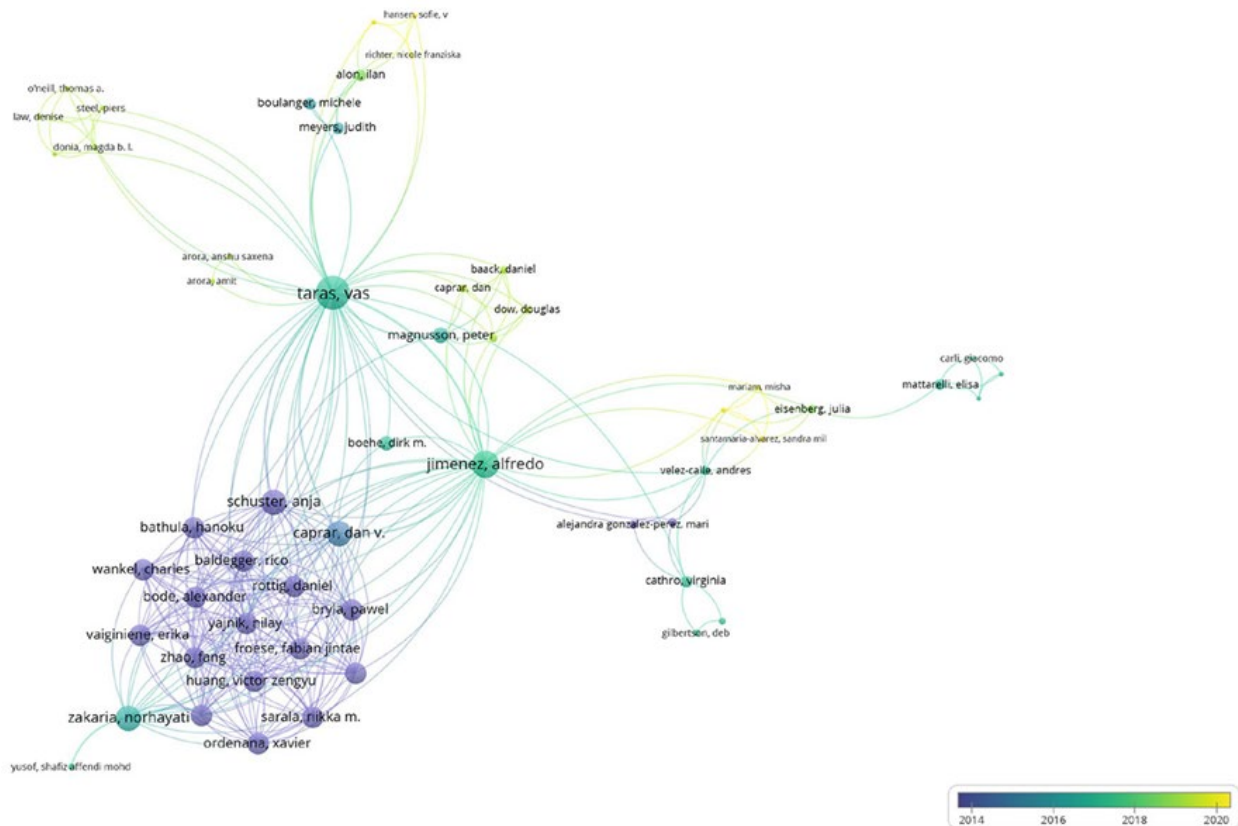


Figure 11. Co-authorship: the author is the unit analysis (size of circles weighted for the number of citations on the topic by the author; colour depending on the average publication year)

is highlighted by the different colours of the 20 co-authors cluster, shifting from yellow to blue, so as the larger size of circles in that cluster (Figure 11). If we remove Taras et al. (2013) from the analysis, because of its nature of outlier for both the number of co-authors (20) and citations, and visualize the density of co-authorship, the focal role of Vas Taras on the topic emerges even more distinctly (Figure 12).

It is important to clarify that in Figures 10–12, VOSViewer has selected the 54 most connected authors automatically among the 421 who have co-authored the 175 articles, and this is the reason why some of the most cited authors reported in Figure 5 (e.g. Jarvenpaa) are not reported in Figures 10–12: they are not reported because they are not among the 54 most connected ones in terms of co-authorships.

Regarding co-authorship and countries, Figure 13 reveals that the USA is by far the most influential country for the number of co-authored publications on the topic and scores higher than average as the average citation for publication, as reported by colours (Figure 13). Moreover, the leading role of the USA in co-authorships does not change if we map the total number of citations and the average publication year of articles from the USA (Figure 14).

Regarding co-authorship and universities, Figure 15 confirms that the University of North Carolina is the most influential university among the 272 universities (only 107 among the 272 universities are connected and mapped), with a total link strength (44) that is more than double the second university in the ranking (University of Gottingen, 21) (Figure 15).

3.1.3 Co-citation networks: authors and journals. We conducted a bibliometric co-citation analysis (Aria and Cuccurullo, 2017), counting the number of citations of authors and journals in

the 175 articles that form the object of this bibliography and not to the entire WoS database. That way, we can identify the most central and influential authors and journals in the literature that form this analysis's object.

Of the 5,073 cited authors in the references of the 175 articles, 47 meet the threshold of 20 citations, and they are reported in Figure 16. Jarvenpaa is by far the most cited author in the

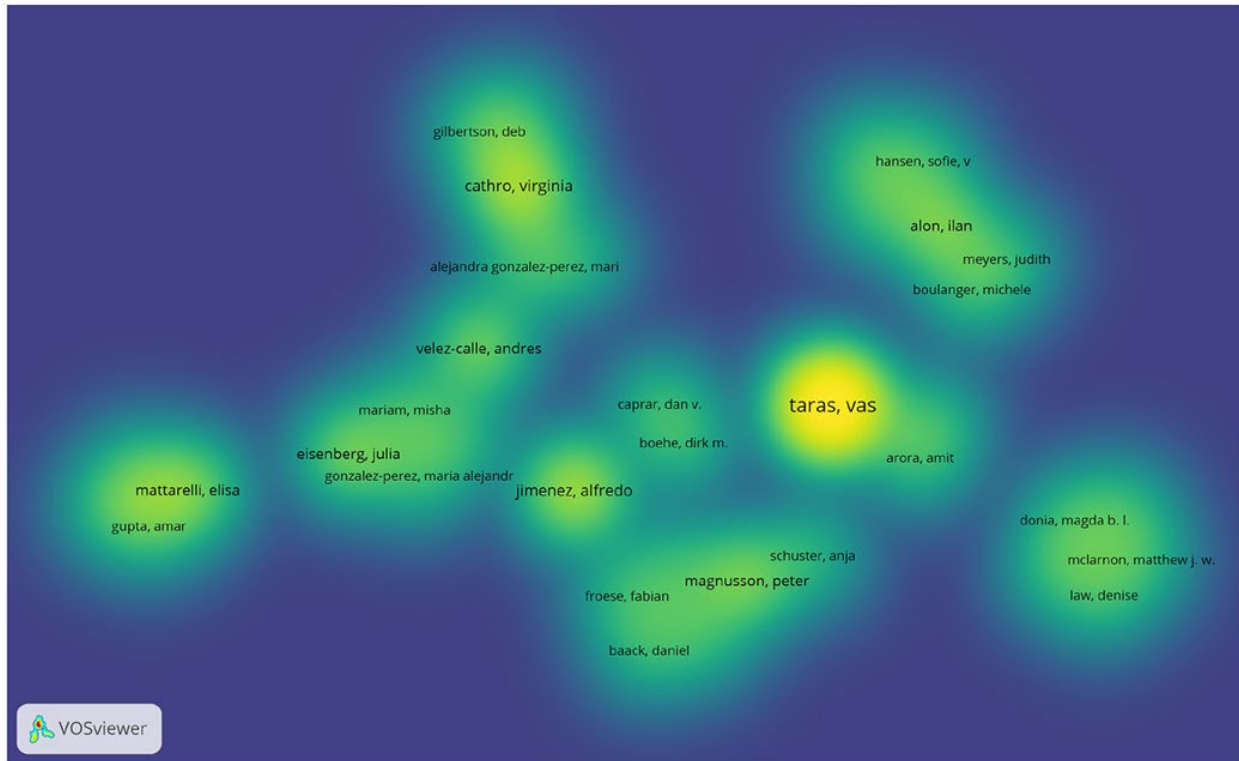


Figure 12. Co-authorship density: the author is the unit analysis (the larger the numbers of items in the neighbourhood of a point and the higher the weights of the neighbouring items, the closer the colour of the point is to yellow)

references of the 175 articles (143 citations; total link strength 1,735), followed by Gibson (93 citations; total link strength 1,439), Hofstede (75 citations; total link strength 838) and Kirkman (73 citations; total link strength 1,263). Three main clusters of co-citation emerge (Figure 16), and they are confirmed if we change the unit of analysis from authors to journals – of the 2,941 cited journals, 81 meet the threshold of 20 citations and are reported in Figure 17: general management (the blue area), information management and organization (the red area), IB and behavioural studies area (the green area). Organization science plays a connecting role between general management and information management, and it is the journal scoring the higher number of citations, followed in the managerial cluster by the Academy of Management Review and the Academy of Management Journal. MIS Quarterly and Journal of Management Information Systems are the most frequently quoted in the information management area, while the Journal of Applied Psychology, the Journal of Management and the Journal of International Business Studies are the most relevant in the IB and behavioural studies area (Figure 17).

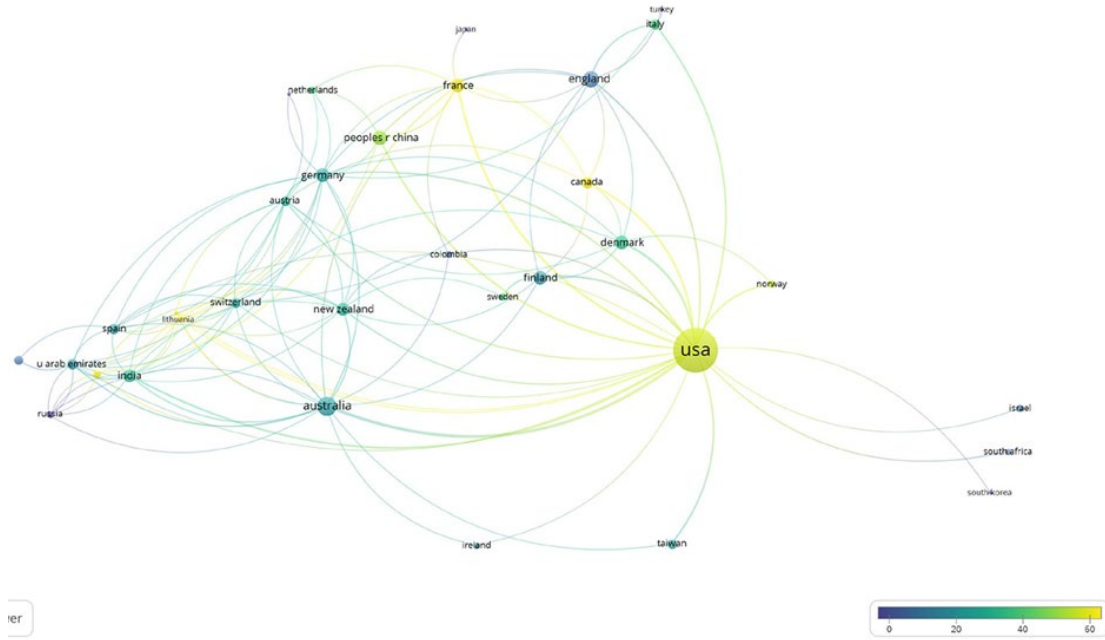


Figure 14. Co-authorship: the country is the unit analysis (size of circles weighted for the number of citations on WoS of authors affiliated to the country)

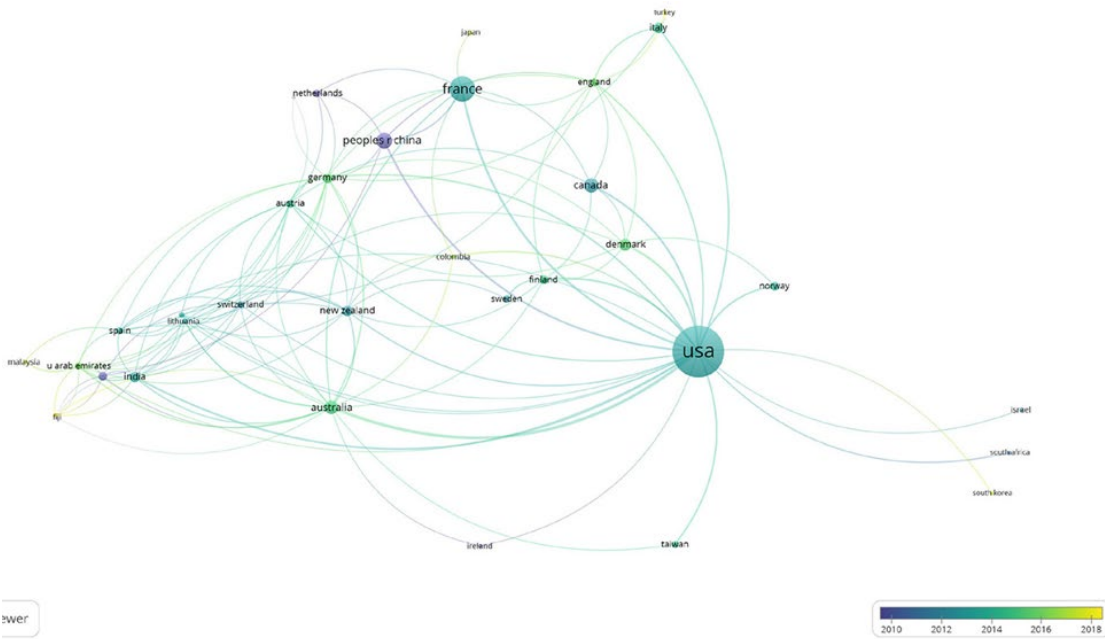


Figure 15.

Figure 14. Co-authorship: the country is the unit analysis (size of circles weighted for the number of citations on WoS of authors affiliated to the country)

3.1.4 Co-occurrence of keywords. A co-occurrence analysis of the keywords reported in the 175 articles has been conducted. Of the 787 keywords, 56 meet the thresholds of 5 occurrences: “global virtual team*” (92 occurrences; 380 total link strength”) precedes “performance” (61 occurrences; 322 total link strength), “communication” (56 occurrences; 281 total link strength), “trust” (35

occurrences; 193 total link strength), “model” (26 occurrences; 150 total link strength), “impact” (24 occurrences; 139 total link strength) and “management” (23 occurrences; 126 total link strength) (Figure 18). The clustering of keywords confirms the dominant role of management and business studies in GVTs in the WoS.

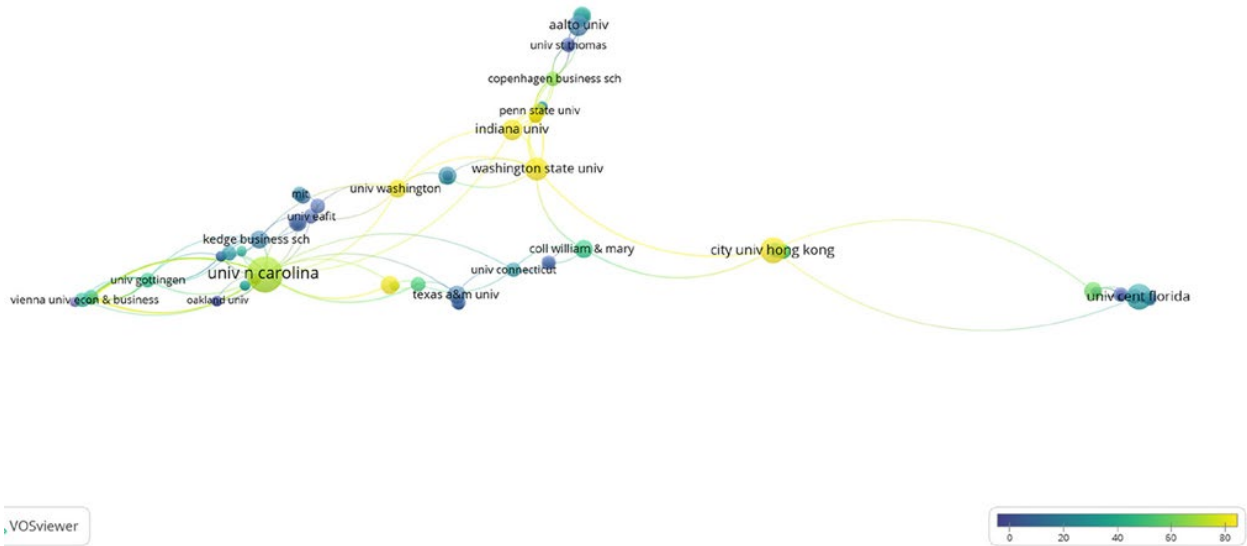


Figure 15. Co-authorship: university is the unit analysis (size of circles weighted for the number of published documents on the topic by the university; colour depending on the average citation)

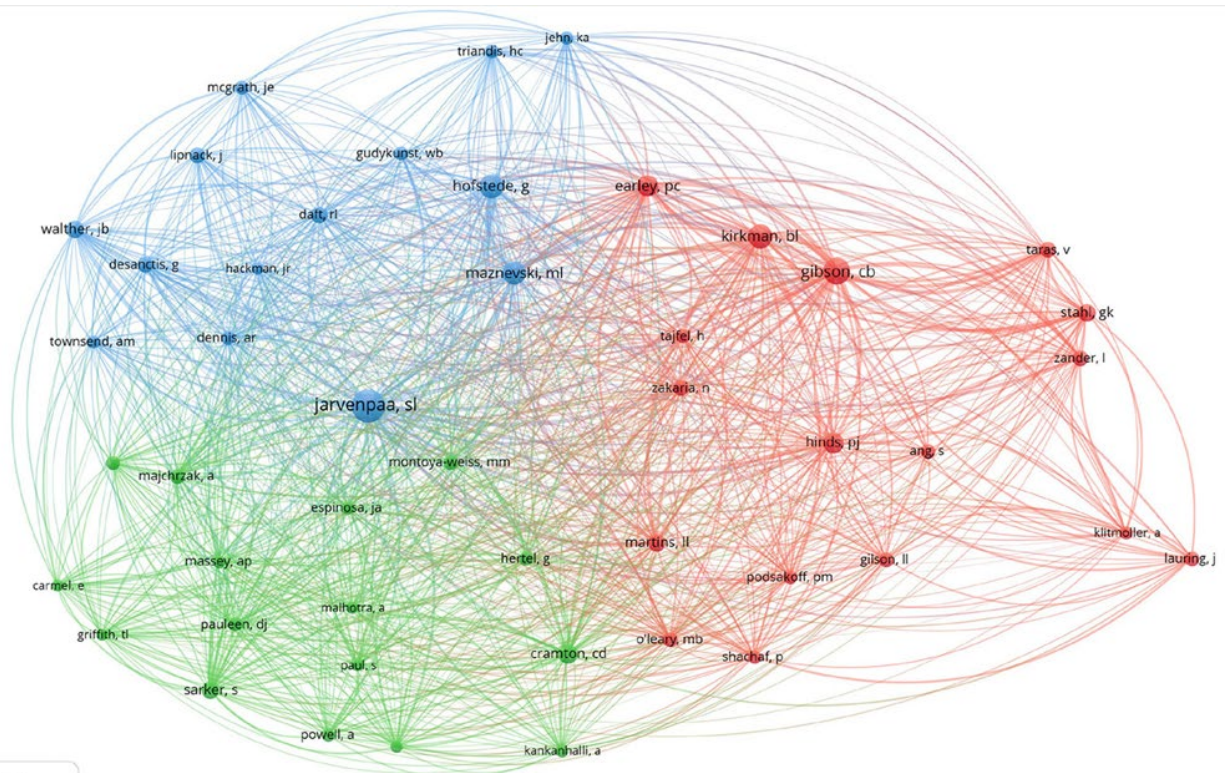


Figure 16. Co-citation: a co-citation link is a link between two items that are both cited by the same document; cited “author” is the unit analysis (size of circles is weighted for the number of citations of each author)

divided into two main research areas. One research stream primarily focused on general management studies, with many of its publications appearing in the *Academy of Management Journal*, showed that managing internal conflict and temporal coordination in virtual teams is a crucial factor in their success (Montoya-Weiss et al., 2001). The other body of literature flourished in the management information literature and was more connected to organizational studies, tackling the issues of trust and leadership in virtual communications (Jarvenpaa et al., 2004; Kayworth and Leidner, 2001; Pauleen and Yoong, 2001).

On the management information side, the most cited literature that followed focused on cultural diversity (Shachaf, 2008), ideology (Stewart and Gosain, 2006), efficacy (Fuller et al., 2006), the relation between conflict and performance (Kankanhalli et al., 2006), the role of space and time (Sarker and Sahay, 2004), trust (Sarker et al., 2011), heterogeneity and collaborative conflict (Paul et al., 2004) and application in public management (Hung et al., 2009).

On the general management and business side, GVTs maintained an organizational focus (Sahaym et al., 2007; Cordery et al., 2009) but increasingly got the attention of innovation management first (Harvey and Griffith, 2007; Daim et al., 2012), international human resource management (Harvey et al., 2005; Hardin et al., 2007; Crisp and Jarvenpaa, 2013; Gibson et al., 2014) and IB later (Saunders et al., 2004; Klitmøller and Luring, 2013), with an increasing focus on the teaching and learning side of IB (Taras et al., 2013; Magnusson et al., 2014; Jimenez et al., 2017; Arora et al., 2019; Taras et al., 2019; McLarnon et al., 2019).

When the IB focus has not been on the experiential learning or educational side, it has been mainly on social capital and identity (Vahtera et al., 2017; Eisenberg and Mattarelli, 2017), cultural intelligence (Alon et al., 2016; Presbitero, 2021), trust (Zakaria and Yusof, 2020) and communication climate (Glikson and Erez, 2020).

Directing our attention to the most recent years, the information management stream, which represented 50% of the literature 15 years ago, is less significant. The scenario is increasingly characterized by IB and organizational management, with several articles in high-impact factor journals that still have not accumulated as many citations as the articles published 10 years ago or more did. However, they promise to do so in the future because of the influence and centrality of authors or journals.

Jimenez et al. (2017) presented a critical review of GVTs knowledge in 2017, but it was neither a systematic literature review nor a bibliometry. Our contribution adds to Jimenez et al. (2017) by including the most recent literature and providing a systematic review and bibliometry. Among this most recent IB literature, we single out Velez-Calle et al. (2020), who explored the change we had with millennial GVTs, for whom cultural differences are not perceived as constraints as it was assumed in traditional IB literature. Among this most recent organizational management literature, we note Jarvenpaa and Keating (2021) on communication models, Gibson and Grushina (2021) on effectiveness, Richter et al. (2021) on cultural intelligence and Stahl and Maznevski (2021) on cultural diversity. This last one, published in the *Journal of International Business Studies* 10 years after Stahl et al. (2010), offers a retrospective of research and suggests an agenda for future research: it updates the reconciliation of conflicting past results through a theoretical framework describing how cultural diversity produces both losses and process gains in teams and specifying the contextual conditions under which diversity contributes to effective team outcomes (Stahl and Maznevski, 2021). The meta-analysis suggested that cultural diversity leads to process losses through task conflict and decreased social integration, but to process gains through increased creativity and satisfaction, effects being almost identical for different levels and types of cultural diversity, moderated by contextual influences, research design and sample

characteristics (Stahl et al., 2010). Their conclusion is that team performance is not affected directly by cultural diversity but rather indirectly, through the mediation of process variables that includes conflict, cohesion and creativity; and through the moderation of contextual influences such as the complexity of the task, team tenure and if the team geographically dispersed or co-located.

Our systematic review of the literature and the number of contributions it includes reveals that GVTs have become autonomous objects of studies that developed a new, growing, interdisciplinary field of research that consistently adopts the label and concept of GVTs. The literature on GVTs identified peculiarities and dynamics generated by combining three areas: global/international work, virtual work and teamwork. Figure 18 reveals that it includes communication, performance, trust, technology and cross-cultural issues. Figures 2 and 3 reveal that a significant portion of this literature was published in IT-oriented journals, such as the *Journal of Information Technology*. It demands new knowledge that cannot rely on previous cross-cultural studies or virtual-work or teamwork studies as they do not conjointly analyze the three dimensions and the particular work environment they generate. Our contribution provides a map for management practitioners, educators and researchers to navigate this new literature and draw new routes.

The importance of GVTs has been growing in the past two decades, and Covid-19 has accelerated the trend. Working in teams, online and globally is critical in the IB community and not anymore a marginal practice. It is essential to have an updated map of the field's most influential authors, journals and clusters, developed with a systematic method.

Limiting literature search to one database (WoS) somewhat limited the scope of our study, although WoS includes all the most important journals in the field. Of course, some second-tier journals and books might still host relevant papers, but they are not the object of this bibliometry. Another limitation of our work is linked to the nature itself of a bibliometry, which is very strong in rigour, methodology, inclusiveness, ability to identify links and clusters and the overall picture but less rich in its depth on individual articles.

5. Conclusion

The role of GVTs has been shifting progressively for the past two decades, from a very marginal and episodic form of work for IB people to an increasingly relevant one. The COVID-19 pandemic, with its lockdowns and international travel bans, further accelerated the trend. GVTs are now commonplace; thus, it was critical to map the state of this research field to systematize the knowledge on the topic we already have. Therefore, as GVTs become more ubiquitous across industries, the future research paths that the most recent literature has indicated stay open, and new ones emerge concerning the limits and sustainability of prolonged or exclusive virtual work forms (Stahl and Maznevski, 2021). As recently recognized by Stahl and Maznevski (2021) in the *Journal of International Business Studies*, the X-Culture project, which every year involves more than 1,000 GVTs in a controlled lab setting involving hundreds of business schools from every continent, represents an ideal environment to expand our knowledge about GVTs (Taras et al., 2013). Its cross-national longitudinal database is the largest globally for GVTs, and it recently shined a new light on the relationships between highly relevant and general theoretical constructs, such as the team member's academic pedigree and the team member's job performance (Taras et al., 2021), peer evaluations and team performance (Tavoletti et al., 2019), peer evaluations and

individual efforts (Román-Calderón et al., 2021), cultural intelligence and performance (Richter et al., 2021) and team charters and performance (Johnson et al., 2021).

Most recently, international tensions and nationalism are on the rise, and so is immigration induced by climatic changes and the number of refugees. In addition, we know from the early literature that trust-building is a critical issue for GVTs (Jarvenpaa and Leidner, 1999), which further increases national and cultural prejudice and makes research on GVTs even more critical, both as a response to the crisis and as an opportunity to develop global competencies efficiently (Crowne, 2020).

In GVTs, the tension between diversity richness and better creativity on one side and cultural uniformity/cohesiveness and process gains on the other has never been more relevant (Stahl et al., 2010). It would be a disservice to both science and practice to overestimate only one side of the coin: the overwhelming literature on the “dark side” of cultural differences about difficulties, costs and risks produced by cultural barriers (Stahl and Tung, 2015) – or the “bright side” of boosted creativity, leveraging on the well-established causal link between cultural diversity and creativity (Wang et al., 2019).

The new research challenge is to provide frameworks and hints to form and manage GVTs that can combine both process advantage and the level of creativity needed in a global economy. The X-Culture project has been the largest living lab for GVTs theoretical developments in IB (Stahl and Maznevski, 2021, p. 12), but other contributions are expected from other research settings, both in business practice and business education.

Part of the GVTs debate but beyond GVTs, and still not explored, is the impact of GVTs on the firm performance and business model innovation at a time of profound digital transformation (Tavoletti et al., 2021). Because of COVID-19, multinational enterprises are in doubt about the optimal mix of home and office work (Megahed and Ghoneim, 2020) and its impact of GVTs on a firm’s performance. Therefore, we look forward to more business research, linking the micro level of GVTs to the meso level of firms, and extending the vast literature about GVTs’ performance to the overall impact on a firm’s performance.

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