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Ethnographic studies in Information Science: bibliometric analysis in the Web of Science database

Estudos etnográficos na ciência da informação: análise bibliométrica na base de dados Web of Science

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Abstract

Ethnography has been recognized as a valuable methodological resource in Information Science research. In this study, we describe Information Science scientific articles on ethnography – and others that use ethnographic methodologies – indexed in the Web of Science database. Bibliometric research found 803 articles indexed in the database's Core Collection, covering the period from 1979 to 2020. The analysis of these articles shows that 2016 concentrates the highest number of publications (65), and points to Michael D. Myers as the most productive and most cited author in WoS. Among the 15 most productive institutions with research on this topic, the University of Toronto stands out with slightly more than half of the total number of articles. Moreover, the Health Sciences stand out with articles focused on management and information systems. This study thus contributes to understanding the difficulties of research in this field, which result from the transformations and obstacles common to the various ethnographic research approaches and its emerging nature in Information Science.

Keywords: Bibliometrics. Ethnographic studies. Information Science. Scientific Production.

Resumo

A etnografia tem sido adotada como recurso metodológico nas pesquisas do campo da Ciência da Informação e digna de reconhecimento como forma metodológica aplicada nesse domínio. Neste artigo, o conjunto dos artigos científicos sobre etnografia ou adeptos de seus procedimentos metodológicos na Ciência da Informação, indexados na base de dados Web of Science, são caracterizados. Após uma pesquisa bibliométrica, 803 artigos indexados na Core Collection da referida base de dados são analisados, abarcando o período de 1979 a 2020. O ano 2016 é o de maior concentração, com um total de 65 artigos, e Michael D. Myers é o autor mais produtivo e que apresenta artigos mais citados na base. Dentre as 15 instituições mais produtivas na temática na WoS, a University of Toronto destaca-se com pouco mais da metade dos artigos analisados. O campo da Saúde, com artigos focados em gestão e sistemas de informação, também se sobressai.

Este estudo contribui para a compreensão das dificuldades presentes nas pesquisas da área, como resultado das transformações e obstáculos comuns a pesquisas etnográficas em suas diversas modalidades, assim como seu caráter incipiente na área da Ciência da Informação.

Palavras-chave: Bibliometria. Estudos etnográficos. Ciência da Informação. Produção científica.

Introduction and Theoretical Background

Ethnography is increasingly being adopted as a methodological resource in Information Science (IS) research. To acknowledge it as a methodology of scientific practice in this domain, it is important to analyze its characteristics and values from a critical perspective, looking at its applicability and usage in scientific production. In addition, ethnography has been deemed a crucial study subject in IS because it reaches social science domains that go beyond the study of isolated facts.

The analysis of the scientific production and use of ethnography as a research modality was motivated by disciplinary discussions on ethnographic studies – whose emergence within IS ensues usages and debates of different natures. We seek to understand the distribution of scientific production within IS over the 1979-2020 period in the Web of Science (WoS) database, chosen for its relevance in the field of Social Sciences; which are the most representative authors and institutions in this database and how they stand in terms of scientific collaboration (co-authorship among authors, institutions, and countries), and also what the citation indexes show, such as the distribution of the annual average article citation over the years and the citation impact of the authors highlighted in the corpus. Therefore, from a bibliometric perspective, we aim to characterize the IS scientific articles indexed in the WoS database that address ethnography or apply its methodological procedures.

Ethnography is recognized for contributing to the study of multicultural contexts and is an emerging perspective in IS through the concept of information culture. Its development as a theoretical and methodological domain requires anthropological values and tools that align with the various interdisciplinary areas of the Information scientific field (Bufrem; Santos, 2009). Influenced by structuralism, it extends into the social sciences, aiming to go beyond the study of isolated facts while avoiding reducing them to a subjective construction.

When Mattos (2011, p. 53) defines ethnography as “[...] a part or an integral discipline of ethnology” – which was developed in the late nineteenth and early twentieth centuries, that is, before anthropology’s emergence as a research field – she conceives it as a form of describing the material culture of peoples, engaging in the observation of their ways of life. The first ethnographic records, for instance, were found in traveling books that described exotic societies, such as the journals of naturalists.

In this sense, ethnography seems to precede the emergence of anthropology, indicating a historical inversion, that is, an autonomous movement of a methodology that foreshadows a field or discipline. Therefore, as a scientific analytical perspective, ethnography significantly contributes to Social Sciences research, particularly regarding Information Science.

Regarding the emergence of this domain in the early nineteenth century, German physician, naturalist, and anthropologist Johann Friedrich Blumenbach, who studied the morphology of human groups based on comparative anatomy, stands out for being one of the first to research humans from a Natural History perspective.

However, given its origin as a descriptive method of registering the material culture of a particular social group or population (etymologically, *ethno* denotes “nation” or “people”, and *graphein*, “to write”), the practice of ethnography, according to Geertz (2008, p. 15), is a way of analyzing observable relations, foreseeing the selection of informants, transcription of texts, genealogy analysis, and field mapping, as well as the holding of instruments such as diaries. Nevertheless, these characteristics, techniques, and procedures do not define the enterprise but the kind of intellectual effort it represents. In view of the discussions on the role of ethnography as a research modality in IS, Geertz’s (2008) standpoint on what it means to do ethnography is a counterpoint worth mentioning. To this author, “doing ethnography is establishing rapport, selecting informants, transcribing texts, taking genealogies, mapping fields, keeping a diary, and so on” (Geertz, 2008, p. 4). His works, whose ethnographic methodology has guided the qualitative, visual, audio, and written recording procedures of culture, were responsible for disseminating the term.

In the analysis of Bourdieu’s first ethnographic registers, we can see how they established a reflexive way of doing sociology, simultaneously influencing the construction of the “cultural capital” concept and an innovative epistemological and political perception (Bourdieu, 1963). The Kabilia experience allowed him to associate ethnology and sociology in studies about symbolic domination as an element of struggle between subjects in different fields and from different social positions.

These and other reflections found in Polivanov (2013) and complemented by Corrêa and Rozados (2017) fostered questions about IS’ theoretical and practical appropriations of ethnography. For instance, ethnographic techniques have been appropriated in research done on and through the Internet. Although Polivanov (2013) problematizes concepts such as “virtual ethnography” and “netnography”, used to distinguish between on and offline research methods, she stresses the specificities of computer-mediated communication when it comes to the interaction and languages in research both on the internet and off it. In other words, as some of the author’s concepts suggest, research taking place in environments that should no longer be addressed as non-places or in terms of real versus virtual.

Corrêa and Rozados (2017), in turn, discuss the application of netnography in IS research, describing its origins, methodological steps and possible fields of studies, as well as its characteristics and differences in relation to traditional ethnography and the first studies developed in Brazil. The authors analyzed six empirical studies that applied netnography, comparing their methodological procedures with the recommendations proposed in recent theoretical studies on the netnographic method. The study provides suggestions to researchers on defining a field of study, data treatment, and selecting relevant IS research topics.

A study by Pérez Martínez, Alcará and Monteiro (2019) on the relevance and application of ethnography in IS, particularly in the cyberspace, uses literature and document search to describe the main elements of ethnography. According to their results, the Brazilian scientific production using ethnography in IS is scarce. It occurs notably in cyberspace studies, given its recognized potential as a method that can be applied to different virtual environments and to understand cultural processes. These spaces are environments of social interaction that allow the development of new research to learn about ways of collaborating and sharing knowledge and information.

The path from ethnography to netnography is apparently simple, as if, as a natural result of advances in technology, there would be a push for transformations in methodologies for the study of material cultures in a given social group or population.

Yet, we may question whether a transformation has occurred in “traditional” ethnography, whose formal origins are attributed to Anthropology, or ethnography itself, to the extent of

mischaracterizing its inherent qualities. In the first case, as Corrêa and Rozados (2017) argue, the possibilities of traditional ethnography would have expanded by allowing the study of objects, phenomena, and cultures that constantly emerge in the cyberspace from the development and social appropriation of Information and Communication Technologies (ICTs). The issue, however, is whether or not it is relevant to identify this type of appropriation through ethnographic studies in their original sense.

Nunes, Carneiro and Silva (2019) developed a bibliographic research in which they indicate the contributions of ethnography to IS. They understand ethnography as a methodological path capable of understanding the individual's active role in being informed. The authors conclude that "[...] issues concerning subjectivities, behaviors, information practices, and actions developed daily by the subjects [...] can be effectively contemplated". Consequently, there is a "[...] greater inclusion of Information Science in the research context of the Social Sciences to expand the modes of approaching information as a research object" (Nunes; Carneiro; Silva, 2019, p. 24).

The discussion brought up by this contextualization aims to characterize the IS scientific articles on ethnography – or those that use it to achieve their research goals – amongst the scientific production in IS indexed in the *Core Collection* of the WoS platform in Library and Information Science field. To contemplate their characteristics and main aspects, we intend to take a critical stance both on its substantive character and on its applicability and modes of use.

Our study proposal specifically focuses on analyzing the scientific production distribution between 1979 and 2020; identifying the most relevant authors, as well as the evolution of their production in the domain; establishing the relationships between their production and their institutional and geographic affiliations; exposing the collaboration network by co-authorship among the most prominent authors; identifying the impact index of the most cited authors and the articles' annual average citations.

The following section describes the methodology used in this study. Subsequently, we present, discuss, and analyze the results. Then, we present the final considerations and the list of references.

Methodological Procedures

This descriptive study is based on a bibliometric analysis of a corpus of 803 articles indexed in the *Core Collection* of the WoS platform (WoS/Clarivate Analytics), which comprises the Science Citation Index Expanded (SCIE), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (AHCI), and Emerging Sources Citation Index (ESCI).

We first analyzed the databases Web of Science (Wos - Clarivate Analytics) and Scopus (Elsevier), both multidisciplinary indexing databases that are worldwide recognized for scientific research and which are reference in the context of bibliometric studies. However, we selected Web of Science due to its research fields categorization, which allowed the thematic delimitation, precisely by Library and Information Science area in the search strategy, since both databases (Scopus and WOS) present results with a high degree of research overlap.

The search was carried out on March 18, 2021, using the *Topic Subject* (TS) search box, encompassing titles, keywords, abstracts, taxonomic, systematic, and descriptor search boxes. Our strategy was to use the descriptor ethnograph* and limit the document typology to scientific articles and articles published before 2021. Thus, the scientific production included was published between 1979 and 2020. The year 1979 was the first year of publication of the documents from de

corpus retrieved from Web of Science. The criterion used to delimit the analysis domain was that the publication should be indexed in the Library and Information Science field.

We used the Bibliometrix package (Aria; Cuccurullo, 2017) of the R Software version 4.0.3 (R Core Team, 2020) for data filter, organization, analysis and visualization and Microsoft Excel software to reorganize and generate the rankings.

The data were collected from the WoS platform in textual format, in txt extension. All the bibliographic information about each register was collected, for example, author, title, source, volume, issue, year of publication, institution, country, keywords, abstracts, references, DOIs. This set of txt documents was imported into the Bibliometrix package (Aria; Cuccurullo, 2017) of the R Software version 4.0.3 (R Core Team, 2020) for data cleaning and organization. A function in the Bibliometrix package allows you to treat documents to disambiguate authors and institutions and eliminate duplications. Soon after, the Bibliometrix generated a spreadsheet in Microsoft Excel, extension .xls with the fields of analysis, which can be downloaded for better data organization and rankings generation. For graphical representation of network, the Biblio Analysis function from the Bibliometrix R package (Aria; Cuccurullo 2017) and the Microsoft Excel for the graphics were used.

In the next section, we characterize the ethnography domain in IS through productivity indicators, addressing the diachronic distribution of scientific periodical production, the authors, institutions, and countries that stand out in the analysis corpus, as well as the authors' production over time. We will also present indicators of scientific collaboration in co-authorship between authors and between countries. Lastly, we will look at citation indexes, which comprise the distribution of the average annual citation of the articles over the years and the citation impact of the authors highlighted in the corpus. We believe that characterizing scientific production, based on the aforementioned points of analysis, may contribute to a better understanding of the transformations and appropriations that have taken place in this domain in terms of authorial, institutional, and geographical aspects, as well as on the impact and visibility of these appropriations in the academic sphere.

Analysis and results

Regarding the distribution of the articles, the upward trend of scientific production over the years started in 1979, with only one publication, and reached its peak in 2016, with 65 publications. In the last five years, the amount of articles published on this topic has declined, as there have been 52 articles published in 2020 (Figure 1).

The results show the notable performance of Michael D. Myers, professor of Information Systems and Operations Management at the University of Auckland's Department of Management Science and Information Systems, ranked 13th among the 30 most productive institutions on the topic (Figure 2).

Kirsty Williamson is a Senior Research Fellow at Monash University and Charles Sturt University, in Australia, and ranks as the second most productive author (Figure 2). She has been involved in qualitative data analysis from a wide variety of approaches.

Jenna Hartel, Associate Professor at the University of Toronto's Faculty of Information, is close behind and appears as the third most productive researcher (Figure 2) for her scientific production in the field of IS, particularly in relation to information behavior⁴. This approach

⁴ Researcher Jenna Hartel's website: <http://www.jennahartel.info/>.

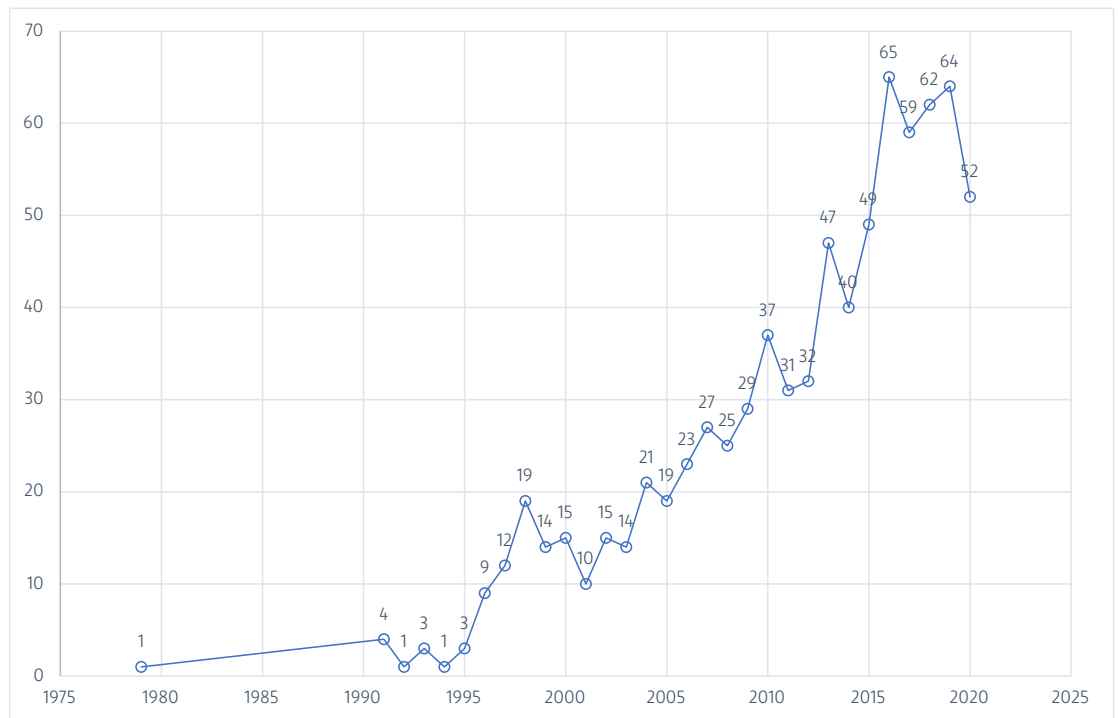


Figure 1 – Distribution of scientific production on ethnography within Information Science over the years in the Web of Science database.

Source: The authors (2021).

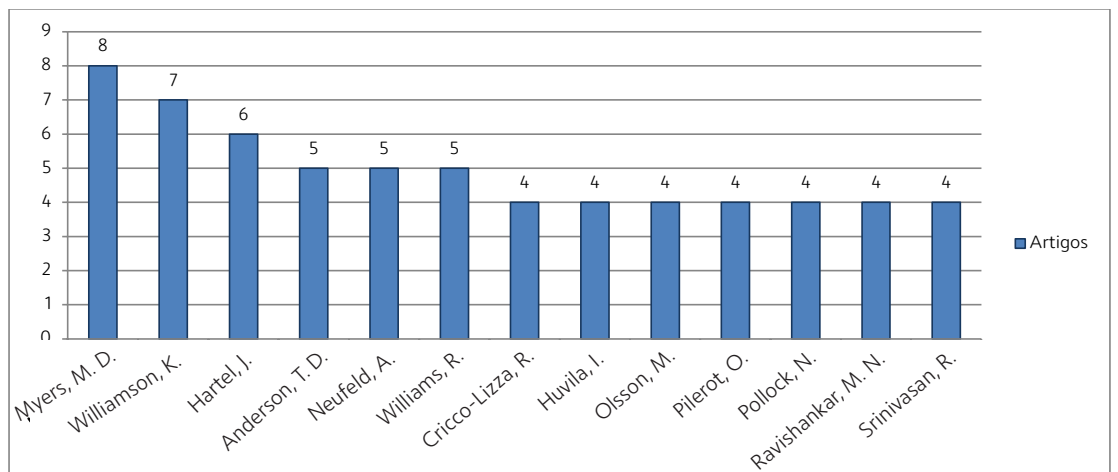


Figure 2 – Most productive authors in the Web of Science database by number of published articles.

Source: The authors (2021).

represents a convergence to the themes of Sociology with the aim of understanding and explaining the phenomena, structures, and development of social realities. This remark also shows the relevance of disciplinary groups and their communal discourses, which require sociological methods of investigation (Hjørland; Hartel, 2003). From these interests, Hartel deepens her studies on the ontological, epistemological, and sociological dimensions of domains without straying from her ethnographic investigations. She and her research group developed in 12 countries a project

entitled iSquare1, which applies the *arts-informed* method, visual research, and drawing and writing techniques to explore graduate students' visual conceptions of the notion of information (Hartel, 2014). Based on Anthropology and Sociology studies, this methodology uses images as an alternative or complement to research with words or numbers. In the iSquare [and kSquare] protocol, images are taken as data produced by the participants, and the modes of interpretation or representation converge on them (Hartel, 2014).

Figure 3 shows the evolution of the authors' production in the domain, allowing us to see when the authors first entered the field and how long they stayed there. The size of the circles indicates the number of papers published by each author, while the intensity of the circles' color indicates the number of citations to these papers. Myers is prominently featured as the author with the longest presence, having also the most cited study of 1999 and a production peak in 2015.

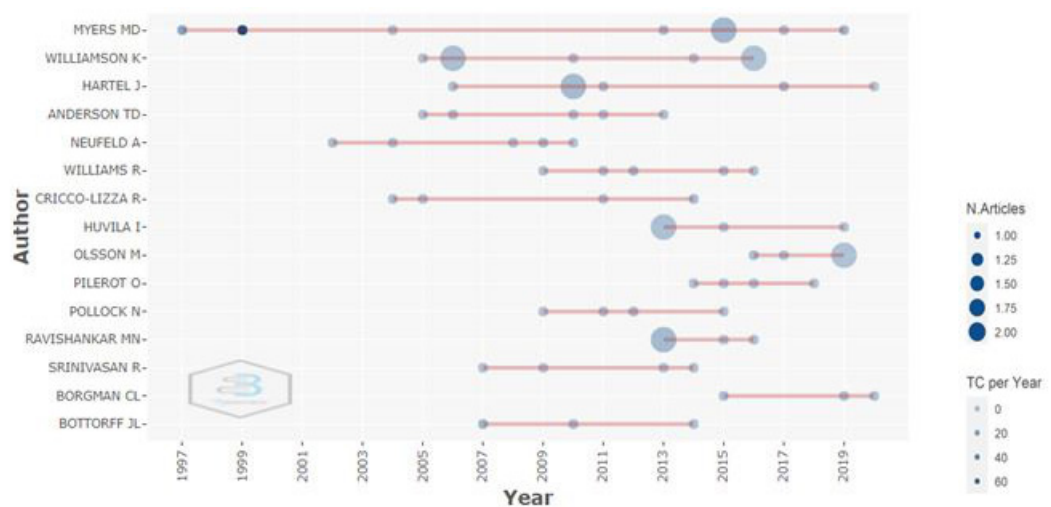


Figure 3 – Distribution of the most productive authors' publications over time.

Source: The authors (2021). (Biblio Analysis - authors production over the time, Bibliometrix).

Myers also stands out for the duration of his career in the field (Figure 3) and for being the most cited among the authors in the corpus, which is sorted by number of citations in descending order (Figure 6). As a proponent of ethnographic research, he argues that it is one of the most thorough methods due to the required fieldwork and the possibility of a deeper understanding of people and in a broader context. This provides to the ethnographer rich insights into human, social, and organizational aspects, especially relevant for IS researchers. His production has mainly focused on digital transformations in relation to the social and cultural aspects that stem from them.

Among the 15 most productive institutions in WoS, the University of Toronto stands out with slightly over half the articles in the corpus.

The University of Toronto, one of Canada's most traditional universities, is a public university founded in 1827 by royal charter under the name King's College, the first higher education institution in Canada⁵. One of its main research centers is the Centre for Ethnography, created in 2007. Since then, it has been promoting ethnographic studies from which derive significant specialized scientific

⁵ University of Toronto's website: <https://www.utoronto.ca/>

production. In addition, the University promotes various events such as international lectures and workshops.

The University of Alberta, in turn, is located in Edmonton and is the largest and one of the most recognized higher education institutions in the Canadian province of Alberta. The University appears as the second most productive in Figure 4 and harbors studies by archaeologists and biological anthropologists dedicated to exploring the history of human diversity through archaeological records. Cultural and linguistic anthropologists combine philosophical questions with in-depth ethnographic research to explore the diversity of contemporary societies. In this sense, they contribute to the breadth of studies in anthropology, which is described as the most humanistic of the sciences and, furthermore, the most scientific of the humanities (Kroeber, 1916)

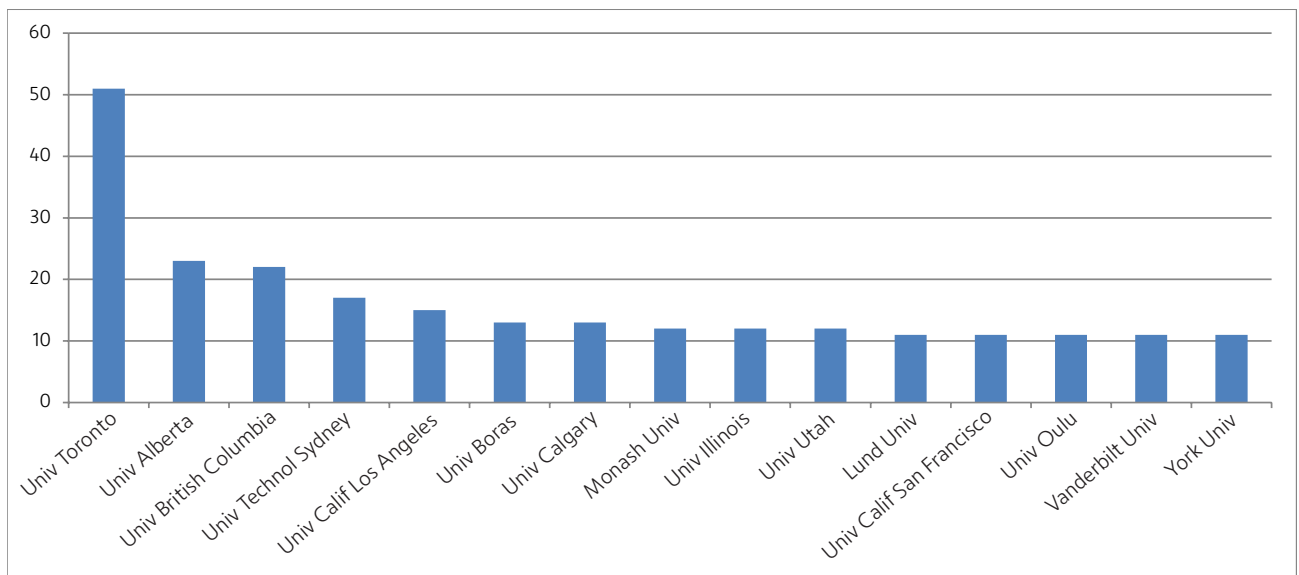


Figure 4 – Most productive institutions on the topic (starting from 11 articles). Data based on institutional affiliation of the authors.
Source: The authors (2021).

The third most cited university in the corpus is the University of British Columbia (UBC), ranked among the world's top twenty public universities. Since 1915, UBC has been one of the world's leading institutions dedicated to teaching, graduate studies, and research. Its two main campuses are located in Vancouver and the Okanagan, in Canada, and attract more than 65,000 students from over 140 countries around the world.

Despite Canada's prominence, as all three of the most productive institutions come from this country, it ranks second among the most productive countries. Figure 5 shows that the United States is the most productive country, as their published articles are distributed among many higher education institutions.

Figure 5 also reveals a trend toward a predominance of studies engaged in purely national (within the country) partnerships – represented in blue – to the detriment of partnerships with other countries – represented in red. Canada has a higher percentage of cross-country collaboration (13%) than the United States (8%). On the other hand, among the ten most productive countries, Norway is the one that shows the highest rate of collaboration with other countries (40%), followed

by China (28%), the United Kingdom (22%), France (21%), and Australia (17.6%). This percentage of collaboration is based on the total number of articles with the respective country's mailing address.

In Figure 5, the countries' frequency of international collaboration (with other countries) are shown in the red bars.

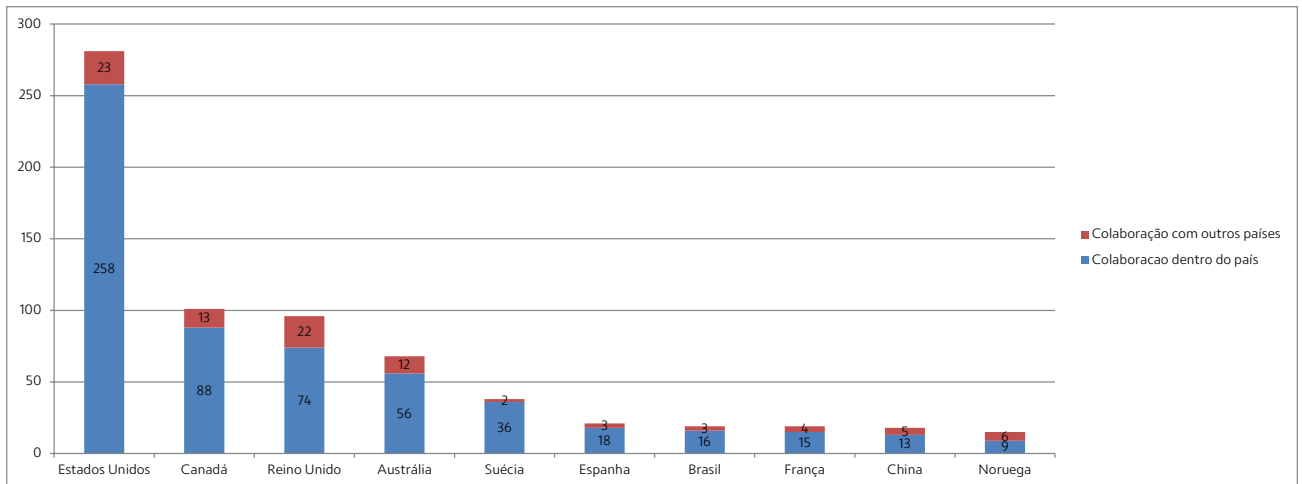


Figure 5 – Type of collaboration for the most productive countries on the topic. Data based on the authors' mailing address. Source: The authors (2021).

Figure 6 highlights the top five most cited authors, given the variation in the number of citations and their respective h-indexes: Michael D. Myers (31), Heinz K. Klein (16), Susan Leigh Star (16), Karen Ruhleder (6), and Margarete Sandelowski (50).

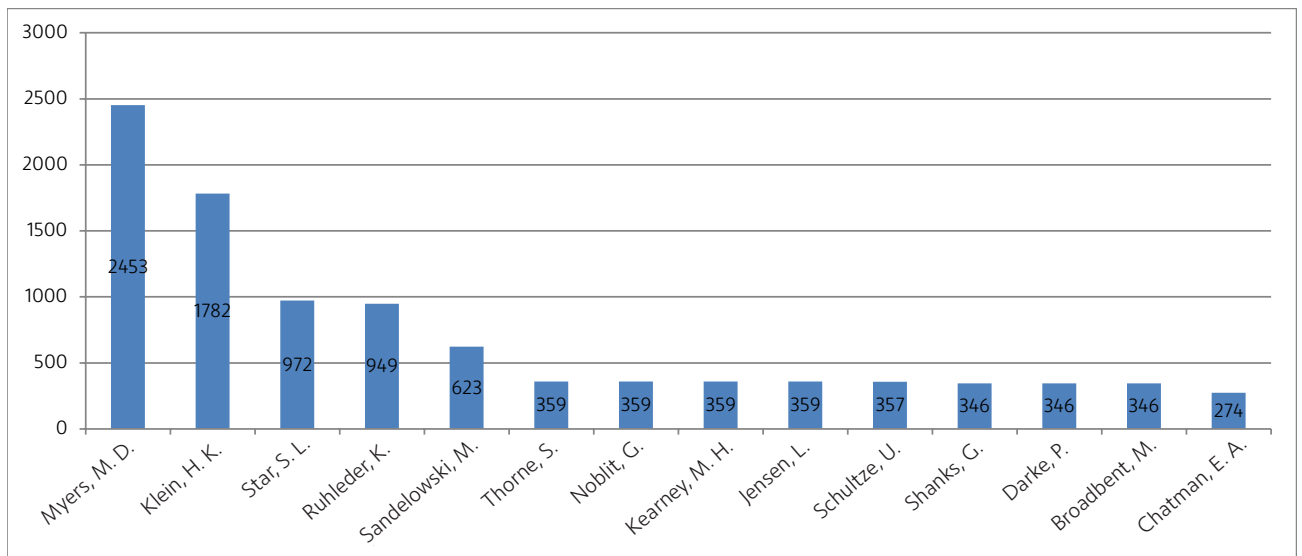


Figure 6 – Most cited authors in the corpus sorted by the number of citations received in Web of Science, in descending order. Source: The authors (2021).

Figure 7 represents the average number of citations per year of the articles in the corpus, with peaks in 1996 and 1999. Still in relation to Figure 7, disregarding the peak years of highly cited articles, the years related to citations can be divided into three periods, the first (2002-2009) is the

most stable citation period, oscillating in values from 2.0 to 3.0, the second period (2010-2013) the average dropped below 2.0 to above 1.5, and the third (2015-2020) the citations declined, oscillating between 0 to 1.0, except for the peak of 2014 to 3.0, showing that studies on the subject have become less cited in recent years.

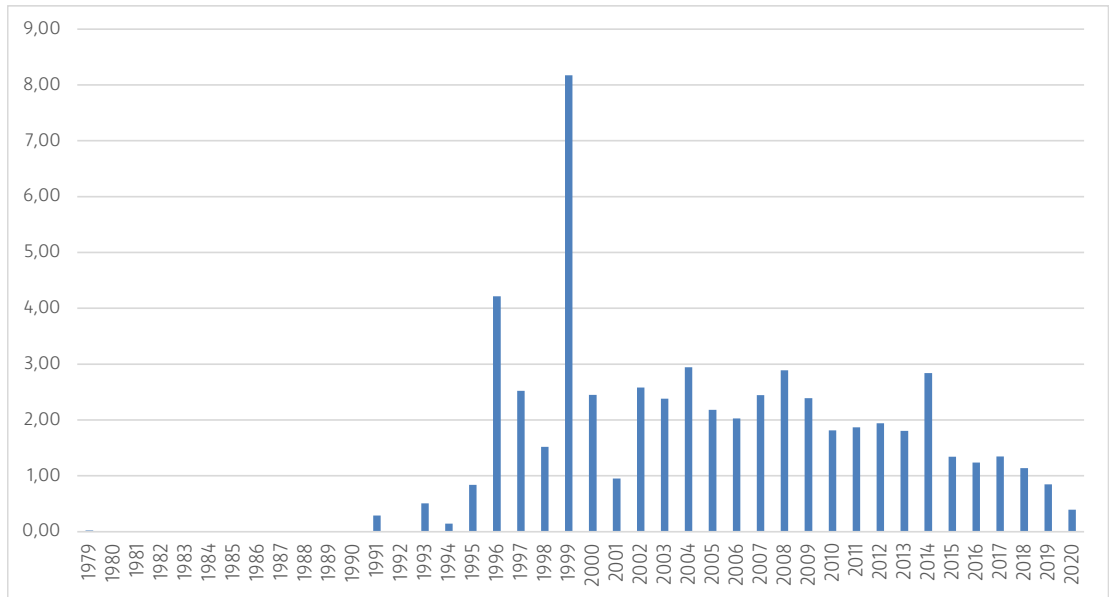


Figure 7 - Average number of citations per year of the articles in the corpus.

Source: The authors (2021). (Biblio analysis - average citation per year, Bibliometrix).

It is also important to describe the relationships between the authors who comprise the analysis corpus. Pollock N with Williams R stands out, as does Borgman CL with Golshan MS. Myers, as shown, is one of the most productive authors but establishes no more than three relationships with other authors. Nevertheless, his article *A set of principles for conducting and evaluating interpretive field studies in Information Systems*, published in 1999, has the highest number of citations (1,782). Another article of his, entitled *Qualitative Research in Information Systems*, was published in 1997 and has many citations (491). As for 1996, the article by Susan Leigh Star and Karen Ruhleder entitled *Steps Towards on Ecology of Infrastructure: design and access for large information spaces* stands out as the second most cited article in the corpus (949), thus raising the annual average of citations for that year.

Neil Pollock is Professor of Innovation and Social Informatics at the University of Edinburgh, in Scotland (UK), and has conducted research in several domains with Robin Williams of the Institute for the Study of Science, Technology and Innovation at the University of Edinburgh, High School Yards, particularly on large-scale, long-term information systems with multiple users and uses. These electronic infrastructures, whose complexity has been proportional to their spread, have allowed effective information sharing and, according to a conception shared by the authors, is enriched by the coordination of activities among diverse and dispersed groups. These findings converge to the optimistic perception of Pérez Martínez, Alcará and Monteiro (2019) about the possibility of applying ethnography to virtual environments such as the internet, the web, video games and new emerging applications in daily life. Thus, it is proven as a way to understand

cultural processes and accomplishments, information mediation, and knowledge representation, contributing to the construction of scientific knowledge and the emergence of innovative ways to study the determining phenomena towards the understanding of reality.

Information systems are shown to be frequent objects of study, and they are especially explored in the field of Health Care. Meanwhile, the articles focused on Information Science are related to users and uses of information in diverse informational contexts, e.g., in libraries and virtual communities, and are represented more prominently by common terms in the field of IS such as community, library, literacy, which stand out the most.

Final Conclusions

Given the size of the analyzed corpus, this article posed some challenging issues due to the impossibility of an analysis with the desirable depth. On the other hand, it became clear how IS researchers have sought to interpret a wide diversity of aspects in systems and processes that determine and are determined by the modes of action from changing structures. In the corpus of ethnographic studies applied to IS, the inter-domain of Information Science and Health is evidenced, mediated by studies on Information Systems.

The highest concentration is in 2016, with 65 articles, and Michael D. Myers is the most productive author. Myers also holds the highest percentage of the most cited articles in the database, and his main focus within ethnography and IS is centered on the social and cultural impacts of digital transformations. The University of Toronto is the first among the 15 most productive institutions on the topic at WoS, standing out with just over half of the articles in the corpus.

Much attention has been paid to the complex experience of those who try to overcome the difficulties associated with the topic of information in its relevant, though not always perceptible, aspects. Some studies are inspired by concerns over theoretical and methodological elements, others about the relatively short-term implementation of technology, often in a single location. These deficiencies are particularly acute in relation to the analysis of infrastructure technologies.

The prominence gained by ethnography is noticeable in analyses on recent developments of the Biography of Artefacts (BoA) perspective, with emphasis on the value of ethnographic strategies. Thus, this study is valuable for understanding the difficulties involved in research, as a result of the transformations and obstacles common to ethnographic research in its various approaches, as well as its incipient character in the IS field.

Concretely, the indicators of productivity, collaborativeness, and impact evidenced in the analysis suggest a domain configuration that signals a transformation like ethnographic research or ethnography. Although originally anchored in Natural History and Anthropology studies, ethnography emerges as an inter-domain of IS that allows for a more in-depth study of social and cultural dimensions also in the digital space, calling for deeper contextual appropriations.

Future research may delve deeper into the analysis of ethnography as a methodological alternative in the IS domain. It is also possible to broaden the knowledge of this domain by deepening the bibliometric study through the analysis of citations and co-citations of the selected literature.

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Collaborators

L. S. Bufrem: conception and design, analysis and interpretation of data, revision and approval of the final version of the article. J. L. Freitas: conception and design, collection, organization, analysis and interpretation of data, revision and approval of the final version of the article. P. C. Araújo: analysis and interpretation of data, revision and approval of the final version of the article