2020

A Bibiliometric Analysis of the Journal of Computers in Human Behavior: 1985–2019

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Background: The *Journal of Computers in Human Behavior* published its first issue in 1985. This study presents a general overview of the journal from 1985 until 2019 using bibliometric indicators to assess its performance.

Methods: The data for this study, dating between 1985 and 2019, was extracted from Scopus database. All the information was exported in CSV format for data analysis. Additionally, Visualization was done by VOS viewer software and applying techniques such as Co-occurrence of keywords, Co-citation of journals, and bibliographic coupling of countries.

Results: The results show that the *Journal of Computers in Human Behavior* has experienced a remarkable growth of both publications and citations in the last 34 years. The paper of Davis R.A. (2001), "Cognitive-behavioral model of pathological Internet use", was the most highly-cited paper of the journal. The United States, Michigan State University, and Kirschner, P.A. were the most active country, university and author in the *Journal of Computers in Human Behavior*. The clustering of keywords indicates that the most frequent keywords can fall into five clusters. Finally, the co-citation map of cited journals in *Journal of Computers in Human Behavior* papers showed that the *Journal of Personality and Social Psychology*, the *Journal of Applied Psychology* and the *Management Information Systems Quarterly* were three main cited journals.

Conclusion: This is the first comprehensive study offering a bibliometric overview of the leading trends of the *Journal of Computers in Human Behavior* over its history.

Keywords: Bibliometric Analysis, Visualization, Computer Science

Introduction

The Journal of *Computers in Human Behavior* is a scholarly journal dedicated to examining the use of computers from a psychological perspective. Original theoretical works, research reports, literature reviews, software reviews, book reviews and announcements are published. The journal addresses both the use of computers in psychology, psychiatry and related disciplines as well as the psychological impact of computer use on individuals, groups and society. The former category includes articles exploring the use of computers for professional practice, training, research and theory development. The latter category includes articles dealing with the psychological effects of computers on phenomena such as human development, learning, cognition, personality, and social interactions. The journal addresses human interactions with computers, not computers *per se*. The computer is discussed only as a medium through which human behaviors are shaped and expressed. The primary message of most articles involves information about human behavior. The fact that the journal has been published uninterruptedly as well as its editorial content and the application of a peer-review process to select manuscripts, made the journal eligible to be indexed by databases such as Scopus and Web of Science (Elsevier, 2020).

Undoubtedly, the inclusion of any journal into one of these databases increases exponentially the citation rate of the authors as their research is exposed to a wide-ranging audience. Bibliometrics can be defined as a qualitative and quantitative analysis of research that is often used to assess the impact of an individual researcher, research groups, institutions, countries or journals. The bibliometric analysis of a specific journal is important as it provides insight that goes far beyond the scope of the journal (Jain et al., 2015; Corrales, Reyes & Fornaris, 2016; Baladi, & Umedani, 2017; Restrepo & Willett, 2017; Krauskopf, 2018; Ouchi et al., 2019; Saberi, Sahebi & Zerehsaz, 2020). Frequently researchers' study some of the more commonly known bibliometric parameters (impact factor, h-index) before submitting a manuscript to a journal. Likewise, libraries evaluate the bibliometric characteristic of journals before deciding whether to include as part of their collection. Hence, this study presents a general

bibliometric overview of *Computers in Human Behavior* from 1985 until 2019 using bibliometric indicators to assess its performance.

Literature Review

Raju (2017) analyzed 260 articles from 20 issues and 5 volumes of International Journal of Information Dissemination and Technology during 2011-2015 by using a technique of scientometric analysis. Most of the articles 46 (17.69%) appeared in the year 2015. Maximum number of citations 765 (24.14%) were received in the year 2014. Issue number 2 of 2014 contained the highest (19) numbers of articles. Most of the articles were published as 'User Studies' followed by bibliometrics, management, digital divide and ICT related study. Authorship pattern revealed that 55.63% were published by multiple authors. 55% articles were having the length of 5-8 pages followed by 102 (39.23%) articles with 1-4 pages.

Anwar, Muhammad (2018) analyzed the contribution of Pakistani authors to 'Library Philosophy and Practice' from 2009 to 2017 by using the technique of bibliometrics. Overall, 86 papers were published in the source journal by Pakistani authors in which maximum 20 (23.25%) papers were published in 2012, followed by 16 (18.60%) in 2013 and 14 (16.27%) in 2011. Most of the papers (45.34%) had the page length of 11 to 15. Collaborative authorship dominated the authorship pattern. In all 26 institutions from Pakistan were responsible for 86 research papers in which Islamia University Bahawalpur (40) and University of Punjab, Lahor (39) contributed most significantly. Rubina Bhatti has secured the first position as the most prolific author followed by Khalid Mohmood (19) and Farzana Shafique (10). With regard to foreign collaboration Pakistani authors seemed far behind as only 8 paper were produced in such a way. Saudi Arabia was found as the leading collaborator with 3 papers. The paper written by Ansari, M. N. and Zuberi, B. A. in 2010 entitled 'Use of Electronic Resources among Academics at the University of Karachi' received most of the citations (55).

Manvendra Janmaijaya et al. (2018) in a study entitled "A Scientometric Study of Neurocomputing Publications (1992–2018): An Aerial Overview of Intrinsic Structure" Published in the Journal of Publications, they show that the journal Neurocomputing has played an important role in shaping academic research since its inception. The results of this study showed that Neurocomputing has discovered and developed trends in the field of soft computing.

Imani, Mirezati and Saberi (2019) conducted a bibliometric analysis of publications published in the *International Journal of Nursing Studies (IJNS)* during 1963-2018. The results of the bibliometric analysis showed that the United Kingdom with 966 papers, King's College London with 130 papers and Bergman, R with 25 papers were the most productive and influential countries, universities and authors contributing to the *IJNS*. The paper of Keeney S. (2001), "A critical review of the Delphi technique as a research methodology for nursing," was the most highly cited article in the *IJNS* from the beginning of 1963 until the end of 2018. The clustering of published keywords suggests that psychometric and nursing care issues are emerging journal clusters and added to the journal in the last two decades.

Mokhtari, Roumiyani and Saberi (2019) in their study entitled “Bibliometric Analysis and Visualization of the Journal of Artificial Societies and Social Simulation (JASSS) between 2000 and 2018” showed that the number of publications in JASSS was increasing. The fewest and highest paper numbers belonged to the years 2000 and 2015, respectively. The most highly-cited paper was authored by Hegselmann, R. and Kruse, U. in 2002 entitled "Opinion dynamics and bounded confidence: Models, analysis and simulation" with 1,117 received citations. The most productive countries were the United States (with 85 papers, 11.93% contribution), the United Kingdom (with 65 papers, 9.12% contribution) and Germany (with 54 papers, 7.58% contribution), respectively.

Methods

The data of this study were collected by using the database of Scopus (Elsevier). We used "*Computers in Human Behavior*" keyword to search Scopus database. A total of 6265 articles published between 1985 and 2019 were found as we searched in the section titled "Publication Name" by using "*Computers in Human Behavior*" keyword (access date: December 10, 2019). We included all documents published between 1985 and 2019 to the study. Statistical analyses were performed with SPSS (version 22.0, SPSS Inc., Chicago, IL, USA). We created infographics showing bibliometric networks by using VOSviewer software tool for constructing and visualizing bibliometric networks.

Results

Numbers of Published Items

Numbers of publications and citations according to years have been shown in Figs. 1 and 2.

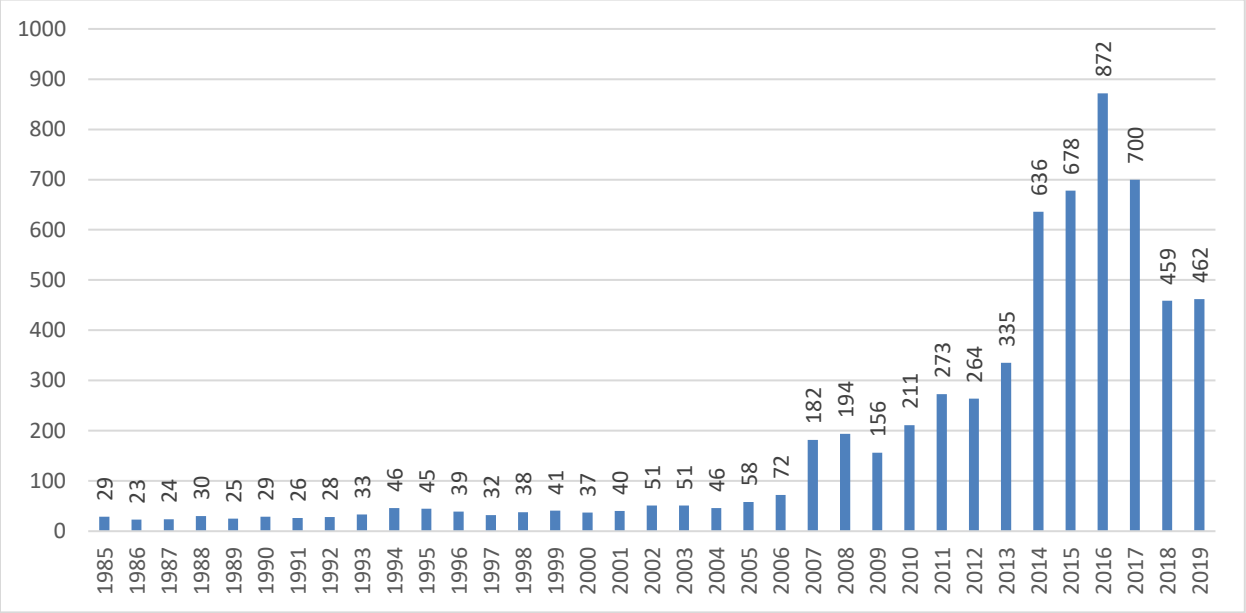

Fig. 1 Number of publications according to years

Continuous increases were detected in the number of publications after 2007 (Fig. 1), and in the number of citations after 2008 (Fig. 2).

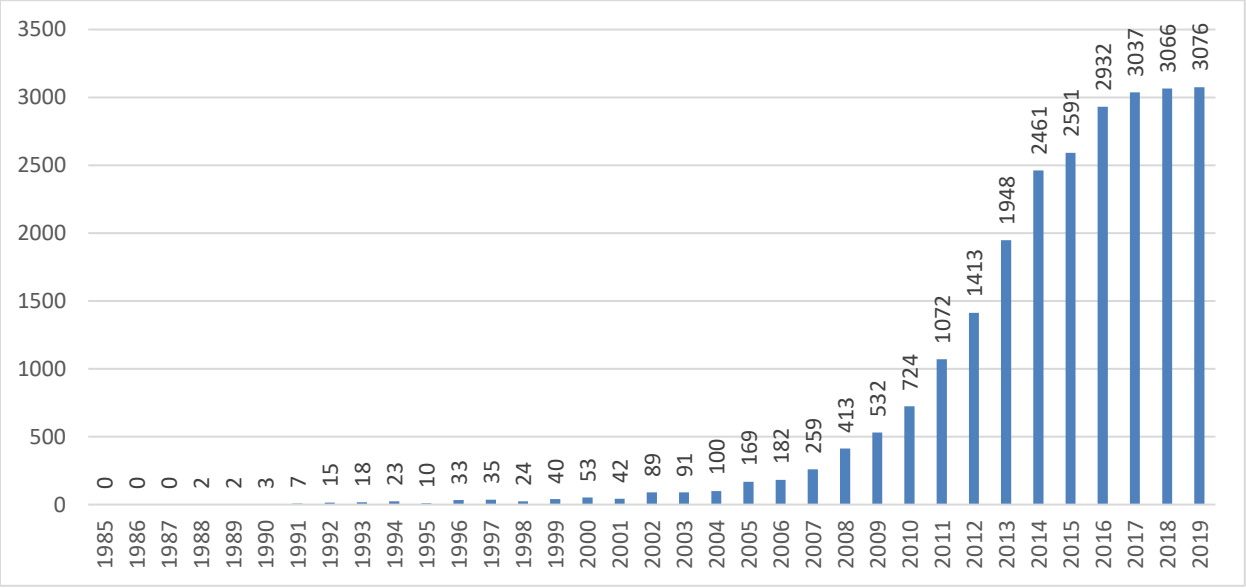

Fig. 2 Number of citations according to years

Most Cited Papers

Table 1 presents the most cited papers published in the journal of *Computers in Human Behavior* according to Scopus. The Journal of *Computers in Human Behavior* has had and still continues to have an important influence on the research field of Computer Science. This success is represented in the following table in the times articles published in this journal have been cited.

Table 1. The 20 most-cited papers in The Journal of Computers in Human Behavior (1985–2019)

Rank	Total citations	Title	Authors	Year	Total citations/Year
1	961	Cognitive-behavioral model of pathological Internet use	Davis R.A.	2001	53/39
2	923	Following you home from school: A critical review and synthesis of research on cyberbullying victimization	Tokunaga R.S.	2010	102/56
3	885	Personality and motivations associated with Facebook use	Ross C. et al	2009	88/50
4	876	Who interacts on the Web? The intersection of users' personality and social media use	Correa T., Hinsley A.W., de Zúñiga H.G.	2010	97/33
5	819	Identity construction on Facebook: Digital empowerment in anchored relationships	Zhao S., Grasmuck S., Martin J.	2008	74/45
6	812	Toward an understanding of the behavioral intention to use mobile banking	Luarn P., Lin H.-H.	2005	58/00
7	767	Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: A review of the research	Kreijns K., Kirschner P.A., Jochems W.	2003	47/94
8	729	Why people use social networking sites: An empirical study integrating network externalities and motivation theory	Lin K.-Y., Lu H.-P.	2011	91/13
9	662	Incidence and correlates of pathological internet use among college students	Morahan-Martin J., Schumacher P.	2000	34/84
10	656	Online social networks: Why do students use facebook?	Cheung C.M.K., Chiu P.-Y., Lee M.K.O.	2011	82/00
11	592	The dimensionality and correlates of flow in human-computer interactions	Webster J., Trevino L.K., Ryan L.	1993	22/77
12	581	Separate but equal? A comparison of participants and data gathered via Amazon's MTurk, social media, and face-to-face behavioral testing	Casler K., Bickel L., Hackett E.	2013	96/83
13	578	Facebook® and academic performance	Kirschner P.A., Karpinski A.C.	2010	64/22
14	575	The top five reasons for lurking: Improving community experiences for everyone	Preece J., Nonnecke B., Andrews D.	2004	38/33
15	558	Problematic Internet use and psychosocial well-being: Development of a theory-based cognitive-behavioral measurement instrument	Caplan S.E.	2002	32/82
16	555	Who uses Facebook? An investigation into the relationship between the Big Five, shyness, narcissism, loneliness, and Facebook usage	Ryan T., Xenos S.	2011	69/38
17	490	The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services	Kuo Y.-F., Wu C.-M., Deng W.-J.	2009	49/00
18	488	Integrating TTF and UTAUT to explain mobile banking user adoption	Zhou T., Lu Y., Wang B.	2010	54/22
19	485	Internet social network communities: Risk taking, trust, and privacy concerns	Fogel J., Nehmad E.	2009	48/50
20	478	Effectiveness of computer-based instruction: An updated analysis	Kulik C.-L.C., Kulik J.A.	1991	17/07

As Table 1 shows, article by Davis R.A., entitled "Cognitive-behavioral model of pathological Internet use" was the most highly-cited paper in the journal of Computers in Human Behavior. A paper by Tokunaga R.S. (2009), entitled "Following you home from school: A critical review and synthesis of research on cyberbullying victimization" was in the second rank with 923 received citations. The third rank belonged to a study by Ross C. et al (2009), entitled as "Personality and motivations associated with Facebook use" with 885 received citations.

Most productive and influential Countries

Table 2 presents the most productive authors in the *Journal of Computers in Human Behavior*. The United States was found to be most productive country with 2503 papers and 0.40% of total literature followed by United Kingdom, Taiwan, Netherlands and Germany (495, 447, 391 and 383 items, respectively).

Table 2. The Most Productive Countries in The Journal of Computers in Human Behavior (1985–2019)

Rank	Country	Total publications	% of 6265
1	United States	2503	0/40
2	United Kingdom	495	0/08
3	Taiwan	447	0/07
4	Netherlands	391	0/06
5	Germany	383	0/06
6	China	345	0/06
7	South Korea	340	0/05
8	Spain	308	0/05
9	Canada	264	0/04
10	Australia	230	0/04
11	Turkey	146	0/02
12	Italy	134	0/02
13	Israel	133	0/02
14	Belgium	111	0/02
15	Finland	110	0/02
16	Singapore	98	0/02
17	France	92	0/01
17	Hong Kong	92	0/01
18	Greece	78	0/01
19	Saudi Arabia	76	0/01
20	Sweden	73	0/01

Most productive and influential Institutions

Table 3 shows institution-wise distribution of articles published in the *Journal of Computers in Human Behavior* during the period under study. Out of 6265 contributions, Michigan State University have been contributed highest article 97 (1.55 percent), Open University of the Netherlands comes to the second position contributing 84 articles (1.34 percent), and University of Twente in the third position 77 articles (1.23 percent), followed by National Taiwan Normal University 76 articles (1.21 percent), Pennsylvania State University 75 (1.20 percent).

Table 3. The Most Productive Institutions in the Journal of Computers in Human Behavior

Rank	Institution	Total publications	% of 6265
1	Michigan State University	97	1/55
2	Open University of the Netherlands	84	1/34
3	University of Twente	77	1/23
4	National Taiwan Normal University	76	1/21
5	Pennsylvania State University	75	1/20
6	Nanyang Technological University	67	1/07
7	Utrecht University	67	1/07
8	Sungkyunkwan University	65	1/04
9	Universiteit van Amsterdam	64	1/02
10	University of Texas at Austin	54	0/86
11	Ohio State University	53	0/85
11	Knowledge Media Research Center	53	0/85
12	National Sun Yat-Sen University Taiwan	50	0/80
13	National Chiao Tung University Taiwan	46	0/73
14	University of Southern California	45	0/72
15	King Saud University	43	0/69
16	National Taiwan University of Science and Technology	42	0/67
17	Florida State University	41	0/65
18	Universität Tübingen	40	0/64
18	University of California, Santa Barbara	40	0/64
18	Universiteit Gent	40	0/64
18	Wee Kim Wee School of Communication and Information	40	0/64
19	Indiana University	39	0/62
19	West Virginia University	39	0/62
20	Erasmus University Rotterdam	38	0/61
20	Kent State University	38	0/61

Most productive and influential authors

Table 4 shows the ranking of authors/contributors of articles. There are a total of contributors or authors for 6265 articles. Kirschner, P.A. from Finland is the most prolific author with 36 publications. Amichai-Hamburger, Y. from Israel comes second with 21 articles. The third prolific author Griffiths, M.D. belongs to United Kingdom.

Table 4. The Most Productive authors in the Journal of Computers in Human Behavior

Rank	Author Name	Total publications
1	Kirschner, P.A.	36
2	Amichai-Hamburger, Y.	21
3	Griffiths, M.D.	20
4	Spence, P.R.	19
4	Yen, D.C.	19
5	Drouin, M.	18
5	Emurian, H.H.	18
5	Guitton, M.J.	18
5	Hwang, Y.	18
6	Lee, K.C.	17
6	Reed, W.M.	17
6	Valkenburg, P.M.	17
7	Mayer, R.E.	16
7	Paas, F.	16
8	Gerjets, P.	15
8	Jou, M.	15
9	Brand-Gruwel, S.	14
9	Hamari, J.	14
9	Rosen, L.D.	14
9	Tsai, C.C.	14
10	Guadagno, R.E.	13
10	Lytras, M.D.	13
10	Oliveira, T.	13
10	Shin, D.H.	13
10	Song, H.	13
10	Wu, Y.C.J.	13

Mapping the Journal of Psychology with VOS Viewer Software

In order to deepen in the analysis of the bibliographic data, this section develops a graphical visualization of the publications of The *Journal of Computers in Human Behavior*. To do so, the work uses the visualization of similarities (VOS) viewer software (Van Eck & Waltman, 2010). This software collects the bibliographic material and develops different bibliometric techniques including co-occurrence of author keywords (Laengle et al., 2017), co-citation of journals (Small, 1973) and bibliographic coupling (Kessler, 1963).

The first factor presented is co-occurrence of author keywords. The software identifies those keywords that appear more frequently in the title page of the publications of the *Journal of Computers in Human Behavior* and the network connections represents the keywords that appear more often in the same documents. Figure 3 shows that depression and personality are the two most common keywords in the journal. Most of the other keywords strongly connect with psychology also appear in the graph.

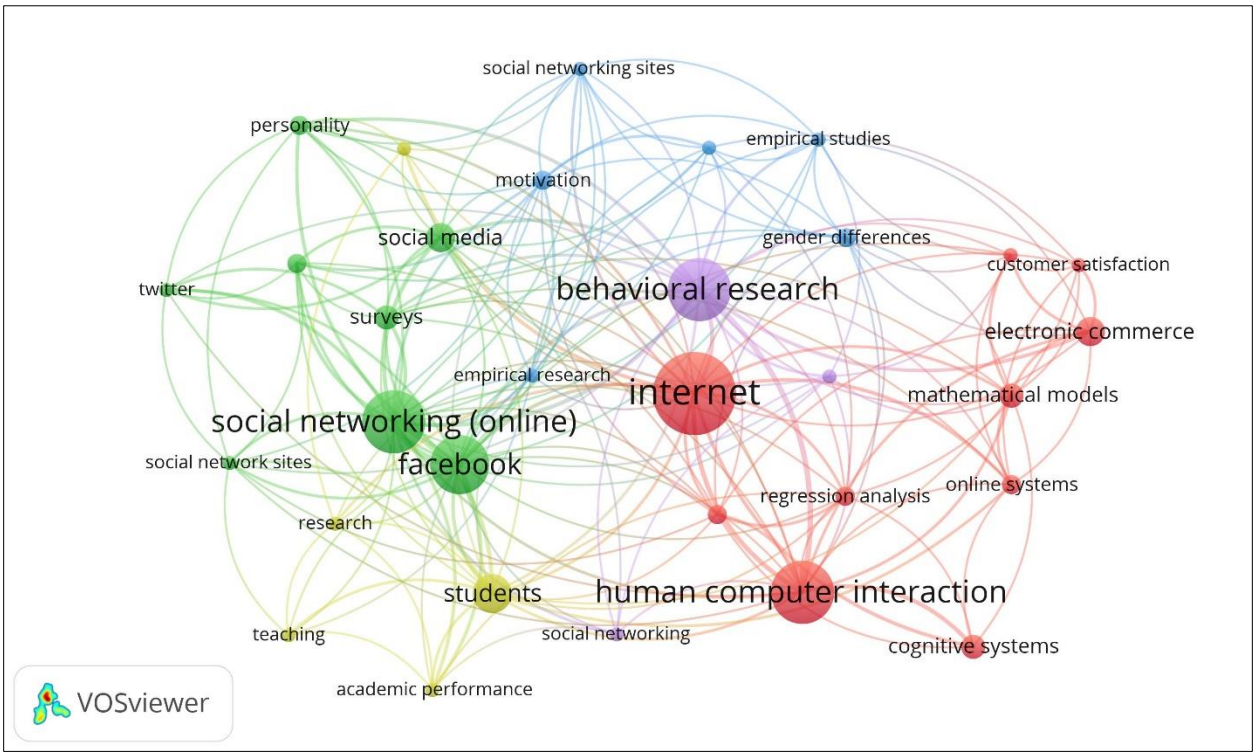

Figure 3. Co-occurrence of keywords the Journal of Computers in Human Behavior

Figure 4 shows the time-based map of the most frequent used keywords in the *Journal of Computers in Human Behavior*. As the map guide, the colored bar bellows the time-based map shows what keywords were predominant and when they were so. keywords in yellow are ones that predominant after 2012. Dark-colored ones predominated before 2012. The time-based map shows that the keywords such as "social media", "social networking (online)", "social network site" and "twitter" have been predominant in recent years. These keywords are in yellow and generally assigned to articles published after 2012.

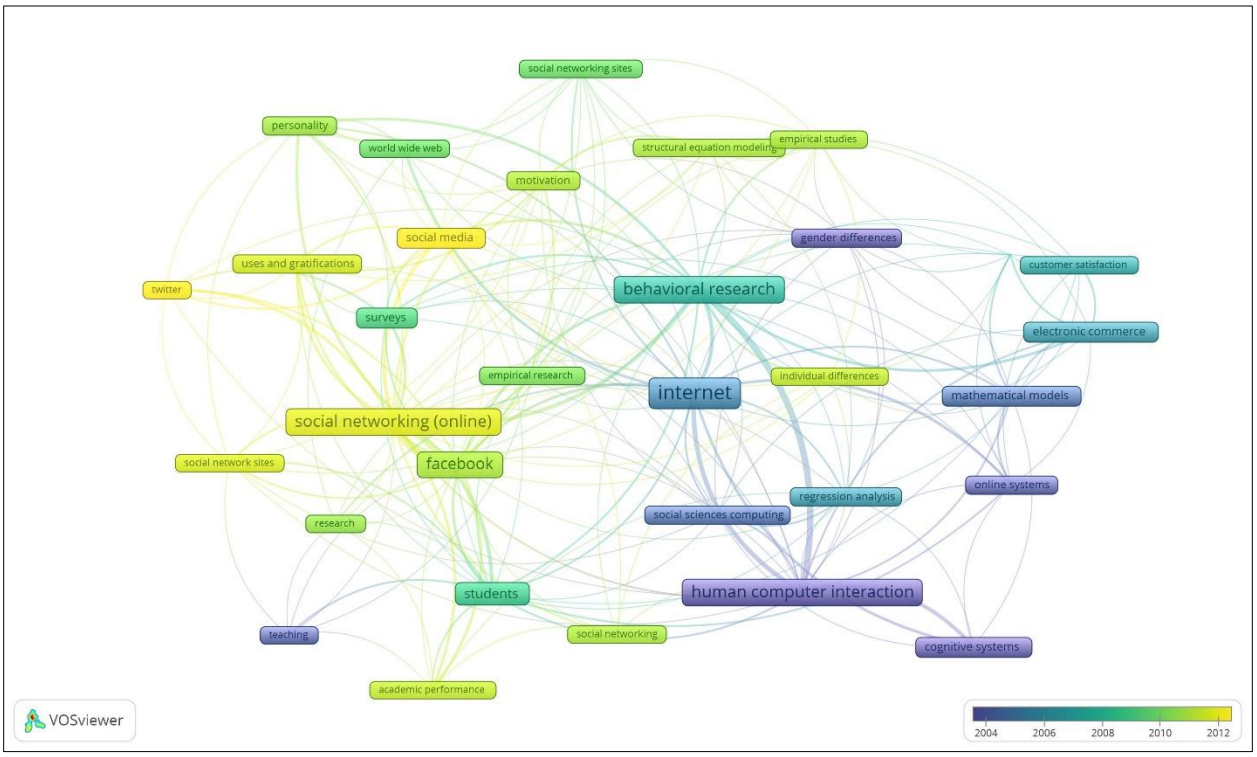

Figure 4. Time-based co-occurrence of keywords the Journal of Computers in Human Behavior

The analysis of Keywords of the papers published in the *Journal of Computers in Human Behavior* indicated that totally 426 unique keywords were used in the journal papers. To better identify the most frequent keywords, clustering technique is applied. In Figure 5, the co-occurrence map of the keywords of papers is developed. As seen in Figure 5, the most frequent keywords fall into five clusters. The first and most important cluster can be realized with the red color.

"Facebook" and "Social networks" are the most fundamental keywords of this cluster. In the second cluster in green, "Surveys" and "Personality" were the top keywords. The third cluster in blue consists of keywords, including "Empirical research" and "Empirical Studies". In the fourth cluster in yellow, there are keywords such as "Mathematical models" and "Technology acceptance model". In the fifth cluster in green, "Human computer interaction" and "Behavioral research" are its main keywords.

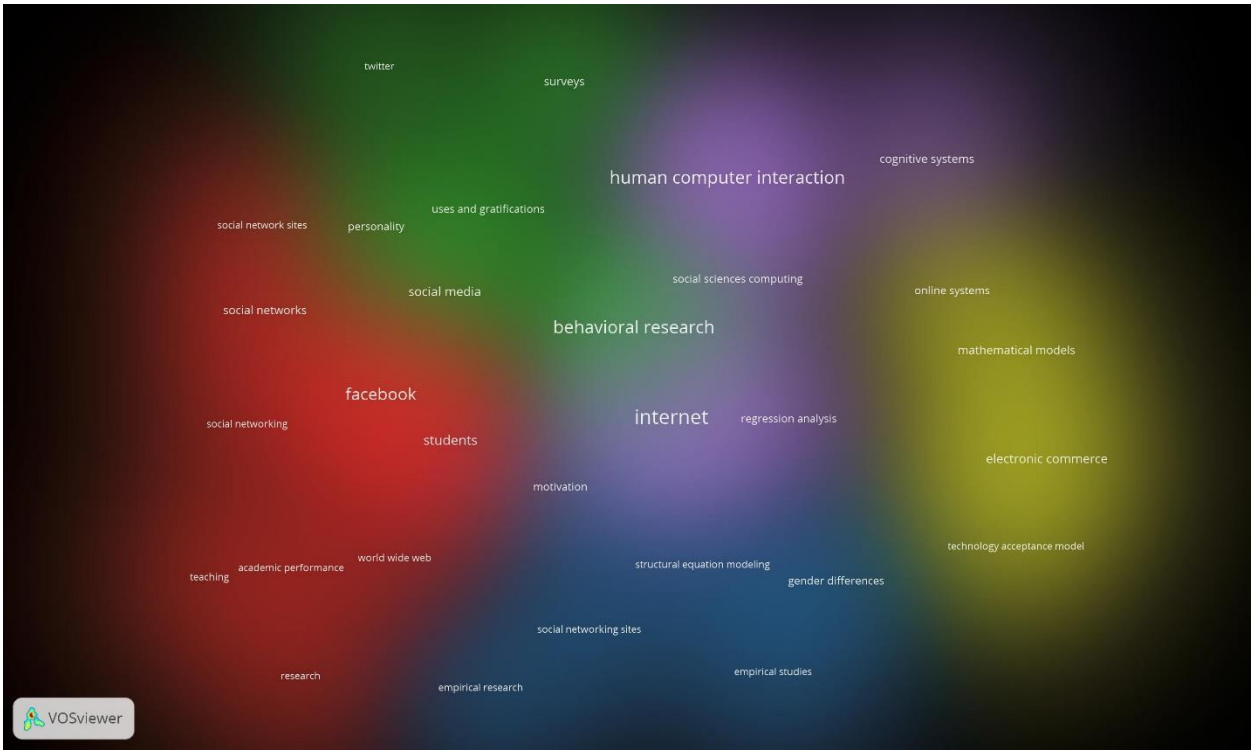

Figure 4. Keywords Clustering of the Journal of Computers in Human Behavior Papers

Another interesting element examined is co-citations of journals highly cited in The Journal of Psychology. Co-citation occurs when two journals receive a citation from the same document of a third journal. Figure 5 presents the co-citation network of the journal. The Journal of Personality and Social Psychology and the Journal of Applied Psychology are the most cited journals and have the strongest network in the journal. The majority of the journals are from the psychology area although, notably, some management journals also appear in the figure.

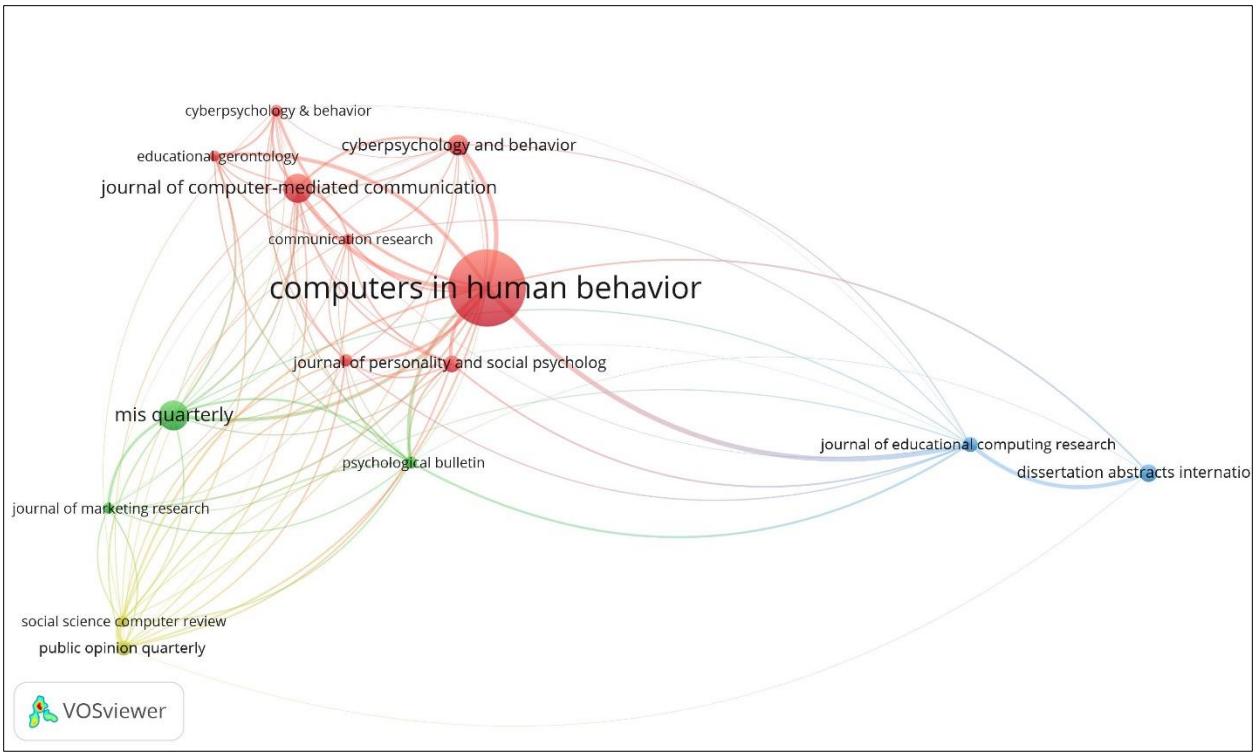

Figure 5. Co-citation of journals with a threshold of 50 citations and 100 connections

Finally, let us develop a graphical visualization of the countries. For doing so, the study uses bibliographic coupling between countries. Figure 6 shows the countries Bibliographic coupling network in the Journal of Computers in Human Behavior. Lines between circles (countries) demonstrated links between an individual country and other countries contributing journal. As can be seen, six countries, including the United States, South Korea, Taiwan, Netherlands, Israel, United Kingdom and China had most links with other countries.

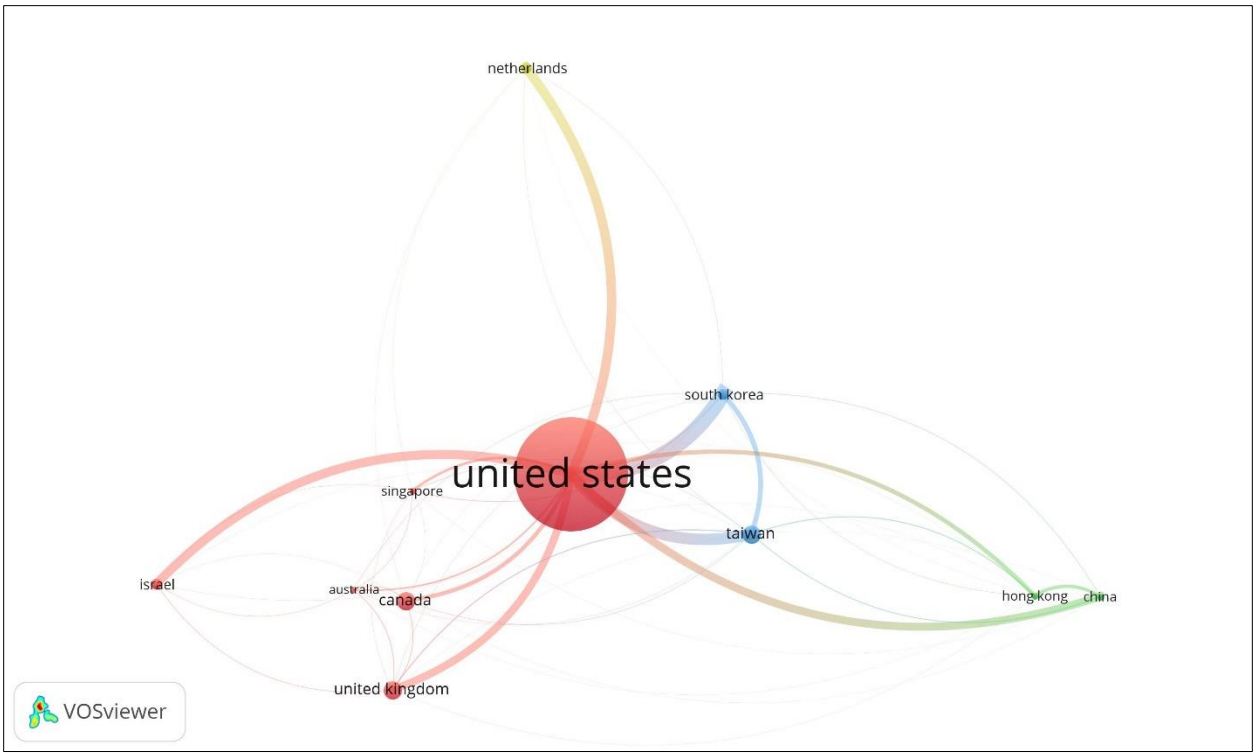

Figure 6. Bibliographic coupling of countries in the Journal of Computers in Human Behavior

Discussion and conclusion

Undoubtedly, scientific journals are considered as one of the most substantial processes for knowledge exchange. In other words, scientific journals are like a university where research findings can be discussed. Due to the variety and rapid dissemination of information, scientific journals have more audiences compared to other information interfaces. In fact, increasing the number of scientific journals and scholars' widespread tendency, assessment and analysis of scientific journals seem very necessary (Saberi, Barkhan and Hamzehei, 2019). One method for assessing scientific journals is the bibliometric analysis. Bibliometrics is a field evaluating collection of publications (papers) using quantitative methods (Tang et al, 2018). Bibliometrics is a main research field with a long history. After being coined, bibliomerics changed in a topic of interest and many researchers used bibliometric techniques. These studies are in four main categories: bibliometric

analyses of research fields, scientific journals, publishing countries and regions, and universities and research institutes (Mokhtari et al., 2019).

This article provides a bibliographic overview of the research published in the *Journal of Computers in Human Behavior* throughout its long tenure, starting from the data gathered from Scopus and the use of bibliometric indicators. The results show that The *Journal of Computers in Human Behavior* has gone through different stages. The first stage (until 2006) captured the period in which the number of publications and their impact on the scientific community was lowest. The second stage (2007–2019) was a period in which the number of publications from the journal increased considerably. From 2007 on, the outcome noticeably changes. The analysis of citations received by the papers indicated that the paper of Davis R.A., (2001) "Cognitive-behavioral model of pathological Internet use" has received 961 citations; therefore, it is considered as the most highly-cited paper in the journal of Computers in Human Behavior.

The survey of the most productive countries, universities and authors in the journal suggested that United States, Michigan State University and Kirschner, P.A. are the most active country, university and author in the *Journal of Computers in Human Behavior*. The co-occurrence map of keywords showed that the papers published in *Journal of Computers in Human Behavior* could fall into five clusters: human computer interaction, social networking service, empirical studies, academic research, and behavioral research. Furthermore, the co-citation map of cited journals in *Journal of Computers in Human Behavior* papers showed that the *Journal of Personality and Social Psychology* and the *Journal of Applied Psychology* are the most cited journals and have the strongest network in the journal. Finally, the countries bibliographic coupling networks in the Journal of Computers in Human Behavior showed that the six countries, including the United States, South Korea, Taiwan, Netherlands, Israel, United Kingdom and China had most links with other countries.

References

Anwar, M. (1763). Contributions of Pakistani authors to Library Philosophy and Practice from 2008 to 2017. *Library Philosophy and Practice (e-journal)*. 1763.

Baladi, Z. H., & Umedani, L. V. (2017). Pakistan Journal of Medical Sciences: A bibliometric assessment 2001-2010. *Pakistan journal of medical sciences*, *33*(3), 714.

Corrales, I. E., Reyes, J. J., & Fornaris, Y. (2016). Bibliometric analysis of the Journal of Oral Research: Period 2012-2015. *Journal of Oral Research*, *5*(5), 188-193.

Elsevier (2020). Journal of *Computers in Human Behavior.* Availabale: https://www.journals.elsevier.com/computers-in-human-behavior.

Imani, B., Mirezati, S. Z., & Saberi, M. K. (2019). A Bibliometric Analysis of International Journal of Nursing Studies (1963–2018). *Library Philosophy and Practice*, *2019*.

Jain, S., Basavaraj, P., Singla, A., Singh, K., Kundu, H., Vashishtha, V., ... & Malhi, R. (2015). Bibliometric analysis of journal of clinical and diagnostic research (dentistry section; 2007-2014). *Journal of clinical and diagnostic research: JCDR*, *9*(4), ZC47.

Janmaijaya, M., Shukla, A., Abraham, A., & Muhuri, P. (2018). A Scientometric Study of Neurocomputing Publications (1992–2018): An Aerial Overview of Intrinsic Structure. *Publications*, *6*(3), 32.

Krauskopf, E. (2018). A bibiliometric analysis of the Journal of Infection and Public Health: 2008–2016. *Journal of infection and public health*, *11*(2), 224-229.

Mokhtari, H., Roumiyani, A., & Saberi, M. K. (2019). Bibliometric analysis and visualization of the Journal of Artificial Societies and Social Simulation (JASSS) between 2000 and 2018. *Webology*, *16*(1), 166-183.

Mokhtari, Heidar; Mirezati, Seyedeh Zahra; Saberi, Mohammad Karim; Fazli, Farzaneh, & Kharabati-Neshin, Mohammad (2019). "A bibliometric analysis and visualization of the scientific publications of universities: A study of Hamadan University of Medical Sciences during 1992-2018", *Webology,* 16(2).

Ouchi, A., Saberi, M., Ansari, N., Hashempour, L. and Isfandyari-Moghaddam, A. (2019), Do altmetrics correlate with citations? A study based on the 1,000 most-cited articles, *Information Discovery and Delivery*, 47 (4), 192-202.

Raju, N. G. (2017). A Scientometric Analysis of International Journal of Information Dissemination and Technology (IJIDT) During 2011-2015. *International Journal of Information Dissemination & Technology*, *7*(2), 146-150.

Restrepo, G., & Willett, P. (2017). The Journal of Mathematical Chemistry: a bibliometric profile. *Journal of Mathematical Chemistry*, *55*(8), 1589-1596.

Saberi, M. K., Barkhan, S., & Hamzehei, R. (2019). A bibliometric study and visualization of Library Philosophy and Practice during 1998-2018. *Library Philosophy and Practice*, *2019*.

Saberi M K, Sahebi S, Zerehsaz M. (2020). Visualization of the Koomesh journal between 2006 and 2017: A bibliometric study. *koomesh*. 22 (1), 1-9.

Tang, M., Liao, H., Wan, Z., Herrera-Viedma, E., & Rosen, M. (2018). Ten years of sustainability (2009 to 2018): A bibliometric overview. *Sustainability*, 10(5), 1655.