

YouTube in scientific research: A bibliometric analysis

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Abstract

YouTube has become the object of scientific research in different subject areas. This study aims to provide an overview of the citation rate of YouTube since its launch in February 2005, based on the Scopus citation database. The total number of citations to YouTube in Scopus in the 12 year period was 36,486 of which the highest number of citations was 8,145 in 2016. It is also shown that YouTube-uploaded videos are highly cited by social sciences, computer science, arts and humanities, engineering, and medicine. It can be seen that researchers from the United States, the United Kingdom, Australia, Canada, Germany, China, and Spain cite YouTube-uploaded videos more than others. The analysis of document types indicates that articles rank first with 48.2 percent of all Scopus documents citing YouTube from 2006-2016, followed by conference papers (21.9%), book chapters (11.9%), reviews (7.7%), books (7.0%), and so on. It can be concluded that YouTube is cited increasingly by different subject areas, by different languages (especially English), and by various countries.

Keywords

YouTube, Social network, Open access, Citation analysis, Scopus

Introduction

YouTube is a video-sharing social network for the world to see. The service was created by Chad Hurley, Steve Chen and Jawed Karim in February 2005. Google bought the site in November 2006. It now operates as one of Google's subsidiaries. Users around the world create, post, share and view originally created videos via YouTube. Videos can be posted for both personal and professional use (YouTube, 2017).

This study aims to provide an overview of the citation rate of YouTube since its launch in February 2005. It is worth noting that since its inception YouTube has been subject to criticism. Nevertheless, YouTube-uploaded videos are increasingly cited by scientific papers indexed in international databases.

One way to test the scientific popularity of a website is to use citation analysis method to predict to what extent it is cited by scientific documents. This research tries to identify and quantify the number of citations to YouTube in the documents indexed by the Scopus citation database, studying the citation behavior of authors who have published papers in journals indexed by Scopus.

Materials and Methods

Bibliometric techniques were applied in this study to map the scientific literature related to the use of YouTube as a reference source. An advanced search was conducted on June 24, 2017, in the Scopus citation database for total citations to YouTube-uploaded videos, as follows:

REF (YouTube) AND PUBYEAR > 2005 AND PUBYEAR < 2017

Results

Table 1 reveals how many YouTube videos were cited in each year. The pattern shows the increasing trends of YouTube citations as used per annum. Yearly distribution of citations gives an idea about scattering of citations. The total number of citations to YouTube in Scopus in the 12 year period was 36,486 of which the highest number of citations was 8,145 in 2016 and the lowest number of citations was zero in 2005.

Table 1. The total number of citations per year

Year	Number of citations
2016	8145
2015	7187
2014	6168
2013	5150
2012	3666
2011	2592
2010	1846
2009	1062
2008	476
2007	181
2006	13
2005	0
Total	36,486

Table 2 and Figure 1 show that YouTube-uploaded videos are highly cited by social sciences, computer science, arts and humanities, engineering, and medicine. Lopes et al. (2017) have conducted a similar bibliometric analysis on Facebook via the Web of Science citation database, indicating that Facebook is cited in papers in the areas of computer science, linguistics, health care sciences and services, and pharmacology and pharmacy.

Table 2. Subject areas frequently citing YouTube

Rank	Subject Area	Number of citations
1	Social Sciences	16,722
2	Computer Science	10,232
3	Arts and Humanities	8,094
4	Engineering	5,144
5	Medicine	3,668
6	Business, Management and Accounting	2,335
7	Mathematics	1,571
8	Psychology	1,310
9	Economics, Econometrics and Finance	1,262
10	Physics and Astronomy	951
11	Environmental Science	791
12	Nursing	558
13	Earth and Planetary Sciences	551
14	Decision Sciences	549
15	Biochemistry, Genetics and Molecular Biology	544
16	Agricultural and Biological Sciences	532
17	Materials Science	480
18	Chemistry	396
19	Health Professions	361
20	Energy	305
21	Neuroscience	224
22	Chemical Engineering	190
23	Pharmacology, Toxicology and Pharmaceutics	188
24	Multidisciplinary	154
25	Immunology and Microbiology	95
26	Veterinary	69
27	Dentistry	48
28	Undefined	5
	Total	36,486

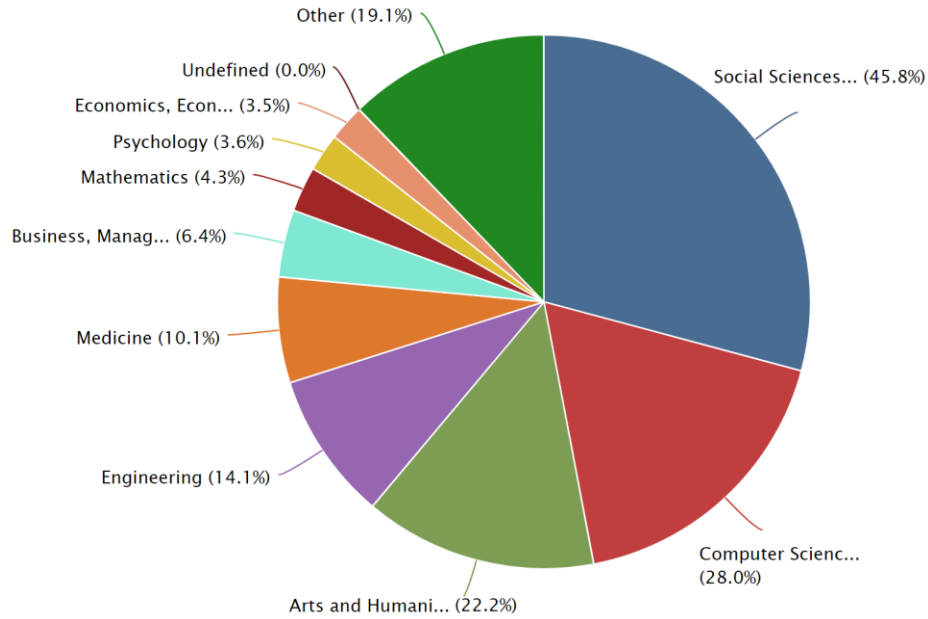


Figure 1. Subject areas frequently citing YouTube (Scopus, 2017)

Table 3 shows the distribution of citations by place of publication (affiliation). It can be seen that researchers from the United States, the United Kingdom, Australia, Canada, Germany, China, and Spain cite videos available on YouTube more than others.

Table 3. Documents citing YouTube by country/territory

Rank	Country/Territory	No. of Citations
1	United States	13,810
2	United Kingdom	4,564
3	Australia	2,196
4	Undefined	2,188
5	Canada	2,115
6	Germany	1,539
7	China	1,148
8	Spain	1,026
9	France	869
10	Italy	865
11	Netherlands	811
12	Japan	706
13	India	655
14	South Korea	614
15	Brazil	531
16	Sweden	508
17	Switzerland	490
18	Finland	418
19	Singapore	396
20	Taiwan	386

21	New Zealand	352
22	Denmark	351
23	Ireland	351
24	Hong Kong	337
25	Belgium	331
26	Austria	328
27	South Africa	322
28	Israel	304
29	Norway	278
30	Malaysia	266
31	Greece	248
32	Poland	217
33	Portugal	216
34	Turkey	204
35	Mexico	201

Table 4 shows the language distribution of citations. The authors of citing documents cited YouTube in different languages. English language was found to be the most dominant language citing YouTube with 34,859 citations.

Table 4. Languages cited YouTube

Rank	Language	Number of citations
1	English	34,859
2	Spanish	542
3	German	300
4	French	274
5	Portuguese	199
6	Italian	67
7	Chinese	64
8	Slovenian	43
9	Japanese	40
10	Polish	34
11	Croatian	32
12	Russian	30
13	Czech	25
14	Hungarian	23
15	Dutch	21
16	Turkish	21
17	Korean	20
18	Norwegian	17

YouTube is also cited by the following languages: Lithuanian (14), Slovak (12), Bosnian (8), Danish (7), Afrikaans (5), Romanian (5), Catalan (5), Swedish (4), Arabic (3), Finnish (3), Greek (3), Estonian (2), Malay (2), Persian (2), Icelandic (1), Indonesian (1), Irish Gaelic (1), and Serbian (1).

Table 5 shows the document type of citing resources. The analysis of document types indicates that *articles* rank first with 48.2 percent of all Scopus documents citing YouTube from 2005-2016, followed by *conference papers* (21.9%), *book chapters* (11.9%), *reviews* (7.7%), *books* (7.0%), and so on.

Table 5. Document type of citing resources

Rank	Document Type	Documents	%
1	Article	17,596	48.2
2	Conference Paper	7,981	21.9
3	Book Chapter	4,346	11.9
4	Review	2,827	7.7
5	Book	2,557	7.0
6	Editorial	459	1.3
7	Note	452	1.2
8	Letter	150	0.4
9	Short Survey	116	0.3
10	Erratum	2	0.0
	Total	36486	100

Discussion and Conclusion

This study shows that YouTube is cited 36,486 times in documents indexed in the Scopus citation database. The result showed that YouTube is cited increasingly by different subject areas (especially social sciences, computer science, arts and humanities, engineering, and medicine), by different languages (especially English, Spanish, German, and French), and by various countries (especially the United States, the United Kingdom, Australia, Canada, Germany, China, and Spain).

The analysis of document types indicates that *articles* rank first with 48.2 percent of all Scopus documents citing YouTube from 2006-2016. Although, the credibility of some of YouTube content as an authoritative reference source was criticized, it is cited by international researchers. The significance of YouTube from a citation analysis point of view goes beyond the changes in information behavior, citation culture of science, and the digital culture.

The present study shows that the use of YouTube, as a social network, in higher education and scientific research is increased, especially in social sciences, computer science, arts and humanities, engineering, and medicine. A previous study by Jaffar (2012) assessing student's perceptions and patterns of usage of YouTube, as well as the effectiveness of YouTube videos within a problem-based learning (PBL) curriculum, indicates that YouTube is used in anatomy education. The results demonstrated that 98 percent of the students (out of 91 second-year medical students) used YouTube as an online information resource, albeit in different frequencies.

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