

Plagiarism:A Scientometric Review of the World Literature between 2000 and 2019

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Abstract.

The purpose of this scientometric analysis is to measure the importance and impact of published literature within the field of plagiarism. The research has been showed with the intent of procurement the growth and features of the literature on plagiarism.This research used publications, total number of publications, citations count with total citations (TC), average article citations (AAC), corresponding author's country (CAC), number of citing articles, journal sources, keywords, and the author-level metrics such as h-, g-, and m-, indices from the Web of Science database in R tools.The core findings are that the most productive year of publication was 2014, and highest total citation by Rosso P; the top source of journal is International journal for educational integrity and title in other (people's) words: plagiarism by university students-- literature and lessons. The outcome displays that the USA controls in the research output, with National Science Foundation funding agency the first position; the most productive author is Wiwanitkit V from Thailand. In the document type's category, the most cited sources are research articles 38.59 % respectively. This paper has provides important suggestion to contributions and publisher. First of all, it presents a plagiarism policy, intellectual structure of educational responsibility as a discipline. This paper has provides important suggestion to contributions and publisher. First of all, it presents a plagiarism policy, of educational responsibility in the world for discipline plagiarism detection plagiarism, revision, quotation, accurately identifying copying.

Keywords: Scientometrics; plagiarism; Intellectual theft;Self-plagiarism;Plagiarism checker Retraction.

Introduction

Exact strategies are needed for plagiarism detection identification with a gigantic measure of archive information. With the spread of PCs and the Internet, countless records opened up as electronic information. Digital documents are not difficult to duplicate and reuse, which energizes literary thefts from protected substance and scholarly reports, for example, research papers. The present circumstance obstructs the sound advancement of the imaginative exercises of people. A straightforward answer for the issue is to build up a strategy that distinguishes literary thefts from countless archives as precisely as conceivable examination papers. The present circumstance blocks the sound improvement of the innovative exercises of people. A straightforward answer for the issue is to build up a strategy that distinguishes copyright infringements from countless archives as precisely as could really be expected.

Counterfeiting location Plagiarism detection from records can be formalized as an issue to process a similitude of archives [42]. Summed up related investigations to plagiarism detection and demonstrated that a perspective for grouping plagiarism detection discovery techniques is the proportion of closeness between archives. A methodology is utilizing measurements of word events, for example, the sack of-words model [43]. Another methodology is utilizing examples of word events, for example, the alter distance and its weighted [48] and neighborhood rendition which are bases of arrangement in bioinformatics [46]. A trouble in applying the example coordinating based way to deal with plagiarism detection overall archives exists on setting the closeness between words. There propose a counterfeiting recognition strategy that utilizes a dispersed portrayal of words for setting a likeness between words [40]. A dispersed portrayal is

viewed as a capacity that maps a word to a vector with a little measurement, and the distance between vectors addresses closeness between the words that relate to the vectors. A basic disseminated portrayal is accessible by diminishing the element of a direct vector portrayal dependent on word recurrence [43]. The new work in neural organizations made simple to accomplish a circulated portrayal that addresses word similitude well from genuine record information. The point of our examination is assessing the legitimacy of utilizing the dispersed portrayal to characterize the word comparability for literary plagiarism detection [44]. There present three techniques dependent on the accompanying three report likenesses: for two archives,

- ❖ The length of the longest regular aftereffect (LCS) [39] partitioned by the length of the more limited report,
- ❖ The neighbourhood maximal estimation of the length of LCS, and
- ❖ The neighbourhood maximal estimation of the weighted length of LCS

There propose a literary theft location strategy dependent on the last similitude. The proposed technique compares to the arrangement comparability figured by the Smith-Waterman calculation [46]. In spite of the fact that there as of now exist counterfeiting location strategies dependent on the calculation; the curiosity of the proposed strategy is utilizing a dispersed portrayal for the word likeness [41, 47]. Basically, the dispersed portrayal was acquired from no specific information by word2vec [44]. Their applied these three techniques to the dataset for an opposition of counterfeiting recognition and examined the exactness of the copyright infringement identification [45].

Objectives of the Study

The fundamental target of this exploration is to examine the distributions of worldwide copyright infringement research announced during 2000-2019 and listed in the Web of Science center assortment data set. In explicit, the investigation means to disclosure:

- To find the Document Types
- To identify the Annual Total Citation per Year
- To indicate the Top 10 contributing authors impact
- To find out the most Source impact of the top ten journals
- To determine the level Most cited plagiarism papers
- To study the Top 20 most cited countries
- To study the various Top 20 Corresponding authors country and publications
- To find out the most preferred The keywords co-occurrence network
- To determine the frequently used Abstract based word cloud
- To study the purpose and benefit of Funding Agencies

Research Methods

All friend assessed logical articles identifying with counterfeiting study were downloaded from the Web of Science™ Core Collection Database [49]. The pursuit terms {"plagiarism"} were utilized in the title field and results were separated by distribution year since 2000 through 2019 No language limits were obligatory. The total metadata for every unique distribution and survey article was incorporated and physically traded on July 28, 2019 [49]. The "reference report" reason since Web of Science was applied to gauge citation rates, h- index and g- index.

Bibliometrix (variant 3.0.1), a R-Tool of R-Studio Version 1.3.959 [50] as complete science planning assessment, and biblioshiny, the gleaming limit up to a web interface for bibliometrix, were utilized to presentation and succeed the metadata from Web of Science™ [48]. Common metadata contained print structures, like writer's name, complete number of distributions, references tally with all total citations (TC), average article citations (AAC), corresponding author's country (CAC), number of citing articles, journal sources, keywords, and the author-level metrics such as h-, g-, and m-, indices. The h-index, a typical intermediary measure for individual logical yield, is characterized as the quantity of papers with citation number $\geq h$ (in any event one citation) [1]. Hence, the h-index relies upon both the quantity of a researcher's distributions and their effect on peers (number of citations). More, to represent the citations development of the most referred to article of the predefined writer over the long haul, the g-index, which gives kudos

for the most exceptionally cited to articles in an informational collection, was utilized. Co-author's estimates included the quantity of articles per writer (articles/authors), number of authors per articles (authors/articles). Also, utilizing the word co-event in our information assortment, we diagrammed the hypothetical construction of a whole word's framework with a dimensionality decline strategy and Multiple Correspondence Analysis (MCA) [10].

We know bunches of papers which express aggregate thoughts. Words appearing to be both in an article were associated in an organization. VOSviewer 1.6.4 [51], an organization study software tool, was reused to speculation a watchword co-occurrence network [35]. The co-occurrence of two watchwords repeats the quantity of diaries wherein the two catchphrases happen created. The size of the rings in the VOSviewer figure shows the number of journals that have the corresponding keywords. The link strength among the rounds reproduces the occurrence of keyword's co-occurrence. The overall link strength is the quantities of link strengths of the keyword total the additional keywords.

Table 1. Main Information about Data in field of plagiarism research

Main Information About Data	
Timespan	2000:2019
Sources (Journals, Books, etc)	1601
Documents	2576
Average years from publication	8.09
Average citations per documents	7.65
Average citations per year per doc	0.81
References	35817
Author's Keywords (DE)	3953
Authors	4835
Author Appearances	6156
Authors of single-authored documents	798
Authors of multi-authored documents	4037
Single-authored documents	969
Documents per Author	0.53
Authors per Document	1.88
Co-Authors per Documents	2.39
Collaboration Index	2.51

Table 1 represents the profile of plagiarism research seen complete window of Biblioshiny: The shiny application for bibliometrix analysis 6156 authors appearances wrote a total number of 2576 numbers of article. It is fairly (4835) number of authors. Findings have interested more scientists to contribute in publishing scientific documents (This is a hypothesis). Collaboration is the significant amongst authors whereby 4037 authors have published exclusively. The Average years from publication for scientific production are about 8.09% in the field of plagiarism. In the whole dataset of 4835 authors, 6156 authors (78,54%) published a single paper related to plagiarism and were considered "occasional" authors; Authors of single-authored documents 798 respectively, Authors of multi-authored documents 4037 respectively. Authors Collaboration Single-authored documents 969 number of authors respectively, Documents per Author 0.533 were produced, Authors per Document 1.88 respectively, Co-Authors per Documents 2.39 were produced and Collaboration Index 2.51.

Table 2. Document Types in field of plagiarism research

Document Types	Records	%
Article	994	38.59

Proceedings paper	782	30.36
Editorial material	427	16.58
Letter	178	6.91
Review	51	1.98
News item	41	1.59
Article; proceedings paper	39	1.51
Book review	24	0.93
Meeting abstract	22	0.85
Correction	11	0.43
Retraction	3	0.12
Review; book chapter	2	0.08
Biographical-item	2	0.08
	2576	100.00

Table-2 discuss about source wise distribution on plagiarism research output were availability during the research periods overall 13 various types of documents are included in this research. Among the 2576 records, the article are placed the first with 39 percentage of document availability, followed by Proceedings paper are placed second with 782 records, the serial number Review; book chapter and Biographical-item are respectively last rank.

Table 3. AnnualTotalCitationperYearin field of plagiarism research

Year	No. of	Mean TC	Mean TC per
2000	13	6.08	0.30
2001	10	10.60	0.56
2002	28	12.71	0.71
2003	32	6.59	0.39
2004	33	8.76	0.55
2005	90	11.81	0.79
2006	99	14.36	1.03
2007	111	7.41	0.57
2008	147	7.80	0.65
2009	171	25.92	2.36
2010	172	10.02	1.00
2011	197	7.52	0.84
2012	218	8.18	1.02
2013	249	5.60	0.80
2014	256	3.67	0.61
2015	156	4.94	0.99
2016	168	4.04	1.01
2017	202	3.04	1.01
2018	183	2.06	1.03
2019	41	0.12	0.12

As seen in the WoS core collection citation database, the global output in plagiarism field cumulated to a total of 2576 articles with an average output of 8.09 papers per year during 2000-2019 and average total citations of articles by year are shown in table 1 the highest mean of total citation per articles 7.65 listed in the year 2014 against 249 number of the article published, more than 10 respectively years (25.92% from 2009, 14.36% from 2006, 12.71% from 2002, 11.81%

from 2005, 10.60% from 2001, and 10.02% from 2010 citation per articles. while the highest (2.36%) Mean total citation per years from 2009, and lowest mean of total citation per article recorded in the year 2019 in the field of plagiarism (Table 3).

Table 4. Top 10 contributing authors'indexes in field of plagiarism research

Author	hindex	gindex	mindex	TC	NP	PYstart
Rosso P	11	20	0.917	413	30	2009
Stein B	8	14	0.533	304	14	2006
Barron-Cedeno A	9	12	0.75	274	12	2009
Bilic-Zulle L	7	9	0.438	221	9	2005
Salim N	5	11	0.417	142	11	2009
Meuschke N	5	9	0.5	82	11	2011
Gipp B	4	8	0.4	75	10	2011
Wiwanitkit V	4	5	0.4	55	36	2011
Cho HG	4	5	0.286	37	12	2007
Joob B	2	3	0.2	16	15	2011

The table 4 describe that the top ten contributing authors indexes in field of plagiarism research, Wiwanitkit V (Department of Clinical Laboratory Medicine, Chulalongkorn University, Bangkok, Thailand) was hierarchical first in the number of published articles (n = 36) but h-index 4 total citation also 55 citation started by 2011 [37]. Rosso P (Professor, Computer Science, Universitat Politècnica de València, Spain) had the highest h-index, g-index, m-indexes and overall citation also citation started by 2009 (11, 20 and 2.2, and 413 respectively) [9]. While Stein B (Professor of Computer Science, Bauhaus-Universität Weimar, USA) had the second place m-index and total citation per item count (0.533 and 304) [20-21].

In the time frame analyzed, there were 1601 academic journals publishing papers linked to plagiarism research. Table -5 shows that International journal for educational integrity had the highest publication output (n = 61, .0.88%), followed by Science and engineering ethics (n = 45, 0.62 %), Nature (n = 28, 0.53 %), and Current science (n = 27, 0.17%). The most cited journals were International journal for educational integrity (n = 633), Science and engineering ethics (n = 522), Journal of academic ethics (n = 378), Computers & education (n = 346), and IEEE transactions on education (n = 311). International journal for educational integrity (14) has the highest h index cited started from 2005, following by Science and engineering ethics 13 h-index since 2000, and Journal of academic ethics and Computers & education 12 h-index since 2005 and 2007. Summarized source impact of the top 10 journals publishing on plagiarism.

Table 5. top 10 Journals indexes publishing on plagiarism

Source	hindex	gindex	mindex	TC	NP	PYstart
International journal for educational integrity	14	22	0.88	633	61	2005
Science and engineering ethics	13	20	0.62	522	45	2000
Nature	9	13	0.53	216	28	2004
Current science	3	5	0.17	34	27	2003
Journal of academic ethics	12	19	0.75	378	24	2005
Accountability in research-policies and quality assurance	7	12	0.78	167	21	2012
IEEE transactions on education	11	17	0.55	311	19	2001
Computers & education	12	18	0.86	346	18	2007

Science	5	9	0.28	83	13	2003
American journal of roentgenology	4	7	0.44	52	12	2012

Table 6. Top 10 most cited countries in field of plagiarism research

Country	No. of Records	Total Citations	Average Article Citations
USA	887	5417	10.79
Australia	288	3265	24.01
United Kingdom	281	2987	17.47
Germany	225	661	7.78
Spain	220	656	6.19
France	170	635	24.42
China	143	622	4.04
India	88	347	2.27
Croatia	75	334	12.85
Canada	74	261	5.55

Nineteen Nine countries were involved in plagiarism related research output. Among them, 3823 (86.38%) of publications were contributed by the top 10 most productive countries, putting out more than 50 publications the table-6 indicated that the United States of America (USA) published the most papers (n = 887), had the highest Total Citations (5417), Other productive countries were Australia (n = 288), United Kingdom (n = 288), and Germany (n = 225). The France had the highest rate of average article citations (n = 24.42), followed by and Australia (n=24.01), United Kingdom (n= 17.47), Austria (n= 14.27), Croatia (n=12.85), and the USA (n = 10.79).

The top 10 cited journal articles by plagiarism publications are presented in Table-7. The number of citations displays how popular the articles are among researchers in the plagiarism area. Most of these articles are survey articles related to the theme of plagiarism analytics. The first-ranked article, titled “In other (people's) words: Plagiarism by university students--literature and lessons” published by Park, Chris, Chris in Assessment & evaluation in higher education in 2003 received the maximum number of citations (n = 121) [19]. This article presents a summary of the IT concept, its enabling access to Determinants, Digital Plagiarism, Trends and Patterns, Origin and Emergence, Students Cheat, digital sources, the Internet, quality assurance, learning, teaching, Digital Detection, Promoting Academic Integrity, Honor Codes, Term Paper Mills etc, as well as the relationship between IT and other developing technologies such as plagiarism analytics collected [19]. While second (n = 104) place of citation “Winnowing: local algorithms for document fingerprinting” published by Schleimer, Saul, Daniel S. Wilkerson and Alex Aiken in Proceedings of the 2003 ACM SIGMOD international conference on Management of data at 2003. This paper offerings and impression of the plagiarism detection service concept it's enabling plagiarism, revision, quotation, accurately identifying copying, small partial copies, file sharing all create copies, and Digital content is for copying [26]. Others articles below hundreds citation.

Table-8 exhibit the lean of corresponding author's countries with their number of publications and examination of number of single country publication (SCP), multiple country publication (MCP) and multiple country publication relative. USA was the foremost country with a total of 502 publications out of those 459 were single country and 43 were multiple country publications with a MCP ratio of 0.09 which shows majority of the publications on plagiarism investigation in United States were single country published.

Author	Title	Journals	Years	Vol	Iss. No.	Page No.	Citations
Park, Chris	In other (people's) words: Plagiarism by university students--literature and lessons	Assessment & evaluation in higher education	2003	28	5	471-488	121
Schleimer, Saul, Daniel S. Wilkerson and Alex Aiken.	Winnowing: local algorithms for document fingerprinting	Proceedings of the 2003 ACM SIGMOD international conference on Management of data	2003	3	1	76–85	104
Prechelt, Lutz, Guido Malpohl, and Michael Philippsen	Finding plagiarisms among a set of programs with J plag	J. UCS	2002	8	11	1016	90
Maurer, Hermann A., Frank Kappe, and Bilal Zaka	Plagiarism-A survey	J. UCS	2006	12	8	1050-1084	79
Fanelli, Daniele	How many scientists fabricate and falsify research?	A systematic review and meta-analysis of survey data PloS one	2009	4	5	e5738	65
Martinson, Brian C., Melissa S. Anderson, and Raymond De Vries.	Scientists behaving badly	Nature	2005	435	7043	737-738	61
McCabe, Donald L., Linda KlebeTreviño, and Kenneth D.	Cheating in academic institutions: A decade of research	Ethics & Behavior	2001	11	3	219-232	57
FANG FC., et al	Real-time quantitative reverse transcription PCR for monitoring of blood-stage Plasmodium falciparum infections in malaria human challenge trials	The American journal of tropical medicine and hygiene	2012	109	2	383-394	56
Liu, Chao, et al	GPLAG: detection of software plagiarism by program dependence graph analysis	Proceedings of the 12th ACM SIGKDD international conference on Knowledge discovery and data mining.	2006	12	1	872	53
Ashworth, Peter, Philip Bannister, and Pauline Thorne	Students on the Qualitative Research Methods Course Unit.(1997). Guilty in whose eyes? University students' perceptions of cheating and plagiarism in academic work and assessment	Studies in higher education 22.2: 187-203.	1997	22	2	187-203	52

Table 7. Table most cited plagiarism papers in field of plagiarism research

<http://annalsofrscb.ro>

Table 8. Top10 Corresponding authors country and publications in field of plagiarism

Country	Articles	Freq	SCP	MCP	MCP Relative
USA	502	0.22	459	43	0.09
United Kingdom	171	0.08	145	26	0.15
China	154	0.07	139	15	0.10
India	153	0.07	145	8	0.05
Australia	136	0.06	128	8	0.06
Spain	106	0.05	89	17	0.16
Germany	85	0.04	69	16	0.19
Canada	47	0.02	39	8	0.17
Japan	46	0.02	42	4	0.09
Brazil	45	0.02	37	8	0.18

While United Kingdom on the other hand with a grand MCP relative of 0.15 resides on the fifth place showing although single country publications was more (171) but considerable number of 26 publications were multiple country publications. The high MCP relative shows the greater collaboration of a country with other countries. Spain and Germany correspondingly were the third and fourth respectively countries.

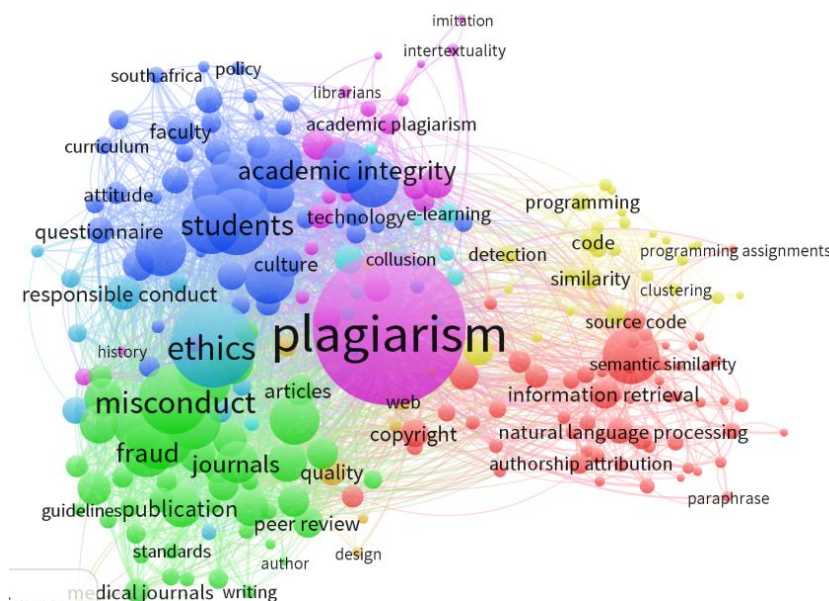


Fig.1 The keywords co-occurrence network in field of plagiarism research.

Keywords analysis

Minimum number of occurrence of a keyword = 5, minimum links strength = 5. Overall, 4481 keywords met threshold criteria. There are 9 clusters of keywords: red indicates Cluster 1 (n = 58), green indicates Cluster 2 (n = 48), blue violet indicates Cluster 3 (n = 46), yellow indicates Cluster 4 (n = 28), pink indicates Cluster 5, aqua indicates Cluster 6, blue indicates Cluster 7, mustard Cluster 8, olive indicates Cluster 9. The most frequent author's keywords were "plagiarism" (n = 1771), "ethics" (n = 560), "misconduct" (n = 370), "scientific misconduct" (n = 354), "students" (n = 332), "perceptions" (n = 264), "science" (n = 254), "plagiarism detection" (n = 247), "attitudes" (n = 240), "fraud" (n = 214). The overall keyword network visualization is presented in figure 1. We recognized keywords through a high-citation burst, which can be used to forecast investigation areas enticing an extraordinary degree of care. The results are plotted on a two-dimensional map total, 9 clusters of words could be recognized (every color signifies a cluster of word).



There is a portion more that could be completed now e.g. poster that in the abstract based word cloud for Tinker Hatfield, the word students, document are repeated the picture - approximately we could address by singularising the words before plotting the word cloud. We used the Shown word cloud mixture in keyword plus Evaluator to create Figure 2, which shows the word cloud of the entire number shaped on the incidence of statuses and the differences in the practice of relations completed plagiarism. A word's font size is larger as the position symmetry is higher. The relations with greater occurrences in the earlier abstract are publicized in the thick pink color of the plagiarism, while the ones with higher frequencies in the current abstract are shown in the olive drab color of the term students, red color indicates for the detection, violet color mention that paper, turquoise color show that academic, and furthermore the identified themes for plagiarism' perception about the adoption of keyword plus color are document, data code, study, software, author, methods, education, source, approach, text, similarity, scientific, system, , etc.

Table 9. Funding Agencies in field of plagiarism research

Funding Agencies	Records	% of 2576
National Science Foundation NSF	37	1.436
National Natural Science Foundation of China	35	1.359
National Institutes of health NIH USA	32	1.242
United states department of health human services	32	1.242
Ministry of Education Culture Sports Science and Technology Japan MEXT	12	0.466
Consejo Nacional De Cienciay Tecnologia Conacyt	11	0.427
CAPES	8	0.311
European Union Eu	8	0.311
Fundamental research funds for the central universities	8	0.311

Japan society for the promotion of science	8	0.311
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Overall 501 agencies contributed in the fields plagiarism related published, the importance and willingness of funding agencies is somewhat reproduced in their organizational plans, mission statements, and strategic objectives. The administrative charts occasionally attribute the responsibility of funding agencies to separate directorates, departments and/or branches (Table 8). For example, funding agencies has a separate partition for plagiarism. Most of the funds supporter by National Science Foundation mission [52], while 35 of funds patron from National Natural Science Foundation of China [53], 32 of funds sponsor by two organisations National Institutes of health NIH USA and United states department of health human services, Ministry of Education Culture Sports Science and Technology Japan MEXT [44] 12 of funds spent, 11 of funds Consejo Nacional De Ciencia y Tecnologia Conacyt [55], and others funding agencies below eight number of funds provided during the period in the field of plagiarism

Conclusion

Our scientometric analysis revealed a global lessening research in Plagiarism, fewer research output from high-income countries (exclusively of USA) compared to low- and middle-income countries and narrow collaborate author with developing countries. The low outputs in developing countries in Plagiarism research mirror the state of matters in other research fields. A improved understanding of the Trends and Patterns, Digital Detection, Promoting Academic Integrity, quality assurance, Origin and Emergence and Plagiarism -associated accurately identifying copying is needed in countries with high digital sources in the world. Developing themes and recent research focus in Plagiarism research are not easily recognized in scientometric studies due to low incidence of appearance in keywords, therefore, the necessity for forthcoming studies guided by narrative reviews

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