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Evaluating the Scholarly Literature on Information Literacy indexed in the Web of Science Database

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ABSTRACT

Purpose: The purpose of this paper is to extract and scrutinized the scholarly literature on Information Literacy indexed in the Web of Science database.

Designed/methodology/approach: Bibliometric approach was brought in use to get the publication data on Information Literacy. A retrospective method of data was used to extract the required dataset from the Web of Science database. The dataset was retrieved on 4th January 2021 at King Saud Bin Abdulaziz University for Health Science, Saudi Arabia. The word *Information Literacy* has been written in inverted commas in the Basic Search option and select "Topic" in the subsequent box. Timespan box was set on All years (1900-2020) by default. A total of 4,943 items has been identified, further, the filter command "Information Science Library Science" was used in the Web of Science Category to refine and limit the results to 2,945. Further in the limit of "Document Types", four types were, Article, Proceedings paper, Review, and Early Access types were selected. The data of publication was exported into Microsoft Excel for analysis. The data of publications, citations and growth rate was distributed by year, further documents' types, topmost productive countries, institutions, and authors in Information Literacy were identified. The frequently used journals and most cited papers were also presented in tabular form.

Research limitation(s): The study is limited to bibliometric analysis of the scholarly literature on Information Literacy indexed in the Web of Science only and no other databases were brought in use for browsing the same terms.

Key finding(s): A total of 2,251 records were selected for data analysis, published from 1983 to 2020. The selected documents gained 22,107 citations with an average of 8.66 citations per document and 58 documents secured the h-index scale. The United States and California State University System of United States were found most contributing country and institution while the Spanish author, Maria Pinto emerged as the most prolific author.

Practical implication(s): This study identified the usage of Information Literacy and its relevant literature indexed in the Web of Science. This analysis could create awareness among the readers, potential authors, and library and information professionals in understanding the scope and coverage of this subject.

Contribution to Knowledge: This attempt will serve as a source of direction for the new investigators interested in the bibliometric examination of research productivity of various journals and scholarly databases. It will contribute to the academic world and will assist to spread the boundaries of knowledge.

Keyword(s): Bibliometric, Information Literacy, Web of Science,

INTRODUCTION

Library practitioners have adopted quantitative methods to evaluate library resources and services more effectively. Bibliometric, a quantitative research method has been used in the field of Library and Information Science (LIS). It was applied by Cole and Eales (1917) for the first time as *statistical bibliography* and opted for it as the sub-discipline of LIS. Cole & Eales (1917) conducted a study to assess the progress of comparative anatomy from 1543-1860. The second study was conducted by Hulme (1923), in this study entries and authors of "*English International Catalog of Scientific Literature*" were examined. Gross and Gross (1927) carried out another similar study and that was related to citation analysis. The term *bibliometric* was used by Alan Pritchard for the first time in 1969. The word bibliometric is an amalgamation of two words "*Biblio*" means book or related to book and "*metric*" means measurement, so bibliometric refers to the application of mathematics to the study of bibliography. Pritchard (1969) defined it as "*the application of mathematical and statistical methods to books and other media*". Bibliometric is the shape of Librametry which was used by the S.R. Ranganathan in the ASLIB conference held in 1948. Other terms for bibliometric are Scientrometric, Informetric and Webometrics etc. British Standard Institute (BSI) defines the term bibliometric as "*the study of the use of documents and pattern of publications in which mathematical and statistical methods are applied*". Bibliometric can be used as quantitative methods to measure the human communication record through process collection, analysis and interpretation of citations given in various types of literature and thereby helping in the identification of significant sources of information. It also helps in the planning and organization of resource sharing, networking and consortium, therefore it is an emerging thrust unit of research in the field of information management. Bibliometric includes a set of methods employed to examine or measure texts and information (Hung, 2012). Journal papers and authorship patterns in terms of geographic, subject organization and other related parameters are usually covered in bibliometric studies (Hazarika, Goswami, & Das, 2003; Hussain & Jan, 2020).

Zurkowski (1974), the president of the National Forum on Information Literacy who used the phrase Information Literacy (IL) as "*the ability to know when there is a need for information and to be able to identify, locate, evaluate and effectively use that information for the issue or problem that at hand"*. Ferguson (2005) stated that IL helps a person to locate, identify and evaluate the required information in the time of need. According to the American Library Association's Presidential Committee, "*to be information literate, one must be able to identify, locate, and use it properly when it is needed*" (ACRL, 2005). Baro and Zuokemefa (2011) defined information literate are "*people who recognize their own need for good information, and who have the skills to identify, access, evaluate, synthesize and apply the needed information*". IL is keenly important for all businesses like teacher, doctors, engineers, lawyers, scientists, politicians and students to do well in their concerned fields. To identify the significance of IL in the field of higher education, numerous authors have contributed tremendous research which is highly commended for the present era (Mulla, 2014; Parvathamma and Pattar, 2013). The study aims to evaluate the scholarly publications on IL indexed in the Web of Science (WoS) database.

LITERATURE REVIEW

Bibliometrics plays an important role in evaluating the academic growth of publications to define parameters via statistical in an accurate manner (van Eck & Waltman, 2014). Broadus (1987) defined it as "*the quantitative study of published physical units, bibliographic units or both*". It is the application of various statistical analyses to study patterns of authorship, publication, and literature use (Glänzel, 2003). Bibliometric is the discipline where quantitative approaches were implemented in scientific fields to study various aspects of written articles like the subject, author, and citations, title, etc. (Hussain, Fatima, & Kumar, 2011). This type of analysis would be useful to monitor the growth of literature and patterns of research (Jacobs & Pichappan, 2001).

The methods of bibliometric closely relate to informatics, scientometrics and webometrics (Hood & Wilson, 2001), these methods can be used in research by increasing the quantity of topics, such as distribution, frequency and words used in different databases which are helpful to link with websites or the link cited by researchers in literature. (Bar-Ilan, 2008). To assist the scientific activities, bibliometric is to be proved as the most common tool (López-Muñoz et al., 2006). In the most prominent quantitative approach of Library and Information Science, the role of bibliometric is of great importance (Laengle et al., 2017).

IL has an exponential increase in information that is freely available over the internet and the rapid development of information technologies that are useful in spreading this information. Before the World Wide Web until 1990, the field of LIS was limited to the use of books and articles, but after the advent of Robust technology, the word IL became a prominent area of browsing and searching across the ever-increasing flood of information. Presently known term IL, earlier being used as library users' instruction and Rader (2002) found more than five thousand papers were published on this topic from 1973 to 2002. More than half (60%) papers on IL were linked to academic libraries. Park and Kim (2011) evaluated the publication growth of IL from the LISA database and found that a total of 908 papers were identified which were published in 214 journals from 1991 to 2009. The three most used descriptors were user training (n=310), university libraries (n=188) and students (n=169). The highest number of papers (n=59) were published in *Reference Services Review*.

Nazim and Ahmad (2007) evaluate the research patterns of IL and they found 607 records from the LISA-PLUS database published between the years 1980-2015. These records were published in 158 journals contributed by 703 authors and 84% of the authors shared one article each. Rader was found the most productive author with 15 papers. About two-third (n=372; 63%) of the papers were written by single author pattern and slightly more than one-fourth (n=161; 27%) were followed the two-author pattern.

Panda, Maharana and Chhatar (2013) examined the 131 documents published in the *Journal of Information Literary* from 2007-2012. More than two-third (n=90; 68.7%) were contributed by solo author followed by two-author pattern (n=23; 17.57). These 131 documents gained 1,627 citations with an average of 12 citations per document. Ninety-five percent of the documents were written by academics. The authors belonged to 15 countries contributed but the majority of documents (71%) were written by the authors affiliated with the United Kingdom.

Alagu and Thanuskodi (2019) surveyed the global research on digital literacy from 1992 to 2011. A total of 512 records were found from WoS database. The ratio of single and multi-author pattern was consisted of 45% and 55%, respectively. Hargittai was found topmost researcher with seven papers and the highest number of documents (33%) were shared by the authors of the United States.

Kolle (2017) scrutinized the literature on IL indexed in WOS from 2005 to 2014. A total of 1,503 papers were found and these papers gained 7,505 citations with a mean ratio of 4.99 citations per paper. The lowest number of papers (n=66) was published in 2005 and these papers received the maximum citation impact (13.68). Pinto, M of University of Granada, Spain has emerged as the most productive author with 23 papers. More than one-third (38%) of the total literature on IL was produced by the United States followed by United Kingdom and Australia. *Journal of Academic Librarianship* was found the preferred source with 97 papers. Information literary, media literacy and digital literacy were the three most frequently used keywords.

Pinto, Escalona-Fernández, & Pulgarín (2013) measured the publications on IL with social and health sciences from 1974 to 2011. The bulk of articles (n=2,177) in IL were published in social sciences while 367 articles were found on health sciences. The highest numbers of papers were published during the last five years of study from 2007 to 2011. The ratio of collaboration was

high in health sciences as compared to social sciences. Social scientists frequently used *Reference Services Review* and health sciences authors used *Health, Information and Libraries Journal* for the dissemination of their findings.

Majid et al., (2017) analyzed 1,989 Scopus documents on IL published from 2003 to 2012. The growing trend of documents was found except in 2012 and the highest number of documents (n=347) was published in 2011. The highest ratio of citations, 10.8 citations per document was gained by 55 documents, published in 2004. Julien, H was found a productive author but the highest average of citations gained by Lloyd, A. More than half of the documents fall in the category of social sciences followed by computer sciences, medicine and engineering. Slightly less than half of the documents were produced by the United States and *Reference Services Review* was found most frequent option for publication.

Aharony (2010) reviewed the 1,971 documents on IL published from 1999-2009 in WoS indexed sources. Three-fourth (75%) of the document type comprised of articles and 54% of documents were contributed by the United States followed by United Kingdom (10.15%). About one-third of the documents (31.82%) were related to information science, library science, and then 10.76% of the documents fall in the category of education, educational research. The assessment of keywords showed that IL has been mostly researched in the health sciences discipline.

Alagu and Thanuskodi (2018) analyzed the research output on IL by India for 25 years from 1993 to 2017. A total of 113 records were found in the WoS database published in 20 journals, 94.7% consisted of article type and Joshi, A. was found a prolific author with three publications. About 17% of documents were written by a single author and the highest number of documents (n=9) were published in the Journal of Evolution of Medical and Dental Sciences. Indian authors collaborated with the authors of 19 countries and the United States found on the first rank with 14 collaborative documents.

METHODOLOGY

A retrospective research method has been used to get the publications data on "Information Literacy" in LIS perspective indexed in the Web of Science database. The dataset was collected on 4th January 2021 at King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia.

The Web of Science Core Collection was selected against the "Select of Database box". The core collection database is assisted to navigate the required dataset with complete citations detail from the world's leading scholarly journals, monographs, and conference proceedings in the sciences, Social sciences, and art & humanities. The word "Information Literacy" has been written in inverted commas in the Basic Search option and select "Topic" in the subsequent box. Timespan box was set on All years (1900-2020) by default. A total of 4,943 items has been identified, further, the filter command "Information Science Library Science" was used in the Web of Science Category to refine and limit the results to 2,945. Further, in the limit of "Document Types", four types were, Article, Proceedings paper, Review, and Early Access types were selected.

Following search query was used.

You searched for: TOPIC: ("Information Literacy"), Refined by [excluding] Publication Years: (2021) And Web of Science Categories: (Information Science Library Science) and document types: (article or review or proceedings paper or early access), timespan: all years.

Following 394 documents were excluded:

Book review (n=294), Editorial materials (n=80), Meeting abstract (n=10), Correction (n=3), News item (n=3), Reprint (n=2), Biographical item (1), and Note (1)

The bibliographic dataset of four selected types of documents was downloaded for data analysis. The following formula was used to calculate the annual growth rate of the publications (Latif & Haq, 2020).

Annual growth rate = 100 (most recent value – past value)/past value

OBJECTIVES

The dataset has been analyzed to achieve the following objectives:

1. To segregate the subscription based and open accessed documents with their citation impact
2. To assess the chorological growth of documents and citation impact by years
3. To examine the types of documents
4. To highlight the top productive countries and institutions
5. To observe the productive authors, with their affiliation and number of documents
6. To describe the characteristics of 10 most-cited documents

RESULTS

Citations analysis

A total of 4,943 records were recognized on the topic of IL and 2,945 bibliographic records related to the category of Information Science Library Science have been selected on the first phase, then four types of scholarly documents consisted of 2,551 have been selected for data analysis, published from 1983 to 2020. The selected documents (n=2,551) received 22,107 citations with an average of 8.66 citations per document and 58 documents secured the *h*-index scale.

In the analysis of the accessibility status of documents, almost one-third (n=869; 34%) of the documents are freely available in the full text while the other two-third (n=1,682; 66%) of the documents are fall in subscription-based group. The comparison of the citation impact of both types shows that open accessed documents received 7,261 citations with an average of 8.35 citations per document while subscription-based documents gained 14,846 citations with a mean of 13.14 citations per document. The subscription-based documents received a higher ratio of citation impact as compared to open accessed documents.

Distribution of documents and citations by years

Table-1 described the chronological distribution of publications, citations and annual growth rate. It has been found that from 1983 to 2020, a total of 2551 papers were published. Only one paper was published in 1983, during the first 12 years (1983-1994), the subject of IL has been going through an embryonic phase and 33 papers with an average of 2.75 papers per year was found on the topic of IL. Slightly more than 15% (n=395) of papers were published during the second phase of 13 years (1995-2007) but these papers received the highest, 22.68 citations per paper. More than one-fifth (n=2,123; 83%) of the papers were published during last the 13 years from 2008 to 2020, these publications received an average of 5.47 citations per paper. The average annual growth rate of these publications was found 57.78. Figure-1 demonstrates the progress of publications and citations, blue bars indicate that the last six years of study found most productive and line indicate the growth of citation, there are three peaks in 2007, 2011 and 2006 with 2158, 1763 and 1450 citations, respectively.

Table-1, Distribution of total documents (TP), percentage of documents (PD), Cumulative total of documents (CTD), total citations (TC), Cumulative percentage of citations (CP), Citation Impact (CT), and Annual Growth Rate (AGR) by year.

Year	TP	PD(%)	CTD	TC	CP(%)	CI	AGR
1983	1	0.04		0		0.00	
1988	1	0.04	2	0	0.10	0.00	0.0
1989	3	0.12	5	0	0.24	0.00	200.0
1990	3	0.12	8	14	0.51	4.67	0.0
1991	3	0.12	11	29	0.85	9.67	0.0
1992	2	0.08	13	11	1.09	5.50	-33.3
1993	18	0.72	31	35	1.70	1.94	800.0
1994	2	0.08	33	141	1.77	70.50	-88.9
1995	8	0.32	41	20	2.14	2.50	300.0
1996	6	0.24	47	50	2.55	8.33	-25.0
1997	23	0.92	70	246	3.33	10.70	283.3
1998	9	0.36	79	30	3.71	3.33	-60.9
1999	21	0.84	100	410	4.52	19.52	133.3
2000	11	0.44	111	638	5.03	58.00	-47.6
2001	33	1.32	144	594	6.26	18.00	200.0
2002	31	1.24	175	796	7.48	25.68	-6.1
2003	31	1.24	206	876	8.94	28.26	0.0
2004	40	1.61	246	897	10.61	22.43	29.0
2005	38	1.53	284	814	12.44	21.42	-5.0
2006	61	2.45	345	1450	14.99	23.77	60.5
2007	83	3.33	428	2158	18.70	26.00	36.1
2008	78	3.13	506	1265	22.20	16.22	-6.0
2009	75	3.01	581	1261	25.60	16.81	-3.8
2010	83	3.33	664	1245	29.24	15.00	10.7
2011	105	4.22	769	1763	33.63	16.79	26.5
2012	108	4.34	877	1160	38.01	10.74	2.9
2013	97	3.89	974	1042	42.06	10.74	-10.2
2014	93	3.73	1067	828	45.73	8.90	-4.1
2015	231	9.27	1298	1372	54.37	5.94	148.4
2016	259	10.40	1557	1131	63.72	4.37	12.1
2017	253	10.16	1810	981	72.97	3.88	-2.3
2018	299	12.00	2109	514	83.82	1.72	18.2
2019	261	10.48	2370	290	93.44	1.11	-12.7
2020	181	7.27	2551	46	100.00	0.25	-30.7
	2,551			22,107		8.67	57.78

Type of documents

Table-2 represents the distribution of documents by type with citation rate, since 1983, a total of 2,198 (86%) documents consisted of article type with total of 20,330 citations, followed by proceeding papers (n=333), review (n=102) and early access (n=28). The analysis of citations reveals that the review articles received a higher number of average citations (15.52) as compared to research articles (9.25).

Figure-1, Distribution of documents and citations by year

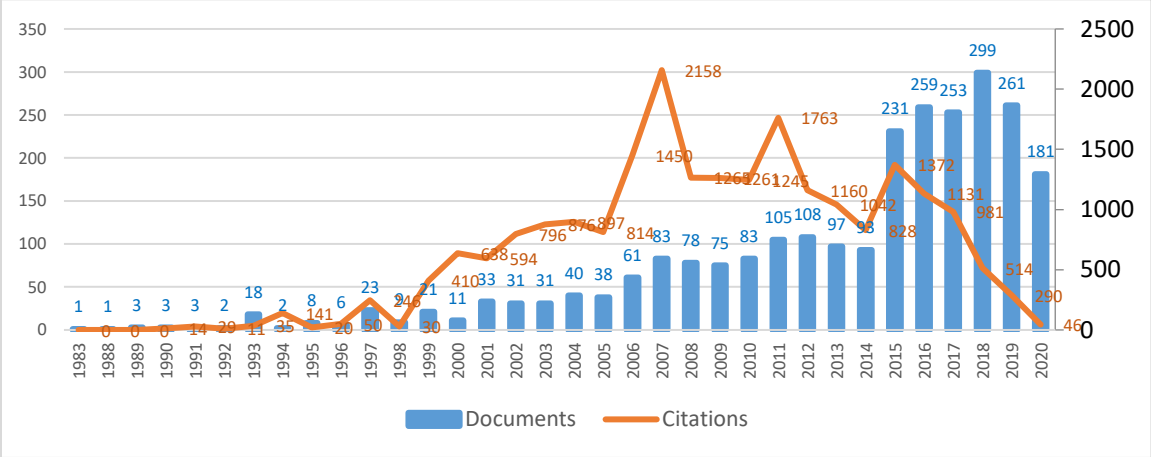

Table-2, Distribution of documents by type with total documents (TD), Total citations (TC), *h*-Index, and Citation impact (CI)

Types of Documents	TD	TC	*h*-Index	CI
Articles	2,198	20,330	56	9.25
Proceeding paper	333	1,175	19	3.53
Review	102	1,583	17	15.52
Early Access	28	6	1	0.21

Most Productive Countries

Table-3 presented the detail of the ten most productive countries around the globe. It has been recorded that the United States has contributed 1,096 (42.96%) documents on IL, followed by England (n=176), Australia (n=143) and Canada (n=138). The top seven countries produced more than 100 papers on IL. Although the United States has been on the top in terms of the number of papers, England has been in the topmost position in terms of citation impact. The papers published by Brazil received the lowest citation impact. Sweden has been standing in 9th position with 53 papers, but this country is equal to the United States in citation impact. The papers on IL of both countries gained 10.15 citations per paper.

Table-3, Top-10 most productive countries with total documents (TD), Total citations (TC), *h*-Index, and Citation impact (CI)

S. No.	Name of Country	TD	TC	*h*-Index	CI
1.	United States	1,096	11,129	46	10.15
3.	England	176	2,599	24	14.77
4.	Australia	143	2,015	25	14.09
5.	Canada	138	1,381	21	10.01
6.	Brazil	122	108	5	0.89
7.	Spain	111	712	14	6.41
8.	South Africa	74	454	12	6.14
9.	Sweden	53	538	13	10.15
10.	Finland	52	333	9	7.1

Most Productive Institutions

Table-4 represents the top-10 most productive institutions with total contributions and h-index citation impacts. It has been observed that California State University System contributed a maximum of 60 papers on IL than other institutions, the University of Granada holds the second positions with 55 documents, however, the contribution of the City University of New York Cuny System and Indiana University System were 35 respectively. While, the State University System of Florida has been ranked third in terms of papers, but this university secured the topmost place in terms of citation impact.

Table-4; Top-10 most productive institutions with total documents (TD), Total citations (TC), *h*-Index, and Citation impact (CI)

S.No.	Name of Institutions	TD	TC	*h*-Index	CI
1.	California State University System, United States	60	554	13	9.23
2.	University of Granada, Spain	55	472	12	8.58
3.	State University System of Florida, United States	43	669	14	15.56
4.	Pennsylvania Commonwealth System of Higher Education PCSHE, United States	42	459	14	10.93
5.	University of Illinois System, United States	41	395	11	9.63
6.	Purdue University, United States	38	197	8	5.18
7.	State University of New York Suny System, United States	36	470	11	13.06
8.	University of North Carolina, United States	36	249	7	6.92
9.	City University of New York Cuny System, United States	35	532	12	15.2
10.	Indiana University System, United States	35	398	10	11.37

Most Dynamic Authors

Table 5, epitomizes the input of most dynamic authors, Maria Pinto of Spain, a faculty member of information science at the University of Granada, who contributed 48 papers and her papers gained 464 citations. Heidi Julien of the University of Buffalo, United States has contributed 26 papers followed by Annemaree Lloyd of University College London with 25 papers, but her papers gained the highest citation impact in top-ten authors. Fernandez-Pascual, Rosaura of University of Granada of Faculty of Economic & Business Science, Granada, Spain is the only male author in this list. Melissa Gross of Florida State University, School of Information, Tallahassee United States had contributed 12 documents and gained the second-highest citation impact.

Table-5; Top-10 most productive authors, affiliation and with total documents (TD), Total citations (TC), *h*-Index, and Citation impact (CI)

S.No.	Authors'	Affiliation	TD	TC	*h*-Index	CI
1.	Pinto, Maria	University of Granada, Spain	48	464	12	9.67
2.	Julien, Heidi	University of Buffalo, United States	26	541	13	20.81
3.	Lloyd, Annemaree	University College London (UCL), England	25	986	16	39.4
4.	Sales, Dora	UniversitatJaume 1, Spain	19	132	6	6.95

5.	Fourie, Ina	University of Pretoria, South Africa	16	115	7	7.19
6.	Bruce, Christine	James Cook University, Australia	15	210	8	14
7.	Vitorino, Elizete-Vieira	Universidade Federal de Santa Catarina, Brazil	15	12	2	0.8
8.	Marzal, Miguel-Angel	University Carlos III de Madrid, Spain	13	92	5	7.08
9.	Fernandez-Pascual, Rosaura	University of Granada, Spain	12	33	4	2.75
10.	Gross, Melissa	Florida State University, United States	12	396	8	33

Frequently Used Journals

The top-10 frequently used journals with the detail of publishing country, impact and quartile factors has been given in table-6. *Journal of Academic Librarianship* with impact factor 1.325 has been found on the top with a total of 239 documents and 3,190 citations, followed by *Portal-Libraries and the Academy* with 124 documents. The third-ranked journal, *College Research Libraries*, has the highest impact factor (2.052) in the top-10 journal with 118 documents and 2175 citations. The highest citation impact, 22.47 citations per document has gone to the documents published in the *Journal of Documents*.

Table-6; Top-10 frequently used journals, country, impact factor, quartile and with total documents (TD), Total citations (TC), *h*-Index, and Citation impact (CI)

S. No.	Name of Journal	Country	Impact factor / Quartile	TD	TC	*h*-Index	CI
1.	Journal of Academic Librarianship,	USA	1.235 (Q3)	239	3190	30	13.35
2.	Portal – Libraries and the Academy	USA	0.783 (Q4)	124	1588	21	12.81
3.	College Research Libraries	USA	2.052 (Q2)	118	2175	25	18.43
4.	Reference Services Review	England	0.735 (Q4)	116	347	8	2.99
5.	Journal of Librarianship and Information Science,	England	1.479 (Q3)	91	966	17	10.62
6.	Information Research an International Electronic Journal,	England	0.763 (Q4)	88	861	16	9.78
7.	Journal of Documentation,	England	1.725 (Q2)	88	1977	24	22.47
8.	"Information Literacy In The Workplace" Book Series: Communications in Computer and Information Science	Switzerland	ESCI	70	40	3	0.57
8.	Reference User Services Quarterly,	USA	0.708 (Q4)	83	557	14	6.71
9.	Health Information and Libraries Journal,	USA	1.356 (Q3)	70	478	13	6.83
10.	Communications in Information Literacy	USA	ESCI	64	294	9	4.59

Most Cited Papers

Table-8 represents that the top-10 most cited paper with total citations in the WoS and Google scholars, the papers "Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research" was top-cited papers with 434 total citations in the WoS, however, for the same paper total citations in Google Scholar were 1186. These top-cited papers were published between 1999 and 2011, four papers were written by a single author pattern while six were the result of collaborative research. Five papers were produced by the United States, three from England and one each by Finland and Singapore. The ratio of average citation per paper was found 222.1 in the WoS and 742.6 in the Google Scholar.

Table-8; Top-10 most cited papers, with total citations (TC) in Web of Science (WoS) and TC in Google Scholar (GS)

S.No.	Bibliographical Detail of Publications	Authors' affiliation	TC WoS	TC GS
1	Metzger, M. J. (2007). Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research. *Journal of the American Society for Information Science and Technology*, *58*(13), 2078-2091.	USA	434	1186
2	Edmunds, A., & Morris, A. (2000). The problem of information overload in business organisations: a review of the literature. *International Journal of Information Management*, *20*(1), 17-28.	England	349	1178
3	Bawden, D. (2001). Information and digital literacies: a review of concepts. *Journal of Documentation*, *57*(2),218-259.	England	328	1605
4	Elmborg, J. (2006). Critical information literacy: Implications for instructional practice. *The Journal of Academic Librarianship*, *32*(2), 192-199.	USA	193	635
5	Webber, S., & Johnston, B. (2000). Conceptions of information literacy: new perspectives and implications. *Journal of Information Science*, *26*(6), 381-397.	England	162	525
6	Hirsh, S. G. (1999). Children's relevance criteria and information seeking on electronic resources. *Journal of the American Society for Information Science*, *50*(14),1265-1283.	USA	159	436
7	Tuominen, K., Savolainen, R., &Talja, S. (2005). Information literacy as a sociotechnical practice. *The Library Quarterly*, *75*(3), 329-345.	Finland	155	407
8	Fisher, K. E., Durrance, J. C., & Hinton, M. B. (2004). Information grounds and the use of need-based services by immigrants in Queens, New York: A context-based, outcome evaluation approach. *Journal of the American Society for Information Science and Technology*, *55*(8), 754-766.	USA	152	417
9	Majid, S., Foo, S., Luyt, B., Zhang, X., Theng, Y. L., Chang, Y. K., & Mokhtar, I. A. (2011). Adopting	Singapore	148	457

	evidence-based practice in clinical decision making: nurses' perceptions, knowledge, and barriers. *Journal of the Medical Library Association: JMLA*, *99*(3), 229.			
10	Mackey, T. P., & Jacobson, T. E. (2011). Reframing information literacy as a metaliteracy. *College & Research Libraries*, *72*(1), 62-78.	USA	141	580

DISCUSSION

More than five thousand publications relevant to library user's instruction and IL had been published from 1973 to 2002 and 60% of the total publications were contributed by academic libraries (Rader, 2002). The volume of IL has been increasing rapidly and research on IL has become exponential. The present research quantifies the scholarly output of IL only indexed in the WoS database. The purpose of this paper is to present an overview of the bibliometric research limited to scholarly publications contain to IL and indexed in the WoS. To analyze the objectives of bibliometrics, a quantitative method was brought into use for extraction of the possible relationship between the elements. It would also elaborate on the extensive international scientific production on IL (Kolle, 2017). Extensive research has been contributed in the area of Information and documentation, computer science, education and business etc. Here we would also concur with Virkus (2003), who explained the conceptual breadth of IL and diversity being applied. Keeping the experience of literature review and professional knowledge we have divided this present paper into different phases like initial work, growth and integrity etc. Similar studies in the future can dig out more prominent information about IL.

A total of 2,551 scholarly publications were found on the topic of IL in the category of Information Science, Library Science in the WoS database. These publications were published between the years 1983 to 2020 with an average annual growth rate of 58.3 and the highest number of publications (n=299) were published in 2018. The IL publications were divided into three phases, first, middle and latest. The first embryonic phase was comprised from 1983 to 1994 and a total of 33 (1.29%) publications were found in this period and these publications gained 230 citations with a mean of 6.96 citations per paper. The middle phase consisted of 13 years from 1995 to 2007 and 395 (15.48%) publications were published and these publications received 8,958 citations with an average of 22.68 citations per paper. The third and last phase was encompassed with 13 years from 2008 to 2020, the maximum publications (n=2123; 83.22%) on IL were published in this productive period but the lowest citation impact, 5.47 citations per paper was found. The earlier studies also endorsed that older publications received a higher number of citations as compared to the latest publications (Kolle, 2017; Tanveer et al., 2020). All targeted publications on IL gained 22,107 citations with an average of 8.67 citations per paper. One-third of the publications were available in the open-accessed format while two-third fall in subscription-based format. Open-accessed publications received a less citations (8.35 citations per paper) as compared to subscription-based publications (13.14 citations per paper). The two papers were published in 1994, these papers received 141 citations with an average of 70.50 citations per paper, this has been found the highest citation impact by year, followed by 11 papers that were published in 2000, these papers received 638 citations with an average of 58 citations per paper. The analysis of the document's type revealed that the maximum documents (n=2198; 86.16%) were belonged to the type of article, followed by proceeding papers, review and early access. There were only 102 (4%) review papers, but the review papers received the highest citation impact against other types of documents. Some previous studies also confirmed that review

articles received more attention and citations by scholars as compared to research articles (Haq & Al Fouzan, 2019).

The examination of productive countries and institutions in IL research showed that the United States outclassed the rest of the world. Forty-three percent of the total IL research was created by the authors affiliated to the United States, followed by England (n=176; 6.89%), Australia (n=143; 5.60%) and Canada (n=138; 5.40%). The publications of the United States received 10.15 citations per paper while the publication created by the authors of England gained the highest, 14.77 citations per paper. Nazim and Ahmad (2007) elaborated that out of 607 publications on IL from 1980 to 2000 indexed in Library and Information Science Abstract Plus database, more than half of the publications were contributed by the United States. Ahorony (2010) also confirmed that 54% of WoS indexed publications on IL from 1999 to 2009 were produced by the United States followed by England. Johnson et al. (2012) analyzed the 2,052 documents on IL published during the first decade of the 21st century in peer-reviewed journals and the United States contributed 70% of the total.

The scrutiny of the top-ten productive institutions showed that out of 10, nine institutions belonged to the United States. The authors affiliated to California State University System, United States produced the highest number of papers (n=60), followed by the University of Granada, Spin (n=55) and State University System of Florida, United States (n=43). The credit of getting the maximum of 15.56 citations per paper has gone to the publications of the State University System of Florida, United States. Maria Pinto of University of Granada, Spain emerged as the most prolific researcher in scholarly publications in IL with 48 publications followed by Heidi Julien of the University of Buffalo, United States with 26 publications and Annemaree Lloyd of University College London (UCL) England with 25 publications. In the list of top-10 authors, the research publications of Annemaree Lloyd gained the highest citation impact with 39.4 citations per paper. Interestingly, out of the ten most productive authors in IL, nine are female by gender. Kumari et al. (2015) evaluated the bibliometric parameters of documents published from 1999-2013 and found that Heidi Julien and Pinto Maria as the most productive authors. Majid's (2015) study also validated the same results.

Forty-five percent (n=1,151) of the IL research were published in the top eleven journals as listed in table-6, among them six journals are published from the United States, four from England and one from Switzerland. Nine journals belonged to Quartile-2 to 4, and two journals fall in the category of ESCI. The maximum, 239 (9.36%) of the scholarly research was published in Journal of Academic Librarianship, followed by Portal-Libraries and the Academy (n=124), College Research Libraries (n=118) and *Reference Services Review* (n=116). These top four journals have more than 100 articles each. As far as the citation impact is concerned, the 88 articles published in England-based, Journal of Documentation received 1,977 citations with an average of 22.47 citations per paper whereas the first ranked, Journal of Academic Librarianship received 13.35 citations per paper. Previous studies identified some of the preferred sources for dissemination of IL research as *Reference Services Review*, (Johnson et al., 2012; Majid et al., 2017) *Journal of Academic Librarianship* (Kolle, 2017), and Pinto, Escalona-Fernández, & Pulgarín (2013) discovered that Social scientists frequently used *Reference Services Review* and health sciences authors used *Health, Information and Libraries Journal* for the dissemination of their findings.

CONCLUSION

Information Literacy has become a buzzword after the advent of the World Wide Web (WWW). WoS is a known reputed database that indexed multidisciplinary subjects. The purpose of this

paper is to cover the word IL covered by the WoS. For this purpose, a retrospective research method has been conducted to elaborate the existing scholarly literature relevant to IL, a total of 4,943 records was recognized, 2,551 have been selected for data analysis, published between 1983 and 2020. The selected documents (n=2,551) received 22,107 citations with an average of 8.66 citations per document and 58 documents secured the h-index scale. The United States and California State University System, United States were found most contributing country and institution, respectively. Among the top-ten most productive authors, nine are females. Although Spain falls on the seventh number in a country table but Maria Pinto, the Spanish author stands on the top in the list of productive authors.

This attempt will serve as a source of guidance for the new researchers interested in the bibliometric analysis of research outputs of various journals, scholarly databases and specific disciplines. It will also contribute to the scholarly world and will assist to extend boundaries of knowledge. This study will also identify the usage of IL and its relevant literature indexed in the WoS. This analysis is expected to create awareness among the readers, potential authors, and library and information professionals in understanding the scope and coverage of this subject.

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