Bibliometric Study on Research Growth of Information Literacy

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Abstract: - *In 21st century, Information Literacy (IL) has become a crucial issue for the political, economic, social & cultural development in all countries. IL is global phenomenon today. It is information gap that divides the nations & the citizens of a nation into rich & poor. It is information literacy that helps in closing this gap. The objective of the present paper is to highlight the concept of Literacy, Information Literacy, Scientometrics Study, Growth of Literature and to specify objectives, hypothesis, limitations, research methodology and conclusions of the study.*

Keywords: Literacy, Information Literacy, Bibliometrics, Information and Communication Technology (ICT), UGC-INFONET, Research Productivity, Scientometrics.

1. Introduction

It is acknowledged that we live in an information-rich society where the amount of information in the world is presently doubling every three years. Therefore it is a necessity of the 21st century to include information literacy (IL) in education.

The information society calls for all people to become information literate, which means that they should not only be able to recognize when information is needed but also be able to identify, locate, evaluate and effectively use information needed for decision making or fulfilling different goals. IL is increasingly important in the present context of the information explosion and related uncertainties about its authenticity, validity, and reliability.

In the information super high way, due to the development of Information and Communication Technology (ICT) tremendous growth of information's leads to information overload. Today the major challenging task is how to access? How to use? How to evaluate the information? To avoid such kind of problems educating the users is essential. Not only in the academic area, but in all professions, people need to know how to use that, how to utilize all the kinds of information and services available world wide. So the knowledge about the information for

the people is an important one for the effective usage of the information.

The terms Bibliometrics and Scientometrics were introduced simultaneously by Pritchard, Nalimov and Mulchenko in 1969. Pritchard defined the term 'Bibliometrics' as 'the application of mathematical and statistical methods to books and other communication medium'. Nalimov and Mulchenko defined 'Scientometrics' as 'the application of those quantitative methods which are dealing with the analysis of science viewed as an information process'. So, Scientometrics is the measurement of science communication, and Bibliometrics deals with more general information processes. Although, famous Bradford's law (1934) of scattering, Lotka's law (1926) of scientific productivity are regarded as milestones in Bibliometrics, but Bibliometrics / Scientometrics research actually started in late sixties. Later in the seventies and eighties, Bibliometrics research took a distinct shape and emerged as a prominent discipline.

2. Background of the Proposed Research

The term information literacy achieved its current prominence within the library community with the advent of the information explosion. An information environment characterized by an exponentional increase in information that is freely available over the internet, along with the rapid development of information technologies that facilitate the access and dissemination of this information (Grafstein, 2007).

The term "information literacy" was first introduced in 1974 by Zurkowski (the President of the US Information Industry Association), in a submission to the US National Commission on Libraries and Information Science, to identify people trained in the application of information resources to their work (Joint, 2005).

The last three decades have seen a growing interest in information literacy research and its applications. Information literacy scholars and practitioners are sharing their models, standards, research findings and implementation ideas through various communication channels. Several information literacy standards and guidelines have been proposed. In the United States, the American Library Association (ALA) and Association for Educational Communications and Technology's landmark publication 'Information Power', and the Association of College and Research Libraries (ACRL) publication Information Literacy Competency have both become the de facto standards for information literacy competencies from kindergarten to college, both across the US and in many other countries throughout the world. In 2012, ACRL established a Task Force to revise and propose a new framework for Information Literacy Competency Standards for Higher Education (ACRL, 2015).

The development of IL is central to the academic success (Faust, 2001). Information literacy takes the students beyond the role of passive listener and note taker and allows them to take some direction and initiative during class. The main purpose of including this in education system is to direct the students that will allow them to discover the material they work with fellow students to understand the curriculum.

IL instruction assists users in identifying and selecting necessary information, and using appropriate search strategies in evaluating, organizing and synthesizing the information thus acquired into a meaningful state. It makes them self-reliant and gives them a sense of being in control of their learning (Kavulya, 2003).

Scientometrics is one of the most important measures for the assessment of scientific production. Scientometrics is the science of measuring and analyzing science. In practice, Scientometrics is often done using Bibliometrics that is measurement of (scientific) publications. One of the most reliable ways to track science and technology activities is the study of scientific literature (Journal Articles, News, Review, Comment, Letter, Editorial, Newspaper Article, etc.), co-authorship, patents, citations, co-citations. Scientometrics is related to and has overlapping interests with Bibliometrics and informatics. There are many definitions for the term "Scientometrics" in the literature; Scientometrics is the quantitative study of the disciplines of science based on published literature and communication. This could include identifying emerging areas of scientific research, examining the development of research over time, or geographic and organizational distributions of research.

The significant characteristic of Bibliometrics is that it enables predictive studies, and also strategic prognostications. Further, as a research field it incorporates empirical, as well as theoretical types of research dealing mostly with mathematical modeling. To this effect, Scientometrics studies enable the identification of various scientific facts and regularities, difficultly reachable by other modes of research. A characteristic example in this connection is the revealing the structure of research networks or scientific disciplines, the identification of emerging research fields, the revealing of similarities and differences in research conduct or policies, ascertaining the degree of coherence between different spheres and prediction of future development of science.

The present research is a bibliometric study on Information literacy. It is an attempt is made to study the research productivity and growth of literature in Information Literacy.

Definitions

- Information - information is data that has given shape. It may be considered as processed data. Thus, information is data

plus the meaning, which has to be a result of human action (Seetharama, 1999).

- Literacy - literacy involves the ability to use language in its written form: a literate person is able to read, write and understand his or her native language and expresses a simple thought in writing (Bawden, 2001).

- Information Literacy - Information Literacy is an understanding and set of abilities requiring individuals to recognize when information is needed, have the ability to locate, evaluate, use effectively the needed information and create information within cultural and social context (ALA, 1989).

- Bibliometrics - 'Bibliometrics' is composed of two distinct parts i.e. 'biblio' and 'metrics'. The word 'biblio' is derived from the combination of the Latin and Greek word 'bib lion' meaning book, paper. On the other hand the word, 'metrics' indicates the science of meter i.e. measurement and is also derived either from the Latin or Greek word 'metrics' or 'metrikos' each meaning measurement. So, Bibliometrics connotes the science of measurement pertaining to books or documents (Bawden, 2001).

3. Aims & Objectives

- To study the growth of the literature out-put in information literacy
- To analyse the types of the documents in the literature
- To find out the major subject categories in the literature
- To assess the country wise productivity of the articles

4. Hypothesis

1. Most of the literature is published in developed countries.
2. English is the most preferred language.
3. Authors give preference to article form for publication.

6. Scope & Limitation

The present study is a Bibliometric analysis of Information Literacy Literature. It aims to apply the empirical laws of Bibliometrics on the data / records of IL literature. The study includes an analysis of IL literature as covered by SCOPUS between 1977 and March 2017 (Thirty years) in the context of country of contributions, language of contributions, authorship pattern and per-capita aspects of contributions. The study is mainly exploratory in nature in identifying the research output of scientists in Information Literacy and is also analytical in nature with suitable statistical tools application in

strengthening the empirical validity. Based on the analysis, the study aims to arrive at future course of projections in authorship pattern, country of origin of contributions and country of publications.

7. Methodology

Present study is a bibliometric study. It has studied the research productivity and growth of literature in Information Literacy. The relevant data were collected from the Scopus database. Scopus is the World largest database for published abstract and peer review journals. All the data was tabulated in Microsoft excel format, and sorted according to requirements.

Standard statistical tools were used for analyze the data.

7.1 Data collection

The term "Information Literacy" used for collect relevant data in Scopus database. Only ten years (2007 - 2016) published document has been incorporated for this study. The number of records taken for the study is 3009 from the year 1977 to 2017. The restrictions placed on the search concerned the following aspects:

- Terminology: with aim of covering all the available citations on IL, the above mentioned database was searched by using the term 'Information Literacy'.
- Time Period: Given that the objective of the present study was to analyze all the journal articles published on IL, the search was open and not limited to any time period.
- Types of documents: Given the enormous of documents concerning IL it was decided to limit this study to published journal articles. Therefore, books, proceedings, book reviews, etc. were all excluded.

7.2 Data Analysis & Interpretation

Collected data has been analyzed by using Statistical Software Package i.e. SPSS package and presented in table from. For the purpose of analyzing the data some statistical techniques like, co-relation tools, Ti, Ti – Square, Chi – Square etc. were used for analyzing data.

8. Major Conclusions / Findings Of The Study

8.1 Year Wise Distribution

The research productivity and the growth literature of information literacy form the year 1977 to 2017 are shown in table 8.1.1.

Table 8.1.1: Year Wise Distribution of Research Publication

Year	Research Output	Percentage	Cumulative
2017	27	0.90	0.90
2016	314	10.44	11.33
2015	300	9.97	20.41
2014	292	9.70	9.70
2013	297	9.87	19.57
2012	193	6.41	6.41
2011	241	8.01	14.42
2010	225	7.48	15.49
2009	211	7.01	7.01
2008	147	4.89	11.90
2007	148	4.92	9.80
2006	113	3.76	3.76
2005	114	3.79	7.54
2004	77	2.56	2.56
2003	78	2.59	5.15
2002	61	2.03	4.62
2001	40	1.33	1.33
2000	26	0.86	2.19
1999	23	0.76	1.63
1998	21	0.70	0.70
1997	15	0.50	1.20
1996	9	0.30	0.30
1995	8	0.27	0.56
1994	3	0.10	0.37
1993	4	0.13	0.13
1992	4	0.13	0.27
1991	6	0.20	0.33
1989	2	0.07	0.07
1988	2	0.07	0.13
1987	2	0.07	0.07
1986	3	0.10	0.17
1983	2	0.07	0.17
1977	1	0.03	0.03

It shows that the largest number i.e. 10.44% of documents were published during the year 2016, followed by 09.97% in the year 2015 and 09.70% during the year 2014. It also indicates that almost half i.e. 47.29% of research was published during the years 2012 – 2017. It is also noted that the year 1977 saw barely 1% of the literature. The people were not aware about the information literacy before. From the year of 1990 it slightly changes and in the year of 1990, 16 (0.15%) articles were published. In the following years it increases gradually. The favourable changes were leads to the new evolution in research and development of the country.

8.2 Distribution of Subject Categories

Attempts were made to know the subject areas / areas of interest for publishing research. The analyzed data is presented in table & figure no. 8.2.1

Table No. 8.2.1: Subject Area Wise Distribution

Subject Area	Publications	Percentage
Agricultural and Biological Sciences	13	0.43
Arts and Humanities	142	4.72
Biochemistry, Genetics and Molecular Biology	21	0.70
Business, Management and Accounting	127	4.22
Chemical Engineering	9	0.30
Chemistry	27	0.90

Computer Science	739	24.56
Decision Sciences	27	0.90
Dentistry	3	0.10
Earth and Planetary Sciences	11	0.37
Economics, Econometrics and Finance	31	1.03
Energy	3	0.10
Engineering	166	5.52
Environmental Science	6	0.20
Health Professions	55	1.83
Immunology and Microbiology	3	0.10
Materials Science	2	0.07
Mathematics	28	0.93
Medicine	275	9.14
Multidisciplinary	9	0.30
Neuroscience	4	0.13
Nursing	68	2.26
Pharmacology, Toxicology and Pharmaceutics	6	0.20
Psychology	44	1.46
Social Sciences	2224	73.91
Veterinary	1	0.03
Undefined	10	0.33

The maximum numbers of articles were in the category of Social Science subject with 73.91% which is also followed by the Computer Science subject 24.56%. Medicine Subject contains 09.14% and 05.52% was from Engineering Field respectively.

8.3 Distribution of Publications Through Document Type / Form

Table No. 8.3.1 represent the type of documents wise distribution of information literacy literature.

Table No. 8.3.1: Type of Document Wise Distribution

DOCUMENT TYPE / FORM	PUBLICATIONS	PERCENTAGE
Article	2017	67.03
Conference Paper	440	14.62
Review	259	8.61
Book Chapter	150	4.99
Editorial	34	1.13
Note	30	1.00
Book	28	0.93
Article in Press	25	0.83
Short Survey	13	0.43
Erratum	5	0.17
Letter	5	0.17
Conference Review	3	0.10
Total	**3009**	**100.00**

It is understood from the table that 67.03% articles on information literacy were published in academic journals followed by Conference Papers (14.62%) and Reviews (08.61%).

8.4 Geographical Distribution

The following table indicates that the Research Output / Publication with their Country / Location (Geographical) wise since 1977. The analyzed data is presented in Fig. 8.4.1

Figure No. 8.4.1: Geographical Distribution of Publications

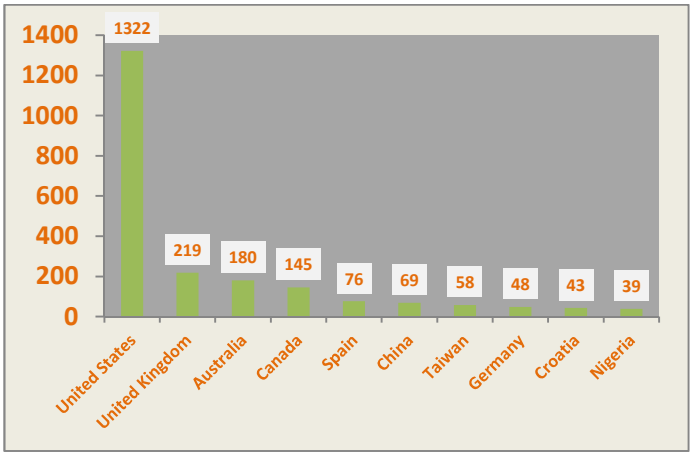

Figure No. 8.4.1 indicates that the top 10 countries by the country wise distribution of research productivity and growth of literature. The maximum number of publications were contributed by the United States (43.93%) followed by the United Kingdom (07.28%). However (05.98%) were contributed by Australia, (04.825%) were contributed by Canada, (02.53%) by Spain, (02.29%) were by China and (01.93%) were by Taiwan. Our Country India is contributed 25 (00.83%) of articles which saw us in the 21st Place.

8.5 Source Wise Distribution

The following table indicates that the Research Output / Publication with their Source Type i.e. Journals, Books etc. wise since 1977. The analyzed data is presented in table 8.5.1

Table No. 8.5.1 Source Wise Distribution of Publications

source type	publications	percentage
Journals	2322	77.17
Book Series	272	9.04
Conference Proceedings	225	7.48
Books	170	5.65
Trade Publications	20	0.66
Total	**3009**	**100.00**

It is understood from the table that the 77.17% articles on Information literacy were published in academic journals followed by Book Series (09.04%). While 225 (07.48%) Literature published in Conference Proceedings, 170 (05.65%) were published in Book Form and 20 (00.66%) published in Trade Publications. It also state that the Current Trend of Publications.

8.6 Language Wise Distribution

An exhaustive analysis of the articles under study revealed that literature on IL is published in various languages. The analyzed data is presented in table 8.6.1

Table No. 8.6.1 Language Wise Distribution of Publications

Language	Publications	Percentage
English	2892	96.11
Spanish	64	2.13
Chinese	24	0.80
Portuguese	24	0.80
German	14	0.47
French	8	0.27
Japanese	5	0.17
Turkish	5	0.17
Croatian	4	0.13
Italian	3	0.10
Lithuanian	3	0.10
Persian	3	0.10
Bosnian	1	0.03
Hungarian	1	0.03
Indonesian	1	0.03
Polish	1	0.03

Table No. 8.6.1 indicates that the top 10 Languages in the Language wise distribution of research productivity and growth of literature. The maximum number of publications were published in English Language 2892 (96.11%) followed by Spanish Language (02.13%). Since English speaking countries and maximum journals covering the articles on the subject under the study are published in English language, it means that English language dominates the others language for article publication in the journals. However (00.80%) literature was published in Chinese and Portuguese. No Indian Regional Language ranked among others.

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