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Knowledge Indexation and Research Productivity in India: Experience with Indian Citation Index

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ABSTRACT

This paper discusses knowledge, research productivity, construction of citation database and their significance for research and academic activities. It also points out the limitations of databases which are causing the development of national citation databases in many countries like China, Korea, Japan, India, etc. which have already brought their own citation Indexes. All these are becoming inevitable and important, as global society is passing on tight rope of the competition to decide scholarly superiority among knowledge stake holders. The paper discusses various steps required for constructing citation database depicting complete process flow followed in Indian Citation Index. It discusses research productivity in terms of quantitative and qualitative output of African countries published in journals of Indian origin and indexed in Indian Citation Index. The paper analyzes and reveals that 44 African countries have significant academic collaboration with Indian counterparts and journals. It also reveals that 09 African countries do not publish any article (paper) in journals of Indian origin and thus have no academic collaboration. The Indian Citation Index organizes the universe of knowledge spectrum into 51 main (primary) subject categories which are further divided into their ~1000 macro level sub subject categories. The paper also finds that currently Indian Citation Index indexes 290 Open Access (OA) Journals published from India which covers 39 primary subject categories.

1.0 INTRODUCTION

Research and innovation are the results of knowledge continuum of human endeavors from the beginning of human civilization. The basic aim of research is to discover and develop methods and systems for advancement of human knowledge. In India higher education system deals with teaching, research, innovation and training which in turn aims to foster academic excellence, develop scientific temperament & ecosystem, industrial innovation and entrepreneurship. Knowledge contents flow from academic and research institutions in different forms and get accumulated as knowledge assets. Knowledge assets are visible, countable and tangible indicators of knowledge strength of a country and people's prosperity thereof. In all, the research articles are one of the major forms of knowledge assets which can be counted and measured using appropriate citation index or dataset. The citation index is not a recent or new idea, it has a long history. In fact the first practical application of a citation index was Shepard's Citations, a legal reference tool that has been in use since 1873[1]. Historically, citation analysis as a concept has its existence since the advent of Islam and has a reference in a branch of Islamic theology called the Science of Hadith. Generally researchers use to identify the accuracy and legitimacy of documents (sources) based on citations alone[2]. Citation indexes resolve semantic problems associated with other traditional subject indexes by using citation symbology rather than words to describe the contents of a document[3]. Primarily citation indexes perform two functions i.e. as an exploration of research tool and evaluation tool[4]. The references that researchers cite in their papers make explicit links between their current research and prior work in the

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literature archive. A citation index is built around these linkages. Indian Citation Index (ICI) too has been built using these linkages and it indexes research oriented works (papers) of journals published from India. Like other similar indexes, this enables one to move back in time to previously published papers and one can also look forward in time to determine who has subsequently cited an earlier piece of research.

1.1 RESEARCH PRODUCTIVITY & COLLABORATION

It is the totality of research performed by Academics/Researchers in universities/institutes and related contents within a given time period. It relates to research publications; writing a book or chapter; working with post-graduate students on dissertations & class projects, research proposals for grants, carrying out editorial duties, obtaining patents; writing monographs, developing experimental designs, producing works of an artistic or creative nature, engaging in public debates and commentaries, etc. Research productivity is an outcome measurement of scholarly effort & it may indicate strength and weakness of stake holders. In general Research Productivity has its two components, i.e. knowledge creation (research), and knowledge distribution. The main stake holders of research productivity are institutions, academics, faculty, students, and researchers of the system. However, here in Indian Citation Index (ICI) we have taken publications in consideration for measuring productivity being straight, tangible and countable output of research. In all 174 countries publications of the world have published in journals of Indian origin during 2004 to 2014 and out of these 45 countries are from African continent as shown below in Table. Also, there are 09 countries of Africa – like Angola, Cabo Verde, Cote d'Ivoire, Djibouti, Equatorial Guinea, Guinea-Bissau, Sao Tome and Principe, Somalia, and South Sudan which could not publish even a single paper in journals of Indian origin during above mentioned time slot.

Table 1: County Wise Productivity Ranking Based on Articles Count

Rank	Name of African Country	No of Articles	No. of Citations	Rank	Name of African Country	No of Articles	No. of Citations
1	Nigeria	6966	2077	27	Togo	19	5
2	Egypt	3446	962	28	Rwanda	16	1
3	South Africa	2840	762	29	Sierra Leone	13	2
4	Algeria	855	169	30	Guinea	10	0
5	Ethiopia	785	304	30	Niger	10	1
6	Morocco	635	182	31	Mali	9	0
7	Tunisia	561	93	31	Mozambique	9	0
8	Kenya	420	187	32	Gabon	8	0
9	Libya	391	197	33	Chad	7	1
10	Ghana	337	75	34	Madagascar	6	1
11	Cameroon	275	107	35	Mauritania	4	0
12	Sudan	269	67	35	Seychelles	4	3
13	Botswana	248	95	36	Burundi	3	0
14	Tanzania	181	55	36	Comoros	3	2
15	Zimbabwe	175	63	36	Gambia	3	0
16	Mauritius	117	24	37	Liberia	2	0
17	Eritrea	114	36	38	Central African Republic	1	0
18	Uganda	105	20	39	Angola	0	0
19	Senegal	62	8	39	Cabo Verde	0	0
20	Namibia	58	10	39	Cote d'Ivoire	0	0
21	Zambia	53	15	39	Djibouti	0	0
22	Benin	50	18	39	Equatorial Guinea	0	0
23	Congo, Republic	47	10	39	Guinea-Bissau	0	0

	of the		
24	Burkina Faso	33	8
24	Swaziland	33	6
25	Malawi	25	2
26	Lesotho	22	14

39	Sao Tome and Principe	0	0
39	Somalia	0	0
39	South Sudan	0	0

Source: www.indiancitationindex.com

Table 2: Citations Based Ranking of African Countries

Rank	African Countries	No of Articles	No. of Citations	Avg. Citation / Paper
1	Nigeria	6966	2077	0.298
2	Egypt	3446	962	0.279
3	South Africa	2840	762	0.268
4	Ethiopia	785	304	0.387
5	Libya	391	197	0.504
6	Kenya	420	187	0.445
7	Morocco	635	182	0.287
8	Algeria	855	169	0.198
9	Cameroon	275	107	0.389
10	Botswana	248	95	0.383
11	Tunisia	561	93	0.166
12	Ghana	337	75	0.223
13	Sudan	269	67	0.249
14	Zimbabwe	175	63	0.36
15	Tanzania	181	55	0.304
16	Eritrea	114	36	0.316
17	Mauritius	117	24	0.205
18	Uganda	105	20	0.19
19	Benin	50	18	0.36
20	Zambia	53	15	0.283
21	Lesotho	22	14	0.636
22	Congo, Republic of the	47	10	0.213
22	Namibia	58	10	0.172
23	Burkina Faso	33	8	0.242
23	Senegal	62	8	0.129
24	Swaziland	33	6	0.182

Rank	African Countries	No of Articles	No. of Citations	Avg. Citation / Paper
26	Seychelles	4	3	0.75
27	Comoros	3	2	0.667
27	Malawi	25	2	0.08
27	Sierra Leone	13	2	0.154
28	Chad	7	1	0.143
28	Madagascar	6	1	0.167
28	Niger	10	1	0.1
28	Rwanda	16	1	0.063
29	Angola	0	0	0
29	Burundi	3	0	0
29	Cabo Verde	0	0	0
29	Central African Republic	1	0	0
29	Cote d'Ivoire	0	0	0
29	Djibouti	0	0	0
29	Equatorial Guinea	0	0	0
29	Gabon	8	0	0
29	Gambia	3	0	0
29	Guinea	10	0	0
29	Guinea-Bissau	0	0	0
29	Liberia	2	0	0
29	Mali	9	0	0
29	Mauritania	4	0	0
29	Mozambique	9	0	0
29	Sao Tome and Principe	0	0	0
29	Somalia	0	0	0
29	South Sudan	0	0	0

25	Togo	19	5	0.263

Source: www.indiancitationindex.com

1.2 JOURNAL–BRIEF BACKGROUND

A journal refers to a serial and serious scholarly publication that is well peer-reviewed, issued at defined and undefined interval. In the world history of journals, the first one was published in 1665, on 5th January i.e. 'Journal des sçavans' and thereafter in the same year on 6th March 1665 second journal, i.e. 'Philosophical Transactions of the Royal Society of London, was published which pioneered the concepts of scientific priority and peer review system. In India, first journal 'Asiatick Researches' was published in 1788. Since then journal publication in India has come a long way and as of now over 6,000 journals in various forms and styles are being published from here. The figure of 6,000+ is quite impressive but all these are not research journals. In the category of journals many different type of publications such as, newsletters, house journals, business news, magazines, popular periodicals, etc. are also counted. However, out of 6,000+ journals, only about 1,800 are good, research-oriented and peer-reviewed publications but out of these, 400 - 500 are either irregular or run late. Thus, there are only 1300 – 1400 journals which are considered as indexable in ICI. In Indian Citation Index (ICI), currently, 900 + journals of all subjects are indexed, with data depth of 2004 onwards.

We all frequently use the term "International Journal' and "National/Local Journal" without knowing and understanding technical and anatomical difference between the two. It seems that in all developing and less developed world there is a widespread perception among all academic and research stakeholders that foreign journals are international & good in quality whereas the journals published from their own country are national/local & inferior in quality.

1.2.1 Defining an International Journal

Primarily, for any publication to qualify as an international journal, it must meet the following criteria, irrespective of "international' word in its title and the location of the publication.

- The editorial board members/editors/reviewers need to be well known experts in the subject area of the journal.
- The editorial board members/editors/reviewers need to be "Inter-institutional", and preferably "Inter- Countries".
- The journal as a policy and scope should receive and publish papers from own and foreign country Author (s).
- The journal should have its wide circulation/subscriptions from own and foreign countries.
- The journal should carry ISSN, which is a unique and international number.
- The journal needs to follow rigorous peer review mechanism comparable to world standards and practices.
- The journal should come regularly as per its defined frequency.

1.2.2 Defining a National Journal

Journals which have national orientation framework and are largely confined to national boundary are known as national/ local journals. Following points further clarify the features of a journal to be called as national/local.

- The editorial board members/ editors/reviewers need to be well known experts in the subject area of the journal.

- The editorial board members/editors/reviewers should be “Inter-institutional” from the country of journal’s origin.
- The journal as a policy and scope should receive and publish papers from own country author(s).
- The journal should have its circulation/subscriptions from own country.
- The journal should carry ISSN, which is a unique and international number.
- The journal should be well peer reviewed.
- The journal should come regularly as per its defined frequency.

1.2.3 Defining Quality of a publication/article

The term quality is generally subjective and contextual; however, in case of research publication, its readers are the best judge. Though the quality of research and innovation is enlightening; it changes the direction of a field dramatically; and advances the field not incrementally, but in a major visible or perceivable manner. A research publication should possess the following three dimensions for attracting quality and citations:

1. Physical: its attributes-- physical format, binding, designing, paper quality, shape, form, etc.
2. Subtle: attributes are micro personality of a document, like printing, language, fonts, format, margins, ink quality, etc.
3. Soul: attributes to research finding, innovation, invention, etc. achieved through *in vivo* and *in vitro* processes.

India is a substantial part of the global society and has a long and distinguished history as a country; possess capability and vital resources to influence, mark presence on the emerging universe of knowledge. Apparently, India is contributing good amount of knowledge in the form research articles. The research papers of India are publishing in foreign as well as in journals of Indian origin. We found that 52% plus research papers of India are published in journals of Indian origin and remaining about 48% papers are in foreign journals[5]. Since India was not having its own citation index till recent past, did start using & relying erstwhile Science Citation Index (SCI), later Science Citation Index Expanded (SCIE) and now Web of Science (WoS). As the SCI (WoS) is in place from 1961, that by virtue of long time use & availability has made it a *de-facto* standard tool for evaluation and measurement of scientific productivity of individuals, institutes, universities, and countries, etc. At international level few tools/databases, like WoS and SCOPUS are available but in these databases representation of Indian research papers particularly published in journals of Indian origin are negligible. Starting from 1961, the very beginning of Science Citation Index (SCI), representation of journals of Indian origin ranged in ~0.3 % to 1.3% to world total. Therefore, these tools/ databases are not adequate to evaluate/analyze India's knowledge contents[6]. This limitation is not only confined to India alone rather it exists for all developing and less developed countries. To come over such limitation, a few countries, like China, Korea, Japan, and few others too[7] have already brought out their own national citation indexes. However, in case of developing countries it might well be that indigenous knowledge rather than that contained in the world’s stores of information is likely to be more relevant[8]. Also, capacity to utilize knowledge is fundamental in furtherance of knowledge generation and growth of an organization, individual, region, and country as a whole. Stocking knowledge either by individuals, institutions in whatever form is of no consequence. Taking cognizance of the situation and challenge, the author has put efforts to build

and bring out multidisciplinary Indian Citation Index (ICI). Thus, the ICI is a home grown national abstracts and citation database intending to index 1000 plus research journals of Indian origin. It provides powerful search engine basically to perform (i) for an effective, rigorous and authentic evaluation and (ii) to ensure visibility and access to articles published in journals of Indian origin. These search and measuring functions are necessary for researchers, policy makers, decision makers, funding agencies, bibliometricians/scientometricians, etc. ICI is available for users to turn raw data/information into the powerful knowledge one needs.

1.3 REASONS FOR INDIAN CITATION INDEX (ICI)

The world is witnessing cut throat competition in all spheres of life including research output of an individual, group, region, institute, and country. Research performance in terms of tangible output has taken centre stage and becomes an intense subject matter of rigorous evaluation and measurement for recognition, grants, awards, funding, claims, adjudging points of superiority, etc. India as a country represents ~17.5% of the world population, possess large territorial part of the globe, contributing substantially to world knowledge output and showing visible impact on worldwide scholarly community but had no comprehensive database to map and measure its published knowledge contents objectively. Citations are one of the hallmarks of scholarly communication and citation databases enable measurement and evaluation of targeted population. Therefore, following are the reasons for developing and having Indian Citation Index (ICI):

- Representation of knowledge contents published in journals of Indian origin is insignificant in international citation database, i.e. (WoS). For example starting from 1961, the representation of Indian journals ranged ~0.3 % to 1.3% to world total.
- Insignificant representation of Indian journals in international citation indexes have largely impacted Impact Factor (IF) of Indian journals even of those being covered in international citation databases because they are also being cited in other Indian journals which are not covered in these international citation indexes.
- Less coverage of journals of Indian origin by so called international citation indexes are making them of partial use and authentic, hence, to come over partial use limitation of these databases, creation of national citation index is essential in order to supplement the result of measurement and analysis based on such international databases.
- To raise the quality and fertility of research published in journals of Indian origin; it enhances effective scholarly exchange and establishes researchers in their area of research.
- Science/knowledge is universal, but its applications may have regional significance, so to tap such local or regional research, national citation index is one of the essential requirements.
- To analyze, evaluate research literature published in Indian journals for strategic planning and generate open reports of ranking, etc. for public knowledge and reaction thereon.
- To investigate the intellectual structure of given learned specialties and disciplines of national significance.
- To provide empirical evidence for claims, etc. and consequential decisions.
- To analyze the changing patterns of research literature published in journals of Indian origin.
- To predict future research trends based on literature published in journals of Indian origin.
- To serve as a national tool/database for an effective, objective, rigorous, reliable and comprehensive evaluation tool.

- To portray realistic and complete picture of India's scholarly works at national and international level.

1.4 CREATION AND STRUCTURE OF INDIAN CITATION INDEX

A true citation index has two parts – a defined source index and a standardized unified cited reference index as shown below in Fig. 1. Here, the defined source index scope needs to be fully and clearly described from which cited references will be compiled as unified cited reference index. The standardized cited reference index is the set of cited references that appear in each article of the source material. The cited references are not harvested as they are presented in the journal. Journals vary in information and format they require for each cited reference[9].

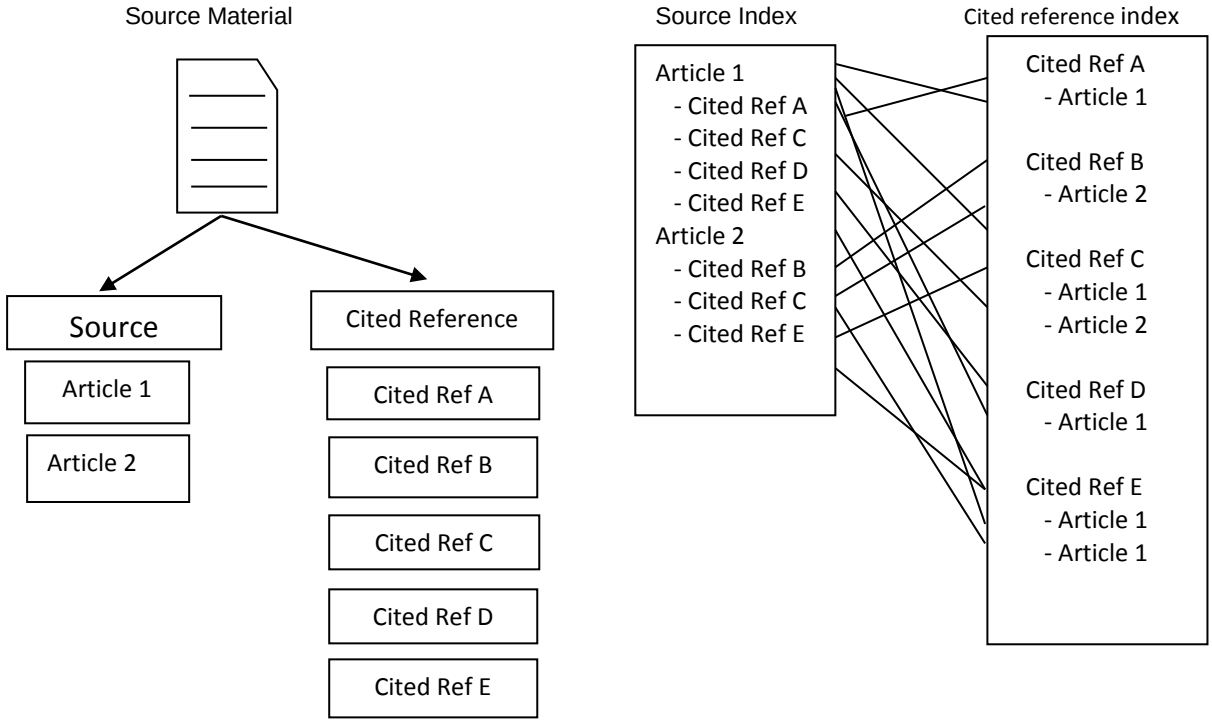


Fig. 1

1.5 ORGANIZATION OF KNOWLEDGE IN ICI

The whole spectrum of index-able knowledge contents for ICI has been put into 51 main subject classes, and a three layered subject classification approach has been followed, i.e. primary subject level (L-1), secondary subject level (L-2), tertiary subject level (L-3). All index able journals in ICI are assigned L-1 level, primary subject category prior to index its contents. L-2 level subject categories are the predefined subsets of L-1 level primary subject category. L-3 level subject categories are decided based on article's micro level subject contents. Hence, L-1 and L-2 subject categories are predefined and fixed. However, in order to aid L-3 level subject category assignment, a list of predefined potent words is available corresponding to each L-2 level subject category separately for reference and consultation of subject heading assignor to arrive at appropriate decision while assigning L-2 and L-3 subject categories respectively. 51 main subject categories (L-1) of ICI are as shown below with number of journals as of now available in each category of L-1 level[10].

Table 3: SUBJECT WISE NUMBER OF JOURNALS INDEXED IN ICI

S. No.	Subject Category	Journal Count	S. No.	Subject Category	Journal Count
1	AGRICULTURE	109	27	LIBRARY AND INFORMATION SCIENCE	19
2	ANTHROPOLOGY	8	28	MANAGEMENT	40
3	APICULTURE	2	29	MATERIAL SCIENCE	12
4	ART AND HUMANITIES	7	30	MATHEMATICS	34
5	ASTRONOMY, ASTROPHYSICS, SPACE AND GEODESY	5	31	METEOROLOGY	3
6	BIOLOGICAL SCIENCE	106	32	NANOSCIENCE AND NANOTCHNOLOGY	1
7	BIOTECHNOLOGY	15	33	OCEANOGRAPHY AND MARINE SCIENCE	5
8	BOTANY	41	34	OTHERS	10
9	BUSINESS AND MARKETING	22	35	PHARMACOLOGY AND PHARMACEUTICAL SCIENCE	69
10	CHEMISTRY	54	36	PHYSICS	23
11	COMPUTER SCIENCE AND TECHNOLOGY	11	37	POLLUTION	3
12	DAIRYING, DAIRY, ANIMALS AND ANIMALS PRODUCE	8	38	POPULATION STUDIES	3
13	DOMESTIC SCIENCE	7	39	PSYCHOLOGY	14
14	EARTH AND GEOLOGICAL SCIENCE	30	40	REMOTE SENSING	1
15	ECONOMICS	23	41	RURAL DEVELOPMENT	4
15	EDUCATION	24	42	SERICULTURE	2
17	ENERGY AND FUEL SCIENCE	5	43	SOCIAL SCIENCE	76
18	ENGINEERING SCIENCE AND TECHNOLOGY	79	44	SSPORT SCIENCE	
19	ENVIRONMENTAL SCIENCE	44	45	STATISTICS	6
20	FISHERY	6	46	TELECOMMUNICATION	2
21	FOOD AND BEVERAGE SCIENCE	7	47	TEXTILE	8
22	FORESTRY	8	48	TOXICOLOGY	12
23	GENERAL SCIENCE & TECHNOLOGY	20	49	VETERINARY SCIENCE	19
24	HEALTH SCIENCE	230	50	WATER	4
25	HISTORY AND PHILOSOPHY OF SCIENCE AND KNOWLEDGE	5	51	ZOOLOGY	25
26	LAW	6			

Source: www.indiancitationindex.com

Currently, ICI holds data of 927 source journals wherein 290 (31.3%) journals are of Open Access (OA). The data of these 927 journals are organized into 51 main primary subject categories (L–1 level) and sub disciplines, i. e. L – 2 of 51 (L-1) subject categories are 1000. Hence, L-2s are enabling more granularities to subject search approach. ICI is indexing 290 OA category journals which are quite substantial, i.e. ~31.3% of currently indexed journals. OA journals from India mainly are from public funded institutions, therefore, quality of them are not only good rather it is par excellence to European & US based journals. Generally, all foreign journals in India are being called or treated as international journals without knowing definition of national and international journals. In developing and less developed world there seems to be a wide spread myth about international journals, for them each foreign journal is an international journal[11].

Table 4: SUBJECT WISE NUMBER OF OA JOURNALS IN ICI

S.No.	SUBJECT CATEGORY	JOURNAL COUNT	S.No.	SUBJECT CATEGORY	JOURNAL COUNT
1	AGRICULTURE	8	20	HISTORY AND PHILOSOPHY OF SCIENCE AND KNOWLEDGE	1
2	ANTHROPOLOGY	1	21	LAW	2
3	ARTS AND HUMANITIES	3	22	LIBRARY AND INFORMATION SCIENCE	2
4	ASTRONOMY, ASTROPHYSICS, SPACE AND GEODESY	3	23	MANAGEMENT	3
5	BIOLOGICAL SCIENCE	34	24	MATERIAL SCIENCE	3
6	BIOTECHNOLOGY	4	25	MATHEMATICS	3
7	BOTANY	6	26	METEOROLOGY	3
8	BUSINESS AND MARKETING	1	27	OCEANOGRAPHY AND MARINE SCIENCE	2
9	CHEMISTRY	14	28	OTHERS	2
10	COMPUTER SCIENCE AND TECHNOLOGY	11	29	PHARMACOLOGY AND PHARMACEUTICAL SCIENCE	41
11	DAIRYING, DAIRY, ANIMALS AND ANIMALS PRODUCE	1	30	PHYSICS	8
12	DOMESTIC SCIENCE	1	31	POPULATION STUDIES	1
13	EARTH AND GEOLOGICAL SCIENCE	2	32	PSYCHOLOGY	4
14	EDUCATION	6	33	RURAL DEVELOPMENT	1
15	ENGINEERING SCIENCE AND TECHNOLOGY	11	34	SOCIAL SCIENCE	10
16	ENVIRONMENTAL SCIENCE	6	35	STATISTICS	1
17	FISHERY	2	36	TEXTILE	1
18	GENERAL SCIENCE & TECHNOLOGY	7	37	TOXICOLOGY	2
19	HEALTH SCIENCE	152	38	VETERINARY SCIENCE	2
			39	ZOOLOGY	1

Source: www.indian citation index.com

In following 10 subject categories there is no Open Access (OA) journal published from India.

Table 5: SUBJECT CATEGORIES OF NO OA JOURNALS

S.No.	Subject	S.No.	Subject
1	APICULTURE	6	NANOSCIENCE AND NANOTCHNOLOGY
2	ECONOMICS	7	POLLUTION
3	ENERGY AND FUEL SCIENCE	8	REMOTE SENSING
4	FOOD AND BEVERAGE SCIENCE	9	TELECOMMUNICATION
5	FORESTRY	10	WATER

Source: www.indian citation index.com

Thus, an exhaustive approach has been followed in organizing knowledge contents of journals published from India aiming to represent all established and emerging areas of the universe of knowledge and aiming to make subject wise retrieval effective and user friendly.

2.0 ICI PROCESS

To begin with, ICI has considered WoS as the benchmark for its creation and development. Accordingly, ICI has followed similar quality parameters for selection of journals for ICI indexing as are available in WoS. Final retention of the journal is left to the Research Impact Indicator (RII) generated later based on database. The processing of contents in ICI involves four main steps that add quality and context to records[12].

Step 1 Capturing Bibliographical and Citation Information

Capturing Bibliographical and Citation Information such as article title, author(s), affiliation(s), abstracts, and references, are captured from the source as collected by the ICI input team. Capturing and XML processing is done using ICI defined DTD as is available at Annexure 1. DTD is used to transfer data between XML documents and databases.

Step 2 Production Database

These records are then loaded into a production database. This is done through our in-house built Data Entry system. When the data is entered/uploaded there are in built functions to validate the data as initial quality checks. Once data is entered there is a separate team to verify the data against the original source materials and make necessary corrections for quality control and data integrity. Also, ICI team of professional experts assigning subject headings incorporates necessary modification in already entered Keywords. During processing, author (s) given keywords/index terms largely are normalized/free terms added consulting/referring title, abstract of the article and relevant thesauri/subject vocabulary, etc. to the data.

Step 3 ICI Warehouse

The records are then loaded into the ICI Warehouse. The main function of the warehouse is to link references and source articles, and in this way to determine how many times an article is cited. Along with this, all the records go through an approval process where the data is verified, then approved before making the same available for search/view through indiancitationindex.com.

Step 4 indiancitationindex.com

All records are sent to indiancitationindex.com, where the database records are made searchable and retrievable. Processing of contents in ICI takes approximately about three weeks time to ensure the quality of ICI content and establish the right context and linking. The processed, verified, validated ICI contents are updated on monthly basis. A flow of process is depicted in Fig 2 below:

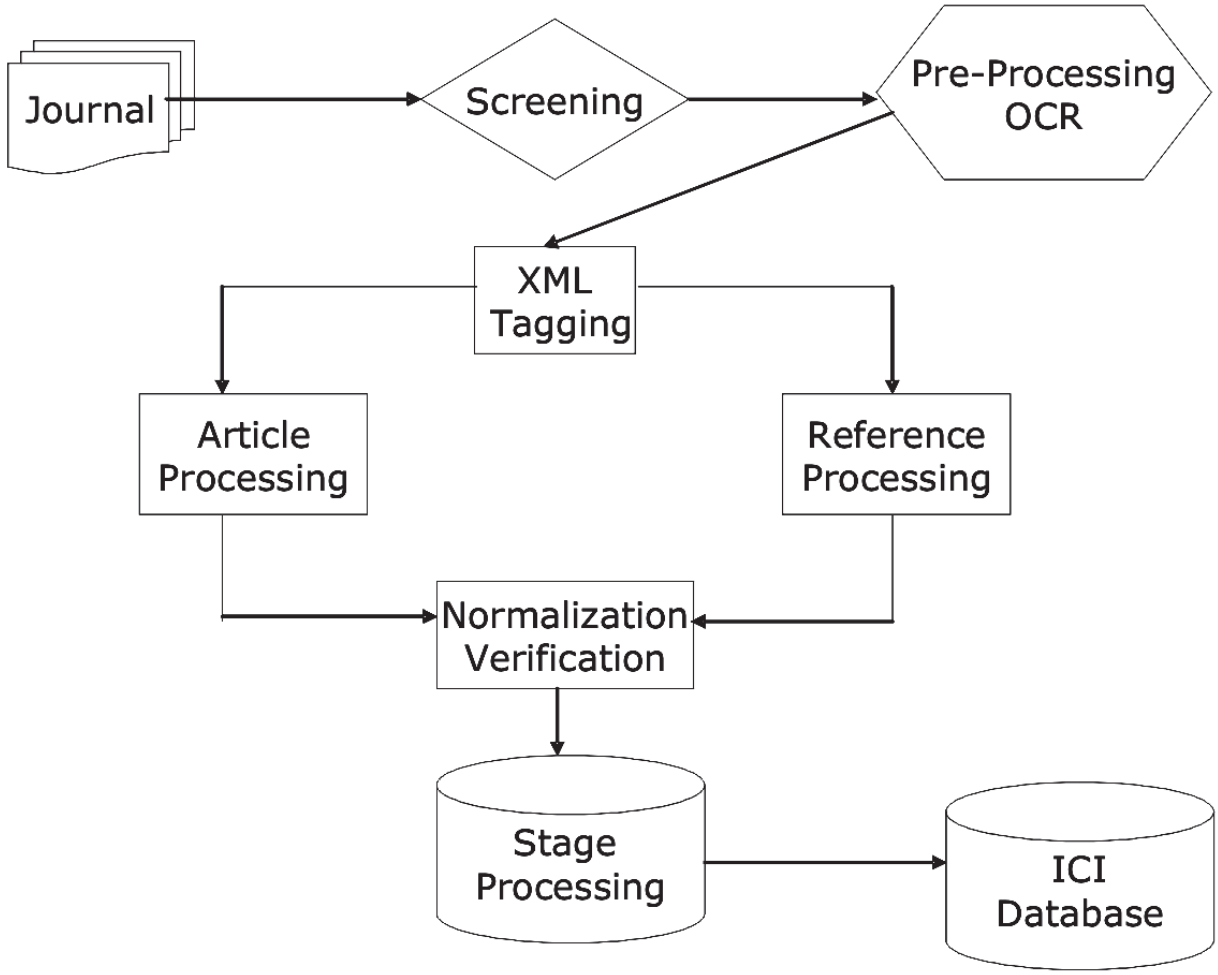


Fig. 2. ICI Process Flow

3.0 ICI SEARCH AND RETRIEVAL SYSTEM

ICI information search and retrieval system is designed to meet the requirements of all types of users. The key search features of ICI are as:

TABLE 6: KEY SEARCH FEATURES

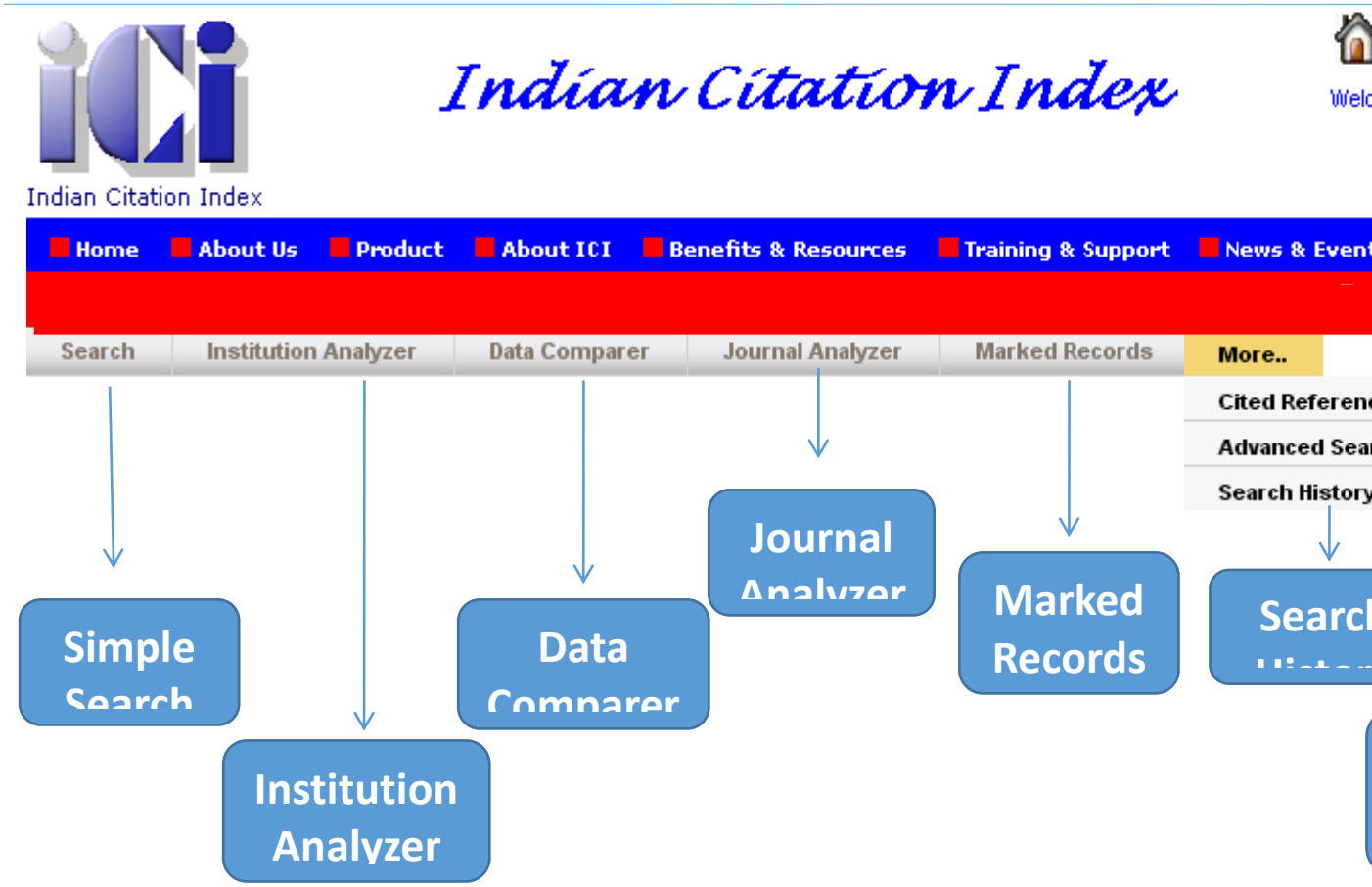
S.No.	Key Features	S.No.	Key Features
1	Basic search	8	Journal Analyzer
2	Search history	9	Data Comparer
3	Refine search	10	Subject category
4	Analyze Search Result	11	Cited Reference search

5	Advanced search	12	RII (IF)
6	Institution Analyzer	13	H-Index

Source: www.indian citation index.com

3.1 Access Points of ICI

ICI has multiple access points to retrieve information as per need of the users. Few of the access points are shown in Fig 3 below and retrieved result can be saved in file or mailed to desired destination of the user.



17 March 2016 Source : Indian Citation Index (ICI)

Fig. 3

CONCLUSION

Measurement and evaluation of research productivity is as essential as pursuance of research itself. Day by day things are becoming more and more competitive, require objective and transparent evaluation based on complete and comprehensive datasets/databases to arrive at decisive conclusion of superiority. The available citation databases for this purpose have limitation of their coverage which is natural to be. Apparent reason is that world over about 150,000 live journal titles are available in all disciplines and languages, so it is impossible for any database to cover and index all the journals. Therefore, building national/regional citation database by each or group of countries is becoming inevitable. Also, representation of knowledge contents (journals, etc) of developing and less developed world in international citation databases is highly insignificant. So without having research productivity data output based on own national or regional citation index which covers extensively all indigenous knowledge resources, the evaluation and measurement of research productivity is bound to be incomplete, inaccurate, and unreliable. Each country/region has its localized knowledge base particularly in humanities; social and applied sciences that generally do not get space in international journals and consequently remain unrepresented in international citation databases. Hence, accounting of this kind of national/regional knowledge segment published largely in local journals is essential while measurement and evaluation is done. All this demand for having their own national/regional citation databases for realistic evaluation of research productivity.

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