RESEARCH WORK AND PUBLICATIONS – A USEFUL STUDY FOR AUGMENTING GOOD PUBLICATION SKILLS

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ABSTRACT - Research is the systematic investigation into and study of materials and sources to establish useful facts and arrive at new conclusions. The core aim of research work is to take up some yet unsolved and important problem and finding effective and efficient solutions as answers to that problem. Publication process takes role in the dissemination of the research resultants to the entire research community. The focus of this paper is presenting a vast amount of publication literature in connection with Computer Science. The essence and background details of the publication process, such as ISBN, ISSN, E-ISSN, Digital Object Identifier (DOI), Print and Electronic (online) Journals, Digital Libraries, Indexing and Abstracting services, Publishers of Citation Indexing, important Bibliometric Indicators such as Impact Factor (IF), and h-index etc., and checklist criteria for UGC Approved Journals are dealt succinctly in this paper. The essential elements of Computer Science and Information Technology play a pivotal role even in all other streams of research studies during the period of one’s research work, by way of supporting digital and printed record keeping activities, obtaining the research results, verification and validation of the research results, and the dissemination of research results from the researchers’ work in the form of research articles published in reputed and prestigious publications. Benefits of publishing one’s research work include enhancing one’s research profile and progressing in research career by way of producing impactful research papers. Hence we hope this work on publications, will be useful for researchers from all streams of study in order to follow the sequence of steps followed before, during, and after the publication process by the concerned publication venues and publishers of various indexing services.


1. INTRODUCTION

The work of a motivated researcher starts with the selection of a research area, proceeding to identifying recent trends in that research area with the help of existing reliable, well reputed and well recognized research literature, finding a challenging, and interesting problem(s) in the existing literature, proposing a workable solution, designing and implementing the proposed solution, testing it thoroughly, recording the results, drafting and preparing a well written research article and moving it to the publication process and getting the acceptance to it, and finally publishing it.

A. WHAT IS MEANT BY DOING RESEARCH WORK?

Research and Development: Research and development (R&D, R+D, or R’n’D) called in Europe as “Research and Technological Development (RTD)” refers to innovative activities undertaken by corporations or governments in developing new services or products (innovations), introduction or improvement of existing services or products [1]. R&D constitutes the first stage of development of a production process or a potential new service. Research plays an important role in various ways to the development of a nation. The purpose of research is to find accurate or exact answers to important questions in an organized and systematic way [2]. Systematic means the research process is broken up into clear steps that lead to conclusions. Organized means there is a planned structure or method used to reach the conclusions. The focus of research is to answer the relevant, useful and significant questions. Research process is the search for valid, reliable, and thoroughly analyzed information by which concerned groups can make important decisions.

There is a need for research, to answer the most important questions in the absence of an existing body of evidence available through prior research, studies etc. Researcher shall choose the research methods and processes that serve the right answers to these questions. High quality research will advance science and technology. Researchers will perform literature studies related to certain topic, find the real problems in the existing solutions, propose and design solutions to these problems, experiment on these designs for checking its functionality, generate results, validate them, analyze and discuss, and then write research articles for explaining these research steps to research audience or readers of their research articles. Researchers bear the responsibility of the development of their research field.

B. MEANING AND SIGNIFICANCE OF PUBLISHING, PUBLISHER, PUBLICATIONS AND PUBLICATION PROCESS

Publishing is the occupation or activity of preparing and issuing books, journals, and other useful material for sale [3]. Publications mean magazines, books or journals issued for sale to public. Publication also means is a way for communicating one’s intellectual work and reach the right target audience. Publisher is a company or person that prepares and issues journals, books, or
magazines to be available at free of cost or for sale. Publication process is a set of activities for making the useful and important information or stories available to public in a printed or electronic form. Publication process is a way to communicate the important messages, statements, or text by means of audio, video, print, electronically as an e-book or on the web to the readers.

In the context of research, the publishing is known specifically as “Academic publishing”. Academic publishing is the subfield of publishing that distributes academic research and scholarship [4]. Most academic work is generally published in academic journal article, thesis or book form. Researchers must be aware of how to publish their research work in the form of research articles in different ways. These ways may be publishing them in journals, conferences, research magazines, or research thesis which is the written work as a final step in their research work completion (eg. B.S. thesis, B.Tech. thesis, M.S. thesis, M.Tech. Thesis, M.Phil. thesis, Ph.D. thesis etc.) [5]. Figure 1 shows the logical flow of activities involved in a successful publication process. In order to improve one’s Academic Performance Indicator (API), one has to conduct research and publish the results of their research work. Publications are very much necessary that, if one wants to survive in the research community, one has to publish one’s research work. Otherwise, it is likely that one deprives of one’s growth in his research career. It means “Publish or Perish”.

![Fig 1: Logical Flow of Activities in a Successful Publication Process](image)

2. PUBLICATION METHODOLOGY

In this section, a vast amount of publication literature in connection with Computer Science is detailed. The knowing of publication background can stimulate passion for writing research articles to the researchers from any discipline.

A. MEANING AND SIGNIFICANCE OF ISBN, ISSN, AND E-ISSN IDENTIFIERS

ISBN, ISSN, and E-ISSN are the identifiers given to different publication types and each type is detailed below. ISBN is the acronym for International Standard Book Number. The length of ISBN [6] number was 10 digits up to the end of December 2016, but its length now is 13 digits from 1Jan 2007. ISBN consists of five elements namely, 1. Prefix element (length is 3 digits), 2. Registration group element (length is between 1 and 5 digits): identifies the particular participant country, geographical region or language area. 3. Registrant element (length is up to 7 digits): identifies the particular publisher or imprint. 4. Publication element (length is up to 6 digits): identifies the particular edition and format of a specific title, 5. Check digit (length is 1 digit): It is used to mathematically validate the rest of the number. Check digit is calculated using a module 10 system with alternate weights of 1 and 3. Figure 2 depicts all the five elements of an ISBN identifier.

![Fig 2: An Example ISBN Consisting of Five Elements](image)

ISBN [7] is a product identifier that is used by booksellers, publishers, libraries, internet retailers and other supply chain participants for testing, sales records, ordering, and stock control activities. This number is useful to identify the registrant, specific title, edition and format. These numbers are assigned to text-based monographic publications rather than newspapers, journals or other types of serials. Each different product form such as paperback, .pdf, EPUB etc. should be identified separately. The group, organization, company, or individual, responsible for initiating the production of a publication, should apply for ISBN number. The publishers should apply to the national ISBN agency that is responsible for the country in which the publishers are situated. Some specific amount of metadata about the publication (to which ISBN is assigned) such as title, author, format etc. must be supplied to the national ISBN agency. ISBN identifiers will be useful to ensure that one’s book is widely known and to increase its sales potential. Books with ISBN identifiers can be seen to be listed by internet retailers such as Amazon to increase the sale volume of these books.
ISSN is the acronym for International Standard Serial Number and E-ISSN is the acronym for Electronic International Standard Serial Number. ISSN identifier is a code of eight-digit serial number, unique internationally for serial publications [8]. ISSN is used to identify uniquely the journals, magazines, newspapers and all kinds of periodical publications on all media. ISSN code has the form of: the acronym “issn” followed by two groups of four digits separated by a hyphen. The last digit (eighth digit) is a check digit calculated using a modulus 11 system on the basis of the seven preceding digits. If the result of this computing for check digit is equal to ‘10’, then the eighth check digit will be denoted by ‘X’ to avoid any ambiguity [9].

Examples ISSN Identifiers:

- ISSN 0976 – 6367 (International Journal of Computer Engineering & Technology (IJCET))
- ISSN 2227-524X (International Journal of Engineering & Technology (IJET))

Especially serials with the same title can be distinguished using ISSN. A different ISSN is assigned to each media type when a serial with the same content can be published in more than one media type. ISSN identifier is used to identify a publication but it neither contains information about the origin or contents of the publication nor guarantees the quality or validity of the contents of the publication. The ISSN systems that refer to serials published in print and electronic media are called print ISSN (p-ISSN) and electronic ISSN (e-ISSN) respectively. For print publications, ISSN is shown preferably in the upper right corner of the cover or on the pages containing editorial information. For electronic media publications: 1. Online publications: ISSN should be shown on the homepage or on the main menu. 2. Publication on physical medium: ISSN should be on any part visible to the naked eye (CD-ROM or DVD label, box, case, microfiche header etc.). In addition to the identifying titles-role, ISSN has the practical uses of electronic archiving, cataloguing, distribution, subscriptions, and management etc. ISSN helps commercial distribution systems to be fast and efficient. ISSN number is used as a suffix for title-level DOIs where the letters “issn and a period (,)” precede the ISSN including the hyphen. Both ISBN and ISSN should be mentioned if a publication is identified by both ISBN and ISSN [10].

B. MEANING AND SIGNIFICANCE OF DIGITAL OBJECT IDENTIFIER (DOI)

A Digital Object Identifier (DOI) is a unique alphanumeric string assigned by a registration agency [11], namely the International DOI Foundation (IDF) to identify a specific piece of intellectual property (particularly one presented in an online environment) that can be a book, a scientific paper, a song, an image, or something else and provide a persistent link to its location on the Internet. The publisher assigns a DOI when your article is published and made available electronically. All DOI numbers begin with '10' and consist of a prefix and a suffix. The prefix identifies the registration agency and the content type (e.g., article, book). The suffix is a unique identifier for the specific content.

The DOI is typically located on the first page of the electronic journal article, near the copyright notice. The DOI can also be found on the database landing page for the article. A DOI does not specify the location of an online object like a conventional web address or URL, rather it specifies the content of an online object. Hence, a DOI is a Persistent Identifier and remains associated with the object, irrespective of changes in the object's web address or URL. All 'Science' articles currently are assigned a DOI, which can be found at the top of the article's HTML version. CrossRef is an official DOI registration agency that specializes in scholarly and professional publication and assigns DOI prefixes to these publishers.

C. MEANING AND SIGNIFICANCE OF PRINT AND ELECTRONIC (ONLINE) JOURNALS

Print Journals also called periodicals, magazines or serials refer to material which is published in separate parts and at regular intervals. Electronic Journals also known as ejournals, e-journals, electronic serials, and online journals are scholarly journals or intellectual magazines that can be accessed via electronic transmission. Both Print and Electronic Journals are complementary and bring their own advantages to the users. Table 1 compares Printed Journals and Electronic Journals [13].

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Parameter Name</th>
<th>Print Journals</th>
<th>Electronic Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Permanence and Credibility</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Disseminating Information</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>Professional Recognition</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>Quicker Broadcasting of Research Findings</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>5</td>
<td>Storing and Retrieval for Future References</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6</td>
<td>Requirement of Intervening Electronic Devices</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>7</td>
<td>Ready Accessibility</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>8</td>
<td>Ease and Economy of Distribution</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>9</td>
<td>Democratizing Influence of the Medium</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>10</td>
<td>Printing Costs</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>11</td>
<td>Cost of Posting a Journal on the Web</td>
<td>X</td>
<td>✓</td>
</tr>
<tr>
<td>12</td>
<td>Limited in Content and Frequency</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>13</td>
<td>Constraints of Time, Space, and Rigorous Adherence to Standards-of-Quality</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>14</td>
<td>Cost of Peer Review of Research Articles</td>
<td>Equal</td>
<td>Equal</td>
</tr>
<tr>
<td>15</td>
<td>Communication within the Scholarly Communities</td>
<td>Slow</td>
<td>Fast</td>
</tr>
<tr>
<td>16</td>
<td>Writing, Reviewing, and Editing Time</td>
<td>More</td>
<td>Less</td>
</tr>
<tr>
<td>17</td>
<td>Ease of Organizing, Cataloguing and Indexing by the Librarians</td>
<td>Easy</td>
<td>Not Easy</td>
</tr>
</tbody>
</table>

D. MEANING AND SIGNIFICANCE OF DIGITAL LIBRARIES
Digital Library is a knowledge base that can be stored and retrieved easily through on-line networks. Digital Library is also called Digital Repository, Digital Collection, Virtual Library, Electronic Library, or Library Without Walls. In Digital Library, the search for information is effective and efficient due to global indexing and search engines [14]. Characteristics of Digital Library include 1. Users can get access to information by just the push of a button, 2. Information source is digitized, compressed and stored in various forms and formats, 3. Saves time for user community, 4. Search is computer-assisted, 5. World is viewed as a global village, and 6. User customization and alerts based on their subject interests [15]. The idea of digital library began with Vanneur Bush’s Memex machine and continued to evolve with the advances in Information Technology (IT). With the advent of computers, the focus fell on large bibliographic databases (online retrieval and public access systems). With the formation of Internet, libraries of digital information are created that can be accessed by anyone ubiquitously.

The purposes of digital libraries are the same as that of traditional libraries which are the collection, the development, the management of information, the subject analysis and the creation of indices, the provision of access, the reference work, and the preservation of the valuable work. Digital Library is all of the following: a large database, particular applications of hypertext methods, an application of the web, and is another step in the digitization of traditional libraries. A coordinated digital library scheme as it exists today allows digital libraries to interoperate and share resources [16]. In order to identify digital objects in the digital library uniquely, names (strings) are used. These names are useful for citations, information retrieval, linking digital objects, and to manage the copyright. Institutions such as ACM (Advanced Computing Machinery), IEEE-CS (Institute of Electrical and Electronics Engineers- Computer Society), Springer, NCSTRL (Networked Computer Science Technical Reference Library), and NDLTD (Networked Digital Library of Theses and Dissertations) take the responsibility of issuing, resolving, and migration of a system of unique names. Digital Libraries such as ACM, IEEE-CS, Springer, NCSTRL, and NDLTD provide recommender systems to reduce cognitive load of their users and help them discovering relevant literature easily [17]. Currently recommender systems function based on content-based filtering, collaborative filtering, or citation-based recommendations.

E. MEANING AND SIGNIFICANCE OF JOURNAL INDEXING/CITATION INDEXING

Journal Indexing is a mechanism consisting of indexed database that includes smart references that provide premium and special information about the quality of the journals subscribed for indexing and hence information about the quality of the research articles published in it [18]. That is, the journal indexing database indexes research article titles, and other items such as full articles or only abstracts and/or references. The prominent journal Indexing services (databases) are IEEE (Institute of Electrical and Electronics Engineers), SCI (Science Citation Index aka Web of Science), Scopus Indexing, DBLP (originally: DataBase systems and Logic Programming, as a backronym: Digital Bibliography & Library Project), GoogleScholar, and IC (Index Copernicus) etc. The screenshots of these Indexing services, currently are as shown in figures 3 - 9.

![ScreeNshot of IEEE Indexed Journals](image)

Fig 3: Screenshot of IEEE Indexed Journals

Once a journal is indexed by a database, it is immediately made visible and available to all users of that database. Hence, Journal Indexing is deemed to be a way for journals to increase their visibility, availability, and readership. Journals generally get their publication indexed by one or more leading indexing databases in order to be known as ‘reputed journal’, ‘authoritative source of scientific information’, and ‘reliable source of high-quality information in that field’ and to persist specially among many other publications that are crowding the publishing space. That means Journal Indexing is considered a reflection of its quality. Indexed journals are considered to be of higher scientific quality as compared to non-indexed journals. The qualitative comparison using relevant parameters for various Indexing brands (IEEE, SCI, SCOPUS, SPRINGER, DBLP, GOOGLEScholar, INDEX COPERNICUS) is given in table 2.

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Table 2. Parametric Comparison of Various Indexing Brands for Journal Publications

<table>
<thead>
<tr>
<th>Journal Name/Parameters</th>
<th>IEEE</th>
<th>SCI</th>
<th>SCOPUS</th>
<th>SPRINGER</th>
<th>DBLP</th>
<th>INDEX COPERNICUS</th>
<th>GOOGLE SCHOLAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reputation</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Quality</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Bibliographic records</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Abstracts</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Online Accessibility</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Open Access</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>Purchasable</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Fig 4: Screenshot of Science Citation Indexed Computer Science Journals

Fig 5: Screenshot of SCOPUS Indexed Computer Science Journals
All of the above branded indexing services look at all the aspects of publication venue, aspects of editors and authors, publication standards, accessibility and long-term availability before they give their consent to index the proposed journals in their indexing databases.

F. MEANING AND SIGNIFICANCE OF BIBLIOMETRIC INDICATORS

Bibliometric Indicators are measures used to study the influence of an author or impact of a well written scientific paper. Table 3 lists the important Bibliometric Indicators with their descriptions. Given below are requirements for various measures to be useful as Bibliometric Indicators:

1. Meaningful in a statistical view.
2. Reflect real elements that are useful for evaluation.
3. Not bring undesirable incentives which would be detrimental to the progress of science.
4. Be insensitive to small variation in bibliometric records which might be because of random events.
5. Be easy to obtain from existing bibliographic databases.
Table 3. List of Important Bibliometric Indicators with their Descriptions [19]

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Bibliometric Indicator</th>
<th>Description of Bibliometric Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Citation Count</td>
<td>It is the number of times an article is cited by other articles.</td>
</tr>
<tr>
<td>2</td>
<td>h-index</td>
<td>A scientist has index $h$ if $h$ of his $N_p$ papers have at least $h$ citations each, and the other ($N_p-h)$ papers have no more than $h$ citations each.</td>
</tr>
<tr>
<td>3</td>
<td>i10-index</td>
<td>It is the number of publications with at least 10 citations.</td>
</tr>
<tr>
<td>4</td>
<td>Download Counts</td>
<td>It is the number of unique downloads.</td>
</tr>
<tr>
<td>5</td>
<td>Keywords Plus</td>
<td>It is the derivative subject indexing.</td>
</tr>
<tr>
<td>6</td>
<td>Impact Factor /Journal Impact Factor (JIF)</td>
<td>It is the average number of citations per article per year.</td>
</tr>
<tr>
<td>7</td>
<td>Immediacy Index</td>
<td>It is the average number of times that an article published in a specific year within a specific journal is cited over the course of the same year.</td>
</tr>
<tr>
<td>8</td>
<td>Cited half-life</td>
<td>It is the number of years, going back from the current year that account for half the total citations received by the cited journal in the current year.</td>
</tr>
<tr>
<td>9</td>
<td>Aggregate Impact Factor for a subject category</td>
<td>It takes into account the number of citations to all journals in the subject category and the number of articles from all the journals in that category.</td>
</tr>
<tr>
<td>10</td>
<td>Median Impact Factor</td>
<td>It is the median value of all journal impact factors in the subject category.</td>
</tr>
<tr>
<td>11</td>
<td>Year Impact Factor</td>
<td>It is similar to the JIF, except the citations are counted to the previous 5 years and again divided by the source items published in the previous 5 years.</td>
</tr>
<tr>
<td>12</td>
<td>C3PO (Citation Performance Per Paper Online)</td>
<td>It is the total citations to a journal divided by the total papers published in a journal.</td>
</tr>
<tr>
<td>13</td>
<td>Z-influence</td>
<td>It is the number of papers in a journal that have never been cited.</td>
</tr>
<tr>
<td>14</td>
<td>PI-BETA</td>
<td>It is the number of $Z$-influence papers in an ISI journal divided by the total papers published in an ISI journal.</td>
</tr>
<tr>
<td>15</td>
<td>Impact Factor Inflation</td>
<td>It is the ratio of 2-year impact factor to 2-year impact factor without self citations</td>
</tr>
<tr>
<td>16</td>
<td>Self-Citation Threshold Approval Rating (STAR)</td>
<td>It is the difference between citations in other journals and journal self citations.</td>
</tr>
<tr>
<td>17</td>
<td>Article Influence (AI)</td>
<td>It is the average influence of an article across the sciences and social sciences.</td>
</tr>
<tr>
<td>18</td>
<td>Cited Article Influence (CAI)</td>
<td>CAI= (1-PI-BETA)(Article Influence)</td>
</tr>
<tr>
<td>19</td>
<td>Recursive impact factor</td>
<td>It gives citations from journals with high impact greater weight than citations from low-impact journals.</td>
</tr>
<tr>
<td>20</td>
<td>Eigen Factor</td>
<td>It is an estimate of the percentage of time that library users spend with that journal.</td>
</tr>
<tr>
<td>21</td>
<td>SCImago Journal Rank (SJR) Indicator</td>
<td>It is a measure of scientific influence of scholarly journals that accounts for the number of citations received by a journal and the importance or prestige of the journals where such citations come from.</td>
</tr>
</tbody>
</table>

G. MEANING AND SIGNIFICANCE OF IMPACT FACTOR

Eugene Garfield, the founder of the Institute for Scientific Information (ISI), first conceived the idea of an Impact Factor (IF) or Journal Impact Factor (JIF) in 1995 [20]. Impact Factor as a bibliometric indicator measures the yearly average number of citations to recent articles published in that journal. IF of a journal is the number of citations received in an year (say $y_i$) of articles published in that journal during the previous two years (say $y_{i+1}, y_{i+2}$) divided by the total number of articles published in that journal during the previous two years ($y_{i+1}, y_{i+2}$) [21]. The IF of a journal generally reflects the importance of a journal in the scientific community in that research field and determine in which journal an author may wish to publish [22]. Impact Factor for the year $y_i$ is calculated as:

$$IF(y_i) = \frac{\text{Citations in year } y_{i+1} \times \text{Citations in year } y_{i+2}}{\text{Publications in year } y_{i+1} \times \text{Publications in year } y_{i+2}}$$

H. MEANING AND SIGNIFICANCE OF H-INDEXING

The h-index, also called the Hirsch index or Hirsch number is an author-level metric that gives a measure of the productivity and citation impact of the publications of a researcher or scientist [23]. Jorge E.Hirsch, a physicist at UCSD, suggested h-index in the year 2005 as a tool to determine theoretical physicists’ relative quality. High h-index means highly reputed researcher or scientist.
Bibliometric indicators such as the total number of papers, the number of citations, and Journal’s Impact Factor (JIF) do not represent well of the quality of papers produced by researchers or scientists. The h-index satisfies all the requirements stated above. An important advantage of h-index as bibliometric indicator is it is simple to calculate.

It cannot discriminate between authors that publish alone or in small groups versus those authors who have many coauthors for their published papers. This creates a false advantage for authors to form collaborations that are not justified well scientifically. H-index depends on the field of knowledge (example: Number of researchers in the field), on the topic of research (example: Vitality of the field in terms of degree of its progression), and language of publication [24]. In some field where h-index are subjected to fluctuations, besides h-index, special attention must be given to the great number of other aspects of the researcher’s professional life. m-index: is the quotient of the h-index divided by the number of years crossed since the scientist’s first publication. It is a better index than h-index because we can make comparison between scientists who are at different stages of their career.

### I. MEANING AND SIGNIFICANCE OF UGC APPROVED JOURNALS
Generally, the UGC-Approved list of journals consists of the journals Indexed in Web-of-Science (Science Citation Index, Social Science Citation Index and Arts and Humanities Citation Index), the journals Indexed in Scopus (Elsevier Science), the journals Indexed in Indian Citation Index, journals that cross a prescribed threshold on quality check criteria developed by the members of the Standing Committee and Language Committee(s) on Notification of Journals as shown in figure 10, and the journals recommended by the Universities after de-duplication.

Research articles published in UGC-approved list of journals would be considered for the purpose of Career Advancement Scheme (CAS) and Direct Recruitment of Teachers and other academic staff as required under the UGC Regulation, 2016. Journal titles that have stopped publishing or are being now published with changed name, or have been split with different names are called ceased journals. Nearly, a total of 32,000 journals are covered in the UGC-approved list of journals and nearly 13,130 journals are ceased publications that are stored separately. All journals are assigned one or more sub-categories using “All Science Journal Classification (ASJC)” codes, which is created and maintained by Scopus. Predatory Journal or Predatory Publisher are unscrupulous open access journals or publishers who publish articles on payment but with little or no real peer review. Predatory open access publishing is an exploitative open access academic publishing business model that involves charging publication fees from authors without following the editorial and publishing policies and services associated with legitimate journals that are open access or not.

### 3. CONCLUSIONS AND FUTURE WORK
The achievements of innovations, advancements, developments are the stems of research work done by researchers in their relevant disciplines, or sometimes cross disciplines. Whatever may be the field of research ‘Computer Science and Information Technology’ plays an active and vital role in publication process of a research article, may the publication be in conference, journal, seminar, symposium, or workshop [26]. The relevant and important elements of ‘Computer Science and Information Technology’ play a major role even in all other streams of research studies during the period of one’s research work, by way of supporting digital and printed record keeping activities, obtaining the research results, verification and validation of the research results, and the dissemination of research results from the researchers’ work in the form of research articles published in reputed and prestigious publications [27]. Even though, there is some literature currently, that literature does not provide connectivity between different concepts related to the publication process that a researcher comes across in the progress of his research work. Our work in this paper may help, and stimulate people with the research zeal to speed up their publication process, because it imparts the necessary and enough knowledge required to perceive through the publication process in any discipline. As part of future work, we would like to develop some criteria based on which, the important decision about the publication venue can be made with an utmost care for succeeding in the publication prospects.
REFERENCES

[27] Aijaz, A. Shaikh. “7 steps to publishing in a scientific journal”, https://www elsevier.com/connect/7-steps-to-publishing-in-a-scientific-journal