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Measuring and Implementing Altmetrics in Library and Information Science Research

C. Baskaran

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Measuring and Implementing Altmetrics in Library and Information Science Research

C. Baskaran
Alagappa University, India

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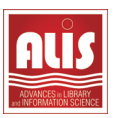

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measurements are fast gaining popularity, and they supplement the traditional research metrics by tracking the number of social mentions of research articles. Altmetrics focuses on the publication itself, not the journal or publisher. Citations take time to build, but altmetrics shows current discussion and societal and economic engagement.

Section 2
Altmetrics: Research in Library and Information Science

The chapter examines the global output on altmetrics research as indexed in Scopus database covering the period 2014 – 2017. The study reveals an increasing trend in the altmetrics research during the study period. Out of 524 global publications, the highest output contribution was found in the year 2018. The US was found to be the major contributor in this field of altmetrics, and journal articles were found to be the preferred source of publication. Social science discipline contributed the largest share of papers (320), followed by computer science, medicine, decision sciences, and mathematics. Scientometrics was the most productive journal in this field of altmetrics.

Section 3
Web Analytics Tools and Techniques

The ERNET network was only made available to educational and research communities. ERNET was initiated by the Department of Electronics (DoE), with funding support from the Government of India and United Nations Development Program (UNDP), involving eight premier institutions as participating agencies—NCST Bombay; Indian Institute of Science; five Indian Institutes of Technology at Delhi, Mumbai, Kanpur, Kharagpur, and Chennai; and the DoE in New Delhi. It is estimated that by 2017, internet users in India are most likely to be in a range of 450-465 million. The frequency of internet access among urban internet users in India is close to 51% or 137.19 million of internet users are using internet on a daily basis (at least once a day). On the other hand, 242 million or 90% of the urban internet user's use internet once a month. Analysis of 'daily users' reveals that they are both in urban and rural India.

Section 4
Quantitative Assessment on Research Productivity

The chapter analyzes the activity index and Lotka's law validation on human DNA research during 1989-2013. This present study uses Scopus database to find publications of 'Human DNA'. The study showed that the lowest relative growth rate (RGR) was 0.04 in 2008, 2010, 2012, and 2014. Similarly, the RGR rose to 0.75 in 1990, and the average mean value of RGR was 0.15. The total no. of authors was (an) = 82886 for 42 publications that each author contributed in the human DNA research. The authors reported that the percentage that authors predicted by Lotka's authors (F-P)2/P = 1526.66.

The study analyses the research publications of forensic medicine growth that between 11 (0.26%) in 1989 and 447 (10.76%) in 2013. The largest output was found in 447 publications in 2013, followed by 420 (10.38%) in 2015. Value n in the field of forensic medicine is being analysed. It has a calculated exponential growth of n= 4.4320914; author data is presented in the analysis. The whole values of A for Indian output were measured 0.84. It is analysed that the world output in forensic medicine, the value of B, are also found to be increasing and decreasing trend during the study period.

Section 5
Bibliometrics and Scientometric Research in Library and Information Science

The chapter describes the research publications on altmetrics research during 2012-2019. A total of 461 publications were brought out on this area over period of study. 25.81% of the publications were published in the year 2018. It is analyzed that information science and library science areas hold the majority 293 (63.55%) of the publications, and the University of Wolverhampton has contributed the highest number (40; 8.67%) of the publications in the field of altmetrics. The study found

that lowest relative growth rate (RGR; 0.04) was found in 2008. 2010, 2012, and 2014 RGR rose up to 0.75 in 1990, and the average mean value of relative growth rate (RGR) is 0.15. The highest number of publications (293; 63.55%) accumulated from information science library science. This area has been ranked first among 25 research fields listed in the study.

Chapter 8

The study analyzes the publications on the research literature on RSS feed during 2008-2018. It is found that 175 publications only brought out by the researchers in the core area of computer science, library science, and engineering related field of research. The study analyzes that information science and library science areas are seen as the predominant areas, which have a plurality (39; 28.2%) of the publications distributed in the field. Shell International Ltd has the most (10; 5.71%) publications. USA occupied the top country. It contributed (10; 48%) of the publications on RSS Feed during the period of study.

Chapter 9

The study analyses the bioinformatics literature during 2007-2017. For this study, a total of 83,904 publications were analysed. This chapter evaluated 11 years of bioinformatics publications with the aid of scientometric tools to find out the year-wise distribution, prolific authors, subject-wise distribution, type of document, top 10 titles, top 10 institutions, country-wise distributions, and language-wise distribution. The findings revealed that a maximum of 10,821 publications were published in 2017. Among the prolific authors, Martens, L. is ranked 1. In the document type, journal articles occupied the first position, which contributed 44,515 records. Among the prolific titles, Lecture Notes in Bioinformatics has the highest contribution of publications (6,814). In the institution-wise distribution, Chinese Academy of Sciences is placed in first position, having contributed 1,576 publications. The majority of the publications (81,555) were published in English language only.

Section 6
Impact of Online and Social Networks and Media Sharing Research Information

This chapter tries to analyse the impact and usage of social media among the postgraduate students of arts in Alagappa University, Karaikudi, under survey method for the study. The study identified the majority (69.79%) of the respondents under female category, and 72.92% of the respondents belong in the age group between 21 and 23 years. It is observed that 32.29% of the respondents use the social media, preferably YouTube. The plurality (48.96%) of the respondents use smartphone/mobiles compare to iPod, desktop, laptop, and others. 35.42% of the respondents' spent between 1 and 5 hours weekly using social media. Further, the study also observes the positive and negative aspects of using social media in postgraduate students of arts disciplines in the university.

Electronic information resources in libraries have made remarkable changes in the users' perceptions towards print resources. A survey among 421 respondents in six state universities in Kerala reveals that the use of e-resources is considered as an advantage and it benefits the academic community. While analyzing the use of e-resources compared to the print resources, the statement 'E-resources affect the reading habit so it is not be encouraged' is rejected because it is not an advantage. All 12 hypotheses set for 'benefits of electronic resources for accessing scholarly information' are accepted because all the regulatory constructs have significant influence on benefit of e-resources.

Foreword

I am delighted to write the foreword for the edited volume entitled "Measuring and Implementing Altmetrics in Library and Information Research". I am glad to appreciate the efforts taken by Dr. C. Baskaran, University Librarian, Alagappa University, Karaikudi for accumulating all related information on metric studies and has given a compendium model in this edited Volume. It reflects new metrics that have been tested in various disciplines, and benefits from a new formal definition of Altmetrics, along with closure of several gaps pointed out by authors and reviewers.

It is my hope and expectation that this book will provide an effective learning experience and referenced resource for all Library Science Professionals measuring the growth of information, leading to improved Scholarly Publications. Each article contains evidence-based background information emphasizing metric studies, intended for the information evaluators who already possess a basic understanding of the principles of Bibliometrics, Scientometrics, Webometrics and Altmetrics in scaling the strength and weakness of a field of study. The layout of each chapter explains learning objectives, and concluding remarks for reader's understanding of the subject matter.

M. Sadik Batcha
Annamalai University, India

Preface

Altmetrics data providers are becoming indispensable tools for observing the impact of research outputs in a wide range of societal environments. From the public discussion of new results in online social networks to the mention of research articles in patent applications, these services capture the footprint of the scholarly results in web spaces representative of different social spheres. Basically, these services provide counts and links that allow users to find out when, where and how many times a document is mentioned in anywhere on the Web. In this way, web links are critical elements to verify that an event has occurred, and therefore to audit the existence of the event. Even more, without this audit possibility, it could be very hard that these platforms and their metrics could be used to support research evaluations. It is not strange that the principal platforms have endorsed the NISO recommendations (2016) about supply transparent information and the ability to be audited for external authorities that verify the reliability of those services. For this reason, Altmetric.com does not include Mendeley readers in its Attention Score because Mendeley does not permit the site to insert a direct link that allows verifying the real number of readers (Altmetric.com, 2019).

However, the audit of data supplied by altmetric providers depends, to a great extent, on the type of data gathered. The number of tweets, Mendeley readers or Wikipedia citations comes from only one source which makes easier to check the real event in the original source. On the contrary, information about blogs and news comes from multiple sources which imply to pre-define a list of sources to track mentions. In face of this difficulty, many of these providers employ third parties that supply data about web events. Concretely, mentions in blogs and news are provided by external services specialized in collect scholarly blogs and media sources (clipping). For example, Altmetric.com used Moreover.com to track mentions (80%) of research articles in mainstream media, whereas PlumX fed their blog mentions from ACI Scholarly Blog Index.

Altmetrics has emerged as a potential complementary data source for metrics connected to research performance. Indicators derived from scientific publications and citations are frequently used to measure scientific impact, but they do not take

the complexity of scientific activities into account. Citations, for example, only reflect how often other researchers have used a specific scientific article, thus only reflecting the scientific impact of research, while research can and often is expected to have much wider impact on the society. As Altmetrics are aggregated from online platforms open to the general public (as well as researchers), they have the potential to reflect both new forms of scholarly communication and the attention received from a wider audience outside of academia. However, there are still many unanswered questions about the applicability and reliability of Altmetrics. Altmetrics are not without challenges. Earlier research has shown how only a fraction of scientific outputs receive online attention that generates Altmetrics (e.g., Costas, Zahedi & Wouters, 2015). Altmetrics can be manipulated unintentionally or intentionally by automated accounts or so-called bots on various platforms (Haustein, et al. 2016). Data quality issues and the dependency on the availability of both APIs for data collection and DOIs for identification place great challenges for Altmetrics research (Haustein, 2016). Furthermore, the heterogeneity of Altmetrics makes it important to view altmetric events identified on different platforms separately (Haustein, 2016). For instance, earlier research into the reasons for engaging with research outputs online has shown how the motivations vary between platforms and how the reasons for engagement vary even within the platforms (Holmberg & Vainio, 2018).

Most of earlier Altmetrics research has focused on the possibilities of using Altmetrics as article level metrics, while research on the applicability of institutional or country level Altmetrics is almost non-existent. Alhoori et al. (2014) studied country level Altmetrics and suggested that Altmetrics could support research evaluation at that level. Alhoori et al. (2014) discovered a weak connection between aggregated country level Altmetrics and more traditional impact measures, such as number of publications and citations. In more traditional scientometrics research aggregations of measurable events to various levels are more common. The much criticized (see e.g., Lariviére & Sugimoto, 2018) Journal Impact Factor (JIF), for instance, is an aggregation of the number of publications and citations a specific journal receives in a specific time frame. One of the criticisms surrounding the JIF is that it can be heavily influenced by a few articles that receive an exceptional amount of citations; Seglen (1997) writes "the most cited half of the articles are cited, on average, 10 times as often as the least cited half". More recently it has been discovered that up to 75% of articles have fewer citations than the JIF of the journals would predict (Lariviére et al. 2016). It appears that the complexity of scientific activities is lost when aggregating bibliometric data to higher levels. This research investigates whether this also holds for Altmetrics and whether aggregating Altmetrics to an institutional level is useful in revealing some new aspects of Altmetrics and the outside influence potentially influencing the creation of Altmetrics.

PlumX is a web-based tool that provides data on the use and impact of research and scholarly products. It belongs to the small but increasingly influential community of altmetric data providers. For those unfamiliar with the term, Altmetrics refers to measures of research impact based on online activity such as saving of papers in Mendeley, downloads, and tweets—and the study and use of these measures (Priem, 2014). Altmetrics also include a wide variety of scholarly products, such as articles, patents, datasets, figures, and videos. As measures, Altmetrics offer evidence about how and where research is being shared and discussed, and by whom. Increasingly, researchers, funders, and universities are using these data to understand and tell fuller stories about their scientific impact and investments. In addition to being involved in these efforts, libraries and librarians are using Altmetric data and research to know the online tools and spaces that researchers and the general public are using to engage with science and scholarship.

It provides a complete overview of PlumX, especially for those unfamiliar with such tools, its main features are described below and organized by:

1. How a subscriber can add and organize its research products for metric tracking?
2. The metrics and data sources that it supplies and mines, and
3. The options and visualizations that it provides for data outputs and analysis.

Account administrators at the subscribing institution can create profiles in the PlumX dashboard for individual researchers and groups. Groups can represent researcher relationships within different organizations—such as a lab, department, and institute—or collections of research outputs. The associated metrics can be accessed and analyzed at these different levels, making it a relevant tool for multiple audiences. Research products in PlumX are called artifacts and include essentially any kind of research output available online with a unique identifier, such as International Standard Book Number (ISBN), digital object identifier (DOI), or PubMed ID. For example, a researcher's profile can include articles, datasets, figures, patents, and clinical trials. PlumX facilitates batch importing of research outputs through a variety of mechanisms, including ORCID, Scopus and Web of Science research information system (RIS) and BibTex files, SlideShare profile IDs, and Github profile IDs. DOIs, uniform resource locators (URLs), ISBNs, and other unique identifiers can be added to researcher or group profiles as well. Researcher and group pages can include images, biographical information, and contact information. The subscribing institution can choose to make its profile data public or private.

ORGANIZATION OF THE BOOK

The book is organized into 12 chapters. A brief description of each of the chapters follows:

Chapter 1 illustrates the History of Altmetrics; the components are given which are meant for Altmetrics research, advantages to using Altmetrics, Altmetrics tools and Altmetrics in scholarly publishing.

Chapter 2 discusses the Altmetrics: source of data, Aggregators in Altmetrics, PLOS article level metrics, Advantages in using Altmetrics, and Limitations of Altmetrics (Not citation-based, Gaming Data, Lack of significant correlation with bibliometric data, Inclusion of public social media, Lack of common definitions, Heterogeneity of social media platforms and users' motivations and Lack of conceptual frameworks and theories).

Chapter 3 provides the year wise distribution of the publications, prolific author of Altmetrics publications, geographical distribution of Altmetrics publications, document type distribution of Altmetrics publications and source title wise distribution of Altmetrics publications and subject wise distribution.

Chapter 4 discusses *the* internet users in India, Latin American internet usage, country-wise internet users' data; it also explain on Network was only made available to educational and research communities. ERNET was initiated by the Department of Electronics (DoE), with funding support from the Government of India and United Nations Development Program (UNDP), involving eight premier institutions as participating agencies—NCST Bombay, Indian Institute of Science, five Indian Institutes of Technology at Delhi, Mumbai, Kanpur, Kharagpur and Chennai, and the DoE in New Delhi.

Chapter 5 analyses the Activity Index and Lotka's law validation on Human DNA research during 1989-2013. The present study attempts to find research publications in 'human DNA' in Scopus database. It is seen that lowest Relative Growth Rate (RGR) 0.04 found in 2008, 2010 2012 and 2014 RGR rose up to 0.75 in 1990 and an average mean value of Relative Growth Rate (RGR) is 0.15, total no. of authors (an) =82886 for 42 publications each author contributed in the Human DNA research. It is reported that expected % authors predicted by Lotka's authors (F-P)2/P =1526.66.

Chapter 6 communicates the research publications of Forensic Medicine growth that between 11 (0.26%) in 1989 and 447 (10.76%) in 2013. The largest output in was found 447 publications in 2013, it followed by 420 (10.38%) of the publication identified in 2015. Value n in the field of Forensic Medicine is being analysed, it has calculated the exponential growth is n= 4.4320914 for author data is presented in the analysis.

Chapter 7 identifies the Year wise publications on Altmetrics, Relative Growth Rate (RGR) and Doubling time (DT) of Altmetrics research, Ranked research areas wise publications on Altmetrics, Ranked institutions wise publications on Altmetrics, Ranked author- wise publications on Altmetrics and Ranked country wise publications on Altmetrics.

Chapter 8 disseminates the publications on the research literature on RSS feed during 2008-2018. It is found that 175 publications only brought out by the researchers in the core area of Computer Science, Library Science and Engineering related field of research. The study analyzes that Information Science and Library Science area as seen predominant area which has majority 39 (28.2%) of the publications distributed in the field. Shell International Ltd has highest 10(5.71%) of the publications.

Chapter 9 discusses the Bioinformatics Literature during 2007-2017. For this study a total of 83904 publications were analysed. This article evaluated 11 years of bioinformatics publications with the aid of scientometric tools to find out the year wise distribution, prolific authors, subject wise distribution, Type of document, Top 10 Titles, Top 10 institutions, Country wise distributions and language wise distribution. The findings revealed that a maximum of 10821 publications were published in 2017.

Chapter 10 analyzes the impact and usage of social Medias among the postgraduate students of arts in Alagappa University, Karaikudi, under survey method for the study. The study could be identified majority of 69.79% of the respondents under female category, 72.92% of the respondents belong in the age group between 21 and 23 years. It is observed that 32.29 of the respondents use the Social Medias preferably, YouTube. The majority of 48.96% of the respondents use Smart phone/ Mobiles compare to iPod, desk top, Laptop and others.

Chapter 11 explains the survey among 421 respondents in six state universities in Kerala reveals that the use of e-resources is considered as an advantage and it benefits the academic community. While analysing the use of e-resources compared to the print resources, the statement 'E-resources affect the reading habit so it is not be encouraged' is rejected because it is not an advantage.

Chapter 12 analyses the impact and usage of social Medias among the research scholars in Madurai Kamaraj University and Manonmaniam Sundaranar University. The result of the study found that 66 (56.90%) were Manonmaniam Sundaranar University and the Residual respondents 50 (43.10%) were Madurai Kamaraj University. 33 (66%) Madurai Kamaraj University were Male and 29 (43.94%) were male from Manonmaniam Sundaranar University.

C. Baskaran
Alagappa University, India

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Section 1

Altmetrics: An Overview in Library and Information Science

Chapter 1
Altmetircs Research:
An Impact and Tools

C. Baskaran
https://orcid.org/0000-0002-2990-958X
Alagappa University, India

ABSTRACT

The chapter describes Altmetrics use in public APIs across platforms to gather data with open scripts and algorithms. Altmetrics did not originally cover citation counts. It calculated scholar impact based on diverse online research output, such as social media, online news media, and online reference managers. It demonstrates both the impact and the detailed composition of the impact. Altmetrics are becoming widely used in academia by individuals (as evidence of influence for promotion and tenure and in applying for grants), institution libraries (for making collections management decisions and understanding the use of IR and digital library content), publishers (performance in specific subject areas), and other areas of research.

INTRODUCTION

Scholarly and scientific publishing, Altmetrics are non-traditional bibliometrics proposed as an alternative or complement to more traditional citation impact metrics, such as impact factor and *h*-index. The term Altmetrics was proposed in 2010, as a generalization of article level metrics, and has its roots in the Altmetrics hash tag. Although Altmetrics are often thought of as metrics about articles, they can be applied to people, journals, books, data sets, presentations, videos, source code repositories, web pages, etc. Altmetrics use public APIs across platforms to gather data with open scripts and algorithms. Altmetrics did not originally cover

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citation counts, but calculate scholar impact based on diverse online research output, such as social media, online news media, and online reference managers and so on. It demonstrates both the impact and the detailed composition of the impact (Altmetrics, 2019).

The Internet or in other electronic communication media are very sensitive to manipulations: just ask any businessman how to manipulate large crowds on a public forum. Moreover, such numbers may, even more than citations, be popularity measures. Can anyone imagine high Twitter numbers discussing Einstein's general relativity? Or string theory? Hence Altmetrics data must be approached with caution, and in the context of multi- dimensional evaluation exercises. Cheung (2013) pointed out; we may say that "likes" or "shares" lack authority and scientific credibility so that the use of Altmetrics may still be somewhat premature. We full y agree with Priem, Piwowar and their colleagues that making an impact nowadays is totally different from making an impact 50 years ago, and hence research evaluation should adapt to changed academic, technical and social circumstances.

Moreover, citation counts are slow, by their nature, as publications must be read, reflected upon, and used in one's own research; then this scientific piece of work must pass peer review and be published before a citation can occur. It denotes that using modern communication media social scientists and colleagues from the humanities can much easier play (and prove they do) their role in bridging academia and everyday life. Of course, considering published research reports and patents will always be the core of any evaluation exercise.

HISTORY OF ALTMETRCIS

Dario Taraborelli published a paper on soft peer review, advocating social bookmarking tools for post-publication peer review (Taraborelli, 2008). Neylon and Wu described the PLOS Article-Level Metrics service launched in 2009 in an article published the same year (Neylon & Wu, 2009). Priem & Hemminger (2010) describes scientometrics 2.0 and called for new metrics based on Web 2.0 tools (Priem & Hemminger, 2010). Groth and Gurney studied chemistry science blogging about scholarly papers and presented their findings at the Web Science Conference 2010 (Groth & Gurney, 2010). The Altmetrics manifesto was published in October 2010 by Jason Priem, Dario Taraborelli, Paul Groth and Cameron Neylon (Priem et al. 2010).

Reader Meter is a web service that tracks the number of Mendeley readers of all papers of a particular author. Reader Meter was launched in late 2010 and is the first working Altmetrics service. The first Altmetrics workshop was in Altmetrics11, held at the ACM Web Science Conference 2011 Workshop in June 2011. Hackathons are an important part of Altmetrics history: a working prototype for Total Impact (now

Impact Story) was put together at the Beyond Impact conference in May 2011, and the idea of the Science Card project started at the Science Online London conference in September 2011. Three of the 11 finalists of the Mendeley/PLOS Binary Battle programming contest in September 2011 were Altmetrics applications. In 2012, we saw the launch of several Altmetrics services, more publishers implementing Altmetrics for their journal articles, and an increasing number of presentations and workshops dedicated to Altmetrics.

Impact assessment is one of the major drivers in scholarly communication, in particular since the number of available faculty positions and grants has far exceeded the number of applications. Peer review still plays a critical role in evaluating science, but citation-based bibliometric indicators are becoming increasingly important. This chapter looks at a novel set of indicators that can complement both citation analysis and peer review (Fenner, 2014). Altmetrics use indicators gathered in the real-time Social Web to provide immediate feedback about scholarly works. We describe the most important Altmetrics and provide a critical assessment of their value and limitations.

An Article level Altmetrics are to be useful to help direct potential readers to the more important articles in their field then evidence would be needed to show that articles with higher Altmetrics scores tended to be, in general, more useful to read. It would be difficult to get direct empirical verification, however, since data from readers about many articles would be needed to cross-reference with Altmetrics scores. Perhaps the most practical way to demonstrate the value of an Altmetrics is to show that it can be used to predict the number of future citations to articles, however, since citations are an established indicator of article impact, at least at the statistical level (more cited articles within a field tend to be more highly regarded by scholars (Franceschet & Costantini, 2011), even though there are many individual examples of articles for which citations are not a good guide to their value. This has been done for tweets to one online medical journal (Eysenbach, 2011) and for citations in research blogs (Shema, Bar-Ilan & Thelwall, 2014). This approach has double value because it shows that Altmetrics scores are not random but associate with an established (albeit controversial) impact measure and also shows that Altmetrics can give earlier evidence of impact than can citation counts.

Cronin, B., Snyder et. al (1998)analysed the metrics could help scholars find important articles and perhaps also evaluate the impact of their articles. Vaughan & Shaw (2003) found that At the time there was already a field with similar goals, webometrics, which had created a number of indicators from the web for scholars and scholarly publications. Kousha & Thelwall, (2008) describes the genre-specific indicators, such as syllabus mentions. Moreover, article downloads indicators. Shuai, Pepe & Bollen (2012) had also been previously investigated. Nevertheless, Altmetrics have been radically more successful because of the wide range of social

web services that could be harnessed, from Twitter to Mendeley, and because of the ease with which large scale data could be automatically harnessed from the social web through Applications Programming Interfaces (APIs). Academic research with multiple different approaches is needed to evaluate their value, however (Sud & Thelwall, 2014).

The components are given which are meant for Altmetrics research as follow,

- **A Record of Attention:** This class of metrics can indicate how many people have been exposed to and engaged with a scholarly output. Examples of this include mentions in the news, blogs, and on Twitter; article page views and downloads; GitHub repository watchers.
- **A Measure of Dissemination:** These metrics (and the underlying mentions) can help you understand where and why a piece of research is being discussed and shared, both among other scholars and in the public sphere. Examples of this would include coverage in the news; social sharing and blog features.
- **An Indicator of Influence and Impact:** Some of the data gathered via Altmetrics can signal that research is changing a field of study, the public's health, or having any other number of tangible effects upon larger society. Examples of this include references in public policy documents; or commentary from experts and practitioners.

ADVANTAGES ON USE OF ALTMETRICS

Altmetrics are becoming widely used in academia, by individuals (as evidence of influence for promotion and tenure and in applying for grants), institutions (for benchmarking a university's overall performance), libraries (for making collections management decisions and understanding the use of IR and digital library contents), and publishers (to benchmark their journals' performance in specific subject areas) alike.

There are some significant advantages given,

- **Context is King:** It's usually much more informative to say, "This article has received 89 Mendeley bookmarks, putting it in the 98th percentile compared to articles of a similar age and subject" than it is to say "This article has received 89 Mendeley bookmarks" alone. Give viewers of Altmetrics a solid reference point when presenting the data.
- **Qualitative Data is Usually More Illuminating Than Metrics Alone:** Presenting qualitative data alongside metrics can create a much more compelling case for research's impact. For example, rather than saying, "This

software has been mentioned in 32 news outlets," you can say, "This software has been mentioned in 32 news outlets worldwide, including the New York Times and The Guardian."

- **Altmetrics are a Great Supplement to Citations:** Even with the increased acceptance of Altmetrics, citations are still the most recognised proxy for impact in many disciplines. Create a more comprehensive picture of research influence by including both types of metrics together where possible.

ALTMETRICS TOOLS

The Altmetrics LLP remains a pioneer in providing Altmetrics-related solutions to specifically academic publishers, who would embed Altmetrics score in each scholarly article they publish in their e-journal gateways. Thus, Altmetrics score of an online scholarly article is instantly known to visitors of that particular e-journal. In some cases, readers even have convenient options to share bibliographic details of "liked" papers through their social media account. Here, users can instantly share any of these papers through Facebook, Twitter, Google+, Linkedin, Mendeley, CiteULike, or similar interactive social networks. As we saw in the earlier sections, Altmetrics data are derived from various social media and social bookmarking platforms. Researchers of the 21st century need to collaborate with transnational researchers for a successful academic career. They have increased their visibility and participation at the global level through maintaining online profiles, both in general and academic social networking, Platforms. Their participation in transnational e-groups in online forums, including E-mail-based forums, increased possibilities of peer-to-peer collaborations. While a plenty of general purpose social networking sites are globally available, some online social networks are meant for academics and researchers. Academic social networks facilitate creation of online groups for discussion based on particular research interests[7].

ALTMETRICS IN SCHOLARLY PUBLISHING

Much early Altmetrics research has examined reference managers, particularly Mendeley and CiteULike. Li et al. (2011) found 92% of Nature and Science articles in their sample had been bookmarked by one or more Mendeley users, and 60% by one or more CiteULike users. Bar-Ilan

(2012) analysed 97% coverage of recent JASIST articles in Mendeley. Priem, Piwowar and Hemminger (2012) reported that the coverage of articles published in the PLOS journals was 80% in Mendeley and 31% in CiteULike. Sampling 1,397 F1000 Genomics and Genetics papers, Li and

Thelwall (2012) found that 1,389 of those had Mendeley bookmarks. Studies have consistently found moderate correlation between reference manager bookmarks and Web of Science (WoS) citations. Li et al. (2011) showed r=0.55 of Mendeley and r=0.34 of CiteULike readers with WoS citations respectively.

Weller and Peters (2012) report similar correlation values for a different article set between Mendeley, CiteULike, BibSonomy, and Scopus. Bar-Ilan (2012) found a correlation of r=0.46 between Mendeley readership counts and WoS citations for articles in JASIST. User-citation correlations for sampled Nature and Science publications were 0.56 (Li et al. 2011); Priem et al. (2012b) report a correlation of 0.5 between WoS citations and Mendeley users articles published by the open-access publisher PLOS. Twitter has also attracted significant interest from Altmetrics researchers. Priem and Costello (2010) and Priem et al. (2011) reported that scholars use Twitter as a professional medium for discussing articles, while Eysenbach (2011) found that highly-tweeted articles were 11 times more likely become highly-cited later. Analysing the use of Twitter during scientific conferences, Weller and Puschmann (2011) and Letierce et al. (2010) conveyed that there was discipline-specific tweeting behaviour regarding topic and number of tweets, as well as references to different document types including journal articles, blogs, and slides. Other sources have examined additional data sources besides reference managers and Twitter, investigating examined citation from Wikipedia articles (Nielsen 2007) and blogs (Shema et al. 2012) explained as the sources of alternative impact data.

During literature survey plethora of articles found and some of the articles are described here, which shows the need of the present study. Batcha M Sadik (2018) analysed the top 15 articles of University of Madras, which have scored high citations and aims to find out to what extend the top cited articles have secured Altmetrics scores". Ezema, Ifeanyi & Cyprian I Ugwu (2017) investigated an attempt to contribute to this discussion with focus on the field of library and information science and extracted citation data from Web of Science, Scopus and Google Scholar, and Altmetrics attentions from 85 LIS journals indexed by Web of Science and found a positive correlation between citation scores and Altmetrics attention of the nine journals that maintained consistent presence in the three databases." Christos & Konstantina Delli (2018) have studied the online visibility of the most popular orthodontic articles on Web platforms in relation to publication details and citations. Melo Maricato and Dalton, discusses "the complexities, challenges and scientific communication in social media of Altmetrics, to have more depth understanding. The authors mention that there are various complexities such as complexity of

assessing publics, the different tools and sources related to Altmetrics present an even greater difficulty i.e., Different manners to measure research actions such as save, discuss, recommend, cite, etc.".

CONCLUSION

In present context, the researchers have to think beyond level of citing and view on the publications in the field of research. The researchers' communities along with research funding agencies are giving much importance to Altmetrics, due to better reflection of social impact and outreach of scientific publications using Altmetrics tools. The new-age researchers need to understand and grasp changing landscape of research communications, particularly which are helping global visibility of research communications. To become a successful researcher, one should first become a successful research communicator. Altmetrics data and the Altmetrics Attention Score are indicators of attention rather than metrics for quality or impact. In rare cases, Altmetrics data (in particular, the underlying qualitative data) can serve as indicators of potential downstream impact. When describing the nature of Altmetrics data, please make it clear that social media is one of several types of data we aggregate (others include mainstream media mentions, peer reviews, and citations to research in policy documents). Altmetrics as a field is in danger of being synonymous with the study of social media alone.

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Chapter 2
Altmetric:
An Overview of Its Advantages and Limitations in Evaluating Scholarly Communication in Social Media

S. Saravanan
Alagappa University, India

ABSTRACT

The primary purpose of this chapter is to provide an overview, importance, and limitations of altmetric, an understudied yet increasingly important arena of study for scholars, academics, and professional researchers. Widespread use of social media tools in the discovery, dissemination, and discussion of research output, altmetric measurements are fast gaining popularity, and they supplement the traditional research metrics by tracking the number of social mentions of research articles. Altmetrics focuses on the publication itself, not the journal or publisher. Citations take time to build, but altmetrics shows current discussion and societal and economic engagement.

INTRODUCTION

Web-based life, for example, Facebook and Twitter, have significantly changed our social and societal landscapes, and drastically modified the manner in which the news is accounted for and how comments are passed on. Altmetrics or 'alternative measurements' is an endeavour to catch how much certain things, for example, articles, book sections, and so on getting the consideration of their perusers. The measurement can be acquired as far as a number of peruses, a number of downloads

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and so on and has been imagined as a pointer of 'value'. The rise of 'web-based life' like Twitter, sites, Academic interpersonal organizations, for example, Mendeley, ResearchGate and so forth gave the likelihood of account perusers' responses to what they read. Altmetrics holds the possibility to change how to examine is found, spread, assessed, remunerated, and even read. It works by searching for references to insightful deals with the web, including "conventional" internet-based life (for example Twitter, Facebook, Google+), web journals (for example researchblogging.com, ScienceSeeker, Wordpress.com), scholastic bookmarking administrations and reference supervisors (for example CiteULike, Mendeley, Connotea), news sources (for example New York Times, The Economist, Wired), and interactive media (for example YouTube, digital recordings), post-distribution peer survey destinations (for example F1000 Prime), and a bunch of others (Alperin, 2015). Hence, Altmetrics is a term to depict online measurements for the effect of academic material, by utilizing information from web-based social networking outlets (e.g Twitter or Mendeley) (Shema, Bar-Ilan and Thelwall, 2014).

DEFINITION

Some of the definitions for Altmetrics are "Altmetrics—short for alternative metrics—aims to measure Webdriven scholarly interactions, such as how research is tweeted, blogged about, or bookmarked" (Howard, 2012). "Altmetrics go beyond traditional citation-based indicators as well as raw usage factors (such as downloads or click-through rates) in that they focus on readership, diffusion and reuse indicators that can be tracked via blogs, social media, peer production systems, collaborative annotation tools (including social bookmarking and reference management services)" (Taraborelli, n.d.).

"Altmetrics are new measurements for the impact of scholarly content, based on how far and wide it travels through the social Web (like Twitter), social bookmarking (e.g. CiteULike) and collaboration tools (such as Mendeley) … What altmetrics hope to do is provide an alternative measure of impact, distinct from the Journal Impact Factor, which has been categorically misused and is unable to respond to the digital environment that scholarship takes place in today" (Galligan, 2012).

ALTMETRICS: SOURCE OF DATA

Altmetrics are a broad class of statistics which attempt to capture research impact through non-traditional means (Priem et al. 2010, 2012a; Priem, Groth, and Taraborelli 2012). In simple terms, they are 'new metrics based on the social web

for analyzing, and informing scholarship' (Priem et al. 2010, 1). The sources mined for altmetric data include:

1. Micro-blogging or short-message services (Twitter),
2. Social networking sites (Facebook),
3. Blogs (WordPress, Blogger),
4. Social bookmarking networks (Delicious),
5. Academic bookmarking platforms (CiteULike, Mendeley),
6. Peer review services (F1000, now F1000Prime),
7. Academic networks (Academia.edu),
8. Collaboratively edited online encyclopaedias (Wikipedia).
9. Data from these sources are potentially subject to multiple forms of analysis
10. Salinas, Cabezas-Clavijo, and Jime´nez-Contreras 2013).

AGGREGATORS IN ALTMETRICS

Altmetrics tools capture/aggregators the article level scholarly data which are shared in social media and measures the impact of content in real time basis and the data are presented with visual effects. Some of the known aggregators are:

Altmetric.com

Altmetric (https://www.altmetric.com/) is a company that tracks and analyses the online activity around scholarly research outputs and builds tools and services around the data they collect and analyze. Altmetric offers services for publishers, institutions, researchers and funders. Publishers can use the tools and data from Altmetric to monitor, measure, and display the attention surrounding the scientific articles they have published. Institutions can use the Explorer for Institutions to monitor attention to research outputs from a specific institution, department, research project or team, researchers or papers, which will provide them with a richer picture of the reach and influence of the research. Researchers can use the tools provided by Altmetric to monitor how and by whom their work is being discussed and to showcase the attention their work has received.

Plum Analytics

Plum Analytics (http://plumanalytics.com/, obtained in 2017 by Elsevier) is another organization following and breaking down online action around research outputs. PlumX Metrics provide insights into the ways people interact with individual pieces

of research output (articles, conference proceedings, book chapters, and many more) in the online environment. Examples include, when research is mentioned in the news or is tweeted about. Collectively known as PlumX Metrics, these metrics are divided into five categories to help make sense of the huge amounts of data involved and to enable analysis by comparing like with like. PlumX assembles and unites proper research measurements for a wide range of academic research yield. It sorts measurements into 5 separate classifications: Citations, Usage, Captures, Mentions, and Social Media.

Impactstory

Impactstory (https://impactstory.org/) is a non-profit organization that has built up an open-source site that enables researcher to screen, track, and showcase the online attention of their research. The large part of the information is provided by Altmetric, however different sources are utilized as well, for example, CrossRef for metadata of articles and Orcid4 for scientist identity management. Impactstory promotes open science and open access publishing, by for example exhibiting the degree of open access publication a researcher has. The founders of Impactstory, Jason Priem and Heather Piwowar, are also the creators of Depsy (http://depsy.org/), a website that aims to "*value the software that powers science*" by showcasing how code that researchers have published on GitHub is being reused.

PLoSArticle Level Metrics

Public Library of Science (PLoS) which has emerged as the leading open access journal repository, offers an alternative to traditional impact in the form of article level metrics. It tracks the influence of individual PLoS articles, from times downloaded to mentions in social media and blogs. Besides, internal article metrics, including comments, notes, and ratings can also be tracked. While a valuable resource for impact, only PLoS articles benefit from its metrics. Nevertheless, this resource represents an important new avenue for metrics, which future publishers will likely replicate. It is available free and can be accessed through http://article-level-metrics.PLoS.org/.

ADVANTAGES IN USING ALTMETRICS

- **Altmetrics Data is Complementary to the Traditional Citation-Based Metrics:** Sourced from the web, unlike traditional citation based metrics Altmetrics data is complementary in nature. It tells how the scholarly content

i.e. journal articles, datasets; research work etc. is discussed, shared, saved, viewed and cited among the community.

- **Measure of Dissemination of Research:** Altmetrics indicators can showcase that how a research gets attention and influence over academic community. These metrics can help to understand where and why a piece of research is being discussed and shared, both among other scholars and in the public sphere. Examples of this would include coverage in the news; social sharing and blog features.
- **Research Attention:** Altmetrics can indicate people exposure and engagement towards the scholarly output. For example discussion and mentions in the news, blogs, and on social networks, page views and downloads.
- **Quicker to Accumulate:** Altmetrics data is quicker to accumulate than traditional citationbased metrics as the data is sourced from the web. It is possible to monitor and collate altmetrics data of a work in real time as soon as it published online.
- **Measure Diverse Impact:** Altmetrics can measure more diverse impacts of a research work than traditional citation-based metrics. As described above, altmetrics data can complement citations that how research is being referred.
- **Diversified Categories of Research Work:** Altmetrics data is more than that apply to journal articles and books. A researcher can share more than scholarly work such as their data, software, presentations, and other scholarly outputs online. It means that the altmetrics can be tracked for these on the Web as easily as we have traditional citation data for articles and books.

LIMITATIONS OF ALTMETRICS

- **Not Citation-Based** Altmetrics are only complementary to traditional citation metrics and do not replace citation-based data such as bibliometrics
- **Gaming Data**: Can be manipulated to fit a user's desired outcome
- **Lack of Significant Correlation with Bibliometric Data**: There is no conclusive research evidence that documents a correlation between altmetric indicators and citation-based indicators
- **Inclusion of Public Social Media:** General public's may be less interested in academic research outputs and more interested in popular topics
- **Lack of Common Definitions:** It is difficult to define activities such as mentions on Twitter, "likes" on Facebook, and recommendations by experts on F1000 as sharing similar meaning

- **Heterogeneity of Social Media Platforms and Users' Motivations**: The nature of social media platforms such as Facebook, Twitter, and F1000, etc., host a wide array of users, with different motivations and use behaviors, that may not be directly comparable and/or uniformly impactful
- **Lack of Conceptual Frameworks and Theories**: Scholars have yet to fully theorize and conceptualize altmetrics
- **Data Quality:** Unlike other measures such as bibliometrics, where data can be triangulated, the data in altmetrics are dynamic, in that they can be deleted or altered, and may therefore lack consistency, accuracy, and reliability
- **Lack of Inclusiveness:** Altmetrics do not include data from all digital media platforms

Language bias Altmetrics.org only collects data on research that is written in English. For example, while they collect data on Facebook, they don't collect mentions on Spanish Tuneti

CONCLUSION

No single metric provides a reader with a comprehensive measurement of the quality or importance of an article or journal. Journal impact factor informs readers of the overall historic quality and scholarly impact of content published in a scientific journal, as measured through citations; article level metrics are an increasingly accepted measurement of disseminative impact, quantifying the attention an individual article receives from news outlets and social media. Although these new metrics are not without flaws, careful consideration of all available measures, along with a critical analysis of an article, will assist readers in discerning the importance of the data they encounter. The traditional and alternative metrics should complement (and not replace) each other.

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Section 2

Altmetrics: Research in Library and Information Science

Chapter 3
Research Pattern of the Altmetrics During 2014–2018:
A Scientometric Analysis on SCOPUS

P. A. Senthilkumar
Anna Centenary Library, India

ABSTRACT

The chapter examines the global output on altmetrics research as indexed in Scopus database covering the period 2014 – 2017. The study reveals an increasing trend in the altmetrics research during the study period. Out of 524 global publications, the highest output contribution was found in the year 2018. The US was found to be the major contributor in this field of altmetrics, and journal articles were found to be the preferred source of publication. Social science discipline contributed the largest share of papers (320), followed by computer science, medicine, decision sciences, and mathematics. Scientometrics was the most productive journal in this field of altmetrics.

INTRODUCTION

Altmetrics is considered to be an umbrella term for assessing the presence or acknowledgement of scholarly research on the social web (Priem, et al., 2010). The aim of Altmetrics is to augment our views on scholarly impact by considering new or "alternative" data sources for measurement, like social bookmarking systems, online reference managers, twitter, wikipedia or blogs. The term Altmetrics was proposed in 2010, as a generalization of article level metrics, and has its roots in the Altmetrics hash tag. Although Altmetrics are often thought of as metrics about articles, they can

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be applied to people, journals, books, data sets, presentations, videos, source code repositories, web pages, etc. Altmetrics use public APIs across platforms to gather data with open scripts and algorithms. Altmetrics did not originally cover citation counts, but calculate scholar impact based on diverse online research output, such as social media, online news media, online reference managers and so on. Altmetrics could be applied to research filter, promotion and tenure dossiers, grant applications and for ranking newly-published articles in academic search engines.

REVIEW OF LITERATURE

During 2007 there were 33.2 million people living with HIV/AIDS worldwide (UNAIDS 2007). Sub-Saharan Africa is the region most affected with HIV/AIDS which is the leading cause of deaths in the region. South Africa is the country with the largest number of HIV infections in the world. The epidemic varies considerably amongst provinces, from 15% in the Western Cape to 39% in the province of KwaZulu-Natal. HIV/AIDS has become a political and scientific issue in South Africa. At the International AIDS Conference in Durban, in April 2000, then the South African President, Mbeki, made a speech that avoided reference to HIV and instead focused on the problem of poverty, increasing perceptions that he saw poverty as a powerful co-factor in AIDS diagnosis. Furthermore, President Mbeki defended a small group of dissident scientists who claim that AIDS is not caused by HIV (Cohen, 2007).

Scientometric approaches have been used for the assessment of scientific disciplines internationally (Dastidar & Ramachandran, 2005 and Pouris 2007), the assessment of a number of scientific disciplines within a country (Pouris, 2003 and Sombatsompop, et al. 2005), the assessment of a particular discipline within a country (Kim 2007 and Pouris, 2007) and the assessment of scientometric phenomena (Schubert & Sooryamoorthy 2010). The approach has also been used for the analysis of HIV/AIDS research in other countries (Macias-Chapula & Mijangos-Nolasco, 2002, Macias-Chapul,a et al. 1999; Mackenzie 2000 & Small 1994). A recent article (Onyacha, et al. forthcoming) investigates, through an analysis of the published literature, the notion held by several people that HIV/AIDS in Africa is unique. An investigation (Chigwedere, et al. 2008) from the Harvard School of Public Health identified that more than 330,000 lives were lost to HIV/AIDS in South Africa between 2000 and 2005 because a feasible and timely antiretroviral (ARV) treatment program was not implemented. In addition, an estimated 35,000 babies were born with HIV during the same period in the country because a feasible mother-to-child transmission prophylaxis program using nevirapine (an anti-AIDS drug) was not implemented.

This investigation identifies the state of HIV/ AIDS related research in South Africa vis-a-vis the rest of the world using evaluative Scientometrics in order to inform relevant policy. South Africa is identified as producing an increasing number of HIV/AIDS related publications, making it one of the most prolific fields in the country. The rest of the world appears to have stabilized its research efforts after the development of highly active antiretroviral therapies. The USA is identified as the main producer of HIV/AIDS research while Europe appears to under-emphasize the issue. Comparison of the world's most prolific universities with those in South Africa identifies that the latter has a fragmented system. A number of policy issues are discussed(Pouris and Pouris, 2011).

The map the number of publications, growth rate and doubling time, scattering of publication over journals, and its impact on publication output, authorship patterns and Global citation score of bioremediation research publication in India using the HistCite, VOSviewer software. Indian Institute of technology, Baba atomic research centre and CSIR are the major producers of research output in the area of bioremediation (Saravanan & Baskaran,2018). The data were obtained from scopus database. Articles published from 2008 –2017 were taken for this study. A total of 2594 articles were published in this field with an yearly average of 259.4 articles. . Out of the 2594 articles, the majority of the articles 421 (16.23%) were published in the year 2017. The RGR in the year 2009 found to be 2.05and in the end year 2017 found to be 0.12. This shows that the RGR declining trend is linear. Among the Authorship patterns, the major contribution of articles were from three authors 534 (20.59%). The Journal named" Advanced Materials Research" ranked in the top position in contributing articles 59 (2.28%) in this field. The highly prolific author is Monteiro S.N who has contributed 41 articles 0.47% (Senthilkumar & Baskaran,2019)

METHODOLOGY

The data about literature on Altmetrics was downloaded from "Scopus" database which is an international indexing and abstracting database using the search term "Altmetrics". For this study, literature published from 2014 to 2018 has been taken. A total of 524 articles were retrieved. The collected data has been classified using Excel. For the purpose of analysis, scientometric techniques such as year wise distribution, geographical distribution, and subject distribution were used for the study.

Table 1. Year wise distribution of the publications

Year	No. of Publications	Percentage	Cumulative	Cumulative %
2014	53	10.11	53	10.11
2015	91	17.37	144	27.48
2016	98	18.70	242	46.18
2017	139	26.53	381	72.71
2018	143	27.29	**524**	**100**
Total	**524**	**100**		

DATA ANALYSIS AND INTERPRETATION

Year Wise Distribution

The year-wise frequency distribution of publication on Altmetrics is shown in Table 1 An effort was made to analyze the year-wise productivity of Altmetrics literature research output. A total of 524 records were published during 2014 - 2018 on Altmetrics covered in the SCOPUS database. It can be observed from the table 1 that most productive year was 2018 with 143 records followed by (139) in 2017 and (98) in 2016 and the least productive year was in 2014 with 53 records.

PROLIFIC AUTHOR OF ALTMETRICS PUBLICATIONS

The table 2 reveals the first 20 prolific authors who belong to their highest productivity. Thelwall, M. have ranked first and contributed 30 articles followed by Bornmann with 26 publications with the second rank. The third rank went to Haunschild,R with 19 contributions. It is observed from the above analysis that researchers Haustein, Holmberg, Costas, Gorraiz and Erdt, have produced more articles in their field with an active participation in the Altmetrics research.

GEOGRAPHICAL DISTRIBUTION OF ALTMETRICS PUBLICATIONS

The table 3 shows the production-wise ranking of countries in Altmetrics literature world output (2014-2018). The USA topped the list with the highest share of 129 (24.62%) publications. UK ranked second with a share of 83 (15.84%) publications and this is followed by Spain who gets the third rank with share of 58 (11.07%).

Table 2. Prolific author of altmetrics publications

Authors	Contributions	Ranking
Thelwall, M.	30	1
Bornmann, L.	26	2
Haunschild, R.	19	3
Haustein, S.	14	4
Holmberg, K.	12	5
Costas, R.	10	6
Gorraiz, J.	10	6
Erdt, M.	9	7
Konkiel, S.	9	7
Peters, I.	9	7
Theng, Y.L.	9	7
Alhoori, H.	8	8
Bowman, T.D.	8	8
Bar-Ilan, J.	7	9
Kousha, K.	7	9
LariviÃ¨re, V.	7	9
Ortega, J.L.	7	9
Xu, S.	7	9
Torres-Salinas, D.	6	10
Kraker, P.	5	11

Germany had a share of 54 (10.31%) publications, Canada produced 36 (6.87%) publications and India and Austria had a least share of publications.

DOCUMENT TYPE DISTRIBUTION OF ALTMETRICS PUBLICATIONS

Table 4 shows the Document type contribution of Altmetrics literature, Article plays the major role in this research, which has 35 publications with 63.93%, Conference paper 85 with (16.22%), Review 35 with 6.68%, and the Editorial with 23 (4.39%). It is evident that the Journal Articles have a major share in the publications of Altmetrics literature.

Table 3. Geographical distribution of altmetrics publications

Country	Publications	Percentage	Rank
United States	129	24.62	1
United Kingdom	83	15.84	2
Spain	58	11.07	3
Germany	54	10.31	4
Canada	36	6.87	5
China	32	6.11	6
Netherlands	26	4.96	7
Iran	20	3.82	8
India	18	3.44	9
Austria	17	3.24	10

Table 4. Document type distribution of altmetrics publications

Document Type	Publications	Percentage
Article	335	63.93
Conference Paper	85	16.22
Review	35	6.68
Editorial	23	4.39
Article in Press	14	2.67
Letter	12	2.29
Book Chapter	6	1.15
Note	6	1.15
Conference Review	4	0.76
Book	2	0.38
Short Survey	2	0.38
Total	**524**	**100**

SOURCE TITLE WISE DISTRIBUTION OF ALTMETRICS PUBLICATIONS

The Source title wise distribution of Altmetrics literature analysis explores on the Table 5 contains the top 10 source titles. Scientometrics records the highest 73 (13.4%) publications, followed by Journal of Infometrics with 24 (4.58%), Profesional De

Table 5. Source title wise distribution

Source Title	Publications	Percentage	Rank
Scientometrics	73	13.93	1
Journal of Informetrics	24	4.58	2
Profesional De La Informacion	16	3.05	3
Journal of the Association for Information Science and Technology	15	2.86	4
Online Information Review	12	2.29	5
Aslib Journal of Information Management	11	2.10	6
Communications in Computer and Information Science	11	2.10	6
Plos One	11	2.10	6
Proceedings of the Association for Information Science and Technology	11	2.10	6
Performance Measurement and Metrics	8	1.53	7

La Informacion Khimicheskie Volokna with 16 (3%) and Journal of the Association for Information Science and Technology have 15 (3%) and so on.

SUBJECT WISE DISTRIBUTION

Table 6 revealed that major productivity i.e. 320 of the total 524 records is published in Social Sciences, followed by Computer Science 291 records and Medicine with 70 records in Engineering, 53 in Decision Sciences and 51 in Mathematics. It is clear from the study that Social science dominated the subject wise distribution of Altmetrics research.

SUMMARY AND CONCLUSION

The global Altmetrics research is increasing in the recent years. The USA is world leader in Altmetrics with 24.62% world share, followed by U.K. (15.84%), Spain (11.07%), Germany, Canada, China, and Netherlands (from 5.0% to 15.84%), Iran, India and Austria (from 3.24% to 5%) during 2014 – 2018. Social science registered the largest publication share of 320 publications, followed Computer Science 291 records and Medicine with 70 records. In Engineering, 53 in Decision Sciences and 51 in Mathematics. Scientometrics was the top most productive journal in this field of Altmetrics. India stands in ninth place with 18 publications among top 10

Table 6. Subject wise distribution

Subject	Publications	Rank
Social Sciences	320	1
Computer Science	291	2
Medicine	70	3
Decision Sciences	53	4
Mathematics	51	5
Biochemistry, Genetics and Molecular Biology	23	6
Engineering	21	7
Agricultural and Biological Sciences	17	8
Arts and Humanities	14	9
Business, Management and Accounting	13	10

countries in Altmetrics research. Indian scientists could focus more on this growing field of Altmetrics research. In summary, Altmetrics is a promising research topic in future by which researchers concentrating on this field expected to make substantial contributions to scholarship.

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Section 3
Web Analytics Tools and Techniques

Chapter 4
Internet Usage in India:
The Global Analytics

P. Murugiah
Central Electro Chemical Research Institute, India

ABSTRACT

The ERNET network was only made available to educational and research communities. ERNET was initiated by the Department of Electronics (DoE), with funding support from the Government of India and United Nations Development Program (UNDP), involving eight premier institutions as participating agencies—NCST Bombay; Indian Institute of Science; five Indian Institutes of Technology at Delhi, Mumbai, Kanpur, Kharagpur, and Chennai; and the DoE in New Delhi. It is estimated that by 2017, internet users in India are most likely to be in a range of 450-465 million. The frequency of internet access among urban internet users in India is close to 51% or 137.19 million of internet users are using internet on a daily basis (at least once a day). On the other hand, 242 million or 90% of the urban internet user's use internet once a month. Analysis of 'daily users' reveals that they are both in urban and rural India.

INTRODUCTION

The history of the internet in India began with the launch of the Educational Research Network (ERNET) in 1986. The first publicly available internet service in India was launched by state-owned Videsh Sanchar Nigam Limited (VSNL) on 14 August 1995. As of May 2014, the Internet was delivered to India mainly by 9 different undersea fibres, including SEA-ME-WE 3, Bay of Bengal Gateway and Europe India Gateway, arriving at 5 different landing points. India also has one overland

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internet connection, at the city of Agartala near the border with Bangladesh.[2]As of 31 December 2018, India had a population of 130 crore people (1.3 billion), 123 crore (1.23 billion) Aadhaar digital biometric identity cards, 121 crore (1.21 billion) mobile phones, 44.6 crore (446 million) smartphones, 56 crore (560 million) internet users up from 481 million people (35% of the country's total population) in December 2017, and 51 per cent growth in e-commerce. Government has embarked on the massive Bharat Net, Digital India, Made in India and Start-up India initiatives to expedite the internet-based eco-system (Internet India, 2019).

History of Internet

The history of the internet in India began with the launch of the Educational Research Network (ERNET) in 1986. The network was only made available to educational and research communities.[5] ERNET was initiated by the Department of Electronics (DoE), with funding support from the Government of India and United Nations Development Program (UNDP), involving eight premier institutions as participating agencies—NCST Bombay, Indian Institute of Science, five Indian Institutes of Technology at Delhi, Mumbai, Kanpur, Kharagpur and Chennai, and the DoE in New Delhi. ERNET began as a multiprotocol network with both the TCP/IP and the OSI-IP protocol stacks running over the leased-line portion of the backbone. Since 1995, however, almost all traffic is carried over TCP/IP. The first leased line of 9.6 kbit/s was installed in January 1991 between Delhi and Mumbai. ERNET was allotted Class B IP address 144.16.0.0 by Inter NIC in 1990. Subsequently, Class C addresses were allotted to ERNET by APNIC. All IITs, IISc Bangalore, DOE Delhi and NCST Mumbai were connected by 9.6 kbit/s leased line by 1992. In the same year, 64 kbit/s Internet gateway link was commissioned from NCST Mumbai to UUNet in Virginia, United States (Twenty years of Internet in India, 1995).

Internet Users in India

According to IAMAI & KANTAR report (2016), India had estimated 432 million Internet users. This however, doesn't take into account the impact of demonetisation. It is estimated that by 2017, Internet Users in India are most likely to be in a range of 450-465 million. The report finds that the overall internet penetration in India is around 31% presently. Growth in the Internet Usage: Rural-Urban Analysis: In Urban India, the Internet User base has grown by7%from Oct2015 to Oct 2016 to reach an estimated 263 million. It is expected to grow to reach user base in a range of 275-285 million by June 2017.In Rural India, the Internet users have grown at the rate of 22% between Oct 2015 and Oct2016, to reach an estimated 157 million. The numbers are expected to reach in the range of 170-180 million by June 2017.

Frequency of Internet Access Among urban internet users in India, close to 51% or 137.19 million of Internet Users are using Internet on a daily basis(at least once a day).On the other hand, 242 million or 90% of the urban internet user's use internet once a month. Analysis of 'Daily Users' reveal that both in Urban and Rural India, the younger generations are the most prolific users of internet. The gender ratio is slightly better in Urban India, while both urban and rural India show almost similar ratios of working and non-working women registering as daily internet users.

The increasing impact of information and communication technologies on higher education, all those concerned with higher education are attempting to grasp how ICT could help in modernizing the process of teaching, learning and research. With the advent of the internet, the following dilemma arises in the educational system: Leaner is not dependent on teacher for interaction; and teachers can give lecturers virtually to unknown learners. So in this era, teachers and students can carry forward their work on the internet in ways that are similar to and tightly intertwined with the traditional ways that they learn, teach and study in libraries, classrooms, laboratories, seminars, conferences and so on. The internet can provide access to essentially unlimited resources of information not conventionally obtainable through other means. The internet has broken down barriers of communication access from anywhere in the world. It is fast, reliable and does not have restrictions on content or format. It also has unlimited range of facilities which assist users to access almost infinite information on the net. It offers the opportunity for access to up-to-date research reports and knowledge globally. It has thus become an important component of electronic services in academic institutions. Hence the internet has become an invaluable tool for learning, teaching and research.

REVIEW OF LITERATURE

Use of electronic resources by research scholars of Kurukshetra University that the main purpose for using e-resources was research work of the scholars and main source to know about ER was guidance from teachers. 62 percent research scholar used e-resources daily and e-journals were most used sources whereas Google was the most used web browser while the main problem was slow access speed to the e-resources (Madhusudhan, 2010). Use of electronic information resources and facilities by humanities scholars" that humanity scholar were regular users of varieties of electronic technologies however they have faced some problems regarding information scattering on too many sources that is difficult to search without assistant and lack of technical support, cost factors and information explosion (Tahir, khalid and Shafique, 2010). The search behavior of users of IIT Delhi regarding the use of electronic information services (EIS) that 61.66 percent of users searched by direct

keywords and Boolean logic and truncation were the most often used search facilities however lack of printing facility (41.34 percent) and trained personnel (34 percent) was the major reason to discourage the users from using EIS (Ali, 2005). The most preferred e-resource among the researchers of National Dairy research Institute (NDRI) and National Bureau of Animal Genetic Resources (NBAGR) and animal science and Agricola was the most used online databases. The internet is a relatively new channel for scholarly resources and contain vast quantities of information that vary a great deal regarding its content, aim, target, group, reliability. Hence, it is important that the end user is aware of the diverse information available on the internet and educated in the criteria by which the information content should be accessed. The internet is one of the beneficial tools in this era of IT world not only for business but for academic point of view and enhances the skills and capabilities of student which assist them in studies and in professional life. Students use the internet as a hub for research in their various fields of study. This can be seen by the way the students consult the internet for assignments, presentations, research works and examinations (Sharma, Singh & Sharma, 2011).

This is a universal fact that the use of internet has a great impact on the student‘s academic carrier. The use of Internet has become a very popular in many areas as well as in education in recent years. Accordingly, Internet access in schools has increased greatly over the last 20years (Berson, 2000). As this study has shown, more students are relying on the Internet for their academic needs than any other areas. The students ‘attitudes toward the use of the Internet for learning at the University of Malaysia Sarawak (Hong, Ridzuan & Kuek, 2003). The study revealed that in general, students there had positive attitudes towards learning through the Internet. The students had the basic skills in using the Internet and perceived the learning environment in the university conducive to the use of the Internet as a learning tool. Use of internet by teachers and students in Shaheed Bhagat Singh College of Engineering & Technology, Ferozepur (Panjab). They found that 46.7% teachers and 36.7% student‘s daily use the internet. About 90% respondents use internet at their college. Yahoo is found as the favourite search engine. Only 31.7% respondents were fully satisfied, whereas 36.7% were partially satisfied with internet facilities (Rajeev Kumar and Amritpal Kaur, 2004).

METHODOLOGY

The study has been explores that data taken in appropriately use Internet users through Google search. The data retrieved the American internet usage by the people, 2. World- wide statistical on the internet users clearly explained in the study. The relevant data downloaded from Google site and presentation given in the study.

Table 1. Latin American internet usage

Latin American Internet Usage					
LATIN AMERICA COUNTRIES / REGIONS	Population (Est. 2007)	Internet Users, Latest Data	% Population (Penetration)	% Users in Table	Use Growth (2000-2007)
Argentina	40,301,927	16,000,000	39.7 %	13.0 %	540.0 %
Bolivia	9,119,152	580,000	6.4 %	0.5 %	383.3 %
Brazil	190,010,647	42,600,000	22.4 %	34.7 %	752.0 %
Chile	16,284,741	7,035,000	43.2 %	5.7 %	300.3 %
Columbia	44,379,598	10,097,000	22.8 %	8.2 %	1,050.0 %
Costa Rica	4,133,884	1,214,400	29.4 %	1.0 %	385.8 %
Cuba	11,394,043	240,000	2.1 %	0.2 %	300.0 %
Dominican Republic	9,365,818	2,100,000	22.4 %	1.7 %	3,718.2 %
Ecuador	13,755,680	1,549,000	11.3 %	1.3 %	760.6 %
El Salvador	6,948,073	700,000	10.1 %	0.6 %	1,650.0 %
Guatemala	12,728,111	1,320,000	10.4 %	1.1 %	1,930.8 %
Honduras	7,483,763	344,100	4.6 %	0.3 %	760.3 %
Mexico	108,700,891	23,700,000	21.8 %	19.3 %	773.8 %
Nicaragua	5,675,356	155,000	2.7 %	0.1 %	210.0 %
Panama	3,242,173	264,316	8.2 %	0.2 %	487.4 %
Paraguay	6,669,086	260,000	3.9 %	0.2 %	1,200.0 %
Peru	28,674,757	7,324,300	25.5 %	6.0 %	193.0 %
Puerto Rico	3,944,259	915,600	23.2 %	0.7 %	357.8 %
Uruguay	3,460,607	1,100,000	31.8 %	0.9 %	197.3 %
Venezuela	26,023,528	5,297,798	20.4 %	4.3 %	457.7 %
TOTAL	552,296,094	122,796,514	22.2 %	100.0 %	590.1 %

DATA ANALYSIS

Latin American Internet Usage

Table 1 present on the data observed that Latin American Internet users according to Google search, the study finds that highest population reported that Brazil 190,010,647 of them 42,600,000 people use internet in the world. It followed by Mexico holds 23,700,000, Argentina with 16,000, 000, Columbia with 10,097,000 people use Internet in terms of gain various task, educational, cultural, research and entertainment.

COUNTRY-WISE INTERNET USERS DATA

Table 2 explained that country wise internet users on 2017 according to global data of presented in the study. It is discussed that China has highest 746,662,194 (53.20%) of the Internet users among the forty two countries are listed. The china shows as the ranked 1 among the country. It followed, India has 699,012,635 (52.95%) of the users as second rank, as we understand that US foremost developed country in the world, whereas, the Internet users 245,436,423(76.18%) so called it is third rank among the countries. Further, there are thirty one counties Internet user's less than one crore.

Table 2. Country-wise internet users' data

S. No	Country	Internet Users	Population Rank	Percentage	Rank
1	China	746,662,194	1	53.20%	109
2	India	699,012,635	2	52.95%	128
3	United States	245,436,423	3	76.18%	54
4	Brazil	123,927,230	4	59.68%	90
5	Japan	117,528,631	5	92.00%	15
6	Russia	110,003,284	6	76.41%	53
7	Bangladesh	83,141,000	7	49.00%	175
8	Germany	73,436,503	8	89.65%	20
9	Indonesia	66,244,991	9	25.37%	157
10	Pakistan	64,000,000[8]	10	30.59%	141
11	United Kingdom	62,354,410	10	94.78%	11
12	Philippines	57,342,723	11	55.50%	101
13	France	55,413,854	12	85.62%	29
14	Nigeria	47,743,541	13	25.67%	153
15	South Korea	47,094,267	14	92.72%	14
16	Turkey	46,395,500	15	58.35%	95
17	Vietnam	43,974,618	16	46.50%	120
18	Iran	42,731,675	17	53.23%	107
19	Egypt	37,519,531	18	39.21%	131
20	Spain	37,337,607	19	80.56%	35
21	Italy	36,442,438	20	61.32%	86
22	Thailand	32,710,169	21	47.50%	116
23	Canada	32,602,776	22	89.84%	19
24	Argentina	30,758,972	23	70.15%	70
25	South Africa	30,248,355	24	54.00%	106
26	Mexico	75,937,568	26	59.54%	92
27	Colombia	28,287,098	27	58.14%	97
28	Poland	28,018,492	28	73.30%	62
29	Malaysia	24,572,446	29	78.79%	45
30	Saudi Arabia	23,803,319	30	73.75%	61
31	Ukraine	23,321,390	31	52.48%	110
32	Australia	21,288,648	32	88.24%	23
33	Morocco	20,555,783	33	58.27%	96

continued on following page

Table 2. Continued

S. No	Country	Internet Users	Population Rank	Percentage	Rank
34	Venezuela	18,940,907	34	60.00%	88
35	Taiwan	18,786,473	35	79.75%	41
36	Algeria	17,440,299	36	42.95%	126
37	Ethiopia	15,739,371	37	15.37%	180
38	Netherlands	15,358,245	38	90.41%	18
39	Kazakhstan	13,814,581	41	76.80%	51
40	Myanmar	13,258,325	42	25.07%	159
41	Kenya	12,600,007	43	26.00%	152
42	Chile	11,822,229	44	66.01%	82

Figure 1. Internet users in India

INTERNET USERS IN INDIA

The data 1 provides the information on the number of internet users in India from 2015 to 2023. In 2018, India had 483 million internet users. This figure is projected to grow to 666.4 million internet users in 2023. Despite the untapped potential, India already is the second-largest online market worldwide. The majority of India's internet

users are mobile phone internet users, who take advantage of cheap alternatives to expensive landline connections that require desktop PCs and infrastructure. As of 2016, India had 320.57 million mobile phone internet users and forecasts estimate 492.68 million Indian mobile phone internet users by 2022.

CONCLUSION

The study discussed that world wide data presented on the Internet users, the Information communications has been deployed to cater to needs of the users, being gained the information unlimited. The recent growth of the Internet and the World Wide Web makes it appear that the world is witnessing the arrival of a completely new technology. In fact, the Web now considered being a major driver of the way society accesses and views information is the result of numerous projects in computer networking, mostly funded by the federal government, and carried out over the last 40 years. The projects produced communications protocols that define the format of network messages, prototype networks, and application programs such as browsers. This research capitalized on the ubiquity of the nation's telephone network, which provided the underlying physical infrastructure upon which the Internet was built.

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Section 4
Quantitative Assessment on Research Productivity

Chapter 5
Activity Index and Lotkas's Law Validation on Human DNA Research

P. Murugiah
Central Electro Chemical Research Institute, India

ABSTRACT

The chapter analyzes the activity index and Lotka's law validation on human DNA research during 1989-2013. This present study uses Scopus database to find publications of 'Human DNA'. The study showed that the lowest relative growth rate (RGR) was 0.04 in 2008, 2010, 2012, and 2014. Similarly, the RGR rose to 0.75 in 1990, and the average mean value of RGR was 0.15. The total no. of authors was (an) = 82886 for 42 publications that each author contributed in the human DNA research. The authors reported that the percentage that authors predicted by Lotka's authors (F-P)2/P = 1526.66.

INTRODUCTION

DNA (Deoxyribo Nucleic Acid) is the genetic material of almost all organisms, including humans. It has a very simple chemical composition, which includes four different nucleotides or bases called adenine, thymine, cytosine and guanine which are commonly known by the letters A, T, C and G. DNA is found in almost every cell in the human body, from blood cells, to skin cells, to liver cells. Additionally, the order of the bases is the same in all the cells from one individual (Butler, 2002), Furthermore. Only small amounts of muscle are required to generate a DNA profile.

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Published guidelines recommend that one gram of muscle be taken in most cases; 100 mg of tissue (at 3-4 mm cube) will provide ample DNA for analysis (ICPO, 2009).

The term "Bibliometrics" introduced by Pritchard (1969), is often used to assess scientific research through quantitative studies on research publications. The Oxford English Dictionary (2012) defines Bibliometrics as "the branch of library science concerned with the application of mathematical and statistical analysis to bibliography; the statistical analysis of books, articles, or other publications." The Bibliometric methods are very useful for measuring the dissemination of knowledge in the natural sciences, but they are less effective in some applied fields, such as engineering (Van Raan 2003). Bibliometric studies are helpful in evaluating library services, collection development, policy refinement, decision making, and resources allocation and even weeding. Data produced by bibliometric methods provide a scientific basis to library administrators for decision making. Researchers have considered Bibliometrics useful for curriculum analysis (Juznic & Urbanija, 2003) and for an appraisal of research output quality (Middleton, 2005).

REVIEW OF LITERATURE

Tague-Sutcliffe (1992) stated "Scientometrics is the study of the quantitative aspects of science as a discipline or economic activity". Scientometrics is a part of the sociology of science and has application to science policy-making. It involves quantitative studies of scientific activities, including, among others, publication, and so overlaps with bibliometrics to some extent. In *Bibliometric indicators* in the field of microbiology: A Norwegian case study, the authors found that only 41 percent of all publications in NSIOD-indexed journals, that were expert-classified as microbiology, were included under the NSIOD-category Microbiology. Aksnes, Olsen and Seglen (2000) observe and assess it quality for bibliometric studies attempting to analyze the evolution of biotechnology research. Dalpe, (2002) analyzes to map leading organizations, and to study the interaction between science and technology According to Saferstein (2001) "forensic science is the application of science to those criminal and civil laws that are enforced by police agencies in a criminal justice system." Thus forensic science is related to the police agencies and to the judiciary.

Jones (2003) reviewed the impact factors of forensic science and toxicology journals and opined that the impact factors of these journals are low because the visibility and size of the circulation of these journals are low. In 2005, Jones used Web of Science (WoS) to identify the most highly most highly cited papers published in the Journal of Forensic Sciences between 1956 and 2005. Jeyasekar & Saravanan (2012) conducted a scientometric study of forensic science to analyse the growth in literature, authorship productivity, the high ranking institution and

country. The authors found that the forensic science literature doubled between 2001 and 2011. In the same year, authors conducted a scientometric analysis of the Indian forensic science literature for the period 2004 to 2011 using the Indian Citation Index (ICI) database. Sivaprakasam & Joshua, (2019) proposed that the analysis was based on the quantification by the type of publications, year, citations, geographical productivity, keywords, most preferred journals, leading publications mapping of authors, priority research areas and productive institutes. There were 1,301 Nipah articles with 64% research articles, 38849 citations, country USA with more productive authors, 'Nipah virus' the commonly used keyword, 'Journal of Virology' as preferred journal, Wang LF as productive author of a research group, Infectious diseases as the priority research area and the most productive institute as Commonwealth Scientific and Industrial Research Organization, Australia.

OBJECTIVES OF THE STUDY

1. To observe the year-wise distribution the records of Human DNA from 1989 to 2013.
2. To analyze the RGR and Dt of the publications of human DNA research.
3. To observe the activity index of world output of human DNA research output
4. To test the applicability of Lotka's law of author productivity in the field of human DNA

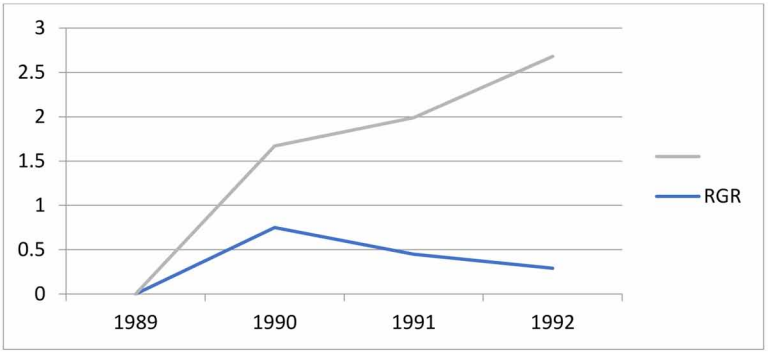
METHODOLOGY

The present study aims to analyze the human DNA research output as a global prospective. The authors used sample data to trace the past trends in the area of research output of human DNA research. The study evaluates the contribution of a country's growth of literature and the development of research productivity in this discipline during from 1989 to 2013. The present study attempts to find research publications in 'human DNA' in the Scopus database.

DATA ANALYSIS

Table 1 shows the RGR and Doubling Time (Dt) of publication in research output of Human DNA at global literature during the study period. The results shows lowest RGR was 0.04 in 2008,2010, 2012 and 2014. RGR rose up to 0.75 in 1990 and the average mean value of RGR is 0.15. The authors deduct from 0.95 to 17.33 and a

Figure 1. RGR and Dt



decreased to 13.86 in 2011. The authors found the Dt increase from 1.57 to 15.25 and found an average mean value of Dt of 8.89 (Figure.1).

Table 2 shows the activity index of the journal output and world output of the human DNA research. The authors observe the research from the journal articles rose from 560 in 1989 to 698 publications in 1996. Suddenly, the activity index appeared that an increased and a decreased trend throughout the period. The authors found an activity index of articles in journals, the proportion of contribution to the productivity and the terms of growth are seen from two different angles. The first angle is the one volume of articles produced by a specific variable (articles in journals) in different years and thus the extent of the increase. The second angle is the volume of growth of literature in different years in relation to the world in productivity. Moreover, the authors observe that the result of activity index was a 96 in 2003 and 104 in 1989.

LOTKA'S LAW OF AUTHOR PRODUCTIVITY

Lotka's law explained that the number of persons making two contributions is about one fourth of those contributing one publication. It explains that the number of authors making "n" contributions is about 1/n2 of those making a single contribution and the proportion of contribution that makes a single contribution is about 60 percent. In other words, for every 100 authors making one contribution each, there would be 25 other authors contributing 25 articles each (100/22 =25) about 11 contributing three articles each (100/33 = 11.1) about 6 contributing four articles each

(100/44 = 6.25), and so on.

Table 1. RGR and DT of human DNA research

Year	No. of Publications	Cumulative	W1	W2	W1-W2 R (a)	Mean (a) 1-2	Doubling Time (DT)	Mean Dt (a) 1-2
1989	597	597		6.39				
1990	675	1272	6.39	7.14	0.75		0.92	
1991	712	1984	7.14	7.59	0.45	0.43	1.54	1.94
1992	673	2657	7.59	7.88	0.29		2.39	
1993	733	3390	7.88	8.12	0.24		2.89	
1994	736	4126	8.12	8.32	0.2		3.46	
1995	767	4893	8.32	8.49	0.17		4.08	
1996	756	5649	8.49	8.63	0.14	0.15	4.95	4.95
1997	734	6383	8.63	8.76	0.13		5.33	
1998	727	7110	8.76	8.86	0.1		6.93	
1999	736	7846	8.86	8.96	0.1		6.93	
2000	681	8527	8.96	9.05	0.09		7.70	
2001	686	9213	9.05	9.12	0.07	0.08	9.90	8.87
2002	674	9887	9.12	9.19	0.07		9.90	
2003	673	10560	9.19	9.26	0.07		9.90	
2004	660	11220	9.26	9.32	0.06		11.55	
2005	662	11882	9.32	9.38	0.06		11.55	
2006	619	12501	9.38	9.43	0.05	0.05	13.86	13.63
2007	615	13116	9.43	9.48	0.05		13.86	
2008	630	13746	9.48	9.52	0.04		17.33	
2009	688	14434	9.52	9.57	0.05		13.86	
2010	616	15050	9.57	9.61	0.04		17.33	
2011	639	15689	9.61	9.66	0.05	0.04	13.86	15.94
2012	720	16409	9.66	9.70	0.04		17.33	
2013	693	17102	9.70	9.74	0.04		17.32	
Total	17102				3.35	0.15	224.67	9.06

Lotka's Law can be expressed by the equation:

an = a1/n2, n = 1,2,3,.....

Where. an is the number of authors contributing n papers each and a1 is the number of authors contributing one paper each.

Table 2. World output vs. Journal articles of activity index

Sl. No.	Year	R. Output of J A	COP = A	World Output	WOP = B	A/B	AI Value
1	1989	560	0.036	597	0.035	1.04	104
2	1990	603	0.039	675	0.039	1.00	100
3	1991	646	0.042	712	0.042	1.00	100
4	1992	601	0.039	673	0.039	1.00	100
5	1993	640	0.042	733	0.043	0.97	97
6	1994	661	0.043	736	0.043	1.00	100
7	1995	680	0.044	767	0.045	0.99	99
8	1996	698	0.045	756	0.044	1.03	103
9	1997	662	0.043	734	0.043	1.00	100
10	1998	656	0.043	727	0.043	1.00	100
11	1999	679	0.044	736	0.043	1.03	103
12	2000	607	0.039	681	0.040	0.99	99
13	2001	619	0.040	686	0.040	1.00	100
14	2002	596	0.039	674	0.039	1.00	100
15	2003	578	0.038	673	0.039	0.96	96
16	2004	574	0.037	660	0.039	0.97	97
17	2005	589	0.038	662	0.039	0.99	99
18	2006	562	0.037	619	0.036	1.01	101
19	2007	546	0.036	615	0.036	1.00	100
20	2008	563	0.037	630	0.037	1.00	100
21	2009	625	0.041	688	0.040	1.01	101
22	2010	561	0.037	616	0.036	1.01	101
23	2011	588	0.038	639	0.037	1.02	102
24	2012	651	0.042	720	0.042	1.00	100
25	2013	623	0.041	693	0.041	1.00	100
		15368		17102			

Table 3. Lotka's Law of Author Productivity

Sl. No.	Number of Publication	Observer No. of Authors With n (an) or F	Observed % of Authors 100/an/a1	Expected No. of Authors (an=al/n2) P	Expected % of Authors Predicated by Lotka's/100n	(F-P)2/P
1	1	79883	100.000	79883.00	100.00	0
2	2	2104	2.634	19970.75	25.00	15984.41
3	3	359	0.449	8875.89	11.11	8172.41
4	4	216	0.270	4992.69	6.25	4570.03
5	5	96	0.120	3195.32	4.00	3006.20
6	6	68	0.085	2218.97	2.78	2085.06
7	7	34	0.043	1630.27	2.04	1562.97
8	8	26	0.033	1248.17	1.56	1196.71
9	9	21	0.026	986.21	1.23	944.66
10	10	11	0.014	798.83	1.00	776.98
11	11	14	0.018	660.19	0.83	632.49
12	12	4	0.005	554.74	0.69	546.77
13	13	4	0.005	472.68	0.59	464.71
14	14	5	0.006	407.57	0.51	397.63
15	15	7	0.009	355.04	0.44	341.17
16	16	5	0.006	312.04	0.39	302.12
17	17	3	0.004	276.41	0.35	270.44
18	18	6	0.008	246.55	0.31	234.70
19	19	1	0.001	221.28	0.28	219.29
20	21	2	0.003	181.14	0.23	177.16
21	22	2	0.003	165.05	0.21	161.07
22	25	3	0.004	127.81	0.16	121.88
23	26	4	0.005	118.17	0.15	110.31
24	28	1	0.001	101.89	0.13	99.90
25	29	2	0.003	94.99	0.12	91.03
26	30	1	0.001	88.76	0.11	86.77
27	31	1	0.001	83.12	0.10	81.14
28	34	1	0.001	69.10	0.09	67.12
29	42	2	0.003	45.29	0.06	41.37
	Total	82886			X^2	1526.66

Table 3 shows the total number of authors (an) is =82886 for 42 publications each author contributed in the human DNA research. The authors reported that expected percentage of authors predicted by Lotka's author is (F-P)2/P =1526.66.

CONCLUSION

The scientists need to encourage and motivate collaborative research of human DNA among the European, North American and Asian scientists and other scientists of Oceania, South American and African countries. In order to improve the quality of human DNA research, the European scientists should be deported to developed countries to undergo training programs to increase the skills and efficiency of the scientists. Scientist in Oceania, South American and African countries' may be motivated to produce a number of publications on human DNA research based on the present study. Based on the findings, the neglected areas of human DNA research may be identified, so that the scientists may be encouraged to carry out further research activities in those areas of human DNA research. From the inferences of the present study, the productivity of the author can be identified. Therefore, the individual scientist may be stimulated to publish a greater number of contributions instead of a single author's contribution Moreover, the present study may serve as a beacon light to Information Science researchers.

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Chapter 6
Exponential and Research Quantity of the Publications on Forensic Medicine

P. Ramesh Babu
Alliance Broadcast Pvt. Ltd, India

ABSTRACT

The study analyses the research publications of forensic medicine growth that between 11 (0.26%) in 1989 and 447 (10.76%) in 2013. The largest output was found in 447 publications in 2013, followed by 420 (10.38%) in 2015. Value n in the field of forensic medicine is being analysed. It has a calculated exponential growth of n= 4.4320914; author data is presented in the analysis. The whole values of A for Indian output were measured 0.84. It is analysed that the world output in forensic medicine, the value of B, are also found to be increasing and decreasing trend during the study period.

INTRODUCTION

The origin of Forensic Medicine remains lost in a distant past, whenever the principles of medical sciences met those of law and justice (Kovacevic, 1989; Kaye, 1992). Perhaps it began with the Code of Hammurabi (1792–1750 BCE), which imposed sanctions for errors in medical and surgical practices. The same type of punishment also existed in Persia. Forensic dissections of bodies began in the 13th century at the University of Bologna in Italy by a surgeon and teacher of anatomy (Saukko and Kright, 2004). Surprisingly, these forensic dissections appeared before the hospital autopsies that started by the end of the 19th century with Rokitansky, Virchow,

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and the advent of the pathogenesis of diseases and cellular pathology. Modern Scientometrics is mostly based on the work. The latter created the and founded the which is heavily used for Scientometric analysis. A dedicated academic journal was established in 1978. The industrialization of science increased the quantity of publications and research outcomes and the rise of the computers allowed effective analysis of this data,

REVIEW OF LITERATURE

The research was intended to analyse the special characteristics and structure of social networks among Korean medical schools for the purpose of providing knowledge regarding medical field structure, dynamics, and potential paradigm development (Kang & Park, 2010). The growth of malaria research at Global Level and the distribution of articles in various journals for the period 1955–2005 (Ravichandra Rao & Divya Srivastavab, 2010). The data have been extracted from a database, which has been developed in-house from MEDLINE, SCI, TDB, Ovid Heath Information and Indian Science Abstracts. Study indicates that the exponential model fits the data on journals, articles and authors. Tehran University of Medical Sciences as the top medical university of Iran was compared with some of top medical universities around the world (Abolghassemi Fakhree & Jouyban, 2011). The qualitative stands up to independent rather than comparative scrutiny. The results shows that of the 240 papers analysed, 27 used ad hoc or no references to qualitative; methodological terms such as thematic analysis or constant comparative methods were used inconsistently; qualitative was a catch-all panacea rather than a methodology with well-argued terms or contextual definition (Ball. E Mc Loughlin & Darvill, 2011). The quantity and citation impact of scientific papers in the field of Complementary and Alternative Medicine (CAM). The data are collected from 19 CAM journals in the Science Citation Index Expanded (SCI-E) database during 1980–2009, and 17,002 papers are identified for analysis (Fu. J.Y, et al., 2011).

The research output of 9909 global and 4862 Indian Himalayan R&D publications, as covered in Scopus database during 2004-13. It compares the contribution, citation impact and international collaborative publications share of top 10 most productive countries, and the place of India among them. It mainly examines Indian output, with a focus its annual average growth rate (13.21%), citation impact per paper (1.86%), distribution of citations (with 62.40% publications received one or more citations), share of international collaborative papers (16.29%) and contribution of leading collaborative countries, distribution of output by broad subject areas, publication productivity and citation impact of thirty leading institutions and authors; media of communications and characteristics of highly cited papers (Gupta & Ritu Gupta,2014).

The Global publications share, Indian publications share and citations impact etc. As per global publications concern, a total of 17076 papers were published which received 255179 citations with an average of 14.94 citations per paper and as per Indian scenario total of 7277 paper were published which received 56134 citations with an average of 7.71 citations per paper during 1989-2014 (Prasad, Pande Singh & Rashmi Prasad,2016) .

A total of 2594 articles were published in this field with an yearly average of 259.4 articles. . Out of the 2594 articles, the majority of the articles 421 (16.23%) were published in the year 2017. The RGR in the year 2009 found to be 2.05and in the end year 2017 found to be 0.12. This shows that the RGR declining trend is linear. Among the Authorship patterns, the major contribution of articles were from three authors 534 (20.59%). The Journal named "Advanced Materials Research" ranked in the top position in contributing articles 59 (2.28%) in this field. The highly prolific author is Monteiro S.N who has contributed 41 articles 0.47% (Senthil Kumar & Baskaran, 2019). The authorship trend shows that, out of total 2477 publication published, 95% of the publications were published under the joint authorship. This study also identifies that Relative growth rate, Doubling Time, Degree of collaboration. Central South University with 268 (10.8%) publication tops in the institutional wise publications productivity. The study also identifies bibliographic coupling of the institution, language distribution, keyword distribution, geographical distribution of the literature and Historiography on Local and Global Citation is also analysed (Saravanan & Baskaran, 2019).

OBJECTIVES OF THE STUDY

1. To know the year-wise distribution of Forensic Medicine research output on Web of Science (WOS) and PubMed.
2. To analyze the Exponential Growth for authors in Forensic Medicine research
3. To find out the year- wise activity Index of Forensic Medicine research output
4. To analyze the Core Journals according to Bradford's law in Forensic Medicine

METHODOLOGY

The present study analysed impact of the publications in Forensic Medicine research at the global prospective. The study explores the research contribution of the countries growth and their trends have been investigated during 1989 - 2016. The present study attempts to extract the data of Web of Science (WOS) and PubMed.

The publications have been extracted the m Web of Science (WOS) and PubMed data on Forensic Medicine was covered during 1989 - 2016.

DATA ANALYSIS

Year-Wise Distribution of Forensic Medicine Research Output on Web of Science

It is analysed the growth of research output in Forensic Medicine, the records retrieved from Web of Science database during 1989 - 2016. The result of the study found that between 11 (0.26%) in the year 1989 and 447 (10.76%) in 2013 is observed in Table 1. The largest output in was found 447 publications in 2013, it followed by 420 (10.38%) of the publication identified in 2015.There were no record published in the year 2003. Further, It can be found that publications growth appears as fluctuates trend in 1992, 1997, 2002, 2011 and 2014, which shows in Fig.-1.

EXPONENTIAL GROWTH FOR AUTHORS IN FORENSIC MEDICINE RESEARCH

Value n in the field of Forensic Medicine is being analysed, it has calculated the exponential growth is *n= 4.4320914* for author data is presented in Table 2. It shows (Fig-12) the calculation for exponent for author productivity as given below the formulas.

$$N= N\sum xy- \sum x \sum y$$

$$N\sum x^2-(\sum x)^2$$

$$= 22x\ 278.83-64.81x131.89$$

$$22x129.62-64.81x64.81$$

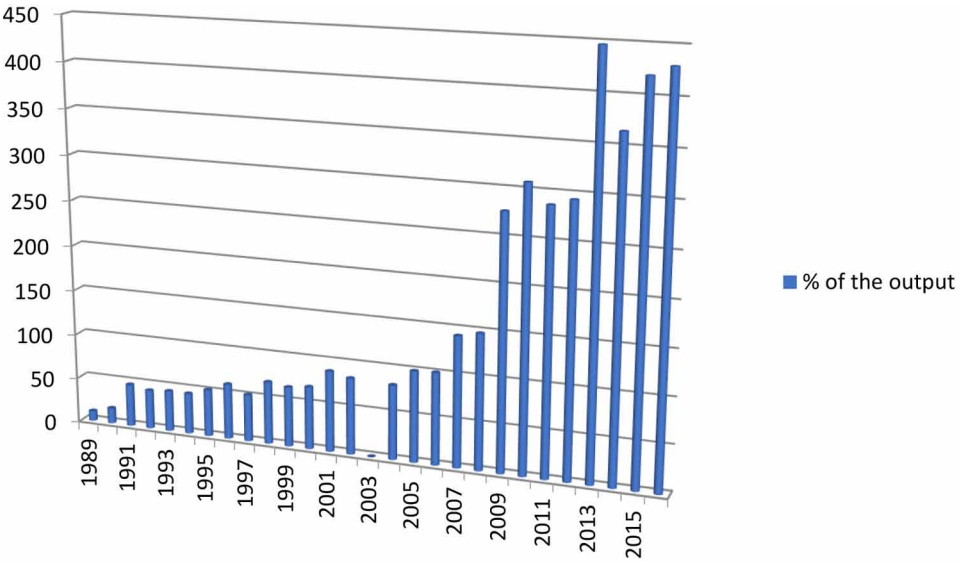
$$= 800499.76/180614.45$$

$$= 4.4320914$$

Table 1. Year –wise distribution of the publication on forensic medicine (WOS)

Year	No. of Output	%	Cumulative %
1989	11	0.26	0.26
1990	17	0.40	0.66
1991	47	1.13	2.82
1992	43	1.02	3.9
1993	45	1.08	4.98
1994	45	1.08	6.23
1995	52	1.25	7.69
1996	61	1.45	8.94
1997	52	1.25	10.61
1998	69	1.66	12.18
1999	66	1.58	13.84
2000	69	1.66	15.98
2001	89	2.14	18
2002	84	2.02	18
2003	0	0	0
2004	82	1.97	19.97
2005	100	2.40	22.37
2006	101	2.42	24.79
2007	143	3.44	28.23
2008	148	3.56	31.79
2009	277	6.67	38.46
2010	308	7.41	45.87
2011	287	6.91	52.78
2012	294	7.08	59.86
2013	447	10.76	70.62
2014	365	8.79	79.41
2015	420	10.11	89.65
2016	430	10.35	100
Total	**4152**	**100**	

Figure 1. Year wise distribution of the publication on forensic Medicine (WOS)



YEAR- WISE ACTIVITY INDEX OF FORENSIC MEDICINE RESEARCH OUTPUT

It analysed that Activity Index of the research output in Forensic Medicine at global level have been extracted by Web of Science and Pub Med databases. Table 3 is identified that growth of research output in Forensic Medicine was witnessed 0.01 (A) in 1989 and 0.06 in 2011 in Indian output.

It is analysed that growth of B is found to be an increasing and decreasing trend perform whole study period. The whole values of A for Indian Output were measured 0.84. It is analysed that world output in Forensic Medicine, the value of B also found to be increasing and decreasing trend at whole study period. of Table 16 indicates the year-wise analysis of Activity Index on the over period of 27 years (1989 – 2016). It is find that an AI is higher than an average (A1>1).

CORE JOURNALS DISTRIBUTION ACCORDING TO BRADFORD'S LAW

Bradford's distribution of core journals according to apply in Forensic Medicine, the Bradford's law relationship between the zone is 1: n: n^2contrastingly the relationship with each of the present study is 6:12:40 which does not fit into *Bradford's* distribution.

Table 2. Exponential growth for authors in forensic medicine research

No. of Articles (X)	Observed (Y)	X=log (X)	Y=log (Y)	XY	X^2
1	1345	0	7.20	0	0
2	1142	0.69	7.04	4.85	1.38
3	984	1.09	6.89	7.51	2.18
4	902	1.38	6.80	9.38	2.76
5	887	1.60	6.78	10.84	3.20
6	834	1.79	6.72	12.04	3.58
7	764	1.94	6.63	12.86	3.88
8	712	2.07	6.56	13.57	4.14
9	684	2.19	6.52	14.27	4.38
10	602	2.30	6.40	14.72	4.60
11	542	2.39	6.29	15.03	4.78
12	424	2.48	6.04	14.97	4.96
13	312	2.56	5.74	14.69	5.12
14	204	2.63	5.31	13.96	5.26
15	197	2.70	5.28	14.25	5.40
16	168	2.77	5.12	14.18	5.54
17	112	2.83	4.71	13.32	5.66
18	97	2.89	4.57	13.20	5.78
19	86	2.94	4.54	13.34	5.88
20	52	2.99	3.95	11.81	5.98
21	32	3.04	3.46	10.51	6.08
22	18	3.09	2.89	8.93	6.18
23	12	3.13	2.48	7.76	6.26
24	9	3.17	2.19	6.94	6.34
25	3	3.21	1.09	3.49	6.42
31	2	3.48	0.693	2.41	6.96
32	1	3.46	0	0	6.92
Total		**64.81**	**131.89**	**278.83**	**129.62**

It is found from Table 4, the number of journals in each zone invalidates the *Bradford's* law of distribution. It is noteworthy to mention that according to *Bradford's* formulation, it should be 6:12:140 whereas the observed number of journals in the three zones stands at the ratio of 110:222:2637. This shows that core distribution of journals are given by a very few journals. It means less than what *Bradford*

Table 3. Year- wise activity index of forensic medicine research output

Year	Indian Output	(A)	World Output	(B)	A/B	AI
1989	4	0.01	11	0.29	0.03	11
1990	5	0.01	17	0.45	0.02	7.
1991	8	0.02	47	1.25	0.01	4
1992	7	0.02	43	1.15	0.01	4
1993	9	0.03	45	1.2	0.02	7
1994	6	0.02	45	1.2	0.01	4
1995	9	0.03	52	1.39	0.02	7
1996	8	0.02	61	1.69	0.01	4
1997	9	0.03	52	1.2	0.02	7
1998	8	0.02	69	1.85	0.01	4
1999	9	0.03	66	1.77	0.01	4
2000	9	0.03	69	1.85	0.01	4
2001	7	0.02	89	2.39	0.008	3
2002	7	0.02	84	2.35	0.008	3
2003	0	0	0	0	0	0
2004	9	0.03	82	2.2	0.01	4
2005	8	0.02	100	2.68	0.007	3
2006	10	0.03	101	2.71	0.01	4
2007	13	0.04	143	3.84	0.01	4
2008	11	0.04	148	3.95	0.01	4
2009	13	0.04	277	7.44	0.005	2
2010	12	0.04	308	8.27	0.004	1
2011	17	0.06	287	7.71	0.007	3
2012	11	0.04	294	8.89	0.004	1
2013	13	0.04	447	12	0.003	1
2014	15	0.05	365	9.8	0.005	2
2015	16	0.05	420	11.28	0.004	1
2016	15	0.05	430	12.16	0.004	1
Total	**268**	**0.84**	**4152**	**12.96**	**0.279**	**103**

Table 4. Core journals distribution according to bradford's law

Sl.No	Name of the Journal	No. Of Publications	Percentage
1	Journal Of Forensic And Legal Medicine	987	33.24
2	Forensic Science International	407	13.70
3	Journal Of Forensic Sciences	166	5.59
4	American Journal Of Forensic Medicine And Pathology	140	4.71
5	International Journal Of Legal Medicine	109	3.67
6	Rechtsmedizin	109	3.67
7	Medicine Science And The Law	84	2.82
8	Romanian Journal Of Legal Medicine	54	1.81
9	Croatian Medical Journal	44	1.48
10	Legal Medicine	38	1.27
11	Forensic Science Medicine And Pathology	36	1.21
12	Kriminalistik	25	0.84
13	Science Justice	25	0.84
14	Ulusal Travma Ve Acil Cerrahi Dergisi Turkish Journal Of	21	0.70
15	Trauma Emergency Surgery	21	0.70
16	Journal Of The American Academy Of Psychiatry And The Law	15	0.50
17	Australian Journal Of Forensic Sciences	14	0.47
18	Turkiye Klinikleri Tip Bilimleri Dergisi	14	0.47
19	Journal Of Evolution Of Medical And Dental Sciences Jemds	13	0.43
20	Magyar Allatorvosok Lapja	13	0.43
21	Addiction	12	0.40
22	Saudi Medical Journal	11	0.37
23	Vojnosanitetski Pregled	11	0.37
24	Analytical And Bioanalytical Chemistry	10	0.33
25	Collegium Antropologicum	10	0.33
26	Electrophoresis	10	0.33
27	Revista Medica De Chile	10	0.33
28	Bulletin De L Academie Nationale De Medecine	9	0.30
29	Folia Morphologica	9	0.30
30	International Journal Of Morphology	9	0.30
31	Plos One	9	0.30
32	Surgical And Radiologic Anatomy	9	0.30
33	Turkish Journal Of Geriatrics Turk Geriatri Dergisi	9	0.30
34	Clinical Chemistry	8	0.26

continued on following page

Table 4. Continued

Sl.No	Name of the Journal	No. Of Publications	Percentage
35	European Journal Of Radiology	8	0.26
36	Forensic Science International Genetics	8	0.26
37	Human Experimental Toxicology	8	0.26
38	Journal Of Medical Ethics	8	0.26
39	Journal Of Pharmaceutical And Biomedical Analysis	8	0.26
40	Medicina Clinica	8	0.26
41	Srpski Arhiv Za Celokupno Lekarstvo	8	0.26
42	Tohoku Journal Of Experimental Medicine	8	0.26
43	Anadolu Psikiyatri Dergisi Anatolian Journal Of Psychiatry	7	0.23
44	Archives Of Pathology Laboratory Medicine	7	0.23
45	Healthmed	7	0.23
46	Injury International Journal Of The Care Of The Injured	7	0.23
47	Jama Journal Of The American Medical Association	7	0.23
48	Journal Of Chromatography B Analytical Technologies In The	7	0.23
49	Biomedical And Life Sciences	7	0.23
50	Journal Of Trauma Injury Infection And Critical Care	7	0.23
51	Psychiatrische Praxis	7	0.23
52	Sleep	7	0.23
53	Academic Emergency Medicine	6	0.20
54	Advances In Clinical And Experimental Medicine	6	0.20
55	Current Opinion In Psychiatry	6	0.20
56	Journal De Medecine Legale Droit Medical	6	0.20
57	Journal Of Chromatography A	6	0.20
58	Journal Of The Royal Society Of Medicine	6	0.20
59	Pferdeheilkunde	6	0.20
60	Radiologia Medica	6	0.20
61	Revista Brasileira De Entomologia	6	0.20
62	Social Science Medicine	6	0.20
63	Wiener Klinische Wochenschrift	6	0.20
64	Acta Medica Okayama	6	0.20
65	Analytical Chemistry	5	0.16
66	Anatomical Record Advances In Integrative Anatomy And	5	0.16
67	Volutionary Biology	5	0.16
68	British Medical Journal	5	0.16

continued on following page

Table 4. Continued

Sl.No	Name of the Journal	No. Of Publications	Percentage
69	Clinica Chimica Acta	5	0.16
70	Clinical Chemistry And Laboratory Medicine	5	0.16
71	Danish Medical Bulletin	5	0.16
72	Danish Medical Journal	5	0.16
73	15 Journals With 5 Articles	75	2.52
74	10 Journals With 4 Articles	40	1.34
75	15 Journals With 3 Articles	45	1.51
76	40 Journals With 2 Articles	80	2.69
77	7 Journals With 1 Articles	7	0.23
	Total	**2969**	**100**

formulated and the third zone covered a very large number of journals and articles. Further, it could be analysed that 71.5% of the journals articles covered out of 4152 research output of the Forensic Medicine whole study period.

CONCLUSION

The study discussed on the publications trend in terms of author Collaborations and productivity, Source-wise publications, Institutions-wise productivity, citations counting and h-index etc. measured in the field of Forensic Medicine during 1989-2016. The aim of the study deals the medico legal autopsy brings still more medical advantages and benefits. The ones presented here are not imaginary, hypothetical, or unrealistic pros of this activity, but true and palpable outcomes of the author's daily medico legal work on necropsies. Quality and training, that is, education, is indeed one of the three major platforms on which forensic pathology needs to build in the future, the other two aims being good legislation and organization.

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Section 5

Bibliometrics and Scientometric Research in Library and Information Science

Chapter 7
Altmetrics Research on the Global Output: A Scientometric Analysis

C. Baskaran
https://orcid.org/0000-0002-2990-958X
Alagappa University, India

ABSTRACT

The chapter describes the research publications on altmetrics research during 2012-2019. A total of 461 publications were brought out on this area over period of study. 25.81% of the publications were published in the year 2018. It is analyzed that information science and library science areas hold the majority 293 (63.55%) of the publications, and the University of Wolverhampton has contributed the highest number (40; 8.67%) of the publications in the field of altmetrics. The study found that lowest relative growth rate (RGR; 0.04) was found in 2008. 2010, 2012, and 2014 RGR rose up to 0.75 in 1990, and the average mean value of relative growth rate (RGR) is 0.15. The highest number of publications (293; 63.55%) accumulated from information science library science. This area has been ranked first among 25 research fields listed in the study.

INTRODUCTION

The term "Bibliometrics" introduced by Pritchard (1969) is often used to assess scientific research through quantitative studies on research publications. Bibliometrics is "the branch of library science concerned with the application of mathematical and statistical analysis to bibliography; the statistical analysis of books, articles, or

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other publications" (Oxford English Dictionary, 2012). The Bibliometric methods are very useful for measuring the dissemination of knowledge in the natural sciences, but they are less effective in some applied fields, such as engineering (Van Raan, 2003).Bibliometric studies are helpful in evaluating library services, collection development, policy refinement, decision making, resource allocation and even weeding. Data produced by bibliometric methods provide a scientific basis to library administrators for decision making. Bibliometrics has been considered useful for curriculum analysis (Juznic & Urbanija, 2003) and for an appraisal of research output quality (Middleton, 2005).

REVIEW OF LITERATURE

Seglen and Aksnes (2000) analyzed the relationship between research group size and scientific productivity within the highly cooperative research environment characteristic of contemporary biomedical science, an investigation of Norwegian Microbiology was undertaken. Dalpe (2002), observed that assess its quality for bibliometric studies attempting to analyse the evolution of biotechnology research, to map leading organizations, and to study the interaction between science and technology. This study analyses the research output in India in neurosciences during the period 1999-2008 and the analyses included research growth, rank, global publications' share, citation impact, share of international collaborative papers and major collaborative partner countries and patterns of research communication in most productive journals (Adarsha Bala and Gupta, 2010).

A total number of 2810 publications were obtained in the study period. The study reveals that the majority number of records was published in 2015, followed by 603 records published in 2014, 554 records have published in 2013, 508 record have published in 2012, and 473 records were published in 2011. The document type wise research publication in solar energy, the articles has a predominant place with 90.1 per cent, and followed by review 5.3 per cent, article; proceedings papers has third place with 3.6 per cent, Editorial Material and other types least percent number of have published (Rangasamy and Umadevi,2011).

Bakthavachalam Elango (2017) this study reveals that 55 per cent of publications were citable articles; average number of authors per article was 4.57; 136 per cent increase in impact factor and reviews received highest citations per paper. Harvard University had most number of publications, whereas University of Cambridge had highest CPP among the most productive institutes. Saravanan, and Baskaran (2018) analyzed the map the number of publications, growth rate and doubling time, scattering of publication over journals, and its impact on publication output, authorship patterns and Global citation score of bioremediation research publication

in India using the HistCite, VOSviewer software. Indian Institute of technology, Baba atomic research Centre and CSIR are the major producers of research output in the area of bioremediation. The research output is an Altmetric attribution score of 9147 for the article The Spread of True and Fall News Online. Altmetric has tracked 12,623,901 research outputs in all sources till date 11th, 2019. Altmetric has tracked 7,171,211 research outputs in all the sources so far, out of which this article got # 4 places. By age, we can compare this Altmetric Attention Score with 273,408 tracked outcasts which were published within six weeks on both sides of this one in any source. This article got # 1 place. This research was published to 1,016 others from the same source and within six weeks on both sides of this one. This article got the first place (Stephen, 2019).

The complexities, challenges and scientific communication in social media of Altmetrics, to have more depth understanding. The authors mention that there are various complexities such as complexity of assessing publics, the different tools and sources related to Altmetrics present an even greater difficulty i.e., Different manners to measure research actions such as save, discuss, recommend, cite(De Melo Maricato and Dalton, 2017). The Altmetric score and growing role of altmetrics for measuring research impact by mentioning that topic are more reliable to general attention as compared to traditional method (Baheti and Bhargava,2017) . An exploratory analysis of the relevance of Altmetrics data through a case study of scholarly articles from India published during 2016 and indexed in Web of Science and also updated on Research Gate. It is observed that about 61% papers indexed in Web of Science have an entry in Research Gate (Bansal,2018)." 10, studies "the relation of Altmetrics to scientific quality papers by underlying the dimensions of measurement for traditional metrics and Altmetrics, using principal component analysis (PCA) and factor analysis (FA) (Bornmann & Haunschild, 2018)

OBJECTIVES OF THE STUDY

1. To analyze the year-wise distribution of publications in the field of Altmetrics during 2012-2019.
2. To analyze the RGR and Dt of the publications of Altmetrics during 2012-2019.
3. To observe the Ranked research areas, authors, Institutions, authors and countries for how the research contribution in the field of Altmetrics.

METHODOLOGY

The Data has been explored on the applying the Scientometrics tools in the field of Altmetrics research during 2012-2019. The data have been retrieved from Web of Science on specific field of Altmetrics. Total no. of 461 records found in the database and use Key term '' ALTMETRCIS'' during period of study. Further, the data have been tabulated and appropriate statistics used for the study.

DATA ANALYSIS

Year Wise Publications on Altmetrics

Table 1 observed that year wise publications of the Altmetrics research during 2012 -2019. The study has been analyzed that majority 119 (25.81%) of the publications appeared in 2018. It followed by 115 (24.94%) and 110 (23.86%) of the publications in the year 2017 and 2016 respectively. Further, the study can be seen that less than ten percent of the publications witnessed during 2012-2014 and 2019 between 4 and 30 and fig. 1 shows that more than ten percent of the publications recorded during 2015-2018.

RELATIVE GROWTH RATE (RGR) AND DOUBLING TIME (DT) OF HUMAN DNA RESEARCH

Relative Growth Rate (RGR) and Doubling Time (Dt) of publications of Altmetrics research during period of study. The study found that lowest Relative Growth Rate (RGR) 0.035 found in 2018 RGR rose up to 3.393 in 2019 and an average mean value of Relative Growth Rate (RGR) was 7. 479. It could be deducted from the discussion above that Doubling time (DT) shown an increasing trend appeared from 19.78 and a decreased tend appeared as 0.204 in the year 2019. An average mean value of Doubling time (DT) was 39.193.

RANKED RESEARCH AREAS WISE PUBLICATIONS ON ALTMETRICS

Table 3 explained that Research areas have been ranked accordingly publications productivity in the field of Altmetrics. The highest publications 293 (63.55%) of the publications accumulated from Information Science Library Science, this areas has

Table 1. Year wise publications on altmetrics

Year	No. of Records	Percent
2012	2	0.434
2013	12	2.603
2014	30	6.508
2015	69	14.967
2016	110	23.861
2017	115	24.946
2018	119	25.813
2019	4	0.868
	461	

Figure 1. Year wise publications on altmetrics

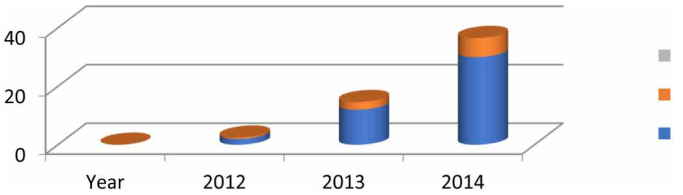


Table 2. Relative growth rate (RGR) and doubling time (DT) of publications

Year	No. of Records	Percent	W1	W2	RGR	Dt
2012	2	0.434	0	0.693	0	0
2013	12	2.603	0.693	2.484	1.791	0.386
2014	30	6.508	2.484	3.401	0.917	0.755
2015	69	14.967	3.401	4.234	0.833	0.831
2016	110	23.861	4.234	4.7	0.466	1.487
2017	115	24.946	4.7	4.744	0.044	15.75

been ranked first among twenty five research field listed in the study. The study shows that second and third position occupies with 23.42% and 12.79% of the publications witnessed by Computer Science interdisciplinary applications and Computer science Information Systems. Further, the study discussed that there are twenty two research areas spread over less than ten percent of the publications. There have been recorded ten research areas holding less than one percent of the publications.

Table 3. Ranked research areas wise publications on altmetrics

S.No	Name of the Research Areas	No. Of Records	Percent
1	Information Science Library Science	293	63.557
2	Computer Science Interdisciplinary Applications	108	23.427
3	Computer Science Information Systems	59	12.798
4	Multidisciplinary Sciences	29	6.291
5	Communication	21	4.555
6	Education Educational Research	10	2.169
7	Medicine General Internal	10	2.169
8	Surgery	10	2.169
9	Chemistry Multidisciplinary	9	1.952
10	Clinical Neurology	6	1.302
11	Health Care Sciences Services	6	1.302
12	Social Sciences Interdisciplinary	6	1.302
13	Emergency Medicine	5	1.085
14	Otorhinolaryngology	5	1.085
15	Biochemistry Molecular Biology	4	0.868
16	Biology	4	0.868
17	Cardiac Cardiovascular Systems	4	0.868
18	Dentistry Oral Surgery Medicine	4	0.868
19	Orthopedics	4	0.868
20	Radiology Nuclear Medicine Medical Imaging	4	0.868
21	Education Scientific Disciplines	3	0.651
22	History Philosophy Of Science	3	0.651
23	Humanities Multidisciplinary	3	0.651
24	Management	3	0.651
25	Medicine Research Experimental	3	0.651

RANKED RESEARCH AREAS WISE PUBLICATIONS ON ALTMETRICS

The Institutions wise research productivity as ranked the number of publications witnessed from the each institute in the study. Table 4 observed that there are twenty five institution have been ranked among them University of wolverhampton has occupied fist rank and holds 40 (8.67%) of the publications, it followed Max

Planck Society has contributed 6.07% of the publications shows second ranked in the series. There are ten Institutions identified more than ten publications bring on the Altmetrics research. Further, the research has contributed less than 10 publications from fifteen institutions on the research.

Table 4. Ranked institutions wise publications on altmetrics

S. No	Name of the Institution	No. of Records	Percent
1	University Of Wolverhampton	40	8.677
2	Max Planck Society	28	6.074
3	Consejo Superior De Investigaciones Cientificas Csic	18	3.905
4	University Of Montreal	14	3.037
5	Universitat Politecnica De Valencia	11	2.386
6	University Of Barcelona	11	2.386
7	University Of Granada	11	2.386
8	Indiana University Bloomington	10	2.169
9	Indiana University System	10	2.169
10	Leiden University	10	2.169
11	Dalian University Of Technology	9	1.952
12	University Of London	8	1.735
13	University Of North Carolina	8	1.735
14	University Of North Carolina Chapel Hill	8	1.735
15	University Of Vienna	8	1.735
16	Nanyang Technological University	7	1.518
17	Nanyang Technological University National Institute Of Education Nie Singapore	7	1.518
18	Russian Academy Of Sciences	7	1.518
19	University Of Quebec	7	1.518
20	University Of Quebec Montreal	7	1.518
21	University System Of Georgia	7	1.518
22	Wuhan University	7	1.518
23	Simon Fraser University	6	1.302
24	Deutsche Zentralbibliothek Fur Wirtschaftswissenschaften Zbw	5	1.085
25	Institute For Scientific Technical Information Of The Russian Academy Of Sciences	5	1.085

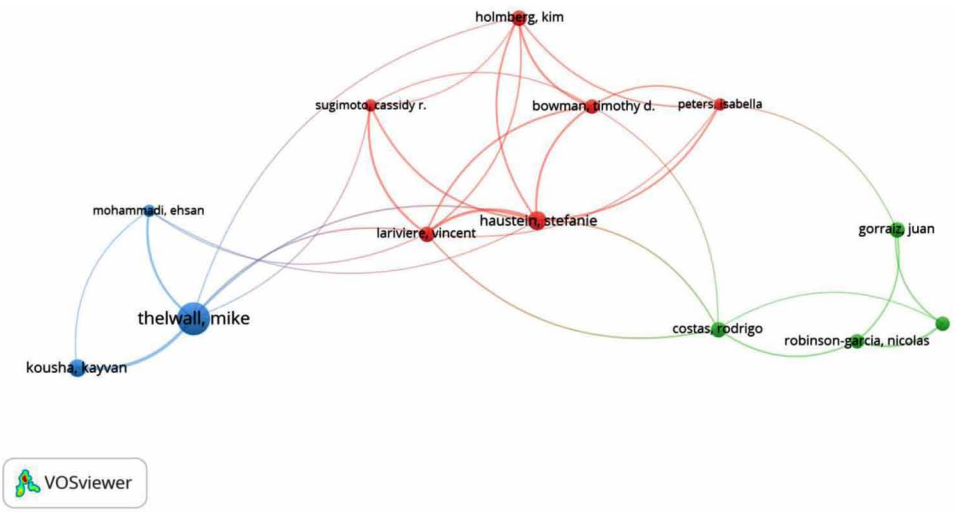
RANKED AUTHOR-WISE PUBLICATIONS ON ALTMETRICS

Table 5 analyzed that there are twenty authors achieved the research in terms brought out the research in the field of Altmetrics. It is analyzed that Thelwall has contributed 36 (7.80%) of the publications in the field of Altmetrics, this top ranked author out of twenty five authors. It followed by Bornmann L has recorded 6.07%, Haunschild R (4.33%), Haustein S (2.60%), Kousha K (2.16%) and Lariviere V (2.16%) of the

Table 5. Ranked author- wise publications on altmetrics

S.No	Name of the Author	No. of Records	%
1	Thelwall M	36	7.809
2	Bornmann L	28	6.074
3	Haunschild R	20	4.338
4	Haustein S	12	2.603
5	Kousha K	10	2.169
6	Lariviere V	10	2.169
7	Costas R	8	1.735
8	Gorraiz J	8	1.735
9	Holmberg K	8	1.735
10	Ortega Jl	8	1.735
11	Bowman Td	7	1.518
12	Robinson-Garcia N	7	1.518
13	Torres-Salinas D	7	1.518
14	Sugimoto Cr	6	1.302
15	Wang Xw	6	1.302
16	Mohammadi E	5	1.085
17	Peters I	5	1.085
18	Xu Sm	5	1.085
19	Bar-Ilan J	4	0.868
20	Borrego A	4	0.868
21	Gonzalez-Fernandez-Villavicencio N	4	0.868
22	Gumpenberger C	4	0.868
23	Martin-Martin A	4	0.868
24	Orduna-Malea E	4	0.868
25	Stuart D	4	0.868

Figure 2.



publications as ranked second, third, fourth, fifth and Sixth respectively. Further, there are twelve authors have contributed each less than two publications and seven authors witnessed each less than one percent of the articles (Net. Vis.1).

Network Visualization -1, Authors Contributed the Publications in Altmetrics Research

See Table 6.

RANKED COUNTRY WISE PUBLICATIONS ON ALTMETRICS

Table 6 analyzed that the research has been witnessed from the countries which were bringing out the publication on Altmetrics. The study has been recorded that USA 11 (24.07%), England 83(18%), Spain 66 (14.31%) of the publication as ranked first, second third. The study proves that Germany 41 (8.8%), Canada 34 (7.37%) and People R China 26 (5.6%) of the publications have contributed in the field of Altmetrics research. Further, the study stands, there are nineteen countries have been recorded less than five percent and eleven authors holed each of them recorded less than one percent of the publications in the field of research.

Table 6. Ranked country wise publications on altmetrics

S.No	Name of the Country	No. of Records	%
1	USA	111	24.078
2	England	83	18.004
3	Spain	66	14.317
4	Germany	41	8.894
5	Canada	34	7.375
6	Peoples R China	26	5.64
7	Netherlands	23	4.989
8	India	17	3.688
9	Brazil	14	3.037
10	Italy	13	2.82
11	Australia	12	2.603
12	Austria	12	2.603
13	Russia	11	2.386
14	Finland	9	1.952
15	Iran	9	1.952
16	South Africa	9	1.952
17	Switzerland	9	1.952
18	Belgium	8	1.735
19	Singapore	7	1.518
20	Ireland	6	1.302
21	France	5	1.085
22	Hungary	5	1.085
23	Israel	5	1.085
24	Scotland	5	1.085
25	Croatia	4	0.868

CONCLUSION

The study discussed that Altmetrics research publications based on the data retrieved from web of science. The main role of Altmetircs concentrates the research output may live online in multiple websites and can be talked about across dozens of different platforms. At Altmetric, we work behind the scenes, collecting and collating all of this disparate information to provide you with a single visually engaging and informative view of the online activity surrounding your scholarly content. Knowing

who's talking about your research and what they're saying is crucial in today's increasingly online world. Ensuring your work is being accurately represented and interpreted, as well as getting to the right people at the right time, all plays an important factor its broader impact.

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Chapter 8
Measuring Research in RSS Feed Literature:
A Scientometric Study

P. Ramesh Babu
Alliance Broadcast Pvt. Ltd, India

ABSTRACT

The study analyzes the publications on the research literature on RSS feed during 2008-2018. It is found that 175 publications only brought out by the researchers in the core area of computer science, library science, and engineering related field of research. The study analyzes that information science and library science areas are seen as the predominant areas, which have a plurality (39; 28.2%) of the publications distributed in the field. Shell International Ltd has the most (10; 5.71%) publications. USA occupied the top country. It contributed (10; 48%) of the publications on RSS Feed during the period of study.

INTRODUCTION

RSS (originally RDF Site Summary; later, two competing approaches emerged, which used the acronyms Rich Site Summary and Really Simple Syndication respectively) (Mulvany, 2008) is a type of web feed which allows users and applications to access updates to online content in a standardized, computer-readable format. These feeds can, for example, allow a user to keep track of many different websites in a single news aggregator. The news aggregator will automatically check the RSS feed for new content, allowing the content to be automatically passed from website to website or from website to user. This passing of content is called web syndication.

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Websites usually use RSS feeds to publish frequently updated information, such as blog entries, news headlines, or episodes of audio and video series. RSS is also used to distribute podcasts. An RSS document (called "feed", "web feed", (Web feed/RSS, 2008) or "channel") includes full or summarized text, and metadata, like publishing date and author's name.

A standard XML file format ensures compatibility with many different machines/ programs. RSS feeds also benefit users who want to receive timely updates from favourite websites or to aggregate data from many sites. Subscribing to a website RSS removes the need for the user to manually check the website for new content. Instead, their browser constantly monitors the site and informs the user of any updates. The browser can also be commanded to automatically download the new data for the user.

REVIEW OF LITERATURE

The relationship between research group size and scientific productivity within the highly cooperative research environment characteristic of contemporary biomedical science, an investigation of Norwegian Microbiology was undertaken (Seglen, & Aksnes, 2000)

The quality for bibliometric studies attempting to analyse the evolution of biotechnology research, to map leading organizations, and to study the interaction between science and technology (Dalpe, 2002). The study attempts to analyze quantitatively the growth and development of information literacy research in global in terms of publication output as reflected in web of science database (SCI) for the period of 2015 to 2019. The researcher has published a total of 4388 papers on information literacy during this period. The study reveals that information literacy research in global is still in its infancy (Shamili & Mohammed Ismail, 2015).

Oral cancer is any malignant neoplasm which is found on the lip, floor of the mouth, cheek lining, gingiva, palate or in the tongue. Oral cancer is among the top three types of cancers in India. The incidence of oral cancer is highest in India, south and Southeast Asian countries. In India, 90 -95% of the oral cancers is squamous cell carcinoma. Based on oral cancer research data obtained from Web of Science database core collection, it is seen that with 2606 (6.92% global share) articles from India on oral cancer during 2010-2017, India ranks 4th in the world in terms of research paper output. About 75% of the Indian publications appeared during the period 2010-17(Sadik Batcha, 2018). Cancer research is growing rapidly as evidenced by the increasing research publication output. Bibliometric analysis helps in studying the various facets of publication productivity in different research areas (Moed, Burger, Frankfort & Raan, 1985 and Batcha SM., 2017).

Several bibliometric studies have reported analysis of cancer literature (Amsaveni & Batcha SM, 2009 and Ugolini, Puntoni Perera FP, Schulte & Bonassi S, 2007) . There are bibliometric studies on cancer of specific organs such as cervical cancer (Jayashankar & Vellaichamy, 2014 and Ram, Shri, 2017) breast cancer (Gupta BM, Gupta R, Ahmed M, 2014) and oral cancer (Patra SK, Bhattacharya P, 2005) while other bibliometric studies are on cancer in specific countries (Mulvany F, Ponder BAJ, 2008) including a study on global perspectives (Ortiz AP, Calo WA, Suárez, Maura SM, Suárez, 2009) Specific country based cancer studies include Arab countries (Glynn RW, Scutaru, Kerin MJ, Sweeney KJ, 2010) Brazil (Sweileh, Zyoud, Al-Jabi, SW, Sawalha AF, 2015), France (Pinheiro CA, Masson AS, Borghesi G, Prisco F, Rotea W, Hoff PM, 2008) Iran Mexico(Thonon, Saghatchian, Nerfie, Delalogs, 2015) and Nigeria (Salisu SA, Ojoye OT, 2015). From the review of literature, it is seen that there are minimum number of bibliometric studies on oral cancer research from India so far. So, this paper attempts to fill this gap by presenting a Bibliometric report on oral cancer research in India.

OBJECTIVES OF THE STUDY

1. To analyze the year-wise distribution of RSS Feed during 2008-2018.
2. To analyze the ranked research areas wise publications of RSS Feed.
3. To observe the Institutions -wise and Country- wise research publications of RSS feed during period of study.

METHODOLOGY

The data explore the research impact of the publications growth trend on RSS. Feed literature. The complete data 175 only retrieved from Web of Science Database during 2008-2018. The search the records on the relevant data on the specific filed applied key terms '' RSS FEED'' for the period of study. The study explores the research contribution of the countries growth and their trends have been investigated during 2008-2018.

DATA ANALYSIS

See Table 1.

Table 1. Year-wise distribution of the research RSS feed

Year	No. of Records	Percent
2008	15	8.571
2009	16	9.143
2010	16	9.143
2011	17	9.714
2012	14	8
2013	15	8.571
2014	11	6.286
2015	12	6.857
2016	23	13.143
2017	21	12
2018	15	8.571
Total	175	

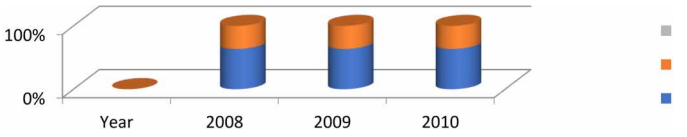
YEAR-WISE DISTRIBUTION OF THE RESEARCH RSS FEED

The study has been analyzed the growth of research output in RSS Feed literature, the data retrieved from Web of Science database during 2008- 2018. The result of the study found that between 11 (6.28%) in 2011 and 21 (12%) in 2017 is observed in Table 1. The largest shows in Fig.-1. The study witnessed that there was a fluctuate trend throughout period of study. Moreover, less than ten percent of the publications recorded overall study period except 2013 (Fig.1).

RGR AND DOUBLING TIME OF THE PUBLICATIONS

Relative Growth Rate (RGR) The mean Relative Growth Rate (R) over the specific period of interval can be calculated from the following equation by Mahapatra (1985),

Figure 1. Year-wise distribution on the research in RSS feed



$$1 - 2^R = \frac{\log e_2 W - \log_{e1} W}{2^T - 1^T}$$

Whereas, 1-2`R= mean relative growth rate over the specific period of interval

$\log_{e\,1}$W= log of initial number of articles/pages
$\log_{e\,2}$W = log of final number of articles/pages after a specific period of interval
$_2$T - $_1$T = the unit difference between the initial time and the final time,

The year can be taken here as the unit of time. The RGR for both articles and pages can be calculated separately.

Therefore

1- 2 R(aa -1 year -1) can represent the mean relative growth rate per unit of articles per unit of year over a specific period of interval and
1 - 2 R (pp -1 year -1) can represent the mean relative growth rate per unit of pages per unit of year over a specific period of interval,

DOUBLING TIME

There exists a direct equivalence between the relative growth rate and the doubling time. If the number of articles/pages of a subject doubles during a given period then the difference between the logarithms of numbers at the beginning and end of this period must be the logarithms of number 2.

If natural logarithm is used this difference has a value of 0.693. Thus the corresponding doubling time for each specific period of interval and for both articles and pages can be calculated by the following formula:

$$Doubling\,Time\left(Dt\right) = \frac{0.693}{R}$$

Therefore

$$Doubling\,time\,for\,articles\,Dt\left(a\right) = \frac{0.693}{1 - 2R\left(aa - 1Year - 1\right)}$$

and

$$Doubling\ time\ for\ papers\ Dt\left(P\right) = \frac{0.693}{1 - 2R\left(pp - 1Year - 1\right)}$$

RGR AND DOUBLING TIME OF THE PUBLICATIONS

Table 3 presents on Relative Growth Rate (RGR) and Doubling time (Dt) of the publications of RSS Feed Literature during 2000-2019. The study analysis the records witnessed the RGR an increasing and suddenly decreasing trend was appearing throughout study period, similarly the study finds doubling time trend being that fluctuates trend over all study period. Further, the highest RGR observed 3.011 and lowest 0 in 2015 and 2010 respectively. Similarly, it is observed the highest 1.842 and lowest doubling time are 0.021 in 2015 and 2013. The study witnessed that overall RGR and Dt are to be found 3.81 and 6.185 respectively during 2008-2018.

RESEARCH AREAS WISE DISTRIBUTION OF THE RSS FEED

The study was listed top twenty five research areas on RSS feed literature. It has been analyzed the highest 39 (22.28%) of the publications holding by Information Science and Library Science, which has been ranked 1 among the twenty five research

Table 2. RGR and doubling time of the publications

Year	No. of Records	Percent	W1	W2	RGR (W2-W1)	Dt
2008	15	8.571	0	2.708	0	0
2009	16	9.143	2.708	2.772	0.064	0.092
2010	16	9.143	2.772	2.772	0	0.693
2011	17	9.714	2.772	2.833	0.061	0.088
2012	14	8	2.833	2.639	0.194	0.278
2013	15	8.571	2.693	2.708	0.015	0.021
2014	11	6.286	2.708	2.397	0.311	0.448
2015	12	6.857	2.397	2.484	2.087	3.011
2016	23	13.143	2.484	3.135	0.651	0.939
2017	21	12	3.135	3.044	0.091	0.131
2018	15	8.571	3.044	2.708	0.336	0.484
Total	**175**			**30.2**	**3.81**	**6.185**

areas. It followed by Computer science information systems and Computer Science Software Engineering have 18.28% and 10.28% of the publications records raked second and third respectively. Further, the study proved that there are twenty two areas hold less than 10% of the publications.

Table 3. Research areas wise distribution of RSS feed

S. No	Research Area	No. of Records	%
1	Information Science Library Science	39	22.286
2	Computer Science Information Systems	32	18.286
3	Computer Science Software Engineering	18	10.286
4	Engineering Electrical Electronic	17	9.714
5	Computer Science Artificial Intelligence	12	6.857
6	Computer Science Interdisciplinary Applications	10	5.714
7	Education Educational Research	9	5.143
8	Telecommunications	9	5.143
9	Veterinary Sciences	9	5.143
10	Computer Science Theory Methods	8	4.571
11	Computer Science Hardware Architecture	7	4
12	Agriculture Dairy Animal Science	5	2.857
13	Communication	5	2.857
14	Nutrition Dietetics	5	2.857
15	Operations Research Management Science	5	2.857
16	Public Environmental Occupational Health	5	2.857
17	Engineering Multidisciplinary	4	2.286
18	Health Care Sciences Services	4	2.286
19	Medical Informatics	4	2.286
20	Education Scientific Disciplines	3	1.714
21	Engineering Environmental	3	1.714
22	Agronomy	2	1.143
23	Anesthesiology	2	1.143
24	Biochemical Research Methods	2	1.143
25	Biotechnology Applied Microbiology	2	1.143

RANKED INSTITUTIONS WISE DISTRIBUTION OF THE RESEARCH RSS FEED

RSS feed research literature shows the publications out in term of researchers interest and impact of the field of research. Table 3 observed that there are twenty five top ranked research productivity brought out the publications on RSS feed. The study shows that Shell Int. Ltd has contributed 10 (5.71%) of the publications seems that top ranked institute in the study. It followed by University Of California System,

Table 4. Ranked institutions wise distribution of the research RSS feed

S. No	Name of the Institutions	No. of Records	%
1	Shell Int Ltd	10	5.714
2	University Of California System	6	3.429
3	Aarhus University	4	2.286
4	Hong Kong University Of Science Technology	4	2.286
5	Complutense University Of Madrid	3	1.714
6	Islamic Azad University	3	1.714
7	State University System Of Florida	3	1.714
8	University Of Toronto	3	1.714
9	University Of Wolverhampton	3	1.714
10	Brunel University	2	1.143
11	California Institute Of Technology	2	1.143
12	California State University System	2	1.143
13	Council Of Scientific Industrial Research Csir India	2	1.143
14	Florida International University	2	1.143
15	Free University Of Berlin	2	1.143
16	Hanyang University	2	1.143
17	Massachusetts Institute Of Technology Mit	2	1.143
18	Microsoft	2	1.143
19	National Cheng Kung University	2	1.143
20	National Institutes Of Health Nih Usa	2	1.143
21	Pompeu Fabra University	2	1.143
22	Providence University Taiwan	2	1.143
23	Sindh Univ	2	1.143
24	Stanford University	2	1.143
25	United States Department Of Agriculture Usda	2	1.143

Aarhus University and Hong Kong University Of Science Technology have been brought out 3.42%, 2.28% and 2.28% of the publication ranked second, third and fourth respectively. The study can see that rest of the twenty one Institutions have contributed less than two percent.

RANKED COUNTRY WISE DISTRIBUTION OF RSS FEED RESEARCH

Table 4 analyzed that country wise distribution of the research publications on RSS feed during the period of study. USA witnessed that 49 (28%) of publications, the highest publications compared to other countries hold the first ranked. The study witnessed that second, third and fourth ranked England, Spain and Peoples R China holding 10.28%, 7.42% and 6.28% respectively. 4.57% of the publications recorded by Indian contribution as fourth ranked in the series. Further, Fig 2 exhibits reset of the 21 countries stands and bought less than 10 and 5 percent of the publications.

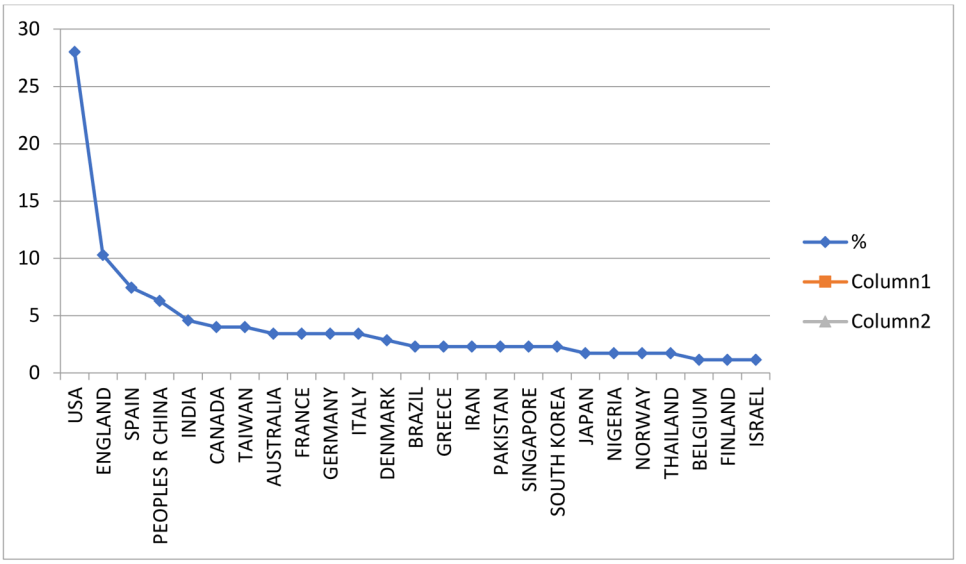
CONCLUSION

The study discussed above the RSS feed research publications in the global literature during 2008-2018, The study finds that US publications shows the predominant position in respect all research domain likewise the country occupy the top position among the counties. Usually Journal articles witnessing highest publications are to be distributed. In July 1999, Dan Libby of Netscape produced a new version, RSS 0.91, which simplified the format by removing RDF elements and incorporating elements from Dave Winer's news syndication format. Libby also renamed the format from RDF to RSS Rich Site Summary and outlined further development of the format in a "futures document". This would be Netscape's last participation in RSS development for eight years. As RSS was being embraced by web publishers who wanted their feeds to be used on My.Netscape.Com and other early RSS portals, Netscape dropped RSS support from My.Netscape.Com in April 2001 during new owner AOL's restructuring of the company, also removing documentation and tools that supported the format. Two parties emerged to fill the void, with neither Netscape's help nor approval: The RSS-DEV Working Group and Dave Winer, whose User Land Software had published some of the first publishing tools outside Netscape that could read and write RSS.

Table 5. Ranked the country wise distribution of the research RSS feed

S.No	Country	No. of Records	%
1	USA	49	28
2	England	18	10.286
3	Spain	13	7.429
4	Peoples R China	11	6.286
5	India	8	4.571
6	Canada	7	4
7	Taiwan	7	4
8	Australia	6	3.429
9	France	6	3.429
10	Germany	6	3.429
11	Italy	6	3.429
12	Denmark	5	2.857
13	Brazil	4	2.286
14	Greece	4	2.286
15	Iran	4	2.286
16	Pakistan	4	2.286
17	Singapore	4	2.286
18	South Korea	4	2.286
19	Japan	3	1.714
20	Nigeria	3	1.714
21	Norway	3	1.714
22	Thailand	3	1.714
23	Belgium	2	1.143
24	Finland	2	1.143
25	Israel	2	1.143

Figure 2. Ranked the country wise distribution on the research RSS feed



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Chapter 9
Scientometric Analysis of Bioinformatics Literature

P. Veeramuthu
Alagappa University, India

ABSTRACT

The study analyses the bioinformatics literature during 2007-2017. For this study, a total of 83,904 publications were analysed. This chapter evaluated 11 years of bioinformatics publications with the aid of scientometric tools to find out the year-wise distribution, prolific authors, subject-wise distribution, type of document, top 10 titles, top 10 institutions, country-wise distributions, and language-wise distribution. The findings revealed that a maximum of 10,821 publications were published in 2017. Among the prolific authors, Martens, L. is ranked 1. In the document type, journal articles occupied the first position, which contributed 44,515 records. Among the prolific titles, Lecture Notes in Bioinformatics has the highest contribution of publications (6,814). In the institution-wise distribution, Chinese Academy of Sciences is placed in first position, having contributed 1,576 publications. The majority of the publications (81,555) were published in English language only.

INTRODUCTION

Bioinformatics is an interdisciplinary subject which develops methods for storing, organizing, retrieving and evaluating biological data. Databases and information systems are used to store and organize biological data. The research is analysing biological data may involve algorithms in artificial intelligence, image processing, data mining, and soft computing. The algorithms in turn depend on theoretical foundations such as discrete mathematics, control theory, system theory, information

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theory, and statistics. Bioinformatics uses many subjects such as computer science, statistics, mathematics and engineering to process biological data. The most important activity in bioinformatics is to develop software tools to generate useful biological knowledge. Bioinformatics is a different science from biological computation, the latter being a subfield of computer engineering using bioengineering and biology to build biological computers, whereas bioinformatics simply uses computers to better understand biology. Bioinformatics is similar to computational biology and has similar aims to it but differs on scale: whereas bioinformatics works with basic biological data (e.g. DNA bases), i.e. it works on the small scale paying attention to details, computational biology is a subfield of computer science which builds large scale general theoretical models of biological systems seeking to expand our understanding of them from an abstract point of view, just as mathematical biology does with mathematical models. Bioinformatics as a science can provide input to all previously mentioned scientific fields, as the recording and processing of detailed biological data is the first step towards doing something with them.

REVIEW OF LITERATURE

A Scientometric study on the research publications from Webology as the source journal during 2004 to 2012. Majority of the publications were contributed by single author 55(54.55%) followed by two authors 32 (31.68%) (Sudharani & Nagaraju, 2013). . The degree of collaboration was 0.45. Among the country wise distribution, the majority of the contributions were from both India and Iran 11 (10.89%). The authorship pattern of spacecraft's Research output during the year 2000-2014. In this study, a total of 2,58,861 articles were analysed . The average number of the authors per publication was 4.14 (Viswanathan & Tamizhchelvan, 2016). The Scopus Citation Database has been used to retrieve the data for 10 years (1999-2008) by searching the keywords (AIDS; Acquired Immune Deficiency Syndrome; Acquired Immunodeficiency Syndrome; HIV; Human Immuno Deficiency virus; Immunodeficiency virus, Human; Immuno deficiency syndrome, acquired; Immunologic deficiency syndrome, acquired; virus, Human immunodeficiency) in the combined Title, Abstract and keywords fields. To compare the profile of Indian research output with China, South Africa and Brazil, the study downloaded the data on these countries using the Affiliation field of this database. India ranks at 12th position among the top 20 countries and its global publication share (2.07%) is higher than Brazil (1.74%), but lower than China (2.24%) and South Africa (2.52%) (Gupta Adarsh Bala & Har Kaur, 2011) .

Studies related to Latin America focused on overall Latin America & Caribbean by Macias-Chapula, Rodea- Castro & Narvaez-Berthelemot (1998) and Macias-Chapula, Sotolongo-Aquilar & Magde (1999) and Mexico .There have also been a few studies relating to Asia, on India by Patra & Chand (2007) and China by Tian, Steinmann, Chen & Zhou (2009). Among analysis of content specific studies, Onyanchla and Ocholla studied the relatedness of AIDS-defining diseases in persons with documented HIV infections to AIDS/HIV by measuring their strength and association. Onyanchla and Ocholla (2009) by using co-word and multidimensional scaling techniques analyses MEDLINE-extracted AIDS/ HIV records. The study five lists of terms to investigate the relatedness of various factors and diseases to AIDS/HIV. Among content specific studies, Onyancha & Ocholla (2009) studied the relatedness of AIDS-defining diseases in persons with documented HIV infections to AIDS/HIV by measuring their strength and association. A total of 2477 papers were identified in the Web of Science database.

The study reveals that most of the researchers preferred to publish their research results in the form of journals articles and 82.8%of articles were published in journals. More numbers of articles were published in the year 2015.Theauthorship trend shows that, out of total 2477 publication published, 95% of the publications were published under the joint authorship. This study also identifies that Relative growth rate, Doubling Time, Degree of collaboration. Central South University with 268 (10.8%) publication tops in the institutional wise publications productivity. The study also identifies bibliographic coupling of the institution, language distribution, keyword distribution, geographical distribution of the literature and Historiography on Local and Global Citation is also analysed (Saravanan & Baskaran, 2019). The data were obtained from Scopus database. Articles published from 2008 –2017 were taken for this study. A total of 2594 articles were published in this field with an yearly average of 259.4 articles. . Out of the 2594 articles, the majority of the articles 421 (16.23%) were published in the year 2017. The RGR in the year 2009 found to be 2.05and in the end year 2017 found to be 0.12. This shows that the RGR declining trend is linear. Among the Authorship patterns, the major contribution of articles were from three authors 534 (20.59%). The Journal named“ Advanced Materials Research” ranked in the top position in contributing articles 59 (2.28%) in this field. The highly prolific author is Monteiro S.N who has contributed 41 articles 0.47%.(Senthilkumar & Baskaran, 2019).

OBJECTIVES OF THE STUDY

1. To find out the Year wise distribution of publications in bioinformatics
2. To observe the Top 10 prolific authors in bioinformatics
3. To analyze the Subject wise distribution in bioinformatics
4. To identify the Document wise distribution of publications
5. To find out the county, title and institution wise distribution of the publications

METHODOLOGY

The study explains to analyse that publications pattern on the Growth trend analysed during 2007-2017. The various aspects deals with Scientometrics indicators applied in the Bioinformatics literature during the period of study. The relevant data retrieved from SCOPUS records and applied on the study based on the sample data. The study measures the contribution of a country's growth of literature and the development of research productivity in this discipline during from 2007 to 2017. The present study attempts to find research output on Bioinformatics Literature in Scopus database.

ANALYSIS AND INTERPRETATIONS

See Table 1.

Table 1. Year wise distribution of publications in bioinformatics

S. No	Year	No. of Publications	Percentage	Cumulative	Cumulative Percentage
1	2007	4645	5.54	4645	5.54
2	2008	6031	7.19	10676	12.72
3	2009	7522	8.97	18198	21.69
4	2010	8139	9.70	26337	31.39
5	2011	7169	8.54	33506	39.93
6	2012	6522	7.77	40028	47.71
7	2013	6708	7.99	46736	55.70
8	2014	8383	9.99	55119	65.69
9	2015	9030	10.76	64149	76.46
10	2016	8934	10.65	73083	87.10
11	2017	10821	12.90	83904	100
	Total	**83904**	**100**		

YEAR WISE DISTRIBUTION OF PUBLICATIONS

Table 1 indicates that total of 83904 publications published on Bioinformatics publications during 2007 to 2017. It has been started from 4645 in 2007 publications and maximum numbers of articles were 10821 in 2017. The publication growth on this bioinformatics which could be found form above the table an increasing trend from 2007 to 2017 and Figure 1 indicates that the publications growth found to be in increasing trend (Figure 1).

TOP 10 PROLIFIC AUTHORS

Table 2 shows that the most prolific authors, who have contributed a large number of papers in the field of Bioinformatics. The authors are ranked according to the number of publications. According to the analysis, the most prolific author is Martens, L. in this field of research. Ranganathan, S. ranks second with 71 contributions from India followed by Perez Jimenez, M.J. with 70 publications. Pan, L has produced least no. articles with 58 publications.

SUBJECT WISE DISTRIBUTION

Table 3 revealed that the highest numbers of articles (38213) are published in the Biochemistry, Genetics and Molecular Biology discipline followed by 25796 in Medicine, 24920 in Computer Science and 18037 in Engineering subject. It is clear

Figure 1. Year wise distribution

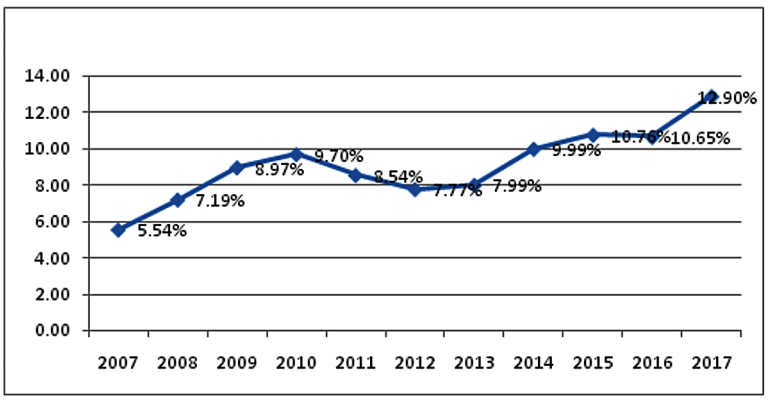

Table 2. Top 10 prolific authors in bioinformatics

S. No	Authors	Contributions	Rank
1	Martens, L.	99	1
2	Ranganathan, S.	71	2
3	Pérez-Jiménez, M.J.	70	3
4	Gasser, R.B.	68	4
5	Hermjakob, H.	68	4
6	Cannataro, M.	67	5
7	Moore, J.H.	61	6
8	Wang, J.	60	7
9	Zhang, A.	60	7
10	Pan, L.	58	8

Table 3. Subject wise distribution in bioinformatics

S. No	Subject	Publications	Rank
1	Biochemistry, Genetics and Molecular Biology	38213	1
2	Medicine	25796	2
3	Computer Science	24920	3
4	Engineering	18037	4
5	Mathematics	15135	5
6	Agricultural and Biological Sciences	7588	6
7	Immunology and Microbiology	6390	7
8	Chemistry	3911	8
9	Pharmacology, Toxicology and Pharmaceutics	3522	9
10	Health Professions	3410	10

from the study that Biochemistry, Genetics and Molecular Biology dominated the subject wise distribution of bioinformatics research.

DOCUMENT WISE DOSTRIBTION OF PUBLICATIONS

Document wise distribution of Research output in the field of Bioinformatics Table 4 indicates the document wise distributions of publications on Bioinformatics. The data from the table reveals that most prevalent form of publication is journal article

Table 4. Document wise distribution of publications

S. No	Document Type	Publications	Percentage
1	Article	44515	53.05
2	Conference Paper	26225	31.26
3	Review	5178	6.17
4	Editorial	3826	4.56
5	Book Chapter	1698	2.02
6	Note	572	0.68
7	Short Survey	471	0.56
6	Conference Review	346	0.41
9	Book	343	0.41
10	Letter	301	0.36
11	Erratum	252	0.30
12	Article in Press	174	0.21
13	Retracted	3	0.004
	Total	**83904**	**100**

which were 44515 records. Article as a source of publication (44515 publications) take the first place, followed by Conference papers (26225 publications) and Review with (5178 Publications).

TOP 10 TITLES IN BIOINFORMATICS

Table 4 shows the most productive journals on Bioinformatics research as indexed in Scopus database. The leading journals preferred by the scientists were Lecture Notes In Bioinformatics (6814), followed by PLOS One (2163), International Conference On Bioinformatics And Biomedical Engineering ICBBE -2010 (2018), BMC Bioinformatics (1758), ICBBE -2009 (1635), Bioinformatics (1529), ICBBE -2011 (1437), ICBBE -2008 (1162), Nucleic acids research (958), BMC Genomics (815) and so on.

PROLIFIC INSTITUTIONS IN BIOINFORMATICS

It is observed from the table that Chinese Academy of Sciences has contributed maximum number of 1576 articles followed by Ministry of Education Institution,

Table 4. Top 10 titles in bioinformatics

S. No	Source Title	Publications	Rank
1	Lecture Notes In Bioinformatics	6814	1
2	Plos One	2163	2
3	2010 4th International Conference On Bioinformatics And Biomedical Engineering Icbbe 2010	2018	3
4	BMC Bioinformatics	1758	4
5	3rd International Conference On Bioinformatics And Biomedical Engineering Icbbe 2009	1635	5
6	Bioinformatics	1529	6
7	5th International Conference On Bioinformatics And Biomedical Engineering Icbbe 2011	1437	7
8	2nd International Conference On Bioinformatics And Biomedical Engineering Icbbe 2008	1162	8
9	Nucleic Acids Research	958	9
10	BMC Genomics	815	10

China has contributed 1368 articles. CNRS Centre National de la Recherche Scientifique ranks third among top 10 institutions with 899 publications followed by National Institutes of Health, Bethesda with 722 contributions. Analysis revealed that Chinese Academy of Sciences Amity University has dominated the Top 10 Institution list by contributing articles.

Table 5. Prolific institutions in bioinformatics

S. No	Affiliation	Contributions	Rank
1	Chinese Academy of Sciences	1576	1
2	Ministry of Education Institution, China	1368	2
3	CNRS Centre National de la Recherche Scientifique	899	3
4	National Institutes of Health, Bethesda	722	4
5	Harvard Medical School	687	5
6	Shanghai Jiao Tong University	638	6
7	University of California, San Diego	602	7
8	Inserm	598	8
9	Fudan University	530	9
10	Consiglio Nazionale delle Ricerche	529	10

COUNTRY WISE DISTRIBUTION OF PUBLICATIONS

The table 6 reveals that USA has topped the list with 23552 records, it followed by china with 21582 Publications, UK with 5961, Germany with 5215 records and India with 3575 publications during the period of study.

LANGUAGES WISE DISTRIBUTIONS

Table 7 shows the language wise distribution of publications. Majority i.e., 81555 of the publications in bioinformatics research literature were written in English language. It has witnessed that other languages publications were distributed in Chinese 1853 records, trailed by Spanish 109 articles followed by Russian, Japanese, French, German, Turkish, Portuguese and Persian language so on.

CONCLUSION

The study analysed the Bioinformatics Literature during 2007-2017. For this research, a total of 83904 publications indexed in Scopus were analysed with the tools of Scientometrics. The study covered 11 years only. Findings revealed that among the year wise distribution of publications, maximum number of publications 10821 (12.90%) were published in 2017 and minimum number of publications 4645 (5.54%) were published in 2007. Among the prolific authors, Martens, L is ranked 1 who

Table 6. Country wise distribution in bioinformatics

S. No	Country	Publications	Rank
1	United States	23552	1
2	China	21582	2
3	United Kingdom	5961	3
4	Germany	5215	4
5	India	3575	5
6	Italy	3444	6
7	Canada	3427	7
8	France	3171	8
9	Spain	2807	9
10	Japan	2617	10

Table 7. Languages wise distribution of publications in bioinformatics

S. No	Language	Publications	Rank
1	English	81555	1
2	Chinese	1853	2
3	Spanish	109	3
4	Russian	96	4
5	Japanese	73	5
6	French	69	6
7	German	56	7
8	Turkish	35	8
9	Portuguese	33	9
10	Persian	28	10

contributed 99 papers followed by S.Ranganathan contributed 71 papers who is placed in second rank. In the Document type, Journal articles occupied the first position which contributed 44515 records followed by conference paper which contributed 26225 papers. Among the Prolific titles, Lecture Notes in Bioinformatics has the highest contribution of publications (6814) followed by Plos one that contributed 2163 publications. In the institution wise distribution, Chinese Academy of Sciences is placed in first position which contributed 1576 publications followed by Ministry of Education Institution which contributed 1368 publications. Among the language wise distributions, Majority of the publications (81555) were published in English language followed by Chinese language that contributed 1853 publications.

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Section 6

Impact of Online and Social Networks and Media Sharing Research Information

Chapter 10
Impact and Usage of Social Media Among the Post Graduate Students of Arts in Alagappa University, Karaikudi, India

P. Pitchaipandi
Alagappa University, India

ABSTRACT

This chapter tries to analyse the impact and usage of social media among the postgraduate students of arts in Alagappa University, Karaikudi, under survey method for the study. The study identified the majority (69.79%) of the respondents under female category, and 72.92% of the respondents belong in the age group between 21 and 23 years. It is observed that 32.29% of the respondents use the social media, preferably YouTube. The plurality (48.96%) of the respondents use smartphone/ mobiles compare to iPod, desktop, laptop, and others. 35.42% of the respondents' spent between 1 and 5 hours weekly using social media. Further, the study also observes the positive and negative aspects of using social media in postgraduate students of arts disciplines in the university.

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INTRODUCTION

According to P.S. Jeesmitha (2019), the word social media means collection of applications (Facebook, Twitter, Whatsapp, LinkedIn, YouTube. etc.) and websites that link people to share information and aware people about any event through social networking. From the beginning of the 21st century, social media is in progress. People belonging to different age group use social media. Social media plays a vital role in life. Information technology (IT) changed the living standard. These tools provide several ways of interaction and different opportunities to learn foreign languages through worldwide. The world becomes a global village due to social media. Users can connect with other people within seconds and share their ideas and give comments by video conferencing. People of different culture can also talk on any issue. Social media links the people to their culture by showing different documentaries. People also use social media to get information about other countries. Social media influence adolescent's life it has both positive and negative impacts situation.

REVIEW OF LITERATURE

According to Shivarama Rao, K. Subangi, M. C. and Malhan (2019), social software in the Web 2.0 world not only enhances the practical usability in the library but also helps the diminishing librarian's role through value addition to profession itself. In this paper, select cases of social academic networks are described and different perspectives have been given on how academic libraries are participating in this massive social networking drive. Also, an attempt has been made to analyze social media presence of select Indian academic libraries.

A new information landscape is evolving where people largely access information and share ideas from hand held devices and making increasing use of mobile apps and social media tools for their convenience. This new information landscape is shaped by emergence of new web technologies, a variety of knowledge management and data analytic tools and content management software. It offers more convenience and saving of time for new generation of information users. Generation 'Y' is now using Facebook as an alternative to email (E Botha, M Farshid & L Pitt, 2011). And "social networks are now growing with mobile technology that has significantly changed the way in which people stay connected" (Shim *et al.,* 2011). Worldwide, there are over 2.32 billion monthly active users (MAU) of Facebook as of December 31, 2018. This is a 9 percent increase in Facebook MAUs year over year1.52 billion people on average log onto Facebook daily and are considered daily active

users (Facebook DAU) for December 2018 (Zephoria, 2019). Institutions require conforming to popular ways of information access for delivery of content.

(Odede Israel,2019) The least used social networking site as indicated by the students is My Space. As regards to the purpose of using social networking sites, the findings indicates that private messaging, photo upload and video sharing were the main purposes for which the students use social networking sites. It is important to state that this study was conducted in a single academic institution; therefore, findings may not be applicable and reasonable to be generalized on all academic institutions. However, students' motivation that will enable students use varieties of social networking sites is highly recommended. In conclusion, students should also be motivated to use social networking sites as platforms for academic discussions such as for assignment and other course related works as well as receive and send academic information among their peers.

This new channel of communication helps to keep more general topics for discussion. It provides various interactive platforms for students to share knowledge and experiences. Hence, various social networking sites are used by students. However, Face book, Twitter and Instagram, are the most popular ones used by students. Others include MySpace, LinkedIn, Mebo, Flickr, Blogs, Wikis, Youtube Google+, Tumblr, 2go, Skype etc. Students are known to be dedicated users of one or more of these social networking sites, many of whom have been made to use these sites as daily for communication and other activities. Charnigo and Barnett-Ellis (2013) stated that Face book is currently the largest online social network targeted for the academic environment, while Muruli and Kumar (2013) asserts it is the most popular and successful of its kind as it is very user-friendly and interactive website for connection. Social network sites enable students to establish and maintain an academic relationship with one another where issues pertaining to academics can be discuss with the aim of learning and assisting each other. Students also use social networking sites as a medium of making useful connections with their lecturers as well as course mates.

The use of Social Networking Sites among students have been recognized as advantageous in terms of enhancing communication, collaboration and the potential for the promotion of and support for learning (Junco, 2011). Thus, Hussain (2012) indicated that social networking sites seemed to have a greater impact in higher education than other levels of education. This is evident in a study on social networking sites usage involving selected students from all the colleges at the University of New Hampshire in the United States of America that showed 96% (1,082) of the surveyed students being regular users of social networking sites especially Face book (Martin, 2009). Also, Research conducted by Blaschke (2014) supports that students could benefit from social networking sites usage throughout their college years. It could also mold them into a better learner as well. In the classroom, tools

such as YouTube enhanced learning by connecting students both with external experts and novel educational content. Outside the classroom, Twitter, face book and other applications sustained and augmented learning conversations, enabling real-time dialogue to take place among students. This new way of communication enhances sharing of dynamic experience.

OBJECTIVES OF THE STUDY

1. To observe the Gender- wise respondents of the study in Alagappa University.
2. To analyzed the social demographic data on the respondents of the University
3. To find out the department wise distribution of the respondents in Alagappa University
4. To analyse the respondents opinion among using Social Medias and web browser.
5. To find out the different browsers and tools for using the Social Medias by the respondents.

METHODOLOGY

The study undertaken by the researcher attempted to collect the data among the postgraduate students of Arts in Alagappa University. A total number of 100 questionnaires were distributed among the students out of seven departments in the faculty of Arts. The filed questionnaire of received from the respondents. Further the study applying the percentage analysis wherever applicable to the study.

SAMPLING TECHNIQUES

For this study convenience Random sampling method was adopted for collecting primary data. A sample including Postgraduate Students of Arts in Alagappa University, Karaikudi. A total number of 100 questionnaires were distributed and 96 properly field questionnaires were received back. Hence selected 96 questionnaires are used for analysis of data.

ANALYSIS AND INTERPRETION

The Research concerned with the use of "Impact and Usage of Social Medias among the Postgraduate Students of Arts in Alagappa University, Karaikudi". This analysis is based on the data collected through questionnaire among postgraduate students of Arts in Alagappa University, Karaikudi.

DISTRIBUTION OF GENDER WISE RESPONDENTS

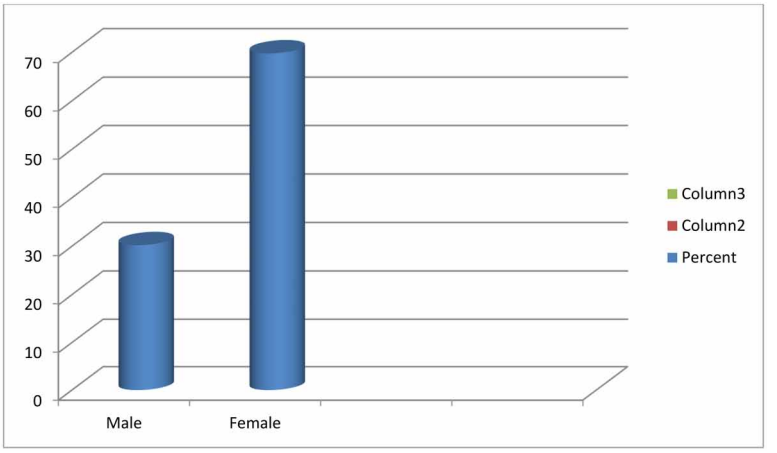
Table 1 shows the gender wise distribution of respondents. In this study, 29(30.21%) of the respondents belong to the category of male, whereas 67(69.79%) of the respondents belong to the category of female (Fig.1).

Table 1. Distribution of gender wise respondents

S. No	Gender	No. of Respondents	Percentage
1	Male	29	30.21
2	Female	67	69.79
Total		96	100

Source: Primary data

Figure 1. Distribution of gender wise respondents



DISTRIBUTION OF AGE WISE RESPONDENTS

Table 2 reveals the distribution of age-wise respondents of the study. It shows that 13.54% of the respondents belong to the category of age18-20 out of 96 respondents. It followed by 72.92% of the respondents belong to the category of age 21-23, and 8.33% respondents belong to the category of age 24-26 and 5.21% of the respondents belong to the category of age a above 27 (Fig.2).

DEPARTMENT WISE DISTRIBUTION OF RESPONDENTS

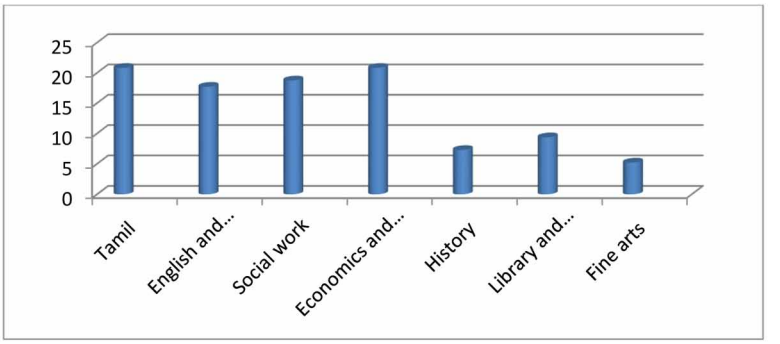
Table 3 reveals the department-wise distribution of Respondents. In this study 20(20.83%) respondents belong to Tamil department, 17(17.71%) respondents belong to departments of English and foreign languages, 18(18.75%) respondents belong to Social work, 20(20.83%) respondents belong to Economics and rural

Table 2. Distribution of age wise respondents

S. No	Age	No. of Respondents	Percentage
1	18-20	13	13.54
2	21-23	70	72.92
3	24-26	8	8.33
4	A bove-27	5	5.21
Total		96	100

Source: Primary data

Figure 2. Department wise distribution of respondents



development department, 7(7.29%) respondents belong to History department, 9(9.38%) respondents belong to Library and information science department and 5(5.21%) respondents belong to Fine arts department respectively.

DEPARTMENT WISE DISTRIBUTION OF RESPONDENTS

Table 4 highlights the location from where the social media mostly accessed by the students 25(26.04%) access the social media from Home, 28(29.17%) access the social media from department/Hostel,17(17.71%) access the social media from the central Library,10 (10.42%) access the social media from Friends/ Relatives house,7(7.29%) access the social media from the Cybercafé and 9(9.38%) respondents access the social media from the other location.

Table 3. Department wise distribution of respondents

S. No	Department	No. of Respondents	Percentage
1	Tamil	20	20.83
2	English and foreign languages	17	17.71
3	Social work	18	18.75
4	Economics and rural development	20	20.83
5	History	7	7.29
6	Library and information science	9	9.38
7	Fine arts	5	5.21
	Total	96	100

Source: Primary data

Table 4. Place of access social medias

S. No	Place of Access	No. of Respondents	Percentage
1	Home	25	26.04
2	Department /Hostel	28	29.17
3	Central library	17	17.71
4	Friends/ Relatives house	10	10.42
5	Cybercafé	7	7.29
6	Other places	9	9.38
Total		96	100

Source: Primary data

TIME SPENT IN SOCIAL MEDIAS THE WEEK

Table 5 Shows the opinions on time spend in social media. In this study, 19(19.79%) respondents spend time Below one hours, 34(35.42%) respondents time spend in 1-5 hours, 10(10.42%) respondents 5-10 hours, 14(14.58%) respondents 10-15 hours, 5(5.21%) respondents 15-20 hours, 14(14.58%) respondents time spend in more than 20 hours.

USE OF SOCIAL MEDIAS TOOLS

Table 6 Shows the opinion about using social media tools 4(4.17%) respondents use Tablet computer, 25(26.04%) respondents use of Laptop,12(12.5%) respondents use Desktop,47(48.96%) respondents use of Smart phone/mobiles and 8(8.33%) respondents use I pad.

Table 5. Time spent in social medias the week

S. No	Time Spent	No. of Respondents	Percentage
1	Below one hours	19	19.79
2	1-5 hours	34	35.42
3	5-10 hours	10	10.42
4	10-15 hours	14	14.58
5	15-20 hours	5	5.21
6	More than 20 hours	14	14.58
Total		96	100

Source: Primary data

Table 6. Use of social medias tools

S .No	Type of Tools	No. of Respondents	Percentage
1	Tablet computer	4	4.17
2	Laptop	25	26.04
3	Desktop	12	12.5
4	Smart phone/mobiles	47	48.96
5	I pad	8	8.33
	Total	96	100

Source: primary data

TYPES OF BROWSER USING FOR SOCIAL MEDIAS

Table 7 Shows the opinion an using social media sites Browser 9(9.38%) respondents use Internet Explorer, 7(7.29%) respondents use of Mozilla fire fox, 72(75%) respondents use Google chrome and 8(8.33%) respondents use opera.

USING SOCIAL MEDIAS BY THE RESPONDENTS

Table 8 shows the opinion an using social media sites 8(8.33%) respondents use of face book, 3(3.13%) respondents use of Twitter, 31(32.29%) respondents use YouTube, 9(9.38%) respondents use of Tumbler/Messenger,25(26.04%) respondents use of What Sapp,13(13.54%) respondents use of Google + and 7(7.29%) respondents use Instagram.

Table 7. Types of browser using for social medias

S .No	Types of Browser	No. of Respondents	Percentage
1	Internet Explorer	9	9.38
2	Mozilla fire fox	7	7.29
3	Google chrome	72	75
4	Opera	8	8.33
	Total	96	100

Source: primary data

Table 8. Using social medias by the respondents

S .No	Social Media	No. of Respondents	Percentage
1	Face book	8	8.33
2	Twitter	3	3.13
3	YouTube	31	32.29
4	Tumbler/Messenger	9	9.38
5	What Sapp	25	26.04
6	Google +	13	13.54
7	Instagram	7	7.29
	Total	96	100

Source: primary data

PERIOD OF USE SOCIAL MEDIAS BY THE RESPONDENTS

Table 9 revels that the opinion on period of uses Social Media. In this study 23(23.96%) respondents Less than one year,26(27.08%) respondents 1 year- 2 year,12(12.5%) respondents 2 year -3 year, 17 (17.71%) respondents using period of 3 year -4 year,13(13.54%) respondents using period of 4 year - 5 years,5 (5.21%) respondents using period of More than 5 years.

PURPOSE OF USE SOCIAL MEDIAS

Table 10 reveals that the 12(12.50%) respondents use the Social Media services for Lesson writing Purpose, 19(19.79%) respondents' services for Assignment preparation, 11(11.46%) respondent's service for Listening subject ideas,25(26.04%) respondent's service for Sharing general information and, 29(30.21%) respondent's service for Preparing for conference / seminars.

Table 9. Period of use social medias by the respondents

S. No	Period	No. of Respondents	Percentage
1	Less than one year	23	23.96
2	1 year- 2 year	26	27.08
3	2 year -3 year	12	12.5
4	3 year -4 year	17	17.71
5	4 year - 5 years	13	13.54
6	More than 5 years	5	5.21
Total		96	100

Source: Primary data

Table 10. Purpose of use social medias

S. No	Purpose	No. of Respondents	Percentage
1	Lesson writing	12	12.50
2	Assignment preparation	19	19.79
3	Listening subject ideas	11	11.46
4	Sharing general information	25	26.04
5	Preparing for conference / seminars	29	30.21
Total		96	100

Source: Primary data

CONCLUSION

The study discussed above the use of Social Networks and Medias among the Post Graduate students in the Faculty of Arts of Alagappa University, Karaikudi, India. The results of the study finds, 29(30.21%) of the respondents belong to the category of male, whereas 67(69.79%) of the respondents belong to the category of female. age-wise respondents of the study. It shows that 13.54% of the respondents belong to the category of age18-20 out of 96 respondents. 20(20.83%) respondents belong to Tamil department, 17(17.71%) respondents belong to departments of English and foreign languages. mostly accessed by the students 25(26.04%) access the social media from Home. 28 (29.17%) access the social media from department/Hostel. 19 (19.79%) respondents spend time Below one hours, 34 (35.42%) respondents time spend in 1-5 hours, 10 (10.42%) respondents 5-10 hours. 9 (9.38%) respondents use Internet Explorer, 7 (7.29%) respondents use of Mozilla fire fox, 72 (75%) respondents use Google chrome and 8(8.33%) respondents use opera. 23(23.96%) respondents Less than one year, 26 (27.08%) respondents 1 year- 2 year,12(12.5%) respondents 2 year -3 year.

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Chapter 11
Outlook Change From Print to E-Resources:
A Study of the Uses and Advantages of E-Resources on Print in the State Universities in Kerala, India

P. C. Binu
https://orcid.org/0000-0002-2210-5861
St. Paul's College, India

ABSTRACT

Electronic information resources in libraries have made remarkable changes in the users' perceptions towards print resources. A survey among 421 respondents in six state universities in Kerala reveals that the use of e-resources is considered as an advantage and it benefits the academic community. While analyzing the use of e-resources compared to the print resources, the statement 'E-resources affect the reading habit so it is not be encouraged' is rejected because it is not an advantage. All 12 hypotheses set for 'benefits of electronic resources for accessing scholarly information' are accepted because all the regulatory constructs have significant influence on benefit of e-resources.

INTRODUCTION

The principal part of education and research is 'Access to Information'. The situations of the world have been changed by the development in information and communication technologies. Technological advancements had a great deal of

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effect on library and information services. Earlier the library collections were just in the conventional bound volumes, yet now it has changed from print to electronic. Most of the libraries offer information both in print and electronic configuration to its users. Now, electronic resources have turned out to be imperative piece of the learning process. With the advent innovative technologies, electronic resources are effortlessly and promptly accessible to users. The present study was conducted among the post graduate students, research scholars and faculty members of six state universities in Kerala. It examines the use and advantages of e-resources compared to print resources.

REVIEW OF LITERATURE

Review of related literature is necessary to empower the researcher to get an unmistakable understanding about the particular field of study. It helps the researcher to have an understanding into the tested methods, procedures and interpretations of similar studies conducted somewhere else. Some prominent studies related to e-resources are reviewed.

Library e-resources have evolved from the introduction of machine-readable cataloguing (MARC) and online public access catalogues (OPACs) in the late 1960s to CD-ROM databases in the late 1980s, to electronic journals, electronic books, online databases and Web-based ERs at the end of the twentieth century (Hawthorne,2008). South African universities, in particular, enjoy a high level of ICT integration and adequate ICT infrastructure. ERs serve as an integral part of research, teaching and academic activities. Although South African universities have invested vast amounts of money in the acquisition of ERs, there are questions about the efficiency and use of these resources. For example, Ashcroft (2011)observed that, while issues regarding the introduction of e-journals, such as raising user awareness, bundling, the proliferation of passwords and consortia purchase have been resolved, the situation regarding e-book provision is less stable.

Dattatraya T. Kalbande (2013) attempted to study the use of e- resources, its impact, and the places from which the users are accessing these resources. A survey among 108 faculty members was conducted at the Mahatma Phule Agricultural University, Rahuri (M.S). The result showed that the awareness about e-resources encourages users to use these resources at maximum. Users are accessing these resources from the department and home. The impact of e-resources was noticeable from the decrease in number of print resources in comparison to the increase in e-resources. The study was conducted through a structured questionnaire to elicit the opinion of the science research scholar, distributed among 100 research Scholars of different science departments, of out of which 80 dully filled questionnaires were

received back giving an overall response rate of 80 per cent. The paper concludes that electronic resources have become an integral part of the information needs of research scholars at Karnatak University. Further, it finds that e-resources can be good substitutes for conventional resources. Finally emphasizes the suggestions given by the research scholar for improvement and better utilization of the library sources and services (Kumbar,Anuradha Kotabagi, Manohar & Lamani, 2014). Nazir Ahmad Bhat (2017) assessed the satisfaction level of users with regard to the following types of Electronic Information Resources (EIRs) relevant to agriculture and allied disciplines, viz. Indexing and Abstracting (I&A) Databases; e-Journals; e-Books; and e-Theses. Seven universities were surveyed using a questionnaire for collecting data. Anajoyce Samuel Katabalwa (2016) studied the use of electronic resource by the postgraduate students in the School of Education at the University of Dares Salaam. The study showed that most of the students are using e-resources for many purposes. The major difficulties faced in the use of electronic resources are power failure, inadequate bandwidth, slow speed, inability to access the resources from home, lack of training, lack of awareness, limited access to computers and difficulty in searching. Finally, the recommendations for improving the use of electronic journal resources are provided.

Libraries in India are facing many problems due to limited library budget, huge expectations of the user, cost of information resources, particularly electronic information resources. It is very difficult for the libraries to arrange all required information to satisfy their users' needs. Library consortiums will be a solution to this problem in India. But library consortia are still in their infancy stage in our country. UGC-Infonet library consortium has provided access to various E-resources to Indian Universities became much beneficial to higher education in India. This article examines the usage of these e-resources under UGC-Infonet digital library consortia (Tawfeeq Nazir, 2015). In the current years electronic resources (e-resources) such e-journals, data files and open access web-sites have revolutionized the learning process of medical students when compared to traditional resources such as lectures, textbook and tutorials. In the context of this, current study was carried out to assess how electronic resources are utilized by the medical students of Sri Dharmastala Manjunatheswara College of Medical Sciences and Hospitals (SDM), Dharwad. The study was carried out through a structured questionnaire by taking representative sample of researcher scholars and scientists. The results revealed the electronic resources are quite useful to medical students and these are good alternatives compared conventional print resources or hard copies. Digitalization of medical college libraries is quite useful for dissemination of knowledge among medical students (Girimallesh, 2019).

The level of use of the electronic resources at the University of Venda, which is one of the previously disadvantaged universities in South Africa. It identifies the different electronic resources used at the university, determines the level of awareness and training in the use of these resources and suggests ways in which electronic resources may be enhanced. The rapid changes in the information and communication technology (ICTs) have influenced service delivery in academic libraries in terms of how information is gathered, accessed, retrieved and used. Hence, electronic resources are invaluable research tools in academic libraries in the twenty-first century (Tintswalo Pascalis, Tlakulaand Madeleine &Fombad, 2017). The majority of the respondents 221 (42.5%) are assistant professors/ lecturers/ senior lecturers, and 195 (37.5%) of them are associate professors followed by 104 (20%) of the respondents are professors. 331 (26.7%) of the respondents followed by the use of e-magazines by 182 (14.7%) respondents. The data shows that a large number of 263 (50.6%) of the respondents are "Highly Satisfied" with the lecturing materials followed by 257 (49.4%) of the respondents "Satisfied" with e-resources offering lecturing materials (Ramesh & Baskaran, 2019).

These resources are delivered over the internet and require different searching skills than print resources. Online resources comprised e-books; e-journals; electronic articles, theses and dissertations; and online newspapers and databases, such as those offered through EBSCO host, e-journal packages offered by publishers such as Emerald and Sage, indexing and abstracting databases, reference databases (biographies, dictionaries, directories, encyclopedias), numeric and statistical databases, e-images, e-audio/visual resources, among others (Johnson, et al., 2012). These items tend to enhance efficiency and effectiveness for both patrons and libraries and enable patrons to access digital information required for investigating issues, solving problems, making decisions and developing new understandings in areas of learning and teaching (Aramide and Bello, 2009). Mogase and Kalema (2015) reported that students have made little effort to use these resources. Pietersen and Raju (2015) noted that, while academic libraries have had success in developing e-collections, the adoption of e-books in particular as part of e-collections seems to have been slow. The study analyses the access attitude on the Scholarly Information through Electronic Resources among Faculty members in the Universities of Southern Tamilnadu. The Madurai Kamaraj University and Alagappa University have respondents of each 130 (34.21%), 85 (22.36%) respondents are belonging to Manonmaniam Sundaranar University. It could be seen that out of 380 respondents, 177 (46.57%) are belonging to faculty of Science. It is understood that 104 (27.36%) respondents are coming under faculty of Arts, 52 (13.68%) of them belonging to faculty of Management, 47 (12.39%) respondents are from faculty of Education. Out of 380 respondents, Assistant Professor Respondents are found 265 (69.74%) which is followed by Professor Respondents 65(17.11%) and Associate Professor Respondents

50 (13.15%). 380 (100%) respondents are aware of E-Resources available in the University Library. the majority of 259 (98.50%) respondents are got training from the University Library for accessing the E – Resources and Only 4 (1.50%) male respondents are not getting training from the University Library. It is also seen that out of 117 (30.80%) female respondents. The study were 421 from selected State Universities in Kerala State, India. The Respondents categorize include Teaching faculty, Research Scholars and PG Students, the analysis made effective use of Electronic resources in rely on academic research prevalence of their needs in the Six State Universities of Kerala. The results examined out of 421 respondents, 220 (52.3%) of them belong to Research scholar. majority of respondents 109 (25.9%) are post graduates and 75 (17.8%) are having PG with NET qualification. Mean value for 'To borrow books' was 3.86 and assigned the rank one. Majority of respondents 416 (98.8%) are searching for educational and research Information. The findings of the study could identify the various parameters while access Electronic resources by the academic community. The study would helpful to bring to access Electronic Information for momentum of gain research and academic ideas among the users (Binu & Baskaran, 2019).

OBJECTIVES OF THE STUDY

- To assess the use of electronic resources compared to the print resources.
- To examine the level at which e-resources are beneficial to the academic community.
- To study e-resource use pattern by the users.
- To evaluate the benefits of electronic resources for accessing scholarly information.

METHODOLOGY

A questionnaire-based survey was conducted among the Post Graduate students, Research Scholars and Teachers from six state universities in the Kerala state. 421 respondents from Cochin University of Science and Technology (CUSAT), University of Calicut, Mahatma Gandhi University, University of Kerala, Sree Sankaracharya University of Sanskrit and Kannur University participated in the survey. The survey was conducted by systematic sampling procedure. The data collected were analyzed via SPSS 20.0 for Windows. Main objective of the study is to assess the uses and advantages of e-resources compared to print resources in the state universities in Kerala.

DATA ANALYSIS

Data analysis is the most important step in research process. It is the link between raw data and significant results leading to conclusions. This process of analysis has to be result oriented.

The following tables provide the demographic characteristic of the respondents.

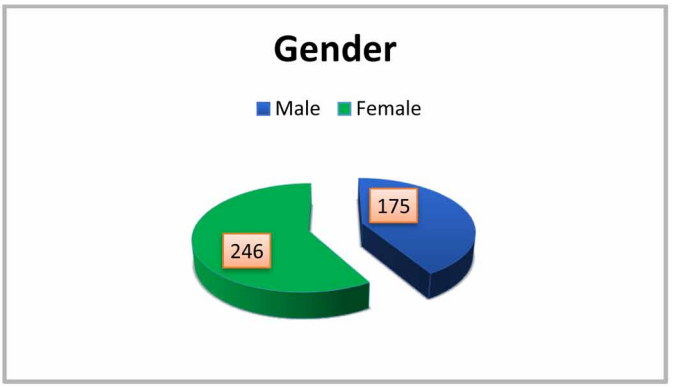
GENDER WISE DISTRIBUTION OF RESPONDENTS

A study of data in table-1 shows the gender distribution of respondents. It could be noted that out of the total 421 respondents, majority of the respondents 246 (58.4%) belong to the female group and the rest 175 (41.6%) are males.

Table 1. Gender wise distribution of respondents

Gender	Frequency	Percent
Male	175	41.6
Female	246	58.4
Total	421	100

Figure 1.



AGE WISE DISTRIBUTION OF RESPONDENTS

A study of data in table-2 indicates that the majority of the respondents 272 (64.6%) are in the 21 to 30 age group. It is followed by, 96 (22.8%) in the 31 to 40 age group, 36 (8.6%) are in 41 to 50 age group and 10 (2.4%) respondents are in the age group above 50. It is also showed that 7 (1.7%) of the respondents belongs to the age group below 20.

EDUCATIONAL QUALIFICATION OF THE RESPONDENTS

It is identified from the table 3, majority of respondents 109 (25.9%) are post graduates and 75 (17.8%) are having PG with NET qualification. It is followed by 61 (14.5%) respondents with M.Phil and 54 (12.8%) having M.Phil with NET qualification. Among the total respondents 44 (10.5%) are qualified Ph.D and 32 (7.6%) have Ph.D with NET. 46 (10.9%) are under graduates.

Table 2. Age wise distribution of respondents

Age Group	Frequency	Percent
Below 20	7	1.7
21-30	272	64.6
31-40	96	22.8
41-50	36	8.6
Above 50	10	2.4

Figure 2.

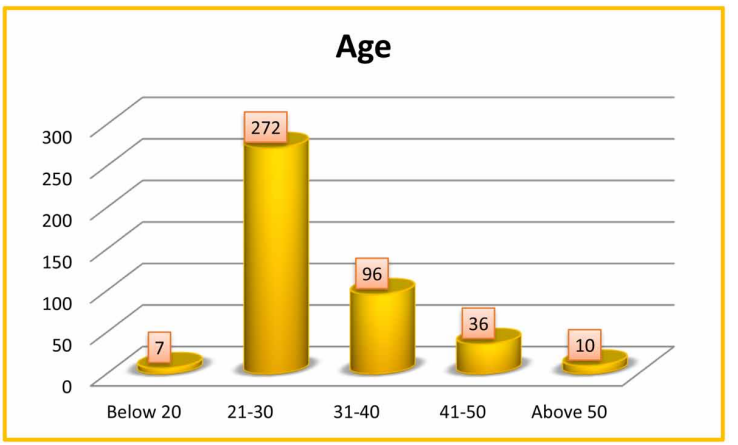
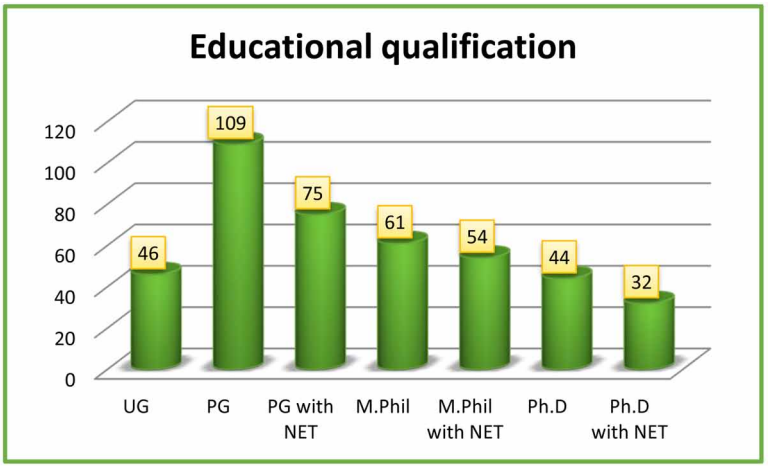


Table 3. Educational qualification of the respondents

Educational Qualification	Frequency	Percent
UG	46	10.9
PG	109	25.9
PG with NET	75	17.8
M.Phil	61	14.5
M.Phil with NET	54	12.8
Ph.D	44	10.5
Ph.D with NET	32	7.6

Figure 3.



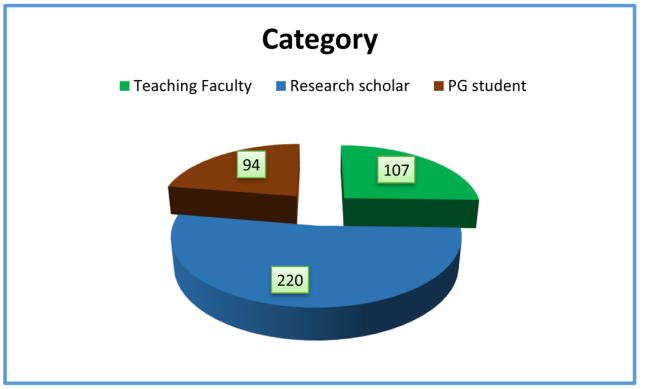
DISTRIBUTION OF RESPONDENTS BY CATEGORY

A study of data in table-4 indicates the category wise distribution of respondents. It could be noted that out of the total 421 respondents, 220 (52.3%) of them belong to the Research scholar category and 107 (25.4%) of them come under the Teaching faculty. In this study, 94 (22.3%) of the respondents are found in the PG student. It is concluded that more than a half of the respondents belong to the Research scholar category.

Table 4. Distribution of respondents by category

Category	Frequency	Percent
Teaching faculty	107	25.4
Research scholar	220	52.3
PG student	94	22.3

Figure 4.



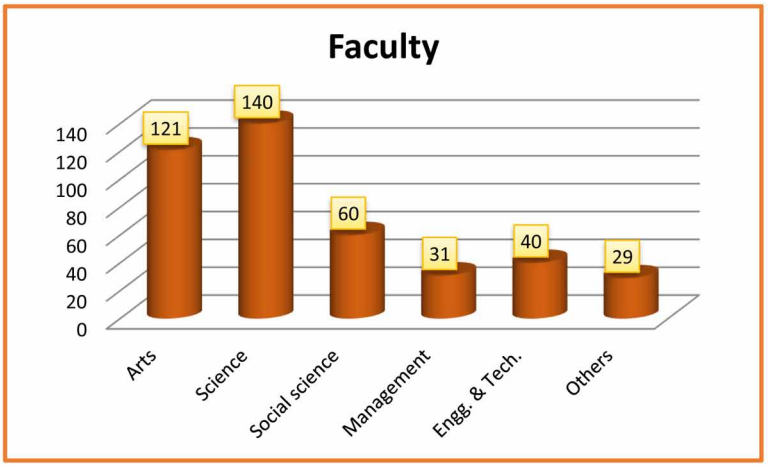
FACULTY WISE DISTRIBUTION OF RESPONDENTS

A study of data in table-5 describes the faculty wise distribution of respondents. It could be seen that out of the total 421 respondents, 140 (33.3%) are belonging to faculty of science. It is clearly understood that 121 (28.7%) are coming under faculty of Arts, 60 (14.3%) of them belongs to Social Science, 40 (9.5%) are from Engineering and Technology, 31 (7.4%) are from Management and 29 (6.9%) are belonging to other faculty. It is concluded that majority of respondents are from science faculty.

Table 5. Faculty wise distribution of respondents

Faculty	Frequency	Percent
Arts	121	28.7
Science	140	33.3
Social science	60	14.3
Management	31	7.4
Engg. & Tech.	40	9.5
Others	29	6.9

Figure 5.



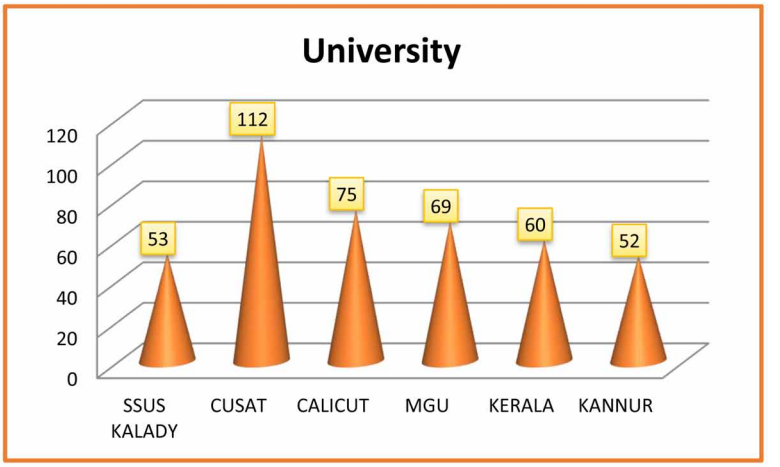
University Wise Distribution of Respondents

Data presented in Table-6 represents the University wise distribution of the respondents. Out of 421 respondents 112 (26.6%) belong to Cochin University of Science And Technology (CUSAT). It is followed by 75 (17.8%) from University of Calicut, 69 (16.4%) from Mahatma Gandhi University, 60 (14.3%) from University of Kerala, 53 (12.6%) from Sree Sankaracharya University of Sanskrit and 52 (12.4%) are from Kannur University

Table 6. University wise distribution of respondents

Name of University	Frequency	Percent
SSUS KALADY	53	12.6
CUSAT	112	26.6
CALICUT	75	17.8
MGU	69	16.4
KERALA	60	14.3
KANNUR	52	12.4

Figure 6.



USE OF ELECTRONIC RESOURCES COMPARED TO THE PRINT RESOURCES

The respondents are asked, how do you agree with the use of electronic resources compared to the print resources? As this being an opinion converted into a score the answer may be subjected to random variations and may be influenced by psychological factors. So it is better to use psychometric scale development approaches to evaluate the relationship. The best model for testing the convergent validity and for modeling the best method is Structural Equation Model (SEM) or Confirmatory Factor Analysis.

Structural equation modeling (SEM) is a statistical technique that takes a confirmatory approach to the analysis of a structural theory bearing on some phenomenon. SEM conveys two important aspects of the procedures: a) causal process under study is represented by a series of structural (regression) equations, and b) these structural relationships can be modeled to facilitate a clearer conceptualization of the theory under study. The hypothesized model is statistically tested simultaneously to examine its consistency with the data through goodness of fit measures.

Confirmatory factor analysis (CFA) is a type of structural equation modeling (SEM), which deals specifically with measurement models that is relationship between observed measures or indicators (e.g. Test items, test scores etc.) and the latent variables or factors. A fundamental feature of CFA is its hypothesis–driven nature. In CFA, the researcher specifies the number of factors and the pattern of indicator factor loading in advance, thus the researcher must have a firm prior sense,

Table 7. Model fit indices for confirmatory factor analysis (CFA) -advantages

	χ^2	DF	P	Normed χ^2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Advantages	18.126	12	.112	1.510	.989	.967	.988	.991	.996	.015	.035

based on past evidence and theory of the factors that exist in the data. In order to evaluate the advantages of the electronic resources compared to the print resources we use the Structural Equation Modeling (SEM) and test the hypothesis;

H_1: Save time of the user is an advantage
H_2: Get variety of information is an advantage.
H_3: Get scholarly information is an advantage.
H_4: Better management of information is an advantage.
H_5: Get latest information is an advantage.
H_6: E-resources affect the reading habit so it is not be encouraged is an advantage.
H_7: Fulfill the information need is an advantage.
H_8: Any other uses is an advantage

MODEL FIT INDICES FOR CONFIRMATORY FACTOR ANALYSIS (CFA) –ADVANTAGES

A study of results in table 7 indicates a reasonable fit model as all the values are above the standard limits.

THE REGRESSION COEFFICIENTS -ADVANTAGES

Table 8 indicates that;

H_1: Save time of the user is an advantage

The results exhibited in Table 8 revealed that the regulatory construct, 'Save time of the user' had significant influence on advantage of e-resources as the standardized direct effect of this construct on advantage of e-resources was 0.737, which is more than 0.4 (also *p* value was significant). So the hypothesis H_1 is accepted and conclude that save time of the user is an advantage

Table 8. The regression coefficients -advantages

Path	Regression Coefficient	C.R.	P	Variance Explained (%)	Rank
Save time of the user → Advantage	0.737	19.956	<0.001	54.4	4
Get variety of information → Advantage	0.818	24.329	<0.001	66.9	2
Get scholarly information →Advantage	0.888	29.861	<0.001	78.8	1
Better management of information → Advantage	0.779	22.048	<0.001	60.7	3
Get latest information →Advantage	0.620	15.328	<0.001	38.4	5
E-resources affect the reading habit → Advantage	0.211	4.529	<0.001	4.5	8
Fulfill the information needs →Advantage	0.552	13.135	<0.001	30.5	6
Any other uses→ Advantage	0.385	8.582	<0.001	14.8	7

H_2: Get variety of information is an advantage.

The results exhibited in Table 8 revealed that the regulatory construct Get variety of information had significant influence on advantage of e-resources as the standardized direct effect of this construct on advantage of e-resources was 0.818, which is more than 0.4 (also *p* value was significant). So the hypothesis $H_2$is accepted and concludes that Get variety of information is an advantage.

H_3: Get scholarly information is an advantage.

The results exhibited in Table 8 revealed that the regulatory construct Get scholarly information had significant influence on advantage of e-resources as the standardized direct effect of this construct on advantage of e-resources was 0.888, which is more than 0.4 (also *p* value was significant). So the hypothesis $H_3$is accepted and conclude that Get scholarly information is an advantage.

H_4: Better management of information is an advantage.

The results exhibited in Table 8 revealed that the regulatory construct Better management of information had significant influence on advantage of e-resources as the standardized direct effect of this construct on advantage of e-resources was 0.779, which is more than 0.4 (also *p* value was significant). So the hypothesis $H_4$is accepted and conclude that Better management of information is an advantage.

H_5: Get latest information is an advantage.

The results exhibited in Table 8 revealed that the regulatory construct Get latest information had significant influence on advantage of e-resources as the standardized direct effect of this construct on advantage of e-resources was 0.620, which is more than 0.4 (also *p* value was significant). So the hypothesis H_5 is accepted and concludes that Get latest information need is an advantage.

H_6: E-resources affect the reading habit so it is not be encouraged is an advantage.

The results exhibited in Table 8 revealed that the regulatory construct E-resources affect the reading habit had no significant influence on advantage of e-resources as the standardized direct effect of this construct on advantage of e-resources was 0.211, which is less than 0.4 (also *p* value was significant). So the hypothesis H_6 is rejected and conclude that E-resources affect the reading habit is not an advantage.

H_7: Fulfill the information need is an advantage.

The results exhibited in Table 8 revealed that the regulatory construct 'Fulfill the information' had significant influence on advantage of e-resources as the standardized direct effect of this construct on advantage of e-resources was 0.552, which is more than 0.4 (also *p* value was significant). So the hypothesis H_7 is accepted and conclude that fulfill the information needs is an advantage.

H_8: Any other uses is an advantage

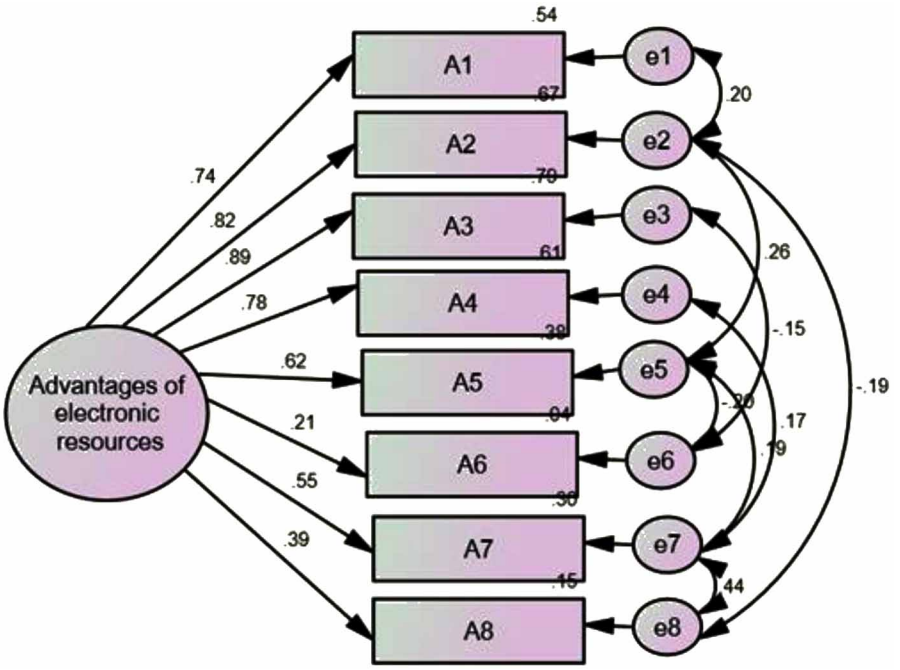
The results exhibited in Table 8 revealed that the regulatory construct 'Any other uses' had no significant influence on advantage of e-resources as the standardized direct effect of this construct on advantage of e-resources was 0.385, which is less than 0.4 (also *p* value was significant). So the hypothesis H_8 is rejected and conclude that any other uses is not an advantage.

BENEFITS OF ELECTRONIC RESOURCES FOR ACCESSING SCHOLARLY INFORMATION

Here use the SEM to evaluate the benefits of electronic resources for accessing scholarly information. That is in this case using SEM we test the hypothesizes

H_1: Information being available at any time is a Benefit
H_2: Access from any location is a Benefit.
H_3: Diversity of resources is a Benefit.

Figure 7.



H_4: User friendly is a Benefit.
H_5: Forwarded to others easily is a Benefit.
H_6: Downloading/Copying is very easy is a Benefit.
H_7: Access to back issues is very easy is a Benefit.
H_8: Multiple user access is a Benefit
H_9: Economical is a Benefit.
H_{10}: Easily searchable is a Benefit.
H_{11}: Links to related information is a Benefit.
H_{12}: Any other Benefits/Usefulness is a Benefit

Table 9. Model fit Indices for CFA-benefits

	χ2	DF	P	Normed χ2	GFI	AGFI	NFI	TLI	CFI	RMR	RMSEA
Benefits of electronic resources	37.991	28	.099	1.357	.985	.957	.986	.991	.996	.012	.029

Table 10. The regression coefficients -benefits

Path	Regression Coefficient	C.R.	P	Variance explained (%)	Rank
Information being available at anytime →Benefit	0.534	12.595	<0.001	51.9	4
Access from any location →Benefit	0.527	12.389	<0.001	28.5	11
Diversity of resources →Benefit	0.662	16.837	<0.001	27.8	12
User friendly →Benefit	0.760	21.062	<0.001	43.8	7
Forwarded to others easily →Benefit	0.664	16.913	<0.001	57.7	2
Downloading/Copying is very easy →Benefit	0.628	15.605	<0.001	44.1	6
Access to back issues is very easy →Benefit	0.835	25.464	<0.001	39.4	8
Multiple user access →Benefit	0.757	20.913	<0.001	69.7	1
Economical →Benefit	0.720	19.190	<0.002	57.3	3
Easily searchable →Benefit	0.579	13.974	<0.003	33.3	10
Links to related information →Benefit	0.707	18.630	<0.004	33.6	9
Any other Benefits/Usefulness→ Benefit	0.577	13.911	<0.005	50.0	5

MODEL FIT INDICES FOR CFA-BENEFITS

The Table-9 indicates a reasonable fit model as all the values are above the standard limits.

THE REGRESSION COEFFICIENTS -BENEFITS

Table 9 indicates that;

H_1: Information being available at any time is a Benefit

The results exhibited in Table 10 revealed that the regulatory construct Information being available at any time has significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.534which is more than 0.4 (also *p* value was significant). So the hypothesis$H_1$is accepted and conclude that Information being available at any time is a Benefit.

H_2: Access from any location is a Benefit.

The results exhibited in Table 10 revealed that the regulatory construct Access from any location has significant influence on Benefit of e-resources as the standardized

direct effect of this construct on Benefit of e-resources was 0.527which is more than 0.4 (also *p* value was significant). So the hypothesis$H_2$is accepted and conclude that Access from any location is a Benefit.

H_3: Diversity of resources is a Benefit.

The results exhibited in Table 10 revealed that the regulatory construct Diversity of resources has significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.662which is more than 0.4 (also *p* value was significant). So the hypothesis$H_3$is accepted and conclude that Diversity of resources is a Benefit.

H_4: User friendly is a Benefit.

The results exhibited in Table 10 revealed that the regulatory construct User friendly has significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.760which is more than 0.4 (also *p* value was significant). So the hypothesis$H_4$is accepted and conclude that User friendly is a Benefit.

H_5: Forwarded to others easily is a Benefit.

The results exhibited in Table 10 revealed that the regulatory construct Forwarded to others easily has significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.664which is more than 0.4 (also *p* value was significant). So the hypothesis$H_5$is accepted and conclude that Forwarded to others easily is a Benefit.

H_6: Downloading/Copying is very easy is a Benefit.

The results exhibited in Table 10 revealed that the regulatory construct Downloading/Copying is very easy has significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.628which is more than 0.4 (also *p* value was significant). So the hypothesis $H_6$is accepted and conclude that Downloading/Copying is very easy is a Benefit.

H_7: Access to back issues is very easy is a Benefit.

The results exhibited in Table 10 revealed that the regulatory construct Access to back issues is very easy has significant influence on Benefit of e-resources as the

standardized direct effect of this construct on Benefit of e-resources was 0.835which is more than 0.4 (also *p* value was significant). So the hypothesis $H_7$is accepted and conclude that Access to back issues is very easy is a Benefit.

H_8: Multiple user access is a Benefit

The results exhibited in Table 10 revealed that the regulatory construct Multiple user access had significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.757 which is more than 0.4 (also *p* value was significant). So the hypothesis $H_8$is accepted and conclude that Multiple user access is a Benefit.

H_9: Economical is a Benefit.

The results exhibited in Table 10 revealed that the regulatory construct Economical had significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.720 which is more than 0.4 (also *p* value was significant). So the hypothesis $H_{10}$is accepted and concludes that Economical is a Benefit.

H_{10}: Easily searchable is a Benefit.

The results exhibited in Table 10 revealed that the regulatory construct Easily searchable had significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.579, which is more than 0.4 (also *p* value was significant). So the hypothesis $H_{10}$is accepted and conclude that easily searchable is a Benefit.

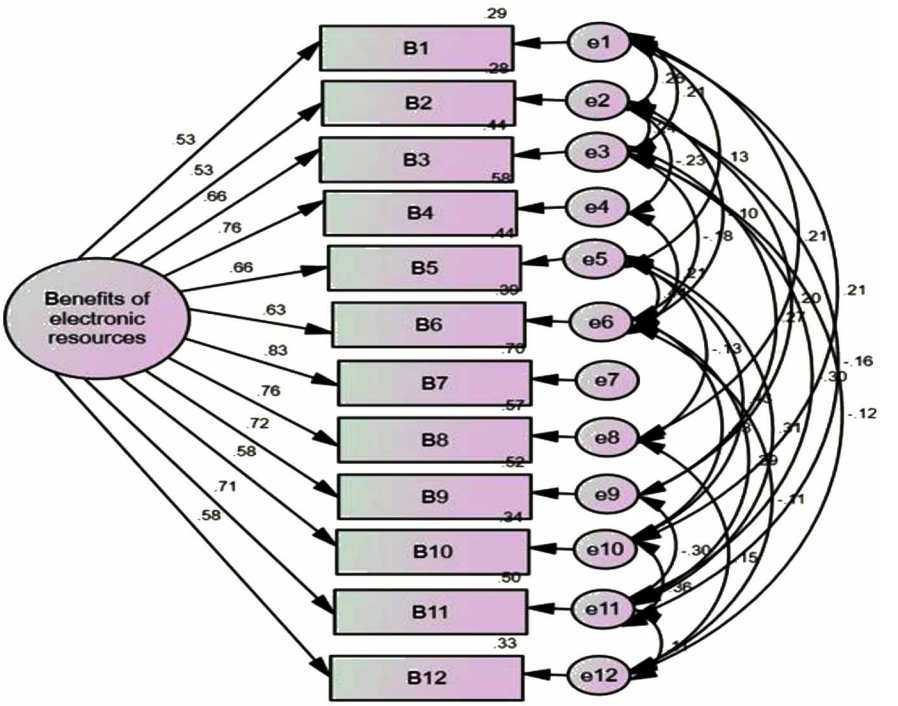
H_{11}: Links to related information is a Benefit.

The results exhibited in Table 23 revealed that the regulatory construct Links to related information had significant influence on Benefit of e-resources as the standardized direct effect of this construct on Benefit of e-resources was 0.707, which is more than 0.4 (also *p* value was significant). So the hypothesis $H_{11}$is accepted and concludes that Links to related information is a Benefit.

H_{12}: Access to back issues is very easy is a Benefit

The results exhibited in Table 10 revealed that the regulatory construct Any other Benefits/Usefulness had significant influence on Benefit of e-resources as the

Figure 8.



standardized direct effect of this construct on Benefit of e-resources was 0.577, which is more than 0.4 (also *p* value was significant). So the hypothesis H_{12} is accepted and conclude that Any other Benefits/Usefulness is a Benefit.

CONCLUSION

The initiation of electronic resources has significant impact on the usage of traditional print resources in libraries. While testing various hypothesizes under 'use of electronic resources compared to the print resources', it is found that two hypothesizes ie, H_6 & H_8 are rejected. The hypothesize $H_{6\,is}$ rejected and state that 'E-resources affect the reading habit so it is not be encouraged' is not an advantage. Similarly the regulatory construct 'Any other uses' had no significant influence on advantage of e-resources. All the twelve hypothesizes under 'Benefits of electronic resources for accessing scholarly information' are accepted because the regulatory constructs have significant influence on Benefit of e-resources. To conclude, E-resources have made significant impact and teaching learning process and research activities.

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Chapter 12
Dissemination of Scholarly Information Among the Research Scholars Through Social Networks and Media in Madurai Kamaraj University and Manonmaniam Sun

P. Pitchaipandi
Alagappa University, India

ABSTRACT

This chapter tries to analyse the impact and use of social media among the research scholars in Madurai Kamaraj University and Manonmaniam Sundaranar University. The result of the study found that 66 (56.90%) were Manonmaniam Sundaranar University and the Residual respondents 50 (43.10%) were Madurai Kamaraj University. Thirty-three (66%) Madurai Kamaraj University were male, and 29 (43.94%) were male from Manonmaniam Sundaranar University. Seventy-three (62.93%) come under the category of 26 to 35 years; 22 (18.97%) were in the category of up to 25 years. Thirty (25.86%) belong to the department of management/commerce; 14 (12.07%) were from the department of education/physical education. Seventy-eight (67.24%) were seeing Facebook, and 33 (28.45%) of the respondents used Twitter.

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INTRODUCTION

Users usually access social media services via web-based technologies on desktops and laptops, or download services that offer social media functionality to their mobile devices (e.g., smartphones and tablets). As users engage with these electronic services, they create highly interactive platforms through which individuals (Kietzmann, Jan, H., Kristopher Hermkens, 2011), communities, and organizations can share, co-create, discuss, participate and modify user-generated content or pre-made content posted online. Networks formed through social media change the way groups of people interact and communicate or stand with the votes. They "introduce substantial and pervasive changes to communication between organizations, communities, and individuals."

These changes are the focus of the emerging fields of self-studies. Social media differ from paper-based media (e.g., magazines and newspapers) and traditional electronic media such as TV broadcasting, Radio broadcasting in many ways, including quality (Agichtein, Eugene, Carlos Castillo, Debora Donato, Aristides Gionis, Gilad Mishne, 2008), reach, frequency, interactivity, usability, immediacy, and performance. Social media outlets operate in a dialogic transmission system (many sources too many receivers) (Pavlik & MacIntoch, John and Shawn, 2015*)*.. This is in contrast to traditional media which operates under a mono-logic transmission model (one source to many receivers), such as a newspaper which is delivered to many subscribers, or a radio station which broadcasts the same programs to an entire city. Some of the most popular social media websites, with over 100 million registered users, include Facebook (and its associated Facebook Messenger), YouTube, WeChat, Instagram, QQ, QZone, Weibo, Twitter, Tumblr, Telegram, Reddit, Baidu Tieba, LinkedIn, LINE, Snapchat, Pinterest, Viber, MeWe, and VK.

REVIEW OF LITERATURE

The most suitable networks for academic use, which type of activities may be most widely accepted among the students and which social networking tools could be most useful for academic purposes. The results indicate that consumption of social networks in the student population surveyed is very high. In addition, the students show a favourable attitude to lecturers using social networks as an academic resource. However, the frequency of use of such networks for academic activities was rather low and, on average, the most frequently used academic activities are those initiated by the students themselves, such as answering queries among peers or doing coursework. The perceived low academic support on social networks may

mean that lecturers take only limited advantage of their potential Rajab (Muyingo & Ali Murat Kirik, 2017).

Social Networking Sites (SNS) such as Facebook, Whatsapp etc. attracted millions of users, many of whom have integrated these sites into their daily practices. In this paper an attempt is made to find the use pattern of Social Networking Sites among the women students of St. Joseph's College, Tiruchirappalli. Data has been collected from 143 respondents using questionnaire method. The key findings are i)70.6% of the respondents are using Whatsapp ii) 38.5% of the respondents are using SNS for entertainment iii) 30% of the respondents spent 1-2 hours daily for SNS iv) 46.8% of the respondents upload videos and pictures in SNS v) 85.3% of the respondents felt SNS are useful to them. It is followed by suggestions (Franklin & Stella Mary, 2019). The Use of Social Networking Sites by Faculty Members and Students of NIT, Mizoram. The study revealed that most of them were aware with the use of SNSs and they are using it for sharing information and Communication. It also found that Poor internet facility, lack of time, lack of privacy, not allowed in departments and lack of technical knowledge are the main problems faced by the respondents (Esther & Verma, 2016). The usage of Social networking sites among the students of north Bengal University of west Bengal. The study revealed that majority students are using their smartphones, tabs etc. for accessing SNS mainly like Facebook, Twitter, LinkedIn, Academia.edu, Flickr, Blogs, YouTube, Myspace etc. Study also examined that Social networking accounts are used mainly for making friends and friendly communication (Roy, Himanshu & Sarkar, Sangita, 2017). The privacy concerns and network issues are the major issues faced while using social media sites, in her study among the political science students of Dr. Badasaheb Ambedkar Marthwada University, Aurangabad (Shyamla, 2017). The education oriented usage of social networking services need to be promoted through platforms like college websites. In her study regarding the usage of social networking tools in higher education among the colleges of Jammu & Kashmir she found that majority faculty have social media accounts which are mainly used for socialization rather than academic purposes. Study further highlighted the potential of social networking tools in teaching-learning process (Gupta & Sangita, 2014).

OBJECTIVES OF THE STUDY

1. To observe the University and Gender Wise respondents of the research scholars in Madurai Kamaraj University and Manonmaniam Sundaranar University
2. To find out the Age Group of the respondents Research area wise Respondents
3. To analyse the types of Social Networks use by the Research Scholars

4. To examine the Social Networks and Medias Browser and Modules to Use of Social Networks and Medias
5. To find out the respondents access through SNs for Research Citation Indexes (RCI)

METHODOLOGY

The study undertaken by the researcher has attempted in bringing out data among the research scholars they have accessed Social Networks sites and Medias in Madurai Kamaraj University and Manonmaniam Sundaranar University. A total number of 116 questionnaires were received from the respondents from the two Universities. The filed questionnaire of received from the respondents. The sampling techniques framed and there were used. Stratified random samplings apply to this study. Further the study implies the percentage analysis where applicable in the study.

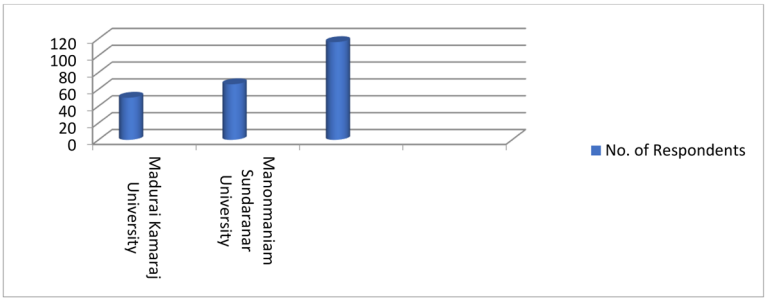
UNIVERSITY WISE RESPONDENTS

Table 1 shows that more than half of the respondent 66 (56.90%) were Manonmaniam Sundaranar University and the residual respondents 50 (43.10%) of them were Madurai Kamaraj University (fig.1).

Table 1. University -wise respondents

S .No	Name of the University	No. of Respondents	Percentage
1	Madurai Kamaraj University	50	43.10
2	Manonmaniam Sundaranar University	66	56.90
		116	100

Figure 1. University wise respondents



GENDER- WISE RESPONDENTS

The descriptive analysis on the table 2 designated that more than half of the respondent 33 (66%) Madurai Kamaraj University were Male and 29 (43.94%) of them Male responded from Manonmaniam Sundaranar University. On the other hand, the remaining 17 (34%) and 37 (56.06%) of respondents were Female respondents were Madurai Kamaraj University and Manonmaniam Sundaranar University respondents responded to the study (fig. 2).

AGE GROUP OF THE RESPONDENTS

Table 3 analysed that majority of the respondents 73 (62.93%) were come under the category of 26 to 35 years, 22 (18.97%) were in the category of up to 25 years, 19 (16.38%) were belong to the category of 36 to 45 years and the remaining 2 (1.72%) were in the category of above 45 years.

Table 2. Gender wise respondents

Gender	Name of the University		Total
	Madurai Kamaraj University	Manonmaniam Sundaranar University	
Male	33 (66%)	29 (43.94%)	62
Female	17 (34%)	37 (56.06%)	54
	50	66	116

Figure 2. Gender wise respondents

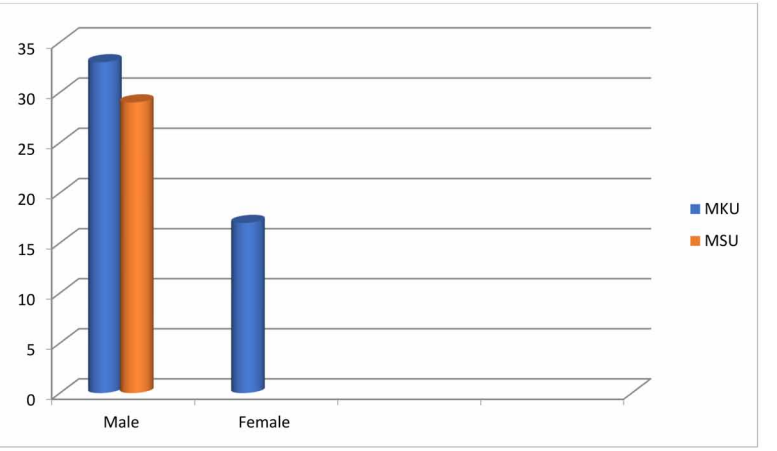


Table 3. Age group of the respondents

S .No	Age Group	No .of Respondents	Percentage
1	Below 25 years	22	18.97
2	26-35 years	73	62.93
3	36-45 years	19	16.38
4	Above 45 years	2	1.72
	Total	116	100

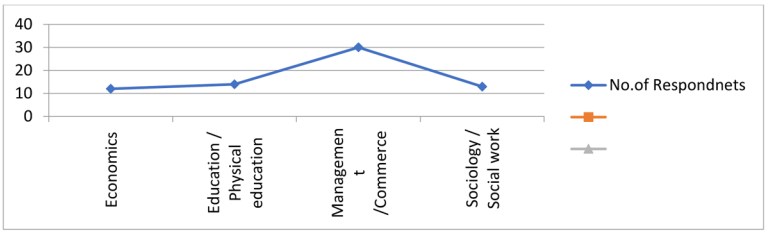
RESEARCH AREAS WISE RESPONDENTS

Table 4 revealed that one fourth of the respondents 30 (25.86%) belong to the department of Management/commerce, 14 (12.07%) were from the department of education/ physical education, 13 (11.21%) were from Sociology/ Social Work/ history and Geography, 12 (10.34%) were from economics department and 3(2.59%) were from Anthropology/Criminology/political science/ others (fig.3).

Table 4. Research areas- wise respondents

S. No	Research Area	No .of Respondents	Percentage
1	Economics	12	10.34
2	Education / Physical education	14	12.07
3	Management /Commerce	30	25.86
4	Sociology / Social work	13	11.21
5	Library & Information Science	9	7.76
6	History /Geography	13	11.21
7	Philosophy /Psychology	5	4.31
8	Anthropology /Criminology	3	2.59
9	Journalism & Mass Communication	11	9.48
10	Political Science	3	2.59
11	Others	3	2.59
	Total	116	100

Figure 3. Research areas- wise respondents



TYPES OF SOCIAL NETWORKS USE BY THE RESEARCH SCHOLARS

Table 5 observed that majority of the respondents 78 (67.24%) were seeing Facebook, One third 33 (28.45%) of the respondents used Twitter. Majority 89 (76.72%) of the respondents used YouTube, Fig.2 shows that majority 101 (87.07%) of the respondents used Whatsapp, more than half 60 (51.72%) of the respondents used Google + (fig.4).

TYPES OF USAGE FOR SOCIAL NETWORKS AND MEDIAS BROWSERS

Table 6 shows that majority 104 (89.66%) of respondents using Google chrome, 37 (31.90%) more than are the respondents using Internet explorer, and 36 (31.03%) more than are the respondents using Mozilla, 11 (9.48%) of respondents using in other places.

Table 5. Types of social networks use by the research scholars

S .No	Types SNS	No. of Respondents	Percentage
1	Face book	78	67.24
2	Twitter	33	28.45
3	YouTube	89	76.72
4	Tumbler/Messenger	23	19.83
5	Whatsapp	101	87.07
6	Google +	60	51.72
7	Instagram	24	20.69
8	Others	18	15.52

Figure 4. Types of social networks by the research scholars

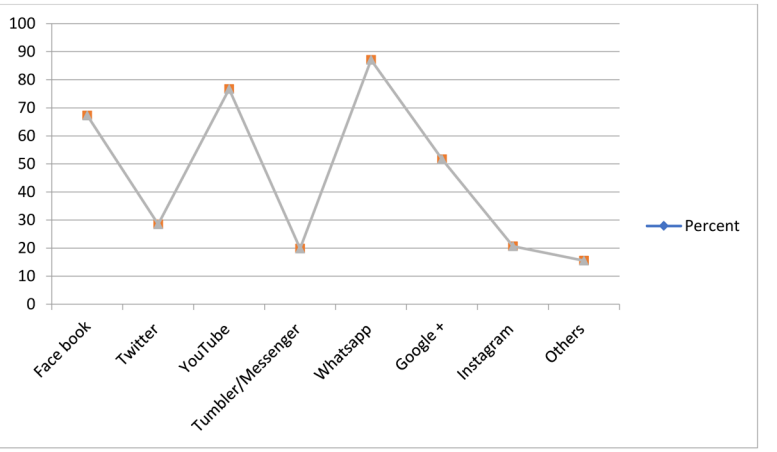


Table 6. Types of usage for social networks and medias browsers

S.No	Browser	No .of Respondents	Percentage
1	Mozilla	36	31.03
2	Internet explorer	37	31.90
3	Google chrome	104	89.66
4	Any other, other places specify	11	9.48

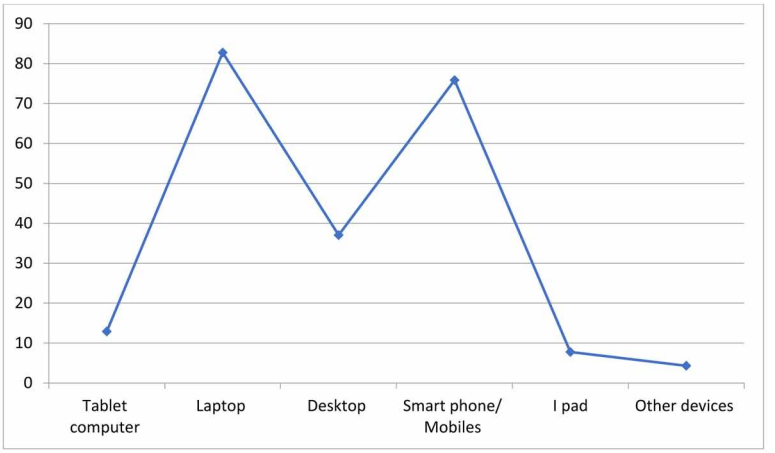
TYPES OF TOOLS USE FOR SNS/MEDIAS

Table 7 witnessed that majority 96 (82.76%) of respondents used to Laptop, 88 (75.86%) majority of respondents used to Smart phone/ Mobiles, nearly half 43 (37.07%) of respondents used to Desktop, 15 (12.93%) of respondents used to Tablet computer, 9 (7.76%) of respondents used to I pad and 5 (7.76%) of respondents used in other devices.

Table 7. Types of tools use for SNS/medias

S.No	SNS/Medias Tools	No .of Respondents	Percentage
1	Tablet computer	15	12.93
2	Laptop	96	82.76
3	Desktop	43	37.07
4	Smart phone/ Mobiles	88	75.86
5	I pad	9	7.76
6	Other devices	5	4.31

Figure 5. Types of tools of SNs use



PLACES OF ACCESS THE SNS/MEDIAS FOR RESEARCH ACTIVITIES

The descriptive analysis from Table 8, the majority 80 (68.97%) of respondents belong to the access home and Department /Hostel, One third 32 (27.59%) of the respondents belong to access in Central library, 15 (12.93%) of the respondents access Friends /Relatives house, 7 (6.03%) of the respondents access Cybercafé and 14 (12.07%) of respondents access in other places.

Table 8. Places of access the SNS/medias for research activities

S.No	Place	No .of Respondents	Percentage
1	Home	80	68.97
2	Department /Hostel	80	68.97
3	Central library	32	27.59
4	Friends /Relatives house	15	12.93
5	Cybercafé	7	6.03
6	Other places	14	12.07

MODULES TO USE OF SOCIAL NETWORKS AND MEDIAS

The descriptive analysis observed from Table 9, the majority 75 (64.66%) of respondents used to SNS/Medias in Group sites (e. g. Yahoo Group, Google Group and What Sapp Group etc. more than half 59 (50.86%) of respondents used to Instant Messaging Sites (Whatsapp), 28 (24.14%) of respondents used to Profile based multi –dimensional sites (e.g. Friendster and Facebook), 20 (17.24%) of respondents used to Short Messaging Services (Twitter), 15 (12.93%) of respondents used to Blogs, 14 (12.07%) of respondents used to Discussion Forums, and 11 (9.48%) of respondents used to Other SNs and Medias.

Table 9. Modules to use of social networks and medias

S. No	SNS/Medias Modules	No. of Respondents	Percentage
1	Group sites (e. g. Yahoo Group, Google Group and What Sapp Group etc.	75	64.66
2	Blogs	15	12.93
3	Discussion Forums	14	12.07
4	Instant Messaging Sites (Whatsapp)	59	50.86
5	Short Messaging Services (Twitter)	20	17.24
6	Profile based multi –dimensional sites (e.g. Friendster and Facebook)	28	24.14
7	Other SNs and Medias	11	9.48

Table 10. Types of inspirations for social networks and medias

S. No	Types of Inspirations	No .of Respondents	Percentage
1	Self- Inspiration	68	58.62
2	Inspiration from faculties	19	16.38
3	Inspiration from librarians	15	12.93
4	Inspiration from friends/ Relatives	53	45.69
5	Others	9	7.76

TYPES OF INSPIRATIONS FOR SOCIAL NETWORKS AND MEDIAS

The descriptive analysis study from Table 9 records majority 68 (58.62%) of respondents belong to Self- Inspiration, 53 (45.69%) nearly half of the respondents belong to Inspiration from friends/ Relatives, 19 (16.38%) of respondents belong to Inspiration from faculties, 15 (12.93%) of the respondents belong to Inspiration from librarians and 9 (7.76%) of the respondents belong to Inspirations for Others.

TYPES OF PREFER FOR THE RESEARCH CITATION INDEXES (RCI)

Table 11 explains majority 94 (81.03%) of respondents were belong to preferred Google scholar, 27 (23.28%) of respondents were belong to Preferred Scopus and Web of Science, 22 (18.97%) of respondents were belong to Preferred for other Research

Table 11. Types of prefer for the research citation indexes (rci)

S.No	Research Citation Indexes	No .of Respondents	Percentage
1	Google scholar	94	81.03
2	Cite seer	6	5.17
3	Get CITED	4	3.45
4	Math scinet	3	2.59
5	Scopus	27	23.28
6	Web of Science	27	23.28
7	EBSCO	8	6.90
8	ProQuest	8	6.90
9	Others	22	18.97

Citation Indexes, 8 (6.90%) of respondents were belong to Preferred EBSCO, and ProQuest, 6 (5.17%) of respondents were belong to Preferred Cite seer, 4 (3.45%) of respondents were belong to Preferred Get CITED, 3 (2.59%) of respondents were belong to Preferred Math Scinet.

CONCLUSION

The above the study discussed that majority 104 (89.66%) of respondents using Google chrome, 37 (31.90%) more than are the respondents using Internet explorer. 96 (82.76%) of respondents used to Laptop, 88 (75.86%) of respondents used to Smart phone/ Mobiles, nearly half 43 (37.07%) of respondents used to Desktop. The majority 80 (68.97%) of respondents belong to the access home and Department /Hostel. the majority 75 (64.66%) of respondents used to SNS/Medias in Group sites (e. g. Yahoo Group, Google Group and What Sapp Group etc. 68 (58.62%) of respondents belong to Self- Inspiration, majority 94 (81.03%) of respondents were belong to preferred Google scholar, 27 (23.28%) of respondents were belong to Preferred Scopus and Web of Science.

Social media has offered a new platform for peer pressure with both positive and negative communication. From Facebook comments to likes on Instagram, how the youth communicate and what is socially acceptable is now heavily based on social media. Social media does make kids and young adults more susceptible to peer pressure. The American Academy of Paediatrics has also shown that bullying, the making of non-inclusive friend groups, and sexual experimentation have increased situations related to cyber bullying, issues with privacy, and the act of sending sexual images or messages to someone's mobile device. On the other hand, social media also benefits the youth and how they communicate. Through the use of social media, kids and young adults are able to keep in touch with friends and family, make more friends, participate in community engagement activities and services, expand on certain ideas with like-minded individuals, and many other countless tasks.

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About the Contributors

C. Baskaran is presently serving as the Librarian/Professor in Alagappa University, Karaikudi, India. He successfully completed a Major Research Project has funded by ICSSR, New Delhi and currently also taking up a Major Research Project from same funding agency (ICSSR). He has authored three books in Library and Information Science. He is a research guide in the Dept. of Library and Information Science, Alagappa University and he guided and awarded eight Ph.D scholars and eight Scholars pursuing Ph.D under his guidance. He has published more than 100 articles to his credit. He was an adjudicator and examiner for Viva-voce exams of Many Ph.D in several Universities. Moreover, he is an editor of a Journal and Editorial advisory board member for journals of Library and Information Science. He visited and Presented papers at International Conferences in Malaysia and Greece. He has been holding charge additionally SWAYAM /MOOCs Co-ordinator of the University. He is a recipient of EET-Award of Research Excellence-2019.

* * *

P. Murugiah has completed UG and PG in Library and Information Science in Annamalai University, Tamilnadu. He attended and presented many papers at conferences and seminars. He published many research papers in different Journals in Library and Information Science. He has more than five years as Librarian in St. Pauls Engineering Collges, Cuddalore Dist. Presently he is serving at Central Electro Chemical Reteach Institute, Karaikudi (CSIR-CERI).

Binu P. C. qualified BLIS, MLIS, and Ph.D in Library and Information Science. He has 15 years of experience as Librarian, earlier he worked Federal Institute of Engineering and Technology, Angamali in Kerala State, India. Presently he is a Librarian in St. Pauls College, Kamalachery, Ernakulam, Kerala, India. He has UGC NET Qualified and He did his Ph.D in Library and Information Science. He presented papers in National and International Conference and published many articles in National and International Journals. He has developed institutional repository of the St. Pauls College Library and he had been given many orientation and Awareness Programme conducted in the College.

P. Pitchaipandi has completed Master in Library and Information Science and Master of Philosophy in Library and Information Science from Madurai Kamaraj University, Madurai, India. He has been worked as Library Trainee at SRM University, Chennai, India. He has got an opportunity for worked as a Research Associate under ICSSR Project at Alagappa University. Now he is a fulltime Research Scholar in the Dept. of Library and Information Science, Alagappa University, Karaikudi, India. He has presented some papers in the conferences.

P. Rameshbabu has qualified BLIS and MLIS in Madurai Kamaraj University and IGNOU respectively. He awarded his Ph.D Library and Information Science in Alagappa University, Karaikudi. He had been worked as Librarian in several Engineering Colleges in Tamilnadu. Presently he is working as Manager (Archives), Alliance Broadcast Pvt. Ltd. Chennai. He has an exposure with digital archive and e-Library experiences in media industry.

S. Saravanan is presently working as College Librarian in Government Arts College. Ariyalur, Tamil Nadu, India. Presently he is a part-time Ph.D research Scholar in the Department of Library and Information Science, Alagappa University, Karaikudi, India.He has more than 15 years of professional experiences across various academic and corporate institutions. Currently, he is a Part-time Research Scholar at Alagappa University, pursuing his Doctoral degree in Library and Information Science. His area of specialization includes Digital Library, Library services through social networking, Scientometric etc. He has attended and presented papers in various national and international conferences, seminars and have the credit of publishing few research papers in his name.

P. A. Senthilkumar is presently working as a Librarian and Information Assistant in Anna Centenary Library, Chennai. He has published papers in various journals & presented papers at various national and international conferences. He also served as organizing committee member in CONEXGENLIB 2018", the National Conference on "Global Trends and Innovations in Libraries and Information Centers". He has published papers in National and International Journals.

P. Veermuthu is presently working as a Librarian and information assistant in Anna Centenary Library, Chennai. He is pursuing Ph.D in the department of Library and information Science, Alagappa University. He has presented may research papers at many conferences. He has published many papers various national and international Journals. He has qualified SET examination in Library and Information Science. He has published several research papers in Journals and conference proceedings.

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