Altmetrics: Metrics beyond traditional citations

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Abstract

Altmetrics is a movement that aims to capture new and previously invisible types of impact of scholarly publications on social web platforms such as news sites, Wikipedia, blogs, microblogs, social bookmarking tools and online reference managers. For evaluating the present work the authors used an online aggregator Altmetric.com which helps in exploring and collecting the social attention score of the research output globally through different platforms. For the collection of data, the authors used a subscription based aggregator Altmetric.com. The data of 1266 journals were collected on certain parameters: Platforms; Mention types; Twitter Demographics; Department wise. First the data were collected for analyzing the possible quantity of platforms used for mentioning the research output of these journals with their altmetric mention score, then followed by data collection as per mention type with their social attention score like Facebook, News Story, Twitter etc. Another parameter which was twitter demographics of the countries in which the data were collected of 207 countries in terms of posts and profiles. Then the last collection was collected to analyze the altmetric attention score taken by the selected departments. In this way data was collected as per objectives and made the study relevant and result oriented.

Keywords: Altmetrics, social bookmarking, attention score, Twitter Demographics

INTRODUCTION

Scholarly communication may be defined as a dialogue between a scholarly writer and a scholarly reader. It is a process of sharing, disseminating and publishing research findings of academics and researchers, so that the generated academic content are made available to the global communities. With the growth in the scholarly literature, it was not only about reading and writing factor but about the use and acknowledgement of the scholarly work which emerged as the new concept called citation. The emergence of internet, information technology and particularly web 2.0 brought new development in the production and acknowledgement of research publications during the 20th century. It was 2010, when "Jason Priem" came with the term "Altmetrics" as a generalization of article level metrics and has its roots in the #altmetrics hash tag. Galligan and Corrie (2013) find that altmetrics have an important future role to play and that they offer the potential to revolutionize the analysis of the value and impact of scholarly work.

The emergence of social media has made a huge difference in our lives. The extension of social media to evaluate performance in academics is a new entity. Alternative metrics or altmetrics is a relatively new and emerging sector which utilizes the platform of various outlets of social media to determine the impact of a research work. Blogs, Twitter, Facebook, etc. are now commonly used avenues for research discussion (Shekhawat & Chauhan, 2018). Barros (2015) finds that alternative metrics or "altmetrics" can be defined as the study and use of academic impact measures based on the activity of online tools and environments. Altmetrics aim to measure the different forms and patterns of meaning and use of scientific products, looking not only for publishing in traditional media, but also the broader process of dissemination in emerging environments. Its goal is to update the scientific concept of influence in a century characterized by the rapid spread of information and adoption of social media on a global scale. Kortelainen, Katvala and Länsman (2017) find the "concept of attention which is applied in two altmetric studies concerning: (1) the use of social media tools on the web pages of scientific journals, and indications of attention in these pages received, and (2) attention received by the radio news on the web page of an indigenous radio station. The purpose is to reveal characteristics of web publications connected to the attention they receive. In altmetric research, data originating from several *sources* can reflect the societal impact a project or a publication may have, not only the impact it has in science. Attention economy theory supports the interpretation of altmetric data". De MeloMaricato and Lima (2017) find that "altmetrics emerged in 2010, proposing a set of new indicators that measure the impact of academic output from media and social networks data. This research examines some aspects of the impact made possible by altmetrics from Facebook and Twitter data analysis. We selected 100 papers, from the collection of the Scientific Electronic Library Online - SciELO, with higher scores (Altmetric Score), from altmetric.com tool. It was observed that the IS Impact is higher than IA and that Facebook has a greater number of users categorized in the IS profile than Twitter". Baheti and Bhargava (2017) find the quality and impact of scientific research is traditionally measured by citation-based metrics. However, the internet and social media revolution have led to radical changes in the way scientific information is shared and how it impacts the world. Alternative metrics (altmetrics) is a rapidly evolving measure to quantify social media attention received by a scientific work. It is a complement to

the conventional metrics and has tremendous potential in enabling faster alternative ways of evaluating research impact.

Introduction to Altmetrics

"In 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 hashtag. . 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 are metrics and qualitative data that are complementary to traditional, citation-based metrics. They can include (but are not limited to) peer reviews on Faculty of 1000, citations on Wikipedia and in public policy documents, discussions on research blogs, mainstream media coverage, bookmarks on reference managers like Mendeley,and mentions on social networks such as twitter. Sourced from the Web, altmetrics can tell you a lot about how often journal articles and other scholarly outputs like datasets are discussed and used around the world. For that reason, altmetrics have been incorporated into researchers' websites, institutional repositories, journal websites, and more' (Altmetrics, 2018).As perBarros (2015)alternative metrics or "altmetrics" can be defined as the study and use of academic impact measures based on the activity of online tools and environments. Altmetrics aim to measure the different forms and patterns of meaning and use of scientific products, looking not only for publishing in traditional media, but also the broader process of dissemination in emerging environments. Its goal is to update the scientific concept of influence in a

century characterized by the rapid spread of information and adoption of social media on a global scale.

Altmetrics are often referred to as if they are a single class of indicator, but they're actually quite diverse and include:

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 (Altmetrics, 2018). As perBarnes (2015) altmetrics is an alternative metrics to measure research impact by tracking social activity around an article or other types of output. Instead of using traditional citation counts and impact factors, Altmetrics measures online scholarly interaction by calculating the number of mentions in social media sites (e.g. tweeters, Facebook, and blogs) and paper-sharing platforms or reference managers (e.g. Mendeley and CiteULike).

Each of these different dimensions can tell a much more nuanced story of research's value than citation counts alone are able to.It is important to bear in mind that metrics (including citation-based metrics) are merely indicators–they can point to interesting spikes in different types of attention, etc but are not themselves evidence of such.To get at true evidence of impact, you need to dig deeper into the numbers and look at the qualitative data underneath: who's saying what about research, where in the world research is being cited, reused, read etc. and so on (Altmetrics, 2018).

Categories

Altmetrics are a very broad group of metrics, capturing various parts of impact a paper or work can have. A classification of altmetrics was proposed by ImpactStory in September 2012 and a very similar classification is used by the Public Library of Science:

Viewed – HTML views and PDF downloads

Discussed – journal comments, science blogs, Wikipedia, Twitter, Facebook and other social media

Saved – Mendeley, CiteULike and other social bookmarks

Cited- citations in the scholarly literature, tracked by Web of Science, Scopus, CrossRef and others

Recommended – for example used by F1000Prime.

Viewed

One of the first alternative metrics to be used was the number of views of a paper. Traditionally, an author would wish to publish in a journal with a high subscription rate, so many people would have access to the research. With the introduction of web technologies it became possible to actually count how often a single paper was looked at. Typically, publishers count the number of HTML views and PDF views. As early as 2004, the BMJ published the number of views for its articles, which was found to be somewhat correlated to citations.

Discussed

The discussion of a paper can be seen as a metric that captures the potential impact of a paper. Typical sources of data to calculate this metric include Facebook, Google+, Twitter, Science Blogs, and

Wikipedia pages. Some researchers regard the mentions on social media as citations. For example, citations on a social media platform could be divided into two categories: internal and external. For instance, the former includes retweets; the latter refers to tweets containing links to outside documents.

Recommended

Platforms may even provide a formal way of ranking papers or recommending papers otherwise, such as Faculty of 1000.

Saved

It is also informative to quantify the number of times a page has been saved, or bookmarked. It is thought that individuals typically choose to bookmark pages that have a high relevance to their own work, and as a result, bookmarks may be an additional indicator of impact for a specific study. Providers of such information include science specific social bookmarking services such as CiteULike and Mendeley.

Cited

The cited category is a narrowed definition, different from the discussion. Besides the traditional metrics based on citations in scientific literature, such as those obtained from Google Scholar, CrossRef, PubMed Central, and Scopus, altmetrics also adopt citations in secondary knowledge sources. For example, ImpactStory count the number of times a paper has been referenced by Wikipedia Plum Analytics also provides metrics for various academic publications, seeking to track research productivity. PLOS is also a tool that may be used to utilize information on engagement(Altmetrics adoption, 2018).

Advantages

Altmetrics have a number of advantages over citation-based metrics:

They are quicker to accumulate than citation-based metrics: By virtue of being sourced from the Web and not from journals and books, it's possible to monitor and collate mentions of work online as soon as it's published (Altmetrics, 2018). As perCabrera, Roy and Chisolm (2018) traditionally the impact of research was measured by citation-based metrics. When a research paper was published, it was difficult to measure its impact. After it was published it would take years to know how much impact it has made, but with the emergence of social media which has made a huge difference in our lives, has revolutionized the traditional system. Now with the help of social media it becomes easy to know how much impact an article is making, we can simply know by seeing how many likes,shares,downloads and comments are on my published paper.

They can capture more diverse impacts than citation-based metrics: As described above, altmetrics can complement citations in that they help you to understand the many 'flavours' of impact research can have (Altmetrics, 2018).

They apply to more than journal articles and books: Researchers are sharing their data, software, presentations, and other scholarly outputs online more than ever before. That means we can track their use on the Web as easily as we can for articles and books(Altmetrics, 2018).

Limitations

There are a number of limitations to the use of altmetrics:

Altmetrics don't tell the whole story: As described above, altmetrics are a complement to, not a replacement for, things like informed peer review and citation-based metrics. Think of altmetrics as just one tool of many you've got in your toolbox for understanding the full impact of research.

Like any metric, there's a potential for gaming of altmetrics: Anyone with enough time on their hands can artificially inflate the altmetrics for their research. That's why altmetrics providers like Altmetric, PLOS and SSRN have measures in place to identify and correct for gaming. Don't forget to look at the underlying qualitative data to see who has been talking about the research, and what they've been saying.

Altmetrics are relatively new; more research into their use is needed: Though we're learning a lot about how often research is shared online, we don't yet know a lot about why–more research is needed. Until we know more, use and interpret altmetrics carefully (Altmetrics, 2018)

History

Scholarly literature is the work written by the researcher's expert in their field. The scholarly literature is not about to interpret new ideas and knowledge only but it is about to share, disseminate and publish so that a dialogue should be built between a scholarly reader and writer. This thought became possible with the evolution of the printing press which made this scholarly literature available through publishing. People who write research work forward it to academic journals. They submit articles to the editors of the journals, who decide whether or not to publish the article. Then the first scholarly journals came into existence namely "Journal Des Scavans", the earliest academic journal published in Europe in January 1665. As per Banks (2015) Journal Des Scavans was the first academic journal to appear. The first issue was published in Paris in January 1665.

With the passage of time, scholarly journals emerged to publish increasingly which took the scholarly literature to the new level called scholarly communication, means this scholarly work is made available to the global community where it got readability. With the growth in the scholarly literature, it was not only about writing and reading factor but about the quality and use of the work which emerges as the new concept called citation. Due to the continuous increase in the scholarly literature, it became time-consuming for the scholarly work to get publish and then takes time for the work to get cited.Barros (2015) finds that alternative metrics or "altmetrics" can be defined as the study and use of academic impact measures based on the activity of online tools and environments. Altmetrics aim to measure the different forms and patterns of meaning and use of scientific products, looking not only for publishing in traditional media, but also the broader process of dissemination in emerging environments. Its goal is to update the scientific concept of influence in a century characterized by the rapid spread of

information and adoption of social media on a global scale.Eugene Garfield introduced the Indexing and abstracting service which indexes the scholarly work by indexing and abstracting the scholarly journals and made it available online to the global community so that the limitation of the time delay of publishing mechanism can be replaced by timeliness mechanism. After this, some indexing abstracting and citation databases came into existence like Web of Science, Scopus, Biological Abstract, Chemical Abstract etc, which also made this scholarly work more reliable, authentic and of great value for the scholarly community. These databases are of utmost importance in the present time for the researchers to access the vast knowledge of their interest. With this, it is now easy for the researchers to know which work is getting more cited and hence can be fruitful for them so that they can cite the work and acknowledge it in their work in order to become the good authors.

The citation aspect of the scholarly work as mentioned speaks about the quality of the work, but many times it takes too much time for an article to get cited, which is debarring the users to rely on such content. As per Cabrera, Roy and Chisolm (2018)"traditionally the impact of research was measured by citation-based metrics. When a research paper was published, it was difficult to measure its impact. After it was published it would take years to know how much impact it has made, but with the emergence of social media which has made a huge difference in our lives, has revolutionized the traditional system". Another limitation of the citation is that it is confined to that platform only on which they are indexed and accessible, thus its metrics can be measured in only one aspect. But with the ease of the web 2.0 the door to new metrics evolved, thus the traditional metrics became limited. The development of web 2.0 has changed the research publication seeking and sharing within or outside the academy, but also provides new innovative constructs to measure the broad scientific impact of scholarly work. Although the traditional metrics are useful, they might be insufficient to measure immediate and uncited impacts, especially outside the peer-review realm. Thus, the evolution of the new metrics came into existence known as Altmetrics. Shekhawat and Chauhan (2018) find "that the emergence of social media has made a huge difference in our lives. The extension of social media to evaluate performance in academics is a new entity. Alternative metrics or altmetrics is a relatively new and emerging sector which utilizes the platform of various outlets of social media to determine the impact of a research work. Blogs, Twitter, Facebook, etc. are now commonly used avenues for research discussion". Baheti and Bhargava (2017) find the "quality and impact of scientific research is traditionally measured by citation-based metrics. However, the internet and social media revolution have led to radical changes in the way scientific information is shared and how it impacts the world. Alternative metrics (altmetrics) is a rapidly evolving measure to quantify social media attention received by a scientific work. It is a complement to the conventional metrics and has tremendous potential in enabling faster alternative ways of evaluating research impact". Patthi et al. (2017) analyze "the correlation of altmetrics with the traditional citations in medical research. The positive correlation between altmetrics and traditional citations indicates that the two are not entirely different from each other and are familiar with each other. Altmetrics are usually accessible earlier and enable us to evaluate the social impact of scholarly research, almost at the actual time. Much work is needed to develop this research which will focus on the clarity of the impact signal. Thus newer dimensions, such as altmetrics and article-level metrics are an effort to explore the influence of research across the worldwide population". Butler et al. (2017) find that prestige of publication has been based on traditional citation metrics, most commonly journal impact factor. However, the Internet has radically

changed the speed, flow, and sharing of information. Furthermore, the explosion of social media, along with the development of popular professional and scientific websites and blogs, has led to the need for alternative metrics, known as altmetrics, to quantify the wider impact of research. We explore the evolution of current research impact metrics and examine the evolving role of altmetrics in measuring the wider impact of research. We suggest that altmetrics used in research evaluation should be part of an informed peer-review process such as traditional metrics. Finally, traditional and alternative metrics should complement, not replace, each other in the peer-review process. Therefore, in 2008, the Journal of Medical Internet Research started to systematically collect tweets about its articles. Starting in March 2009, the Public Library of Science also introduced article-level metrics for all articles (Altmetrics, 2018).

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Literature review

Research evaluation

During the last decades there has been an increasing need to show the impact of research. Scientists hired by governments and industries, professors in universities, PhDs working for foundations or in research centres, etc. build research results that are directly effective on all parts of our life such as the medicines we take, our economic policies, our approaches to marketing, the educational strategies used in our schools, therapeutic strategies for the mentally distressed or the techniques for harnessing energy for industry. However, the results of all investigations are not equally reliable. In other words, many research results are published daily but all of them do not have the same quality and, equally important, there is a budget constraint in access to all this information. The tremendous number of journals being published and the continued increase in the cost of yearly subscriptions have made increasingly difficult for libraries to maintain adequate subscription lists. At the same time, libraries have been facing a marked decrease in budgets, gifts and other forms of financial support (Archambault & Larivière, 2009).

So, by using scientific methods of research evaluation, we have to choose among them. Evaluations of research output and impact are particularly relevant given the emphasis today on accountability and documenting the value of research. Research evaluation is used to provide accountability for public funds and to make decisions on funding allocation. One of the traditional ways that has been used to evaluate research is citation analysis. However, citations can be created for many different reasons (Borgman & Furner, 2002) and because both publishing and citation traditions vary between disciplines, new methods for measuring have emerged. The newest indicators which measure scientific output through social media are collectively called altmetrics.

Altmetrics

Galligan & Dyas-Correia (2013) point out that citation accounting and journal impact factors have traditionally been used as a means of ascertaining the value of scholarly work and as a way of filtering out only the most significant and relevant material from the huge volume of academic literature produced. As the volume of material has increased and scholarly communication has moved online, the traditional metrics are failing (Priem et al., 2010). Traditional metrics have generally dealt with journals or articles and have not measured other significant research output like blog posts, slideshows, databases, and other important scholarly outputs. New ways are needed to measure the visibility and impact of research. In this context, social media may generate new ways to measure scientific output (Priem & Hemminger, 2010).

Altmetrics or social media metrics were introduced in 2010 by Prime et al. (2010) as an alternative way of measuring broader research impacts in the social web via different tools. Altmetrics can measure the impact at the journal article level as evidenced through social media activity (Galligan & Dyas-Correia, 2013). As Galloway & Pease (2013) state, altmetrics are the tools that help track a scholar's influence and relevance beyond traditional citation metrics. Altmetrics provide immediate feedback because they rely on real-time data and interactions and can be quantified quickly. Piwowar & Priem (2013) described the benefits of altmetrics in these terms: "Altmetrics provide additional, supplementary information and can balance misleading metrics tied to particular journals. More timely than traditional metrics, altmetrics quickly reveal the impact of recent work and add authority to different types of scholarly products not captured as articles. Altmetrics can capture social media references that escape tradicional metrics and reflect public engagement prompted by scholarly writing."

But both citation counting and altmetric indicators have their own difficulties and deficiencies. As some deficiencies of citation analysis are enumerated above, deficiencies of altmetrics should not be overlooked. Although one of the purposes of altmetrics is measuring research impact beyond academia, it is not easy to determine scholarly and non-scholarly audiences in different platforms (Haustein, 2013). Unlike the traditional indicators, which use the scholarly literature, altmetrics rely on new media that have a more dynamic nature; thus, inconsistency of data is another limitation (Fenner, 2014). Additionally, the durability of data and platforms is another challenge (Liu & Adie, 2013)

The potential for manipulating and gaming altmetrics data is also a serious limitation (Priem, Parra, Piwowar, Groth, & Waagmeester, 2012) which is rooted in the lack of quality control on the social web. The majority of new metrics are more appropriate for recent publications and less suitable for old papers. Additionally, altmetrics are prone to biases towards scholars with more Web visibility, who are mainly younger (Priem, 2014). For instance, people who have more friends in the social networks or those who are more active tweeting have a greater chance of being seen or getting more tweets. Moreover, Kwak, Lee, Park & Moon (2010) showed that once retweeted, a tweet gets retweeted almost instantly on the 2nd, 3rd, and 4th hops away from the source, signifying fast diffusion of information after the first retweet.

Finally, the behaviours of scholars in social media are not similar across disciplines, countries and languages, and therefore the normalization of altmetrics for different contexts needs to be considered (Wouters & Costas, 2012).

Meschede and Siebenlist (2018) find that alternative metrics (altmetrics) still need to be evaluated in order to fully understand their meaning, their benefits and limitations. . For this purpose, 5000 journal articles from six disciplines have been analyzed regarding their metrics with the help of the aggregators PlumX and Altmetric.com. For this set, the highest numbers of events have been recognized regarding Mendeley readers, followed by Twitter and Facebook mentions. Intra-correlations between the metrics across one aggregator have been calculated, as well as inter-correlations for the corresponding metrics across the aggregators. For both aggregators, low to medium intra-correlations could be calculated which shows the diversity of the different metrics. Regarding inter-correlations, PlumX and Altmetric.com are highly consistent concerning Mendeley readers followed by Wikipedia mentions, whereas the consistency concerning Twitter, blogs and Reddit on a moderate level. The sources Facebook, Google+ and News show only low correlations.Uribe and Alhuay (2017)find the presence, productivity, and influence of Ibero-American authors that write about information literacy (InfoLit). Using bibliometric and altmetric indicators, it seeks to analyze the impact and subsequent use of their scholarly works on social and scientific platforms. For this study, Fifty-five authors with the highest productivity were identified. An analysis of bibliometric and altmetric indicators at the author and publication level was carried out, based on the results of searches on eight scientific platforms (Google Scholar, ResearchGate, Academia.edu, Mendeley, ORCID, IraLIS, E-LIS and EXIT), three social networks (Facebook, Twitter and LinkedIn), and data provided by a commercial supplier (Altmetric.com). Overall they found a greater presence of authors in ResearchGate followed by Academia.edu and Google Scholar as opposed to Mendeley and ORCID. Furthermore, as to social platforms, the greatest potential influence lies with Facebook, due to its high number of followers. In conclusion, it was found that both the productivity and the impact-visibility center on specific authors writing about InfoLit, and various measurement resources show that for these authors there is a positive two-way impact from bibliometric to altmetric and vice versa.Baheti and Bhargava (2017)find the quality and impact of scientific research is traditionally measured by citation-based metrics. However, the internet and social media revolution have led to radical changes in the way scientific information is shared and how it

impacts the world. Alternative metrics (altmetrics) is a rapidly evolving measure to quantify social media attention received by a scientific work. It is a complement to the conventional metrics and has tremendous potential in enabling faster alternative ways of evaluating research impact.Evers and Williams (2016)reveal that altmetrics tries to capture measures of the impact of single articles. An important role is played not only by how many sources refer to the published work, but also by weighing how influential and high-ranking these citing sources are, how often the work has been cited on Twitter, Facebook, and other social media, and how much attention the lay press has devoted to a scientific article, person or group and altmetrics pretends to offer the best estimate of research impact. However, more sources need to be included to make altmetrics really useful.Adie and Roe (2013)find that Scholarly content is increasingly being discussed, shared, and bookmarked online by researchers. Altmetric is a start-up that focuses on tracking, collecting, and measuring this activity on behalf of publishers. The study witnessed sharing and discussion of around 750,000 articles over a year. The average number of articles shared each day grows by 5-10% a month. Butler et al. (2017)find that prestige of publication has been based on traditional citation metrics, most commonly journal impact factor. However, the Internet has radically changed the speed, flow, and sharing of medical information. Furthermore, the explosion of social media, along with development of popular professional and scientific websites and blogs, has led to the need for alternative metrics, known as altmetrics, to quantify the wider impact of research. We explore the evolution of current research impact metrics and examine the evolving role of altmetrics in measuring the wider impact of research. We suggest that altmetrics used in research evaluation should be part of an informed peer-review process such as traditional metrics. Finally, traditional and alternative metrics should complement, not replace, each other in the peer-review process.Kortelainen, Katvala and Länsman (2017)find the concept of attention which is applied in two altmetric studies concerning: (1) the use of social media tools on the web pages of scientific journals, and indications of attention in these pages received, and (2) attention received by the radio news on the web page of an indigenous radio station. The purpose is to reveal characteristics of web publications connected to the attention they receive. In altmetric research, data originating from several sources can reflect the societal impact a project or a publication may have, not only the impact it has in science. Attention economy theory supports the interpretation of altmetric data. Bornmann (2015)finds the purpose of case study which is to investigate the usefulness of altmetrics for measuring the broader impact of research. This case study is based on a sample of 1,082 the Public Library of Science (PLOS) journal articles recommended in F1000. The data set includes altmetrics which were provided by PLOS. The F1000 data set contains tags on papers which were assigned by experts to characterise them. The results of the current study indicate that Facebook and Twitter, but not Figshare or Mendeley, might provide an indication of which papers are of interest to a broader circle of readers (and not only for the peers in a specialist area), and could therefore be useful for the measurement of the societal impact of research. Melero (2015)reveals that Article-level metrics (ALM) is the result of the aggregation of different data sources and the collection of content from multiple social network services. Sources used for the aggregation can be broken down into five categories:

usage, captures, mentions, social media and citations. Data sources depend on the tool, but they include classic metrics indicators based on citations, academic social networks (Mendeley, CiteULike, Delicious) and social media (Facebook, Twitter, blogs, or YouTube, among others). Altmetrics is not synonymous with alternative metrics. Altmetrics are normally early available and allow to assess the social impact of scholarly outputs, almost at the real time. This paper overviews briefly the meaning of altmetrics and describes some of the existing tools used to apply this new metrics: Public Library of Science-Article-Level Metrics, Altmetric, Impactstory and Plum.Erdt, Nagarajan and Theng (2016) reveal that altmetrics is an emergent research area whereby social media is applied as a source of metrics to assess scholarly impact. In the last few years, the interest in altmetrics has grown, giving rise to many questions regarding their potential benefits and challenges. This paper aims to address some of these questions. First, we provide an overview of the altmetrics landscape, comparing tool features, social media data sources, and social media events provided by altmetric aggregators. Second, we conduct a systematic review of the altmetrics literature. A total of 172 articles were analysed, revealing a steady rise in altmetrics research since 2011. Third, we analyze the results of over 80 studies from the altmetrics literature on two major research topics: cross-metric validation and coverage of altmetrics.Hoffmann, Lutz and Meckel (2016)provide an introduction to the use of Social media which is becoming increasingly popular in scientific communication. A range of platforms, such as academic social networking sites (SNS), are geared specifically towards the academic community. Proponents of the altmetrics approach have pointed out that new media allow for new avenues of scientific impact assessment. However, the internet and social media revolution has led to radical changes in the way scientific information is shared and how it impacts the world. Thus, the authors find a relational approach based on social network analyses of academic SNS, while subject to platform-specific dynamics, may add richness and differentiation to scientific impact assessment. Barnes (2015)provides an introduction to the use of altmetrics as a tool to assess research impact. Altmetrics is an alternative metrics to measure research impact by tracking social activity around an article or other types of output. Instead of using traditional citation counts and impact factors, Altmetrics measures online scholarly interaction by calculating the number of mentions in social media sites (e.g. tweeters, Facebook, and blogs) and paper-sharing platforms or reference managers (e.g. Mendeley and CiteULike).Barbaro and Rebuffi (2014) find that researchers and academics are moving their everyday work onto the Web, exploring new ways to spread, discuss, share and retrieve information outside of the traditional channel of scholarly publishing. As scholarly communication moves increasingly online, there is a growing need to improve the ways in which the impact of scientific research output is evaluated. Altmetrics, even if they are still in an early stage, have the potential to develop as complements to traditional metrics and to provide a useful insight into new impact types not included in existing measures.Cabrera, Roy and Chisolm (2018)find that traditionally the impact of research was measured by citation-based metrics. When a research paper was published, it was difficult to measure its impact. After it was published it would take years to know how much impact it has made, but with the emergence of social media which has made a huge difference in our

lives, has revolutionized the traditional system. Now with the help of social media it becomes easy to know how much impact an article is making, we can simply know by seeing how many likes, shares, downloads and comments are on my published paper

PROBLEM

The emergence of social media has made a huge difference in our lives. The extension of social media to evaluate performance in academics is a new entity. Alternative metrics or altmetrics is a relatively new and emerging sector which utilizes the platform of various outlets including social media to determine the impact of a research work like Blog, Twitter, Facebook, News Story etc. The present work examines these platforms to analyze the altmetric attention scores of the research output.

OBJECTIVES

To find the mentioned quantity of platforms of the research output.

To find the highest number of journals mentioned by the platforms.

To find the highest altmetric attention score of Tweet, Facebook post and News Story with special reference to India.

To find the highest number of posts and profiles representing twitter demographics of 207 countries across the world.

To analyze the highest altmetric attention score of journals of the selected departments.

To analyze the highest mentioned output type received by the select departments:

-Department of Life Sciences; School of Natural Sciences,

-Department of Life Sciences; School of Medicine & Medical Science,

-Department of Humanities; School of Social Sciences,

-Department of Life Sciences; School of Medicine & Medical Science; School of Natural Science,

-Department of Humanities; Department of Life Sciences; School of Natural Sciences; School of Social Sciences.

SCOPE

Scholarly content is increasingly being discussed, shared, viewed and bookmarked online by researchers through various platforms including social media. This study tries to examine the immediate impact of research output. This study analyses journals with reference to different platforms, their altmetrics attention score, posts and profiles and also analyses the altmetrics attention score of these journals falling in 5 selected departments.

METHODOLOGY

For evaluating the present work the authors used an online aggregator Altmetric.com which helps in exploring and collecting the social attention score of the research output globally through different platforms. For the collection of data, the authors used a subscription based aggregator Altmetric.com. The data of 1266 journals were collected on certain parameters: Platforms; Mention types; Twitter Demographics; Department wise. First the data were collected for analyzing the possible quantity of platforms used for mentioning the research output of these journals with their altmetric mention score, then followed by data collection as per mention type with their social attention score like Facebook, News Story, Twitter etc. Another parameter which was twitter demographics of the countries in which the data were collected of 207 countries in terms of posts and profiles. Then the last collection was collected to analyze the altmetric attention score taken by the selected departments. In this way we collected the data as per our objectives and made our study relevant and result oriented.

DATA ANALYSIS

Quantity of Platforms Mostly Used

There are 17 platforms used to mention the research output among all the 1266 journal titles, but 16 platforms are mostly used for the research output. After analyzing the mentioned score of these platforms, it seems evident that among the platforms,twitter scores highest in terms of mentions (105943; 58.72%) followed by Blog mentions (10455; 9.67%), Patent mentions (14672; 8.13%), News mentions (12921; 7.16%), Facebook mentions (10455; 5.79%), Google+ mentions (4922; 2.72%), Wikipedia mentions (4901; 2.71%), F1000 mentions (3735; 2.07%), Policy mentions(3004; 1.66%) and Video mentions (671; 0.37%). Rest of the platforms i.e. Syllabi mentions to Reddit mentions are within the range of (0-576; 0%-0.31%) (Table1).

Table 1: Platforms with their total Mention Score

Platform Name	Total mentions	%age
Twitter Mentions	105943	58.72
Blog Mentions	17457	9.67
Patent Mentions	14672	8.13
News Mentions	12921	7.16
Facebook Mentions	10455	5.79
Google+ Mentions	4922	2.72
Wikipedia Mentions	4901	2.71
F1000 Mentions	3735	2.07
Policy Mentions	3004	1.66
Video Mentions	671	0.37
Reddit Mentions	576	0.31
Peer review Mentions	554	0.30
Weibo Mentions	332	0.18
Q&A Mentions	216	0.11
Pinterest Mentions	30	0.01
LinkedIn Mentions	5	0.002
Syllabi Mentions	0	0
Total	180394	100%

Most Number of Journals Covered by the Platforms

For analyzing which platform covers the most number of journals for mentioning their research output, onlythose journals are included with mentions ≥ 1. Thus, it is evident that the highest number of journals (1131; 29.18%) are mentioned by Twitter, followed by Facebook (541; 13.96%) and Blog (437; 11.27%). Other platforms i.e. Video to News cover the range of journals (88-384; 2.27%-9.90%) and LinkedIn to Reddit cover the range of journals (6-86; 0.15%-2.21%)(Table2).

Table 2: Number of Journals mentioned by the Every Platforms

Platform Name	Number of Journal Covers
Twitter Mentions	1131
Facebook Mentions	541
Blog Mentions	437
News Mentions	384
Wikipedia Mentions	256
Policy Mentions	247
Patent Mentions	229
Google+ Mentions	222
F1000 Mentions	171
Video Mentions	88
Reddit Mentions	86
Peer review Mentions	52

Q&A Mentions	32
Weibo Mentions	16
Pinterest Mentions	13
LinkedIn Mentions	6

Altmetric Attention Score (Indian Landscape)

It is evident in Indian landscape that Twitter has been the highest used mention type for the research output as *Tweets* are (846) with highest Altmetric score of 1322036 (96.07%), followed by *News Story* (172) with Altmetric Score of 52040 (3.78%) and*Facebook Posts* (11) with Altmetric Score of 1981 (0.14%) (Table 3)

Table 3: Altmetric Attention Score (Indian Landscape)

Mention Type	Altmetric Attention Score	Country
TWEET(846)	1322036	INDIA
NEWS STORY(172)	52040	INDIA
FACEBOOK POSTS(11)	1981	INDIA

TWITTER DEMOGRAPHICS:

It is clear that among the twitter demographics of 207 countries it seems clear that United States has the highest number of posts (23324) and profiles (12514) followed by United Kingdom and Japan with (9196-3525; 4832-2611) number of posts and profiles respectively. From New Zealand to Canada, they come within the range of (308-2685; 205-1825) posts and profiles.25 countries are within the range of (95-300; 55-218) posts and profiles, 40 countries are within the range of (20-87; 17-24) posts and profiles, 60 countries are within the range of (5-19; 5-17) posts and profiles, 62 countries are within the range of (1-5; 1-5) posts and profiles and (48599; 28951) number of posts and profiles are unknown (Table 4)

Table 4: Twitter Demographics of 207 Countries

Country name	Number of posts	Number of profiles
United States	23324	12514
United Kingdom	9196	4831
Japan	3525	2611
Canada	2685	1825
Australia	2006	1228
Spain	1862	1219
Netherlands	1453	655
France	1295	706
Germany	1044	634
India	846	604
Mexico	712	469
Brazil	651	463
Ireland	526	311
Sweden	503	344
Italy	462	324
Argentina	387	184
Switzerland	363	213
Chile	335	195

Norway	326	174
New Zealand	308	205
25	95-300	55-218
40	20-87	17-24
60	5-19	5-17
62	1-5	1-5
Unknown	48599	28951

DEPARTMENT WISE ALTMETRIC ATTENTION SCORE:

It is evident that the Department of Life Sciences; School of Natural Sciences has the highest Altmetric attention score (173833; 61%) followed by Department of Life Sciences; School of Medicine & Medical Science (75541; 26.6%); Department of Humanities; School of Social Sciences(34790; 12.2%), Department of Life Sciences; School of Medicine & Medical Science; School of Natural Science(140; 0.04%), Department of Humanities; Department of Life Sciences; School of Natural Sciences; School of Social Sciences(108; 0.03%)(Table 5)

Table 5: HIGHEST ALTMETRIC ATTENTION SCORE

S.NO	Department	Altmetric score	Total output score	Output Type
1	Department of Life Sciences; School of Natural Sciences	173833	7547	Article
				Chapter
				News
2.	Department of Life Sciences; School of Medicine & Medical Science	75541	5459	Article
				Book
				Chapter
				Dataset
3.	Department of Humanities; School of Social Sciences	34790	1662	Article
				Book
				Chapter
				Dataset
4.	Department of Life Sciences; School of Medicine & Medical Science; School of Natural Science	140	7	Article
5.	Department of Humanities; Department of Life Sciences; School of Natural Sciences; School of Social Sciences	108	3	Article

HIGHEST MENTIONED OUTPUT TYPE BY THE DEPARTMENTS

It is evidentthat the Department of Life Sciences; School of Natural Sciences has the highest output score (7547). In this output score we have the article output type (7462; 98.87%) at the top level followed by News (70; 0.92%) and Chapter (15; 0.19%) (Table6).

Table 6: HIGHEST OUTPUT TYPE

S.NO	Department	Total output score	Output Type			
1	Department of Life Sciences; School of Natural Sciences	7547	Article	News	Chapter	
			7462	70	15	
2.	Department of Life Sciences; School of Medicine and Medical Science	5459	Article	Dataset	Book	Chapter
			5239	194	18	8
3.	Department of Humanities; School of Social Sciences	1662	Article	Book	Dataset	Chapter
			1573	47	30	12
4.	Department of Life Sciences; School of Medicine & Medical Science; School of Natural Science	7	Article			
			7			
5.	Department of Humanities; Department of Life Sciences; School of Natural Sciences; School of Social Sciences	3	Article			
			3			

The findings and conclusions of the present work are as under:

It is evident that the highest number of journals is mentioned by the Twitter, followed by Facebook, Blog. Others like Video to News cover the low range of journals followed by LinkedIn to Reddit.Holmberg and Thelwall (2014)also find that "twitter has gained a lot of media coverage, for instance as an efficient and rapid tool for sharing emergency information". Jansen et al. (2009) is also of the opinion that twitter is known as "electronic word of mouth". It seems evident in Indian Landscape, that the Twitter mentions are having highest altmetric attention score followed by News Story and Facebook Posts. As perIfukor(2010) users have relied on Twitter for communication and coordination. Further Miller (2008) is of the opinion that "Twitter is often considered merely a platform for sharing simple status updates and to engage in phatic communication".

CONCLUSION:

Coming to the conclusion, it seems evident that altmetrics has a phenomenal impact on the research output. The results of this study show that altmetrics can be used as a source of data in information behavior studies. Reference management software provides an unobtrusive means of capturing reading habits in scholarly literature that are useful to all the stakeholders in the scholarly communication system.

The application of altmetric indicators to supplement citations counts in order to estimate readership presents two advantages over the use of citations alone. Bookmarks are available sooner, as shown by the fact that the percentage of recent literature bookmarked in Mendeley is much higher than the share of literature cited. Additionally, altmetric are useful to capture usage beyond the academic community, since reference management software can be employed by professionals to manage the literature.

Among other altmetric indicators, citations in twitter have been proposed as an alternative to traditional impact metrics. Citations of articles in Wikipedia can be seen as a metric that partially captures the societal and educational impact of an article in a wider audience beyond the academic community. However, the results of this study reveal severe limitations in the use of altmetric citations for research evaluation purposes

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