

Citation Analysis, Social Media & Its Impact On Knowledge Era

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Abstract- *The citation analysis method requires the analysis of the bibliographical references that are usually appended with every research communication. Analysis of such citations can reveal valuable information like the relative use of different kinds of information sources such as books, periodicals, reports, conference proceedings, patents etc., The age of the document which reveal the rate of obsolescence of literature, the most frequently used periodicals, scattering literature, language preference, etc., with different kinds of scientific communities according to subjects, nationality etc.*

Keywords- Citation, Analysis, Citation Analysis, Social Media, Knowledge Era, etc.

I. INTRODUCTION

Definition of Citation: A citation is a formal reference to a published or unpublished source that we consulted and obtained information from while writing any research work.

Analysis: To analyse means to break a topic or concept down into its parts in order to inspect and understand it, and to restructure those parts in a way that makes sense to you. (Analysis in Research Papers., n.d.).

Citation and analysis, when these two terms meet together, this union brings various kind of paradigm in the universe of knowledge. Citation analysis is continuous process now-a-days and many databases gives real-time outputs.

Initially it was started for the purpose of collection development then followed by trend analysis then by most influencing author, journals, articles, etc. But these quantitative paradigms slowly shifted towards complex in nature like quantitative from outside but lots of qualitative characteristics lied within and it emerged out as a behavioural tool and also became more applicable in various field of knowledge, information and data.

We are witnessed of major three phases of citation analysis

- Paper phase
- Detachable Electronic Media Phase
- Web Phase

In these first two phases the growth and development of citation analysis was slow but in the third phase it has got thrust and boost with the help of power of computing, internet and more creative analytical tools, complex databases and more powerful search engine algorithms.

As information became product, more entrepreneurs came into this field and made it more innovative and user friendly in term of use and ease. Now we are living in the age in which databases like Dimension, Scopus, lens and many more are providing real time analysis of published as well unpublished and in-print resources' quantitative packaged information which were earlier merely data only.

Contrast to this, each product also needs information. To produce and market a product needs information ranging from materials to process and human resources (talent) to market. The www and social media have made our globe so tiny in such a sense that each and every products' information reaches to its' user in rapid manner. In the echo, the review of the products is also come in light quickly. The innovators, entrepreneurs and corporates always need such a kind of information and the modern version of citation analysis, that are webometrics or may be social media analytics.

Though all these new innovative techniques came into existence and became wide spread, in the field of research or in the field of evaluating policies, citation analysis remain at the top edge.

As with the new tools, methodology and techniques; citation analysis techniques came into existence and parallelly a new filed data science emerged which has tremendously impacted on material publishing on web, especially in Websites, blogs and Social Medias.

Earlier, researchers and innovators have to rely on published articles and papers in journals as well as grey literature. Beside this, due to many reasons like marketing of published and in-print papers and impact factor, etc.; the researcher and sponsoring bodies have started putting brief content, news, ideas, results like highlighting things on social media. On the other hand, common people to statements and corporates too sharing their views, ideas and replies on social media for particular product, policy, incident, issue, subject, etc.

So now, this social media and web content became useful data for analysis. These communication, data science and social media grew together and has impacted by and large in society. Entrepreneurs, corporates, policy makers and researchers being impacted hugely with this combination of social media and data science as the outcome of analysis directly useful for decision making.

Originally bibliometrics was defined by Karolinska Institutet Bibliometrics Project Group as “the application of mathematical and statistical methods to publications”. In this work it is assumed that, the citations are made available through citation databases. Building on these assumptions technology forecasters have come to view bibliometrics as one of the principal building blocks for any piece of technology forecasting research and it is the primary method used to “capture some of the information inherent in the content and patterning of the literature” (Watts & Porter, 1997, p.27), (Taylor, 2013.).

Equally most of big data like citation databases involve statistical methods, analytics’ applications like R and Python were started to analyse in bibliometrics. These all were related to text mining which has drawn attention on social media analytics.

As data science, internet and communication technology flourished, this citation analysis which were limited to particular journals or thesis submitted to universities or bound in specific geographical boundaries was nurtured with more characteristics with wider area regardless medium of publication and geographical limits which is more comprehensive called bibliometrics. Here million-dollar question is that how bibliometric analysis is impacted on data science, especially trend analysis of social media. If we think on qualitative side of bibliometric analysis, from the result we are able to understand impact of research, researcher, sponsoring bodies, countries collaboration, social network, intensity of discussed topics (key words), etc. If we think of quantitative side of bibliometric analysis, we can find most productive journals, authors, countries; most cited authors,

journals, articles, etc. Likewise, in social media analytics frequently three terms appear which are social network-based behaviour analysis, sentimental analysis and trend analysis which are more or less impacted by bibliometrics.

Bibliometrics results presents who? what? from where? When and by whom? In extending pattern, social media analytics adds two more parameters and that are how? and why? Unlike citation databases, there are no front-end databases for social medias. Hence it required text-mining. The ability to apply text mining algorithms effectively in the context of text data is critical for a wide variety of applications. Social networks require text mining algorithms for a wide variety of applications such as keyword search, classification, and clustering. While search and classification are well known applications for a wide variety of scenarios, social networks have a much richer structure both in terms of text and links. (Aggarwal & Wang, 2011)

In social networking websites, people generally use unstructured or semi-structured language for communication. In everyday life conversation, people do not care about the spellings and accurate grammatical construction of a sentence that may lead to different types of ambiguities, such as lexical, syntactic, and semantic. Therefore, extracting logical patterns with accurate information from such unstructured form is a critical task to perform. (Irfan et al., 2015)

On the other hand, citation databases are well-structured, scholarly and obtained mostly from peer reviewed information. It is obvious that, text-mining in social media is more complex compare to citation databases. However, citation databases related mostly with science & technology and emerging field in the research so when comparing authentic terms, the database of citation will be bigger than the social media. It is noteworthy that, citation databases have more “fixed terms” and as social media is engaged by different communities who either using different languages or dialects or slangs, it is more volatile and need often precise meaning of emerging terms.

Simply, we can conclude that there is major impact of social media on the research society. Earlier, what “Current content” and “Indexes” were playing a major role which is mostly now replaced by social media as it has large foot print and access. One can put overview of his / her work whether it is pre-print or freshly published for getting more views to the original paper.

Here, we must suggest that what relationship lies between a research work and citations, we can create linkages same between the original “post” on social media; it’s shares,

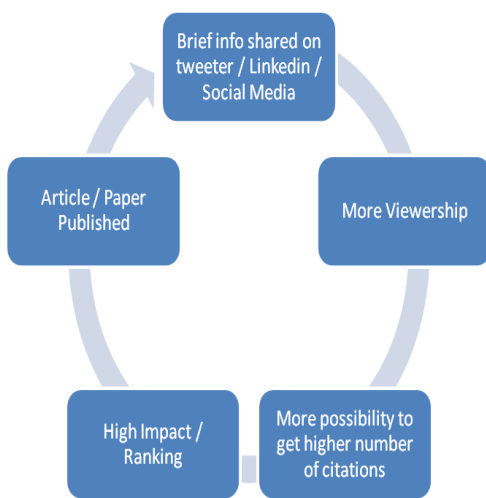
forwards and comments. Though there are issues of “privacy” of a social media account holder, one can analyse without revealing its’ identity by giving focus on “terms” and “trends”. I would like to put here a table to compare both.

Table -1
Comparison of Citation and Social Media Analysis in Authors’ View

Research work /Paper publication	Social Media Post / Blogs
Authors	Social Media Account holder
Number of Citations	Number of Likes, shares and comments
Cited authors	Persons commented, liked, shared
Author Keywords	Authors’ has tags
Word cloud and Trending terms	Sentiment Analysis
Author collaboration network	Virality analysis
Language	Language
Authenticity / Facts confirmed here	Authenticity / Facts not confirmed here should be checked

Of course, above suggested method is classical and old fashioned but if applied to social media, it can serve data which are comprehensive for any marketing firm, policy maker firm, government – home department or political parties. However, here caution is that, this would be a very delicate kind of results hence, it is necessary to handled it carefully.

Diagram – 1
Spiral of Knowledge in Social Media Era



As knowledge triggers knowledge, The Brain Chamber of Dr S.R. Ranganathan comes in mind. Whether, knowledge acquired from any sensory organ, for instance say Social Media, it is capable of trigger knowledge with the use

of logical, thinking process and memory stored in human brain. It is watchful here that social media may trigger “inappropriate” knowledge as it has lack of accountability as well as authenticity.

However, several components and factors of web 2.0 and social media have been studied and identified by Paroutis and Saleh (2009), Dumbrell and Steele (2014), Behringer and Sassenberg (2015) and (Sigalaa and Chalkiti, 2015) that; knowledge sharing helps in overcoming barrier of communication, enhance participation of humans, peer-to-peer sharing and evaluation of content and knowledge exchange. It is also observed by (Makkonen et al., 2020) in their study that, social media has positive effect on knowledge work, it is Improving of knowledge building and maintenance of tasks (learning). Authors of this paper have also observed that Tweeter, LinkedIn, Researchgate and Google scholar and similar platforms are useful in scholastic communication. These platforms are out-of-box and each has different kind of strategies. The first two is in Social Media Categories while the third and fourth one lies in pure scholastic communication channel. The first two can serve for ongoing study, preprint publication news and post publishing marketing while rests are providing search and briefing platform for scholastic communication. Earlier what Current content service was doing, the similar role is being played by the Social Media. Wingyan Chung (2016) concern in his article related to breaching privacy of user in social media analytics. Though social media is useful but concern is that it should not expose privacy related to personal identity like gender, location, marital status, income related data, etc.

II. CONCLUSION

Social media is now almost becoming addiction to most of the people around the world. On the other hand, scholastic communication and big data have also reached a new height and acceleration is exponential. Biliometrics invented before social media and its’ analytics due to limited periphery however, authors strongly believe that both has impacted on each other and gave new dimensions to each other, especially big data science has widely impacted on citation analysis. Social media left strong foot-print on scholastic communication which were never observed earlier. The highlighting issue with social media analytics is the privacy issues. However, social media is playing a catalyst role in scholarly publication and that is the most important.

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