Guest Editorial

Measuring Scholarly Communication in the Era of Data Science

Manoj Kumar Verma

Department of Library and Information Science Mizoram University, Aizawl, Mizoram - 796 004, India
E- mail: manojdlsibhu@gmail.com

Over the past century, methods of evaluating scholarly communication have advanced significantly from basic publication counts to sophisticated, data-driven analyses that provide a more nuanced understanding of research impact.In the early 20thcentury, Librametrics emerged and focusing primarily on quantitative assessments of library collections, usage patterns, and housekeeping operations. This gradually led to Bibliometrics in the 1960s, which introduced more systematic approaches to evaluating research through citation analysis and journal impact factors. Soon after, Scientometrics developed to specifically measure science research output, analyzing growth patterns in scientific literature and collaboration networks. These traditional metrics served as the gold standard for decades, providing what was then considered an objective measure of scholarly influence and productivity. However, as the academic landscape expanded and digital technologies revolutionized how knowledge is created and shared, it became increasingly clear that these conventional methods offered only a partial view of research impact, often overlooking important dimensions of scholarly communication. The informetrics expanded the scope to study all forms of information related to scholarly communication under one umbrella. Because of digital revolution and emergence of website and digital platforms, a new metric tool Webometrics (or Cybermetrics) was emerged in 1990s to measure web-based scholarly activity. This was crucial as more research moved to digital platforms.

The digital age brought with it both challenges and opportunities for research evaluation. The explosion of scholarly outputs across diverse platforms, the rise of open-access publishing, and the growing importance of interdisciplinary collaboration exposed the limitations of citation-based metrics. In response, the scholarly community started to developing an alternative approaches to capture the broader ecosystem of research impact. Altmetrics emerged as a complementary framework in the 2010s, measuring attention and engagement through social media mentions, policy documents, news media coverage, and other non-traditional indicators. This shift reflected a growing recognition that scholarly influence extends far beyond formal citations in journal articles. It encompasses real-world applications, public engagement, and knowledge dissemination across multiple channels, capturing the multifaceted nature of research impact across academic, societal, and digital communication platforms. The emergence of alternative metrics occurred alongside the rapid advancement of data science techniques. This convergence opened new possibilities for analyzing and interpreting the complex patterns of scholarly communication.

Today, the integration of data science methodologies has fundamentally transformed how we measure and understand scholarly impact. Advanced computational techniques such as natural language processing, machine learning, and network analysis enable researchers to process scholarly data with unprecedented speed and precision. These approaches allow for real-time tracking of research dissemination, identifying emerging trends, and mapping knowledge flow across disciplines and geographical boundaries. Data science has also facilitated the development of more sophisticated citation prediction models, topic modelling of scholarly literature, and visualization tools that reveal hidden patterns in research networks. These advanced analytical capabilities allow funding agencies, institutions, and policymakers to make more informed decisions about resource allocation and research priorities. They enable the identification of promising new fields of inquiry, the measurement of interdisciplinary collaboration, and the assessment of research's societal impact.

This special issue explores these complex issues through a series of contributions that examine both the potential and the limitations of data-driven approaches to measuring scholarly communication. The articles address fundamental questions about defining and quantifying research impact in an era of information abundance. They investigate innovative applications of data science techniques to scholarly evaluation while critically examining the assumptions and values embedded in these measurement systems. Several contributions focus on practical case studies that demonstrate how researchers implement these new approaches, highlighting successes and challenges encountered in real-world settings. As we stand at this important juncture in the evolution of scholarly metrics, it is clear that we need technologically sophisticated and conceptually strong approaches. The future of research evaluation lies in developing measurement systems that can capture the full spectrum of scholarly impact while remaining transparent, accountable, and adaptable

to changing needs. This will require ongoing collaboration between information scientists, data analysts, researchers, and policymakers to ensure that our metrics evolve to serve the advancement of knowledge truly

There was a very good response for this special issue of *DESIDOC Journal of Library & Information Technology* on Measuring Scholarly Communication in the Era of Data Science and received total 44 papers and after blind peer review, 15 papers were selected including one international paper.The selected papers are highly diverse and cover a broad range of metric-related themes, such as bibliometric analysis in scholarly communication, disability research, internal communication, research visibility, testing the applicability of bibliometric laws, sustainable development goals, research support services, open data publishing, gender disparities, technological trends in library and information science, social issue research in India, LIS research on emerging areas, virtual assistants, and topic modelling.

I hope this special issue will contribute to these important scholarly conversations and help chart a path forward for the responsible use of data science in measuring scholarly communication. I am deeply grateful to all the contributors (authors), reviewers, and editorial staffs whose hard work and insights have made possible to bring this special issue at present form on time. Their contributions represent valuable steps toward developing more comprehensive and meaningful ways to understand and support the vital work of scholarly research in the 21st century.Last but not least, I extend my special thanks to the Director of DESIDOC for entrusting on me for this special issue and providing the opportunity to learn many new things as guest editor.