

Conference Proceedings as a Source of Scientific
Information: A Bibliometric Analysis

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Résumé

While several authors have argued that conference proceedings are an important source of scientific knowledge, the extent of their importance has not been measured in a systematic manner. This article examines the scientific impact and aging of conference proceedings compared to those of scientific literature in general. It shows that the relative importance of proceedings is diminishing over time and currently represents only 1.7% of references made in the natural sciences and engineering, and 2.5% in the social sciences and humanities. Although the scientific impact of proceedings is losing ground to other types of scientific literature in nearly all fields, it has grown from 8% of the references in engineering papers in the early 1980s to its current 10%. Proceedings play a particularly important role in computer sciences, where they account for close to 20% of the references. This article also shows that not unexpectedly, proceedings age faster than cited scientific literature in general. The evidence thus shows that proceedings have a relatively limited scientific impact, on average representing only about 2% of total citations, that their relative importance is shrinking, and that they become obsolete faster than the scientific literature in general.

Introduction

Though the traditional model of the growth of scientific literature considers conference proceedings as prototype papers that do not withstand the test of time, recent literature has shown that in some fields, conference proceedings can be considered as the final product of scientific research. Drott [2], for instance, showed that the function of proceedings in the scholarly communication system is much more complex than what the standard evolutionary model has suggested, and that they are more than just « preliminary material that will later be turned into rigorous, finished works and formally published as journal articles » (p. 299).

Première partie

Setting the Context

Chapitre 1

Overview of Methodologies

The main methodological challenge of this study was to isolate among all cited material the references made to conference proceedings (refer to the Appendix for a diagram-form synthesis of the approach used). The challenge as always in this type of study is to maximize the signal-to-noise ratio, that is, to retrieve a maximum of proceedings (i.e., signal) while keeping false positives (i.e., noise) to a minimum.

1.1 False Negatives and False Positives

Despite all of these efforts, the presence of false negatives and false positives was unavoidable. For instance, some proceedings share a heading that is similar to other monographic publications and are thus impossible to recuperate. To validate our final query, a random sample of 1,000 retrieved proceedings was manually validated. For the SSH, 8.9% were false positives; 4.4% were false positives in the NSE. On the other hand, a sample of 1,000 nonproceeding references also was manually validated with a percentage of false negatives of less than 1% for both the NSE and the SSH.

1.2 Validity

Overall, these very low percentages indicate that the collected data constitute a valid representation of cited proceedings in Thomson's scientific document sources. Even though the study's actual numbers may be imprecise in terms of absolute value, its relative values should reflect the same proportions that would appear if one had been able to retain all cited proceedings, since all scientific fields and years were equally subjected to the same research criteria.

Chapitre 2

Results

As one might expect and as previous literature on the topic has suggested, most of these subfields are related to the field of engineering. In NSE (Figure 6), these subfields are computers (19.6 %), followed by other engineering subfields such as electrical engineering & electronics (13.1 %), civil engineering (11.5 %), nuclear technology (11.2 %), miscellaneous engineering & technology (10.3 %), aerospace technology (8.9 %), industrial engineering (8.5 %), and mechanical engineering (8 %).

Conclusion

The extent to which conference proceedings are cited in engineering and computer sciences strongly suggests that scientists in these fields consider these documents as more than just prototypes, but rather as final products of scientific research. The transfer rate of proceedings into scientific articles is also likely to be lower in these fields. This is in line with a function of proceedings proposed by Goodrum et al. and others [1, 3], which is a substitution of articles with proceedings. However, the fact that the age difference between cited proceedings and cited scientific literature is similar in both engineering and science as a whole suggests that the function of proceedings in engineering is to not only replace articles but also provide, as in other fields, access to more recent discoveries.

Bibliographie

- [1] R. Chen and W. Chen. A parallel solution to xml query application. In *Computer Science and Information Technology (ICCSIT), 2010 3rd IEEE International Conference on*, volume 6, pages 542 –546, july 2010.
- [2] E. D. Demaine, J. Iacono, and S. Langerman. Retroactive data structures. *ACM Transactions on Algorithms*, 3, May 2007.
- [3] Z. Yong, S. Bhowmick, E. Leonardi, and K. Widjanarko. Xblend : Visual xml query formulation meets query processing. In *Data Engineering, 2009. ICDE '09. IEEE 25th International Conference on*, pages 1535 –1538, 29 2009-april 2 2009.

Annexe A

Exemple de chaque type de document

Article

C.M. Drott. Reexamining the role of conference papers in scholarly communication. *Journal of the American Society for Information Science*, 46(4) :299-305, 1995.

Communication à une conférence

Livre

Chapitre de livre

Thèse de doctorat

Page d'un site Web

Norme

Annexe B

BlaBla

bla bla bla Pour que la table des matières se construise, il faut compiler 2 fois de suite avec LaTeX

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