

Citation counting and impact factors

Citation counts and journal impact factors appear to be gaining importance in discussions on science and scientists, in committee rooms across the country. The statistics that spew out from the Institute of Scientific Information (ironically abbreviated as ISI) in Philadelphia are mesmerizing; which scientist after all can resist being influenced by rankings of scientists, papers, journals and institutions. Despite the many warnings that have appeared in the literature, citation counting is becoming a critical factor in evaluating science. When time, money and sometimes, desire, are not available to obtain the citation counts on individual papers, the more insidious journal impact factors suffice. The reasoning here is simple and compelling; if a paper is published in a 'high impact' journal then there is a greater probability that it is significantly more important than a similar article in a 'low impact' journal. This argument, of course, ignores the many uncontrolled parameters that eventually determine where a paper is published. To many from the 'less developed' countries the growing influence of the Science Citation Index (SCI) in evaluating science and scientists is disturbing. After all the SCI covers relatively few journals from the poorer countries (only a dozen from India), leading to the labelling of all work published in non-SCI journals as 'lost science'.

Indian journals, including those indexed in the SCI, have great difficulty in attracting the best of papers emanating from this country. This is unsurprising, in view of their relatively low visibility ('low impact'). We face a piquant situation here. Unless our journals publish the best of our research, their impact factors are unlikely to improve. Unfortunately, unless their impact (in SCI terms) improves, they are incapable of netting the most desirable fish. There is also the constant complaint that even the best work from India, published in highly visible journals, attracts less attention than similar work done in the West. The hard fact is that science is a harshly competitive international game, where the rules are written elsewhere. Many extremist solutions have been proposed to deal with the declining quality of our journals. Closing them down (and sentencing their editors to hard labour) is one. At the other

extreme, suggestions have sometimes been made that punitive measures must be introduced, compelling our researchers to publish in Indian journals. (This would be akin to travelling by Air-India, when the bills are paid by the government.) Somewhere, in between, probably lies a reasonable course of action. The tendency of committees to applaud publications in international journals (whatever be their repute) is often pointed out as a major factor inhibiting the best of our researchers from patronizing our own journals, at least on occasion. Unfortunately, even initiation of discussions on the state of our journals is likely to attract sharp comments. In our exuberant post-nuclear phase, criticism in scientific circles appears more likely to be decried as 'negativism' and sometimes viewed as an exercise in 'self flagellation'. While no dramatic measures appear visible on the horizon to alter the trend of sinking impact factors, citation counts and even total numbers of papers published (SCI journals, of course), the vast majority of uncited and poorly cited scientists may take heart from the molecular biologist, Sydney Brenner's characterization of citation counting as a 'pseudoscience'. Indeed, finding out how many people have cited a paper is a poor substitute for reading it oneself. In evaluation of colleagues, journals and institutions in our country, personal knowledge (and prejudices) may still turn out to be a better indicator than the raw statistics of the ISI. In assessing scientists there is little doubt that very highly cited researchers have had a major influence on their disciplines. Unfortunately, most of the time we compare citation counts that are so low that it becomes difficult to distinguish the signal from the noise. The ISI churns out an unending stream of facts and figures. It appears important to have access to these facts, so that we may, each in our own way, distort them. We would also do well to remember Brenner's mild admonition 'that citation often tells us more about the sociology of science than about the science itself.' The SCI is undoubtedly an invaluable tool in scholarly attempts at mapping the development of science. It may be a less reliable weapon in the hard task of assessing scientific performance in diverse environments.

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