Research Assessment: Declaring War on the Impact Factor

Nearly forty years ago, when I began my research career in India, science proceeded at a leisurely pace. There was little by way of funding or major facilities even at the best of institutions. Enthusiasm and interest were the key ingredients in maintaining a focus on research. The environment still contained many role models, who had made significant contributions to their chosen fields, under undoubtedly difficult circumstances. The mid-1970s was a time when political and economic uncertainties precluded a great deal of government interest in promoting science. There was relatively little pressure on researchers to publish papers. The age of awards and financial incentives lay in the distant future. In those more sedate times, the results of research were written up when the findings appeared interesting enough to be communicated. The choice of journals was limited and most scientists seemed to be content with submitting manuscripts to journals where their peers might indeed read the papers. Journals were still read in libraries. Note taking was common, photocopies were rare and the ‘on-line journal’ had not yet been conceived. The academic environment was not overtly competitive. I never heard the word ‘scooped’ in the context of science, until well into middle age. Eugene Garfield’s ‘journal impact factor’ (JIF) had not penetrated into the discourse of scientists, although the parameters for ranking journals had been introduced into the literature much earlier. The word ‘citation’ was rarely heard. In the library of the Indian Institute of Science (IISc) there was a lone volume of the 1975 Science Citation Index (a hardbound, printed version, extinct today), presumably obtained gratis, which sat forlorn and unused on rarely visited shelves. Only a few handy and curious readers would even venture near this sample of unused on rarely visited shelves. Only a few hardy and day), presumably obtained gratis, which sat forlorn and看望 newly published papers. The age of awards and financial incentives lay in the distant future. In those more sedate times, the results of research were written up when the findings appeared interesting enough to be communicated. The choice of journals was limited and most scientists seemed to be content with submitting manuscripts to journals where their peers might indeed read the papers. Journals were still read in libraries. Note taking was common, photocopies were rare and the ‘on-line journal’ had not yet been conceived. The academic environment was not overtly competitive. I never heard the word ‘scooped’ in the context of science, until well into middle age. Eugene Garfield’s ‘journal impact factor’ (JIF) had not penetrated into the discourse of scientists, although the parameters for ranking journals had been introduced into the literature much earlier. The word ‘citation’ was rarely heard. In the library of the Indian Institute of Science (IISc) there was a lone volume of the 1975 Science Citation Index (a hardbound, printed version, extinct today), presumably obtained gratis, which sat forlorn and unused on rarely visited shelves. Only a few hardy and curious readers would even venture near this sample of unused on rarely visited shelves. Only a few hardy and
Chemistry and The Journal of Biological Chemistry. Clearly, in the 1920s the literature of chemistry was overwhelmingly dominated by European journals. For students growing up in the frenetic world of modern science, I might add that Science, Nature and PNAS appear far down the list. A similar exercise carried out today would reveal a dramatically different list of journals; undoubtedly a reflection of the turbulent history of the 20th century.

The journal impact factor emerged in the 1970s as a tool to rank journals. In the early years, it was largely a metric that was of limited interest. The revolution in the biomedical sciences resulted in an explosive growth of journals in the last two decades of the 20th century; a period that coincided with the dramatic rise of information technology and the emergence of the internet. The acquisition of the Institute for Scientific Information by Thomson Reuters lent a hard commercial edge to the marketing of the tools and databases of scientometrics; the Web of Science began to enmesh the world of science. Journal impact factors appear unfailingly, every year, making the business of publishing science journals an extremely competitive exercise. Journal editors scramble to devise schemes for enhancing impact factors and scientists are drawn to submit articles to journals that appear high on the ranking lists. If JIFs were used only to compare journals there may have been little to grumble about. Unfortunately, individuals soon began to be judged by the impact factors of the journals in which they had published. Some years ago the use of an ‘average impact factor’ was actively promoted in India, to judge both individuals and institutions. The introduction of the ‘h index’, a citation based parameter that appeared in the literature a few years ago, as a means of ranking individual performance, may have drawn away a few adherents of the average impact factor. Very few proponents of the JIF as an assessment tool in India appear conscious of obvious limitations. Most impact factors are driven up by a few highly cited papers, while others bask in reflected glory. The field specific nature of the JIF can lead to extremely misleading conclusions, when comparing individuals and institutions using this imperfect metric. Despite these drawbacks, the use of JIF as a tool of research assessment has reached epidemic proportions worldwide, with countries like India, China and the countries of southern Europe being among the hardest hit. Students in India, particularly those working in the biological sciences and chemistry in many of our best institutions, are especially self conscious; constantly worrying about the JIF when they submit papers.

The Declaration on Research Assessment (DORA) is a call to take up arms against the insidious JIF. Its general recommendation is a call for a boycott: ‘Do not use journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist’s contributions, or in hiring, promotion, or funding decisions.’ Scholarship and achievement can be judged without using a metric that was never designed for the purpose. The Declaration also has a message that may well be worth heeding by researchers in India: ‘Challenge research assessment practices that rely inappropriately on Journal Impact Factors and promote and teach best practice that focuses on the value and influence of specific research outputs.’ In his Science editorial, Alberts is trenchant: ‘The misuse of the journal impact factor is highly destructive, inviting a gaming of the metric that can bias journals against publishing papers in fields (such as social sciences or ecology) that are much less cited than others (such as biomedicine).’

Research assessments have also become commonplace in ranking institutions. The metrics used rely substantially on publication numbers and citations, invariably based on the Web of Science, although additional parameters contribute in differing ranking schemes. In recent times, both the Prime Minister and the President have publicly lamented that no Indian university or institution appeared in the ‘top 200’ in the world (The Hindu, 5 February 2013 and 16 April 2013). While there may be much to lament about in Indian higher education, are the rankings really an issue that needs immediate attention? In an Op-Ed piece in The Hindu (9 March 2013), Philip Altbach is categorical: ‘For India, or other developing countries to obsess about rankings is a mistake. There may be lessons, but not rules…. The global rankings measure just one kind of academic excellence, and even here the tools of measurement are far from perfect.’ Altbach notes, and many analysts would undoubtedly agree, that two systems, ‘the Academic Ranking of World Universities, popularly known as the “Shanghai rankings”, and the World University Rankings of Times Higher Education (THE) are methodologically respectable and can be taken seriously’. While the former measures only research impact, with several parameters weighted towards the highest level of achievement (number of Nobel prize recipients in an institution), the latter ‘measures a wider array of variables’. Altbach adds: ‘Research and its impact is at the top of the list, but reputation is also included as are several other variables such as teaching quality and internationalization. But since there is no real way to measure teaching or internationalization weak proxies are used. Reputation is perhaps the most controversial element in most of the national and global rankings.’ Altbach’s critique, of an apparent obsession with university rankings in India, was quickly countered by Phil Baty, the editor of THE rankings who warns: ‘…it would be a far greater mistake for Indian institutions and policy makers to under-use the global rankings than to overuse them’ (The Hindu, 11 April 2013). It may indeed be important for institutions to appreciate the rules of the game if they are to achieve a competitive score. Policy makers would also benefit if they set out to understand the tools of research assessment before they begin to use them.

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