

## Editorial

The objective of this archival journal is to disseminate high-quality original R&D results to a wide audience consisting of academic researchers, academic educators and industrial researchers and practicing engineers. The peer review process is crucial to assuring quality of what we disseminate. As an engineering technology journal we aim to serve both industrial and academic communities; it is hard to pinpoint the precise distribution, but we can reasonably assume it is about even. We strive to publish “impactful” R&D results that can benefit industry and eventually the society at large in a number of ways, e.g., higher quality products at lower cost, reduced consumption of fossil fuels, reduced environmental impact, safer operations etc.

While the authorship of most contributions we publish has academic affiliations, the readership is probably evenly distributed among academic and industrial sectors. The producers of the results are not the only consumers of the outcome of the research effort. As is obvious, some of the papers published lead to further extension or diversion and lead to archival publications in this or other journals. However, it is equally likely that the results are applied in practice and no publications appear from this extremely important activity. The former leads to journal citations, which the academic community is particularly fond of, while the latter leads to real impact and yet no measurable credit accrues to the authors or the journal. The former may be classified as “high-impact-factor research” while the latter is truly “impactful” research. The impact factor computation thus ignores a key contribution of an engineering technology-oriented journal and its authorship. Engineering science journals, on the other hand, have both authorship and readership firmly placed in academia. A reader is potentially an author as well. One need not be a rocket scientist to predict that engineering science should have higher impact factors and science journals should have even higher ones. Even a cursory analysis of the impact factor data indeed attests to this hypothesis. Without divulging the identities of the journal concerned, the following tables substantiate this thesis quite clearly.

Tables 1 and 2 provide some quantitative data to substantiate the thesis that the numerical value of the impact factor depends on the category of intended readership. When the readership is primarily that is actively involved in research and publication, the impact factor should be high; indeed it is of the order of 25 for the most recognized scientific journals. On the other hand, if the readership is primarily users of the results published, as is the case for engineering practice-oriented journals, the impact factor calculated in the same manner must be low or even very low. Engineering science and technology journals should stack between these limits since their readership is mixed and, depending on the journal, maybe slanted towards practice. This is also borne out by the data in Table 1. Of course, an extensive analysis could be undertaken to further assess this hypothesis but perhaps it is more important to look at the impact factor in proper perspective since it most certainly serves a useful role if interpreted correctly.

Interestingly, high impact factors may be associated with shorter cited half-lives in some cases.

**Table 1** Impact factors for selected standard journals in four categories.

Journal	Area	Impact Factor		
		1998	1999	2000
S-1	Science	25.8	29.5	28.8
S-2	Science	24.4	24.6	23.9
S-3	Science	3.3	4.1	3.9
ES-1	Engineering Science	1.42	1.54	1.65
ES-2	Engineering Science	0.99	1.21	1.05
ET-1	Engineering Technology	0.61	0.58	0.61
ET-2	Engineering Technology	0.40	0.40	0.40
ET-3	Engineering Technology	0.45	0.45	0.57
EP	Engineering Practice (very high circulation)	0.130	0.165	0.104

**Table 2** Approximate distribution of readership and authorship of different categories of journals.

Journal Type	Authorship	Readership	Impact Factor Range (numerical value)	Remarks
Pure Science	Academic	Academic	High	Readers are potential authors
Engineering Science	Academic	Academic + Industrial	Medium	Smaller fraction of readers are potential authors
Engineering Technology	Academic + Industrial	Industrial + Academic	Low	Very small fraction of readership is potential authors
Engineering Practice	Industrial	Industrial	Very Low	Almost no authors among readership

High: &gt; 20

Medium: ~ 1-2

Low: ~ 0.50

Very Low: ~ 0.10

Until a new true measurable impact factor can be defined it is hazardous to make judgements based on the “academic” impact factor, which does have useful purpose but only when both the authorship and readership belong to the same category viz. academic researchers. True impact of applied research cannot even be measured in terms of patents resulting there from since a minute fraction of patents actually see real adoption in practice. The not-so-infrequent trend among some authors to avoid citing the most relevant papers and of citing peripheral papers also clouds the impact factor calculation. High quality papers published in other than the English language also get sidetracked in this computation. Also, citations in

textbooks, handbooks and encyclopaedias, which have much more extensive readership than a typical journal article would have are excluded from computation of the impact factor.

What is the main point of all this discussion and analysis? It is simply that due diligence and care is needed to make informed decisions about the true value of applied engineering R&D. Unless academic researchers conduct applied research and publish it in technology-oriented journals the development of innovation in industrial operations and processing will suffer. Purely scientific research has long lead times before it can be adopted by industry. Someone must make the path from discovery to application a little bit clearer and smoother, which is the role of engineering researchers. This path may, however, lead to lower “impact factors” but significant “impact,” which should not detract, but inspire the researcher as it improves the lives of the people around the world in a variety of ways.

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