

Reframing the Debate on Quality v/s Quantity in Research Assessment

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ABSTRACT

The debate on quality versus quantity is still persistent for methodological considerations. These two approaches are highly contrasting in their epistemology and contrary to each other. A single composite indicator that reasonably senses both quality and quantity would be significant toward performance. This paper evaluates the potency of the combined metric for quality assessment of publications (QP) in India's National Institutional Research Framework (NIRF) exercise in 2020. It also suggests a potential improvement in quality measurement to obtain the rankings more rationally with finer tunings.

Keywords: Research evaluation; Institutional ranking; Quality assessment; Combined metric; NIRF

1. INTRODUCTION

The National Institutional Ranking Framework (NIRF)¹, in its ranking methodology, considers a combined metric for quality assessment of the research publications. The metric (namely QP) subsequently utilizes total citation count (CC), field-normalized citation index (NCI), and number of citations in the top-25 percentile (TOP25P) averaged over the previous three-years. Eventually, it determines the score of publication quality using QP (40 marks) = $\{15 \times p \text{ (CC/P)} + 12.5 \times p \text{ (NCI)} + 12.5 \times p \text{ (TOP25P)}\}$.

2. BACKGROUND CONTROVERSIES

Here the citation values of a 3-year window have been used to measure the quality of publications. Ambro et al (2012)² suggested using a field-specific citation window. Nederhof et al (2012)³ argued that a longer window invariably gives a better result. They also opined to have a minimum of 5-years window for the hard sciences. As a comprehensive insight, Wang (2013)⁴ studied that a larger window produces a far more accurate result; even field-normalization cannot be an effective alternative for using short-term citation window in research evaluations. Indeed the share-value of citations for collaborative (multi or mega) authorship across the institutions further creates a controversy.

One can argue, the process of measuring quality could have been prompted by the weight of source journals (alongside the citation score of each publication). An exemplary article that appeared in an authoritative (higher impact) journal cannot be credited equally with the articles published in a journal having no 'Impact Factor' or 'CiteScore' value. Quite often, the intensity of citations for the publications emanated from basic-research greatly differs from the citations received by

the publications of applied-research. Most of the theoretical researches usually go for longer sleep compare to application-oriented papers that immediately earn frequent citations. Thus sleeping beauties of publication datasets are to be considered in the assessment of quality.

On the contrary, setting up the benchmarks of citation is truly confusing but a quintessential need for ranking scientific institutions and enterprises. Otherwise, no comprehensive guide practically exists to refer to the field-normal values of citation. The problem becomes crucial when an institute deals with the interdisciplinary and/or transdisciplinary areas (viz. statistics, data-science, nano-technology), thereby it publishes beyond the traditional boundaries. Therefore, the measurement of quality of the publications is really a difficult task with a hierarchy of complexity. As such the combined metric for quality of publications in the NIRF endorses (only) macro-level assessment for ranking the institutions – hence offers an approximate result.

3. EXPRESSING POSSIBILITIES

Worthy to mention quality-weighted dimensions of quantity when governs by fractional counting and normalizing technique can be an effective way to establish the quality assessment (Pal & Sarkar, 2020)⁵. However, the curation of publication data can only be done by participating institutions (not by third-parties) with all variables of measurement to support the decision making. Further translation of quantitative information for quality assessment should be made with caution. Pinar and Unlu's (2020)⁶ excellent review of quantitative factors in assessing the quality of the research environment in the UK's research excellence framework (REF) is no doubt interesting. They also recommended evaluating the quality of the research environment (more rigorously) rather than

using quantitative metrics only. The following ideas would supplement this representation in many ways.

4. DEBATES ON QUALITY VS. QUANTITY

“Quantity has a quality all of its own” – as said by Joseph Stalin (a great philosopher) about sixty years ago. Quantity is an aspect by which things are measurable in terms of counting a number; whereas quality is a distinctive attribute that would certainly be indicative of a degree of excellence. In spite of several discussions that have been made in a different direction, the debate on quality versus quantity is still persistent for methodological considerations. Such a debate likely to be continued, because these two approaches are highly contrasting in their epistemology and contrary to each other; so as to difficult to combine them in a true sense (Mukherjee, 1993)⁷. But, if they combine canonically with the perspective, then the research result could be far more effective.

Although quantity itself is a quality; but larger in quantity (extensive) does not mean greater quality (intensive). Rather a quantity with certain quality invariably signifies toward performance. It is therefore not difficult to envisage; high-quantity with low-quality often be superseded by low-quantity having high-quality. So the quality and quantity when combines optimally, then it forms the basis of measuring performance. Prathap (2011)⁸ considered the term ‘quasity’ as a measure of performance that incorporates certain attributes of quantity and quality. Again he argued that evaluative scientometrics must admit a three-dimensional process incorporating quantity, quality, and consistency for measuring scientific performance that has to be a more prospective indicator (Prathap, 2014)⁹.

Vinkler (2013)¹⁰ suggested two aspects of evaluation for measuring scientific performance; where the quantity of scientific outcome was approximated by scholarly articles (published in journals), and he measured the quality (impact) by means of citations received by the articles. He also tried to characterize the quantity combining quality through a single measure, but he did not arrive at a fruitful solution. He even realized that estimating the relative potential of the publications across disciplines is truly difficult and quite complex for the inter-disciplinary research publications. Sahel (2011)¹¹ also drew on key issues of the ‘quality versus quantity’ for measuring the performance of individual researchers. Eventually, he tried to interpret these two essential components of research evaluation keeping in view of balancing the issues.

5. CONCLUSIONS

The ideas (more or less) supplement to this representation toward forming an acceptable basis of well-balanced evaluation for quality assessment of publications (QP) by integrating these two complex (but interesting) phenomena. Despite many indices (h-index, g-index, p-index, etc) led to several indicators; a single composite indicator that reasonably senses both quality and quantity (to compare the performances) would be the most valid agenda of future research in evaluative scientometrics. Otherwise, it will remain forever an incommensurable problem.

REFERENCES

1. NIRF-MHRD, Government of India (2017). Methodology for ranking of academic institutions in India: Parameters, combined metric for quality of publications. <https://www.nirfindia.org/>. (Accessed on 24 October 2020).
2. Abramo, G.; Cicero, T. & D’Angelo, C.A. A sensitivity analysis of researchers’ productivity rankings to the time of citation observation. *J. Informetrics*, 2012, **6**(2), 192-201. doi: 10.1016/j.joi.2011.12.003.
3. Nederhof, A.J.; Van Leeuwen, T.N. & Clancy, P. Calibration of bibliometric indicators in space exploration research: A comparison of citation impact measurement of the space and ground-based life and physical sciences, *Research Evaluation*, 2012, **21**(1), 79-85. doi: 10.1093/reseval/rvr005.
4. Wang, J. Citation time window choice for research impact evaluation. *Scientometrics*, 2013, **94**(3), 851-872. doi: 10.1007/s11192-012-0775-9.
5. Pal, Jiban K. & Sarkar, S. Understanding research productivity in the realm of evaluative scientometrics. *Annals. Libr. Inf. Stud.*, 2020, **67**(1), 67-69.
6. Pinar, M. & Unlu, E. Determinants of quality of research environment: An assessment of the environment submissions in the UK’s research excellence framework in 2014. *Research Evaluation*, 2020, **29**(3), 231-244. doi: 10.1093/reseval/rvaa003.
7. Mukherjee, B.N. Toward a rapprochement between the two basic paradigms of educational research. *Qual. Quant.*, 1993, **27**(4), 383-410. doi: 10.1007/BF01102500.
8. Prathap, G. Quasity, when quantity has a quality all of its own: Toward a theory of performance. *Scientometrics*, 2011, **88**(2), 555-562. doi: 10.1007/s11192-011-0401-2.
9. Pratap, G. Quantity, quality, and consistency as bibliometric indicators (Letter to the editor). *J. Assoc. Inf. Sci. Technol.*, 2014, **65**(1), 214. doi 10.1002/asi.23008.
10. Vinkler, P. Quantity and impact through a single indicator. *J. Am. Soc. Inf. Sci. Technol.*, 2013, **64**(5), 1084-1085. doi: 10.1002/asi.22833.
11. Sahel, J.A. Quality versus quantity: Assessing individual research performance. *Sci. Transl. Med.*, 2011, **3**, 84cm13. doi: 10.1126/scitranslmed.3002249.

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He contributed to the present study by conceptualizing the ideas, designing the research work, and writing of the formatted contents.