



Which factors help authors produce the highest impact research? Collaboration, journal and document properties



Fereshteh Didegah*, Mike Thelwall

Statistical Cybermetrics Research Group, School of Technology, University of Wolverhampton, Wulfruna Street, Wolverhampton WV1 1LY, UK

ARTICLE INFO

Article history:

Received 18 June 2013

Received in revised form 15 August 2013

Accepted 19 August 2013

Keywords:

Citation factors

Research impact

Hurdle model

ABSTRACT

This study assesses whether eleven factors associate with higher impact research: individual, institutional and international collaboration; journal and reference impacts; abstract readability; reference and keyword totals; paper, abstract and title lengths. Authors may have some control over these factors and hence this information may help them to conduct and publish higher impact research. These factors have been previously researched but with partially conflicting findings. A simultaneous assessment of these eleven factors for Biology and Biochemistry, Chemistry and Social Sciences used a single negative binomial-logit hurdle model estimating the percentage change in the mean citation counts per unit of increase or decrease in the predictor variables. The journal Impact Factor was found to significantly associate with increased citations in all three areas. The impact and the number of cited references and their average citation impact also significantly associate with higher article citation impact. Individual and international teamwork give a citation advantage in Biology and Biochemistry and Chemistry but inter-institutional teamwork is not important in any of the three subject areas. Abstract readability is also not significant or of no practical significance. Among the article size features, abstract length significantly associates with increased citations but the number of keywords, title length and paper length are insignificant or of no practical significance. In summary, at least some aspects of collaboration, journal and document properties significantly associate with higher citations. The results provide new and particularly strong statistical evidence that the authors should consider publishing in high impact journals, ensure that they do not omit relevant references, engage in the widest possible team working, when appropriate, and write extensive abstracts. A new finding is that whilst it seems to be useful to collaborate and to collaborate internationally, there seems to be no particular need to collaborate with other institutions within the same country.

© 2013 Elsevier Ltd. All rights reserved.

1. Introduction

During an academic career, scholars make numerous choices about the type of research to conduct, how to present their research, and where to submit it for publication. It seems logical that researchers should aim to conduct the highest possible impact research in order to make the most of their talents and opportunities. Whilst the key decisions for this aim are likely to be specific to the topics researched, there are some more peripheral factors that are nevertheless relevant and that academics may also need to consider in order to maximise the impact of their efforts.

* Corresponding author. Tel.: +44 7752944457.

E-mail addresses: f.didegah@wlv.ac.uk, fdidgah@gmail.com (F. Didegah), m.thelwall@wlv.ac.uk (M. Thelwall).

Citation counts are widely acknowledged as the main scientific research impact indicator and empirical studies have been carried out to seek associations between citation counts and various objective and easily measurable properties of research. These include the impact of the publishing journal (Boyack & Klavans, 2005), collaboration (Gazni & Didegah, 2010), the interdisciplinarity of the article references (Larivière & Gingras, 2010), the number and impact of references (Boyack & Klavans, 2005), and the size of the related field (Lovaglia, 1989). Thus, authors seeking to maximise the impact of their research may write more clear titles and abstracts and may also be particularly careful to ensure that their literature review does not miss any relevant highly cited papers. More generally, if they wish to conduct high impact research then they may also seek to engage in collaborations (hence generating more co-authors). Presumably, attempts to artificially manipulate these factors, such as by adding honorary international authors or irrelevant high impact interdisciplinary references, would not work since factors associating with higher citations presumably reflect underlying properties of research rather than surface features of an article. Nevertheless, knowledge of important factors may naturally push authors towards higher impact types of research, for example by looking to expand their collaboration network, by being open to interdisciplinary research influences, and by paying particular attention to relevant research in high impact international journals (e.g., rather than national research).

This study examines whether research collaboration, journal and reference impact, abstract readability, and article size attributes affect citation counts. These factors are at least to some extent under the control of the authors and so it would be useful to know whether researchers should pay attention to them to ensure that their research has the greatest possible impact. Research collaboration has been frequently analysed (Sooryamoorthy, 2009) and the other factors have also been examined (Zhao, 2010; Gazni, 2011) but they have not been examined simultaneously for multiple research fields using an optimal statistical model. This is an important omission because non-simultaneous tests may identify apparently important factors that have no effect when other factors are controlled. van Raan (1998) criticises the claim that a theory is needed for citation analysis and suggests replacing the theory with a feasible model that provides a possible approximation of reality. This study also helps to address this goal with its new, more integrated statistical model.

2. Literature review

As introduced above, research citation impact has been shown to be related to a number of objective factors, such as research collaboration, choice of journal, and properties of the article itself. This review does not consider article type as a factor, even though review articles are known to attract more citations (Aksnes, 2003), because it is concerned with primary research outputs. It also does not consider another factor, author reputation (Peters & van Raan, 1994), because this is presumably influenced by conducting high impact research and so is not a factor that authors can consider for individual articles.

2.1. Research collaboration

Multi-author research has become more common (Gazni, Sugimoto, & Didegah, 2012; Persson, Glänzel, & Danell, 2004) and receives more citations than does solo research (Gazni & Didegah, 2010; Leimu & Koricheva, 2005a,b; Sooryamoorthy, 2009). However, a few studies have found no correlation between more authors and increased citations (Bornmann, Schier, Marx, & Daniel, 2012; Haslam et al., 2008). These studies' findings are often not generalisable, however because they are limited to a single country (Sooryamoorthy, 2009), a single institution (Gazni & Didegah, 2010), a single field of study (Haslam et al., 2008; Leimu & Koricheva, 2005a,b) or a specific journal (Bornmann, Schier, Marx, & Daniel, 2012). Using correlation and regression tests, positive correlations between citation counts and the number of authors have been found (Gazni & Didegah, 2010; Haslam et al., 2008; Leimu & Koricheva, 2005a,b; Sooryamoorthy, 2009) but not the *extent* to which the number of authors contributes to increased citations. The differences between the results of previous studies might be due to the differing samples of publications used and disciplinary differences in particular. Whereas previous studies have conducted detailed micro-level analyses, macro level studies are also needed.

International collaboration can also lead to increased citations (Glänzel, 2001; Glänzel & Schubert, 2001; Katz & Hicks, 1997; Narin, Stevens, & Whitlow, 1991; Sooryamoorthy, 2009). Nevertheless, an investigation of Harvard University publications found no correlation between international collaboration and citation counts (Gazni & Didegah, 2010), but Harvard may be a special case as a world-leading institution. Most studies are geographically or institutionally limited and hence are difficult to generalise. Two studies (Glänzel, 2001; Glänzel & Schubert, 2001) avoid this issue by taking the full Science Citation Index (SCI) during a one or two-year period. However, they do not cover social science fields. To measure the impact of international collaboration on citation counts, the simple method of comparing the mean citation for domestic collaboration with that of international collaboration is often used. This has the limitation that the difference may be spurious in the sense of being caused by factors other than the ones investigated. International collaboration seems to be particularly beneficial for small institutions (Goldfinch, Dale, & DeRouen, 2003) rather than big institutions (Gazni & Didegah, 2010).

Institutional collaboration, which involves researchers from different institutions, also associates with higher citation impact (Gazni & Didegah, 2010; Sooryamoorthy, 2009; Narin & Whitlow, 1990). These studies are also geographically and institutionally limited and use a simple correlation test for an association between institutional collaboration and citation counts, and so it may be that other factors explain the increased citations better than institutional collaboration.

Download English Version:

<https://daneshyari.com/en/article/10358566>

Download Persian Version:

<https://daneshyari.com/article/10358566>

[Daneshyari.com](https://daneshyari.com)