# **Open Access: Challenges and Possibilities**

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#### 1 INTRODUCTION

With the emergence of the Internet, technology came the concept of Open Access (OA): knowledge should be free and accessible to all. This indicates that any further use of research should be free. During the 2000s, the impetus for the Open Access movement grew as the Internet made it easier and faster to share research and academic work with the rest of the world. As a result, there are a variety of OA models available, including Diamond, Gold, Bronze, Green, Black, Hybrid, and "gratis and libre". The models offer different levels of access and financial alternatives. The reader may be required to pay a charge or subscribe to a service in some cases. In other cases, the author pays to get his work published in journals. Some are free to both the researcher and the reader, with the publisher paying the price in the form of outside funding.

Using a qualitative literature analysis, this research tries to highlight the main challenges and opportunities of Open Access, as well as what consequences they may have for the future. This paper's discussion is based on relevant academic sources found utilizing reputable online academic search engines and literary databases such as Google Scholar and Oria. The rest of the paper is structured as follows: The study's findings are presented in Section 2. Section 3 discusses the consequences of the possibilities and challenges before section 4 concludes the article.

### 2 RESULTS

The results of the qualitative study are presented in this section. Eleven papers were reviewed in total. The most commonly cited OA benefits and problems are described here. To save space, the challenges or possibilities are summarized, and the reader is directed to the sources if they want a more in-depth look at a particular topic.

The majority of papers in the qualitative survey discussed the following issue: the financial impact on publishers [11], researchers, and the cost of OA itself [4]. There's also the issue of how OA might affect academia [10]. For example, how can academic impact be quantified, how can paper quality be maintained, how can predatory journals be prevented, and how can additional administration be addressed [1, 2, 5–7, 10]?

The study also discovered that Open Access has the potential for wider dissemination, which leads to new ideas and faster adoption in education and business, as well as easier access for underdeveloped nations [3, 8–10]. It also means that scholarly work can be published and reused faster, with more citations [5, 7].

#### 3 DISCUSSION

As can be seen from the results, many of the obstacles are tied to the financial aspect of research. The research reveals that while the initial cost of shifting to an OA model will be greater, it will eventually level out and become less expensive and sustainable [11]. According to Michael J., "[...] there is indicative evidence that open access to findings/data can lead to savings in access costs, labour costs and transaction costs" [4, p. 20]. However, copyrights and paywalls, which are used by some publishers, exacerbate this problem [2, 4, 10].

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The second set of challenges concerns the academic work's quality and the fact that determining the work's impact might be difficult. This is a concern because researchers are evaluated based on these criteria, and they may be less motivated to perform OA work if measurable metrics for the impact of their work are not implemented well. However, the majority of studies indicated that the impact citations for OA publications are higher, showing that this issue may be less of a concern than previously thought [5–7]. The quantity of citations also demonstrates that OA models can be used to assess academic impact [1].

The opportunities appear to exceed the economic challenges. The academic world might advance and gain new insights in new and/or more sophisticated subjects as a result of increased dissemination, as the rate of growth would dramatically improve [8–10].

Businesses and educational systems can improve and adapt more quickly as a result of earlier adoption, which has a stronger impact on society. Such an impact could potentially boost the OA model's economic components as well as society as a whole [8–11]. As a result, this concept can lessen some of the economic constraints while also motivating society to adopt OA alternatives.

Finally, there is the moral component of open access models to consider. By employing it, the academic community recognizes the need of developing countries and strives to correct the skewness found in how knowledge is handled as a commodity in today's society [8].

#### 4 CONCLUSION

The paper discovered that by giving everyone equal access to academic research, new ideas will arise, better studies will be undertaken, peer-reviewing will be easier, and it will assist low-income developing countries as well as other countries. The costs of research and journals, the quality of OA research, and the impact rating of researchers are the main challenges of open access. According to research, OA can grow more affordable and sustainable over time, while also improving academic impact.

## **REFERENCES**

- [1] Kristin Antelman. 2004. Do Open-Access Articles Have a Greater Research Impact? *College & Research Libraries* 65, 5 (2004). DOI: https://doi.org/10.5860/crl.65.5.372.
- [2] Jeffrey Beall. 2012. Predatory publishers are corrupting open access. *Nature* 489, 7415 (2012), 179–179. DOI: https://doi.org/10.1038/489179a.
- [3] Leslie Chan, Barbara Kirsop, and Subbiah Arunachalam. 2005. Open Access Archiving: the fast track to building research capacity in developing countries. *Science and Development Network* (November 2005). DOI: https://doi.org/.
- [4] Michael J. Fell. 2019. The economic impacts of open science: a rapid evidence assessment. *Publications* 7, 46 (2019). DOI: https://doi.org/10.3390/publications7030046.
- [5] C. Hajjem, S. Harnad, and Y. Gingras. 2005. Ten-Year Cross-Disciplinary Comparison of the Growth of Open Access and How it Increases Research Citation Impact. *IEEE Data Engineering Bulletin* 28(4) (2005), 39–47. arXiv:cs/0606079 [Accessed 15.10.2021].
- [6] Steve Hitchcock. 2013. The effect of open access and downloads ('hits') on citation impact: a bibliography of studies. (25 June 2013). https://eprints.soton.ac.uk/354006/1/oacitation-biblio-snapshot0613.html [Accessed 15.10.2021].
- [7] Steve Lawrence. 2001. Online or invisible? Nature 411, 6837 (2001), 521. http://www.m-hikari.com/online.pdf [Accessed 15.10.2021].
- [8] Mariana Mazzucato. 2011. The Entrepreneurial State. Demos, London. DOI: https://doi.org/10.3898/136266211798411183.
- [9] R. Schimmer, K. K. Geschuhn, and A. Vogler. 2015. Disrupting the subscription journals' business model for the necessary large-scale transformation to open access. (2015). DOI: https://doi.org/10.17617/1.3.
- [10] Jonathan P Tennant, François Waldner, Damien C Jacques, Paola Masuzzo, Lauren B Collister, and Chris H J Hartgerink. 2016. The academic, economic and societal impacts of Open Access: an evidence-based review. F1000Research 5 (04 2016), 632–632. DOI: https://doi.org/10.12688/f1000research.8460.3.
- [11] Richard Van Noorden. 2013. Open access: The true cost of science publishing. Nature 495, 7442 (2013), 426–429. DOI: https://doi.org/10.1038/495426a.