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Journals on the Road: Open access or non-open access?

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Abstract

Introduction: The choice of open access (OA) or non-open access (non-OA) publishing model is a serious concern and challenge for authors and journals. Therefore, the present study aimed to review the scientific literature related to the challenges and opportunities of the OA publishing model compared to subscription-based and hybrid publishing models.

Methods: The present study is a narrative review. Articles were searched in various databases such as Scopus and Web of Science (WoS), and articles concerning the research topic were reviewed.

Results: OA challenges were divided into five general categories: 1. Providing publishing fees 2. Fewer citations to OA articles without Article Processing Charge (APC) than citations to OA articles published in hybrid journals and OA journals receiving APC 3. Lower quality (scholarly output and citations number) of some OA journals compared to subscription-based journals 4. Fewer citation indicators of OA journals than hybrid journals. 5. Lack of difference in the citation indicators of some OA, subscription-based, and hybrid journals. Opportunities for the OA model were also divided into five categories: 1. Increasing the visibility of OA articles 2. Receiving more citations by OA articles than subscription-based articles 3. Higher citation indicators of some OA journals than subscription-based journals 4. The rapid growth of OA articles and Journals 5. Increasing the opportunity for scientific collaboration for researchers.

Conclusion: OA publishing is an advantage for articles. However, being an OA journal alone is not an advantage, as in many cases, subscription-based and hybrid journals have higher citation indicators than fully OA journals. Therefore, various variables such as visibility, the possibility of receiving more citations, and costs can be effective in the researchers' approach to select the journal and publication model.

Keywords: Open access, Non-open access, Hybrid journal, subscription journals, articles

Introduction

Scientific communication is of particular importance in the scientific community. Researchers carry out their research to produce knowledge and share the obtained results so that others can benefit from its results, and thus the cycle of science production continues. However, one of the deterrents in the science cycle is the cost of resource subscription-based, which can create a knowledge gap. This has led to a crisis in recent decades in paying subscription-based scientific journals. There are various ways to solve this crisis, one of which is the open access (OA) movement. The OA movement to scientific resources began in the early 1990s and gradually spread to various disciplines worldwide as the Web expanded. The most important group of the OA movement met for the first time in February 2002 in Budapest, Hungary, intending to achieve communication and collaboration between all institutions active in this context. As a result, the summit created the Budapest Open Access Initiative (BOAI). The meeting was held with the aim of accelerating international activities in order to make research papers accessible in all fields of science. (*Open Access: History & Policies*, n.d.; Siamak, 2007)

OA allows any user to read, download, copy, distribute, print, and search or link to the full text of the article for free. Moreover, the user can use this information without any technical, legal, or financial restrictions to produce software or other legitimate applications. The only thing that should be considered in the field of copyright in OA articles is the correct citation to previous articles. (*Budapest Open Access Initiative*, 2001) Suber defines OA journals published as e-journals provided to users free of charge, permanently, and without legal restrictions on copyright and provided by non-profit or for-profit institutions. (Suber, 2009) There have been two significant patterns for journals over the last two decades: OA and subscription. Obviously, various modes of OA have emerged over the years, such as green, gold, and diamond, the most important of which is the hybrid model. (Allahar & Sookram, 2020; *Different Open Access Models - Guide to Getting Published in Journals*, 2021) In the hybrid model, which many journals accept, only some articles in a journal will be published as OA if APC paid for by the author. The question always arises for journals and authors which mode is more suitable for publication. Therefore, this research is an attempt to study the challenges and opportunities of the OA publishing model for articles and journals by an in-depth study of selected literature.

Methods

This research is a narrative review conducted in 2021. Keywords related to the research topic were searched in well-known international databases such as Scopus and Web of Science (WoS). The 100 articles that the challenges and opportunities of the publishing model for articles and journals published after 2000 were critically evaluated. Lastly, 24 full-text English-language articles were eligible for inclusion in the study, and research data were extracted from these articles.

Results

In response to the research's objectives, the findings are extracted from the literature and were presented in Tables 1 and 2 in two categories: Challenges and Opportunities.

Challenges: Table 1 shows that OA challenges in the reviewed articles are divided into five general categories: 1. Providing publishing fees 2. Fewer citations to OA articles without article publishing charge (APC) than citations to OA articles published in hybrid journals and OA journals receiving APC 3. Lower quality (scholarly output and citations number) of some OA journals compared to subscription-based journals 4. Fewer citation indicators of OA journals than hybrid journals. 5. Lack of difference in the citation indicators of OA, subscription-based, and hybrid journals.

Opportunities: Table 2 shows that OA opportunities in the reviewed articles are divided into five general categories: 1. Increasing the visibility of OA articles 2. Receiving more citations by OA articles than subscription-based articles 3. Higher citation indicators of some OA journals than subscription-based journals 4. The rapid growth of OA articles and journals 5. Increasing the opportunity for scientific collaboration for researchers.

Table 1. Open access challenges

OA challenges	Literature
Providing publishing fees	(Baro & Eze, 2017; Björk & Solomon, 2012; Sheikh, 2017)
Fewer citations to OA articles without article publishing charge (APC) than citations to OA articles published in hybrid journals and OA journals receiving APC	(Abbasi et al., 2019; Özay et al., 2021; Solomon et al., 2013; Sotudeh et al., 2015)
Lower quality (scholarly output and citations number) of some OA journals compared to subscription-based journals	(Abbasi et al., 2019; AlRyalat, Nassar, et al., 2019a; AlRyalat, Saleh, et al., 2019; AlRyalat et al., 2020; Atchison & Bull, 2015; Erfanmanesh, 2017; Gunasekaran & Arunachalam, 2011; Kousha & Abdoli, 2010; Wohlrabe & Birkmeier, 2014)
Fewer citation indicators of OA journals than hybrid journals	(Abbasi et al., 2019; Björk & Solomon, 2012)
Lack of difference in the citation indicators of OA, subscription-based, and hybrid journals	(Sabharwal et al., 2014; Zawacki-Richter et al., 2010)

Table 2. Open access opportunities

OA Opportunities	Literature
Increasing the visibility of OA articles	(Abbasi et al., 2019; Alkhawtani et al., 2020; AlRyalat, Nassar, et al., 2019a, 2019b; Atchison & Bull, 2015; Björk & Solomon, 2012; Clements, 2017; Eysenbach, 2006; Koler-Povh et al., 2014; Kousha & Abdoli, 2010; Sheikh, 2017; Wohlrabe & Birkmeier, 2014)
Receiving more citations by OA articles than subscription-based articles	(Abbasi et al., 2019; Alkhawtani et al., 2020; AlRyalat, Nassar, et al., 2019a, 2019b; Atchison & Bull, 2015; Björk & Solomon, 2012; Clements, 2017; Eysenbach, 2006; Koler-Povh et al., 2014; Kousha & Abdoli, 2010; Langham-Putrow et al., 2021; Sheikh, 2017; Wohlrabe & Birkmeier, 2014)
Higher citation indicators of some OA journals than subscription-based journals	(AlRyalat, Nassar, et al., 2019a; AlRyalat, Saleh, et al., 2019; Özay et al., 2021)
The rapid growth of OA articles and journals	(Özay et al., 2021; Solomon et al., 2013)
Increasing the scientific collaboration for researchers	(Clements, 2017; McKiernan et al., 2016)

Discussion

This section discusses the challenges and opportunities of OA.

OA challenges:

Publishing scientific journals is costly, and the buyer covers this payment in subscription-based journals. Additionally, changing the fully subscription-based paradigm to fully OA will create

problems in publishing costs. Therefore, financing the publication of journals is one of the main challenges of journal. (Jamali Mahmavi et al., 2006) It should be noted that many OA journals cover publishing costs through the publisher and do not charge any fees from the author, but some journals charge a fee from the author as APC. (Allahar & Sookram, 2020; Björk & Solomon, 2012) An intermediate solution to the cost of publishing has also been adopted and used by some journals known as hybrid journals. In these journals, only articles are published in OA, the cost of which is paid by the author, and the rest of the articles are published in the form of subscription, and the cost of their publication is covered by the amount received from the readers. (Abbasi et al., 2019; Björk & Solomon, 2012; Langham-Putrow et al., 2021) According to the studies, it can be said that the cost of publishing articles in OA, in addition to being the crucial challenge for journals, especially in developing countries, is also one of the challenges for researchers. This may discourage authors from publishing in hybrid and OA journals with APC. (Baro & Eze, 2017; Björk & Solomon, 2012; Sheikh, 2017)

Another OA model challenge is receiving fewer citations by OA articles without APC than received citations by OA articles published in hybrid journals and OA journals with APC. (Abbasi et al., 2019; Özay et al., 2021; Solomon et al., 2013; Sotudeh et al., 2015)

In the study of Abbasi et al. (2019), OA articles published in hybrid and OA journals with APC in the field of library and information science had more citation than other OA articles. Sotudeh et al. (2015) also examined the citation rate in OA and non-OA articles of journals with APC in Elsevier and Springer publications, so the findings indicated that OA articles in hybrid journals had received more citations. This is also related to the cost challenge because it shows that journals that receive fees for publishing an article for OA are of better quality.

Another challenge in open access models is the journals' quality. One of the methods of evaluating the quality of scientific journals is to examine citation indicators. Scholarly output, impact factor (IF), and overall average citations in some OA journals are lower than subscription-based journals. (Abbasi et al., 2019; AlRyalat et al., 2020; Atchison & Bull, 2015; Gunasekaran & Arunachalam, 2011; Kousha & Abdoli, 2010) Erfanmanesh, in a review of OA journals in the Scopus database, showed that subscription-based journals were of higher quality in all fields except health and nursing. (Erfanmanesh, 2017) Other studies have also shown that in medical journals such as radiology and respiratory diseases, the scholarly output of non-OA journals is higher than OA

journals in the same field. .(AlRyalat, Saleh, et al., 2019; AlRyalat, Nassar, et al., 2019b; Malkawi L, Al-Ryalat N, Hadidi E Al, Serrieh D, 2019)

Another challenge is fewer citation indices of fully OA journals than hybrid journals. In Abbasi et al.'s study, hybrid journals in the field of library and information science have higher citation indices than other journals. (Abbasi et al., 2019) However, in some studies, such as Sabharwal et al. (2014) , in a review of 63 orthopedic journals in the WOS database, no significant difference was found between the citation rate and the IF of OA and hybrid journals. Solomon et al. (2013) also notes that the average citation rate of OA journals that receive APC has grown closer to subscription-based journals. However, other OA journals have lower average citations. Unquestionably, in a small number of previous studies, there has been no difference between the citation indicators of OA journals and other journals. (Sabharwal et al., 2014; Zawacki-Richter et al., 2010)

OA opportunities:

OA articles in hybrid journals have received more citations than subscription-based articles in the same journals. (Björk & Solomon, 2012) OA articles are known as an opportunity because articles as OA are more visible and more likely to be cited. OA articles also benefit the scientific cycle by accelerating the dissemination of scientific findings. (Abbasi et al., 2019; Alkhawtani et al., 2020; AlRyalat, Nassar, et al., 2019a, 2019b; Atchison & Bull, 2015; Eysenbach, 2006; Koler-Povh et al., 2014; Kousha & Abdoli, 2010; Langham-Putrow et al., 2021; Sheikh, 2017; Wohlrabe & Birkmeier, 2014)

In addition, disseminating information in the form of OA, followed by increasing the visibility and exposure of researchers to new data, can provide new opportunities for the interaction of ideas in joint projects and increase scientific collaboration for researchers. (Clements, 2017; McKiernan et al., 2016)

In addition to receiving more citations by articles, another opportunity for OA is to have more citation indices at the level of OA journals, which has been mentioned in some studies. For example, in the review of medical journals in Scopus, the SNIP, CiteScore, and percent cited indices of OA journals were higher than subscription-based journals. (AlRyalat, Nassar, et al., 2019b) The SNIP index in oncology journals was also higher in OA journals than subscription-

based journals. (AlRyalat, Nassar, et al., 2019a) Also, in Gynecology journals, the average SJR and the 3-year IF for APC-receiving open access journals were higher than for subscription-based journals, and OA journals in this field are also overgrowing. (Özay et al., 2021) In addition, in a review of journals and articles from 1999 to 2010 in Scopus, Solomon et al. (2013) noted that OA articles and journals would grow much faster than subscription-based articles and journals., which is another opportunity for OA publication.

Conclusion

According to the review of literature, it can be said that although OA publication facilitates visibility and access to the article, this alone does not indicate the validity and further increase of citations. Obtaining more citations by articles and journals depends on the quality of the article and various factors. Comparing the OA and non-OA articles in different studies have shown that OA articles receive more citations than subscription-based articles. Therefore, the OA is an advantage and an opportunity for articles. However, studies have demonstrated that the number of citations in articles that received the APC from an author is higher than in articles without the APC. This can indicate that the high-quality journals charge OA from authors. Undoubtedly, the type of journal that publishes articles plays a vital role in this regard. In the case of journals, OA alone cannot be an advantage, as in many cases, subscription-based or hybrid journals have higher citation rates than fully OA journals. Furthermore, various variables such as visibility, the possibility of receiving more citations, and cost can affect the researchers' approach to selecting the journal and publication pattern.

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