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Title: ***New Web Services that Help Authors Choose Journals***

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ABSTRACT

The motivations for an author to choose a journal to submit to are complex and include factors relating to impact and prestige, service quality, and publication costs and policies. Authors require information about multiple characteristics of journals that may be difficult to obtain. This article compares and contrasts the new author-oriented journal comparison tools and services that have emerged to assist researchers in this important step of the scholarly publishing process. Many of these tools combine factors to provide full web-based manuscript submission decision tools, however all have limitations that reduce their usefulness.

Key Points

- A growing number of free and fee-based sources exist to help authors find data on journals and publishers
- Journal identification services usefully aggregate information that can help authors make data-driven journal selection decisions
- Many services provide useful journal matching service, but the range of available author selection priorities is varied
- Authors balance risk and reward when selecting journals leading to complex selection criteria.

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Introduction

From an author's perspective, the decision to submit a paper to a particular journal could be likened to a long-term investment decision. Imagine that each year you manage to save part of your salary and want to regularly invest that money for future needs years from now. You have a choice of alternative stocks from which to choose and once you have chosen a particular option you have to stick with it in order to see what sort of returns you get from it. In an author's context, returns are scientific impact, citations, and prestige that then translate to appointments, grants, tenure, and positions at better universities. Some of the submission options are high risk, high yield (for example, trying to get something published in *Science* or *Nature*) others are low risk, low yield (for example, predatory open access journals). One of the risks is the long delay from submission to publication in many journals, which might negatively impact a yearly academic review. Is the risk worth the potential reward if, for example, your manuscript is rejected after a year-long review process, forcing you to resubmit elsewhere?

How do authors go about choosing a journal to submit to? Fit of the journal is certainly a prime concern (Salina & Munch, 2015; Tenopir et al., 2011), but much more goes into the ultimate decision. Many studies over the last two decades have examined that decision process and it is a complex array of competing criteria, including, among other factors, time from submission to publication, acceptance/rejection rate, potential audience, fees, impact factor, and perceptions of prestige (Mabe & Amin, 2002; Rowland & Nicholas, 2005; Björk & Holmström, 2006; Björk & Öörni, 2009; Mabe, 2009; Coonin & Younce, 2010; Mabe & Mulligan, 2011; Tenopir et al., 2011; Jamali et al., 2014; Tenopir et al., 2016). The earliest mathematical model that attempted to factor in journal publishing characteristics extrapolated to individual articles to match them to potential readers appeared in 1974. The factors examined included relevance, acceptance rate, circulation, prestige, and publication lag of a journal (Kochen & Tagliacozzo, 1974).

Criteria and motivations can be grouped in different ways. Based upon previously mentioned research, Table 1 identifies the factors that an author must consider that together drive the author's choice of journal for submission. Björk & Öörni (2009, p.63) explain that the importance of any one factor in the decision varies, but it is "not directly related to the content or quality of the manuscript." Each author must weigh the relative implications of these issues against their personal publication and career needs.

Table 1. Factors that influence an author's choice of journal submission (adapted from Björk & Öörni (2009))

Changing business paradigms, in particular Open Access (OA) with article processing charges (APC), also affect this author quandary. The traditional economic view of scholarly journals is as bundled content providers to readers. The paying customers of the journals have been the subscribers, typically libraries, who often pay very high prices to provide access to the latest research results to the researchers and students they represent. Unlike other branches of the media industry, such as movies, news, television, or books for entertainment, the modern scholarly journals industry is unique in that the ultimate end users of the product do not bear the cost of access themselves. Instead of selling journal

bundled *content* to subscribing institutions, or article pay-to-read charges, scholarly OA publishers rely on income by selling *services*. For authors of articles, these services include such things as editing, dissemination, quality control, and branding services.

Finding out about the various aspects of journal services can be tricky, but is critical information to help an author select a publishing venue. For some of the factors and information that authors' need (and as depicted in Table 1), objective data is readily available (e.g., journal impact factor and the APC charged by OA journals). For other criteria, especially those factors listed under service quality, information is sometimes not openly available to authors (although the publishers often have the data)—e.g., average publication delay and the acceptance rate. Others, such as the quality of the review process, are even more elusive and subjective.

While obtaining information by exploring a journal website or via word-of-mouth may be the most common practice, a growing number of free and fee-based sources exist to help authors find data on journals and publishers. Some of the services are long established and even predate the Internet. The examples in Table 2 represent tools that have become mainstream in academic circles, and although some have other aims as well, they have been used by authors to gather information that will guide them in choosing a journal for submission of their work. In fact, the increasing demand for this type of utility can be seen in a shift in focus for these established products. Cabell's International recently launched a "blacklist" of journals "to keep researchers protected from exploitative operations" (see <http://www.cabells.com/newsletter-blacklist>). The development of Cabell's Blacklist follows the ending of librarian Jeffrey Beall's widely referenced open-access black list of predatory journals and publishers.

Table 2. Some examples of established services to help authors and librarians find information about journals and publishers

This article will explore the new services being developed directly in response to user needs in light of the factors that influence an author's choice in journal submission. The goal is to provide an overview of the tools tackling an authors' difficulty in finding the right journal to submit—i.e., which one is credible and the right fit, what is the likelihood of being accepted for publication, what is the quality of the editorial process or the speed of publication, is the journal open access, and so on.

New Services

The next generation of open access services focus explicitly on targeting prospective authors (Table 3). These web-based tools often take their models from consumer choice portals such as TripAdvisor (hotels, restaurants), IMDB (Films) and Carmax or Carfax (car buying) that strive to reduce work and information overload for their users. The services are generally free and focus on two aspects: (1) simplifying the search process so users can easily find journals that best fit their article and (2) providing the best information to help users evaluate a journal to make a more informed submission decision. The overarching

goal is to assist authors with the complex journal selection process for manuscript submission as they wade through the overwhelming growth in scientific publications.

Table 3. New services to help authors choose journals

Using the different services is relatively straightforward. Each tool has a simple web interface that allows the user to input key pieces of information about their article—e.g., title, abstract, keywords/phrases—and similar to using a popular search engine, find the best matching journals. The user can then compare journals on the results list and consider the array of data provided to guide journal selection for a submission. One exception is Cofactor Journal Selector that leads a user through a detailed list of filters to match an author's publishing requirements, often referred to as faceted navigation. This, however, assumes the user is knowledgeable about author criteria and motivation metrics, but Cofactor Journal Selector does provide explanations of the filtering options.

The pros and cons of each service is dependent upon the varying sources and size of a tool's searchable database as well as the range and completeness of information they collect and provide.

Tools to match journals

The strength of a service's ability to help discover or recommend an appropriate journal relies on the content powering these tools—which journals and what data make up their searchable database. Each service is constrained by the number of titles that they curate in their database and range from a very limited number of titles and subject scope (e.g., Cofactor Journal Selector) to Research Square's JournalGuide that aggregates over 46,000 titles from across a wide-range of databases and indexes (Table 3). Cofactor Journal Selector, JANE, and JournalGuide have a biomedical focus while IEEE Publication Recommender will be of interest to authors in the field of technology. As such, IEEE Publication Recommender also matches against IEEE conferences. It is also important to note that the services provided by publishers are limited to only searching their own proprietary pool of publications that assumes an author begins their decision process by first choosing a publisher. The comprehensiveness of each journal database, or from where they have been sourced (i.e., from which major indexes), is not always completely transparent, however. For the non-publisher services, a journal editor is able to request that their journal be added if missing from the database.

In addition to journal/publisher information, most of the services leverage article-level data, for example article abstracts. These tools match a manuscript title and/or abstract against articles that have already been published by a journal and provide suggestions based on published content most similar to the author's pending manuscript. EndNote Match, leveraging their work in citation connections, can also search an article's reference data to identify relationships with related journals. Additionally, Edanz and JournalGuide provide the capability to search for journals using a drop-down list of categories or fields of study. Even with the ability to select sub-categories or sub-fields, the search appears to cast a very wide net.

Clearly, the usefulness of these recommendations depends upon both the size and scope of the journal titles being searched and the complexity of the search engine. Several services address technology, but an in-depth analysis of the search algorithms is beyond the scope of this article (Table 4).

Table 4. Search engine systems.

As a rudimentary test on the services ability to suggest journals, we used the title and abstract of this article to compare each tool (Table 5). No additional filters or options were selected so that the identical search string was used in each tool. These results do illustrate not only the variance in search results, but most importantly, show the differences in journal databases being searched. As was already noted, the publisher tools (IEEE, Elsevier, Springer) are only searching against their own proprietary journals and will only search titles from their respective publishing platform. Surprisingly, several attempts at searching an Elsevier published article title and abstract in Elsevier Journal Finder did not recommend the corresponding journal. Testing the same activity in IEEE Publication Recommender and Springer Journal Suggester did result in a match, but not consistently. While further investigation would be needed to truly comment on the viability of these search algorithms, the purpose of these tests were to simply demonstrate the range of results.

Table 5. Results of search using title and abstract of this article.

Tools to help decision-making

In reality, a good search engine does not attempt to return the results that best match the input query—i.e., journal match. A good search engine tries to answer the underlying question—i.e., what is the best journal for my manuscript.

While an individual author’s journal selection process is multi-faceted, evaluating the factors in the decision is further complicated by the disparate sources of publication data and metrics. One of the advantages of these new services is to aggregate more information about the journal beyond basic journal and publisher information to help authors make data-driven decisions about which journal to choose (Table 6). By providing these additional measures in one place, researchers can analyze the information to select search results that best match their publishing requirements or validate a possible journal title.

Table 6. Metrics to help evaluate/select a journal

Table 6 indicates the varying range of an author’s decision-making criteria that each tool provides. Again, the strength of these services rests upon the completeness and accuracy of the data they are collecting. The publisher tools are able to display complete information as they own the data, but the tools that are aggregating data from various sources are not consistent. Most of the tools provide basic information about the journal (i.e., aims and scope), except for JANE and EndNote Match—although they provide a link to the journal homepage. However, none of the services provide data that address audience, such as data often associated with Ulrichsweb (e.g., subscription reach). While Cofactor and Edanz Journal Selector will update their information if it is provided by a journal editor, JournalGuide relies upon representatives from a journal to “claim” the journal profile and

subsequently enhance the information provided on the site. As a result, this tool had the most missing data of those surveyed.

Most of the tools use filters or sorting functionality to isolate the criteria that best matches a user's publishing requirements (e.g., impact factor, open access). It is important to note that while non-English language journals can be found in most of the databases, none of the tools provide language as a filter which has implications for their intended audience. To alleviate a bit of the confusion in decision-making, some services also offer relevancy ranking to weigh and improve search results and in effect, recommend the best journal match. While IEEE Publication Recommender simply rank the results by relevancy, the basis for the results order for Edanz and Spring Journal Suggester is unclear. The other services, however, have developed a unique match "score" to more robustly rank results (Table 7). While these systems can provide some level of judgement for the user, they are not absolute scores. Researchers still need to apply critical analysis using the other metrics provided in the results.

Table 7. Weighted results to help discover suitable journal matches

Tools to increase transparency

As an extension to the information aggregated by these services, there are tools that by focusing on increasing the transparency and accountability in academic publishing can also help authors evaluate journals. Following the trend of popular user-generated content services like TripAdvisor or Yelp, these tools provide user reviews to shed light on the peer-review system (Table 8). They allow researchers familiar with submitting to a particular journal to share their feedback and experience with the journal's review and manuscript handling process. These first person accounts (positive or negative) can add to the metrics a researcher uses to choose a journal to submit their work.

Table 8. Services that crowdsource user reviews

These tools are all developed by independent researchers for the research community. They rely on the online voluntary participation of users who both produce and use the content. While using these services is free, contributing a review does involve user registration—QOAM requires an academic email address and JournalReviewer states the reviews are moderated. While crowdsourcing data within established communities that have a shared social identity often fosters participation, individual involvement is often motivated by drivers such as social recognition and self-esteem (Porter et al., 2011; Estellés-Arolas, Navarro-Giner, & González-Ladrón-de-Guevara, 2015).

Depending on crowdsourcing data for the broader publishing industry may not yet be ideal, however, uncovering information about peer-review is becoming paramount (Porter, Donthu, MacElroy, & Wydra, 2011; Baverstock, 2016). According to the original development team, Research Square's JournalGuide encouraged user reviews, but no longer includes that information due to low response rate (Perkel, 2015; Research Square, 2016). On the other hand, as a personal venture, Andy Cullison of DePauw University created the

Journal Survey Project that updates in real-time the results of a short online questionnaire for philosophy authors' experiences with journal submission/review processes (see <http://www.andrewcullison.com/journal-surveys/>). His service engaged the philosophy community, aggregated data on 150 journal titles, and in April 2017 was acquired by the American Philosophical Association (Maxwell, 2017).

Sustainability

Author-oriented journal comparison tools and services are relatively new—the majority appearing around 2014. The economic models for the free services vary among the type of service owner, in other words their ultimate purpose. JANE, JournalReviewer, and SciRev are owned and managed by researchers to benefit the publication process and are funded by grants, foundations, and in the case of JournalReviewer, self-funded by the developers. Publisher and commercially operated free services are typically created as giveaway products or marketing tools to increase their primary business. Publishers (e.g., Elsevier, IEEE, Springer) help researchers choose the best of *their* journals to increase article submissions. Editorial consulting firms that are hoping to sell related publication support services to authors such as English editing, translation, article formatting, etc. develop the other free tools. Regardless of the approach, authors are not directly paying for these free online services, but someone is. EndNote Match sits behind a subscription to EndNote that may be purchased by an individual, but is also a very common institutionally funded service.

At the other end of the spectrum are fee services that provide the author with “expert” advice on selecting the right journal to ensure publication. Fee services such as Editage Journal Selection (Cactus Communications) and Edanz Journal Selector (fee option) eliminate an author's involvement in judging suitable journals. Analogous to concierge services, typically aimed at convenience, these services allow researchers to hire experts to analyze their manuscript and prepare reports with journal recommendations and submission advice. For around a US\$300 fee, these services also market their expertise and quality. However, are users willing to pay for web-based services? In 2014, the University of Otago announced their development and launch of a fee-based iPhone app called HelpMePublish to connect academic authors with over 5,000 potential journal-publishing options (Strong, 2014). Just three years later, the app no longer exists and a replacement has not filled the void.

Conclusion

While authors seek to publish the results of their research in the best sources they can, that fit their topic the most closely, and will have the biggest impact, author motivations for seeking a journal to submit to are complex and requires information about journals that may be difficult to obtain. Beyond access to the information, these new services and tools help authors navigate the information overload—both the data and ever-growing number of journal options—to help inform their choice.

Seeking help with this complex decision is ultimately only as good as the source used. Most of these services are new and not all will survive the test of time. If authors rely on such services, there is also a chance that the limitations and potential biases of the services will

restrict the creation of new journals or lead other journals to lose submissions. On the other hand, as these tools increase the transparency of journal information and their editorial processes, this could lead to an overall improvement in academic quality control. The work done by Jelte Wicherts (2014) showed that if the transparency of the peer-review process is an indicator of editorial quality, there is promise in using that to predict academic quality in new journals. Interestingly, authors and these services tend to assume that peer review is present and uniform before even considering a journal, but peer review can be widely interpreted and new methods of validating articles are disrupting peer review within scholarly journals (Baverstock, 2016).

It is important to note that the authors aggregated the list of services mentioned in this article during spring 2017 via a widespread investigation. The data collected was through direct analysis of the product websites, unless otherwise noted, and none of the authors have any affiliation with services of this type, listed or not. This inventory, while extensive, is limited by the dynamic nature of web-based tools. For example, Journalysis.org (Bangor University) was originally included in Table 3, but the site was no longer active upon submission of this article.

Ultimately, of course, the burden is on the author to be knowledgeable and the final selection will likely be based on varying multiple factors, the weighting of each being idiosyncratic to the individual investigator. Ironically, many prospective authors fail to simply verify a journal's aims and scope when submitting a manuscript (Ahlstrom, Bruton, & Zhao, 2013). Guides merely assist the process and authors are warned to implement critical analysis as advocated by two generic services known as: "The CRAAP Test: Critically evaluating information sources" (<https://www.library.qut.edu.au/transcripts/craaptest.jsp>) and "Think. Check. Submit" (<http://thinkchecksubmit.org/>).

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Table 1. Factors that influence an author’s choice of journal submission (adapted from Björk & Öörni (2009))

| |
|--|
| Impact & Prestige |
| <ul style="list-style-type: none"> ▪ Publisher prestige ▪ Journal inclusion in citation indexes ▪ Impact factor level ▪ Journal position in ranking lists |
| Service Quality |
| <ul style="list-style-type: none"> ▪ Quality of the peer review process ▪ Quality of the publishing process ▪ Post publishing features ▪ Publication delay ▪ Rejection rate |
| Publication Cost & Policy |
| <ul style="list-style-type: none"> ▪ Journal OA policy ▪ APCs and other charges ▪ Availability of external APC funding ▪ Institutional reward schemes |

Table 2. Some examples of established services to help authors and librarians find information about journals and publishers

| Service | Launch | Cost | # Titles | Owner / Developer | Primary coverage |
|---|----------------|--------------|----------|--|---|
| (Ulrich's Periodicals Directory) UlrichsWeb | (1932) 1999 | Subscription | 25,000 | ProQuest | Serials information, circulation, subjects |
| Cabell’s Journal Directory | 1978 | Subscription | >11,000 | Cabell’s International | journal acceptance rates, journal quality, transparency and the peer-review process |
| (Science Citation Index®) Journal Citation Reports (JCR) | (1963) 1975 | Subscription | >11,000 | Clarivate Analytics | Impact factors for journals |
| Directory of Open Access Journals (DOAJ) | 2003 | Free | >9,000 | Infrastructure Services for Open Access C.I.C. | OA journals |

Table 3. New services to help authors choose journals

| Service | Cost | # Titles | Owner / Developer | Searches Across |
|--------------------------------------|-----------------------------|----------------|---------------------|---|
| Cofactor Journal Selector | Free | 95 | Cofactor | Biology & medicine journal information |
| Edanz Journal Selector | Free / Purchase Fee | 28,547 | Edanz, Japan | Journal information & abstracts |
| Elsevier Journal Finder | Free | 2,900* | Elsevier | Elsevier journal information & abstracts |
| EndNote Match | Incl with Endnote™ purchase | > 8,200 | Thomson Reuters | Indexed data in Web of Science |
| IEEE Publication Recommender™ | Free | 170+ | IEEE.org | IEEE periodical & conference full text |
| JANE (Journal/Author Name Estimator) | Free | all of Medline | Martijn Schuemie | Medline abstract records |
| Research Square's JournalGuide | Free | > 46,000 | Research Square, UK | Pubmed & major indices abstracts |
| Springer Journal Suggester | Free | > 2,500 | Springer Nature | Springer & BioMed Central journal information and abstracts |

* Per Kang, Doornenbal, & Schijvenaars (2015)

Table 4. Search engine systems.

| Service | Search engine |
|--------------------------------------|------------------------------------|
| Elsevier Journal Finder | Elsevier Fingerprint Engine™ |
| EndNote Match | Patent-pending technology |
| JANE (Journal/Author Name Estimator) | Lucene search engine (open source) |
| Research Square's JournalGuide | Proprietary algorithm |
| Springer Journal Suggester | Journal matching technology |

Table 5. Results of search using title and abstract of this article.

| Service | Top 3 Journals Recommended | | |
|--------------------------------------|------------------------------------|---|---|
| Edanz Journal Selector | Quality of Life Research | Health and Quality of Life Outcomes | Environmental Monitoring and Assessment |
| Elsevier Journal Finder | Policy and Society | Journal of Informetrics | Energy Research & Social Science |
| EndNote Manuscript matcher | IEEE Internet Computing | International Journal of Web Services Research | Learned Publishing |
| IEEE Publication Recommender™ | Computer | IEEE Transactions on Professional Communication | IEEE Transactions on Big Data |
| JANE (Journal/Author Name Estimator) | PLOS ONE | Prilozi | Indian Journal of Anaesthesia |
| Research Square's JournalGuide | PLOS ONE | International Neurourology Journal | Scientometrics |
| Springer Journal Suggester | Research Integrity and Peer Review | Scientometrics | Journal on Vehicle Routing Algorithms |

Table 6. Metrics to help evaluate/select a journal

| Impact & Prestige | Service Quality | Publication Cost & Policy |
|-------------------|-----------------|---------------------------|
|-------------------|-----------------|---------------------------|

| Service | Impact Factor | SNIP | SJR | JCR | Article Influence | Editorial info | Acceptance rate | Publication speed | Embargo time | Publishing model | Publishing charges | License |
|--------------------------------------|---------------|------|-----|-----|-------------------|----------------|-----------------|-------------------|--------------|------------------|--------------------|---------|
| Cofactor Journal Selector | | | | √ | | √ | | √ | | √ | √ | √ |
| Edanz Journal Selector | | √ | √ | | | | | | √ | √ | √ | √ |
| Elsevier Journal Finder | | | | √ | | √ | √ | √ | √ | √ | √ | √ |
| EndNote Match | | | | √ | | | | | | | | |
| IEEE Publication Recommender™ | √ | | | | √ | | | √ | | √ | | |
| JANE (Journal/Author Name Estimator) | | | | | √ | | | | | √ | | |
| Research Square’s JournalGuide | | √ | | | | √ | √ | √ | | √ | √ | |
| Springer Journal Suggester | | | | √ | | √ | √ | | | √ | | |

Data Field Descriptions:

- Editorial info: peer review type, responsiveness (review time)
- Publication speed: accepted article production time
- Publishing model: open access, subscription
- Publishing charges: APCs, manuscript handling fees, OA fees, submission fees (does not include subscription fees)
- License: Creative Commons, copyright

Table 7. Weighted results to help discover suitable journal matches

| Service | Ranking |
|--------------------------------------|--|
| Elsevier Journal Finder | % Match to Elsevier journals based on natural language processing of manuscript title/abstract |
| EndNote Manuscript Matcher | Match Score: best fit against all indexed data in Web of Science analyzing manuscript title/abstract/ references |
| JANE (Journal/Author Name Estimator) | Confidence Score: scores journals in Medline by searching for the 50 articles most similar to manuscript title/abstract |
| Research Square’s JournalGuide | Score: ranks journals according to number of matches of manuscript title/abstract to published articles |

Table 8. Services that crowdsource user reviews

| Service | # Titles | # Reviews | Review Data |
|-----------------------------------|----------|---|---|
| JournalReviewer | 842 | 249 reviews from 104 titles | Turnaround time, review length and quality, recommendation |
| SciRev | 14,000** | ~4,000 reviews | Peer review process duration, reviewer report quality, outcomes, motivation |
| Quality Open Access Market (QOAM) | 23,836 | 1,094 OA & hybrid titles with at least 1 review | Editorial information, peer review, governance, workflow. |

** Per Perkel (2015)