

What do scholarly channels and resources do authors trust to read, cite and publish in? A Malaysian study

**Abrizah, A.¹, Fathiah Badawi¹, Niusha Zohorian-Fooladi¹,
David Nicholas², Hamid R. Jamali² & Norliya, A. K.³**

¹Department of Library & Information Science,
Faculty of Computer Science & Information Technology,
University of Malaya, Kuala Lumpur, MALAYSIA

²CIBER Research Ltd, UNITED KINGDOM

³Faculty of Information Management,
Universiti Teknologi MARA, Shah Alam, MALAYSIA

e-mail: abrizah@um.edu.my; fathiahfirst@yahoo.com; niushazohorian@gmail.com;
dave.nicholas@ciber-research.eu; h.jamali@gmail.com; drnorliya@yahoo.com

ABSTRACT

The paper provides the results of the first phase of the research project Trust and Authority in Scholarly Communications: The Periphery of World Scholarship in the Digital Era conducted in Malaysia. It provides for an examination of the behaviours and attitudes of academic researchers as producers and consumers of scholarly information resources in today's scholarly digital environment; with respect to how they determine authority and trustworthiness in the sources they use, cite, and publish in. This first phase utilised focus groups to obtain this information. Five focus groups were conducted in three universities in Kuala Lumpur involving a total of 48 science and social science researchers cum authors. Findings indicate that peer-reviewed journals are still the central to the authors, however they seem to have more freedom in relation to journals they read and cite, compared to publish. Overall, authors view that scholarly resources that are current, relevant, authored by credential scholars, peer-reviewed, having credible reference lists, published by reputable journals, and having online presence are fit for scholarly utilisation. The extent to which authors are prepared to believe that the scholarly information source and channel are trustworthy for publication rely on it in view of its impact, indexation status, reputation, peers' recommendation, accessibility and visibility, and authority's approval. New forms of communication channels such as social media or new journal models are not much used in formal scholarly communication or perhaps on the verge of being more used. The focus groups provided the direction for questionnaires and interviews that would follow. The paper also discusses the implication of the findings to academic librarians towards delivering the right services to meet the needs of the scholarly community.

Keywords: Trustworthiness; Authority; Citation behaviour; CIBER's Research Project; Scholarly communication

INTRODUCTION

The origins of the current research lie in *CIBER's Trust and Authority in Scholarly Communications in the Light of Digital Transition* project conducted by University of Tennessee USA and CIBER Research Ltd UK (Tenopir et al. 2013) for the Alfred P. Sloan Foundation. This research project provides for an examination of the behaviours and attitudes of academic researchers as producers and consumers of scholarly information resources in the digital era in respect to how they determine authority and trustworthiness in the sources they use, cite, and publish in. Tenopir's et al. (2013) study constitutes a major investigation into what is unquestionably the most important characteristic of scholarly communication, use and information seeking behaviour – i.e. quality and reliability. The investigation began in 2012 with two countries, USA and UK, which are at the centre of scholarly communication. It is now being conducted worldwide in recognition of the universality, connectedness and, possible, inequalities in scholarly communication.

The notion of trust in scholarly communications has been examined quite extensively, and from a significant variety of disciplinary angles. The scientific literature serves for scholars as “a tangible record of the search for truth” (Sox and Rennie 2006) as the basis to build on for the further advancement of human knowledge. Scholars, therefore, have particularly stringent requirements for high quality, reliable and reputable information sources and channels, which have traditionally been operationalised as a series of conventional indicators especially for articles submitted to journals. These indicators include (a) presence or absence of scientific reviewing processes before the publication of the information (Bornmann 2011; Harnard 1999; McKnight, and Price 1999; Rowland, 2002), (b) post-publication assessments by means of comments and review articles (Nentwich, 2005; Weller, 2000), (c) citations received a book or article (Bornmann and Daniel, 2008; Cronin, 1984), (d) Journal Impact Factor (Garfield 2006), (e) the reputation of the channel used to communicate the information (Ellis, Cox and Hall 1993; Kling, 2004), and (e) the author's professional reputation and institutional affiliation (Abrizah et al. 2014; Becher and Trower, 2001).

How scholars read and use, cite and publish their research work has been discussed by many researchers. Weller (2001) pointed out that peer-review seems to be one pivotal criterion that many scientists employ in evaluating the legitimacy of publication venues. Tenopir (2003) indicated that peer-reviewed journals are more accepted and used by scholars because they are free of cost and accessible (Tenopir 2003). Rusch-Feja and Siebeky (1999) found that physicists, biologists and biomedical scientists use electronic journals more than other resource types. Tenopir et al. (2009) found that electronic articles account for the majority of readings among scientists, though most readings are still printed on paper for final reading. Scientists reported reading a higher proportion of older articles from a wider range of journal titles, and more articles from library electronic collections. Evans (2008) and Kurtz et al. (2005) found that the availability of electronic journal articles has resulted in authors citing fewer older articles and a narrower diversity of sources. While these studies examine the behaviour of authors, readers and other stakeholders regarding peer-reviewed scholarly e-journals, Kling, Spector and McKim (2002) examined the electronic distribution of articles called working papers or technical reports that are sponsored by academic departments or research institutes. They believed that scholars would have a better chance to use

Internet resources to improve the dissemination of their research if a wider array of publishing models is available besides electronic journals and hybrid paper-electronic journals.

Tenopir et al. (2009) pointed out that many studies had demonstrated that faculty in the sciences tend to read more in electronic journals or from e-prints than do humanists or those in the social sciences although Vakkari (2008) has shown that when normalising for availability, humanities faculty are no less inclined to use electronic journals. In another study to understand how economists cite the literature, Sharif and Mahmood (2004) used citation analysis and found that the highly-cited journals are mainly from the USA. Polonsky and Mittelstaedt (2006) who explored the publishing performance in six marketing journals, found that there is a dominance of publishing by North American academics in socially-oriented research, meanwhile Asian academics seems to be generally under-presented.

Open Access and self-archiving publishing model, whose aim is to maximise dissemination of research output, are specifically noted incentives for selection of Open Access journals due to free access and visibility. However, free public availability and increased exposure may not be strong enough incentives for authors to choose open access over more traditional and respected subscription based publications, unless the quality issue is also addressed (Warlick and Vaughan 2007). Social scientists are suspicious and confused about Open Access publications, but not if they come from a traditional publisher (Nicholas et al. 2014). Frandsen (2007) compared the open access journals usage in developing and developed countries and revealed that authors from developing countries less cite Open Access journals more than those from developed countries. Although multiple studies have reported that the impact of Open Access citations often surpasses those published in non-Open Access publications (Antelman 2004; Harnard and Brody 2004), Open Access journals are accepted by scientists only if peer-reviewed.

Other essential scholarly communication evaluation criteria accumulated throughout the years to complement to the traditional peer review is usage based metrics (Cronin, 2001). New refined metrics have increasingly been developed to analyse the performance of a journal, an author or an article (Priem and Hemminger 2010; Taylor and Kamalski 2012) such as based on page views and downloads (Thelwall and Kousha in, press), blogs (Shema, Bar-Ilan, and Thelwall 2014) and web links (Kousha and Thelwall 2014; Mas Bleda et al. 2014) as well as altmetrics (Mohammadi et al., in press). However, the use of social media and Open Access platforms to disseminate information and research was met with general skepticism due to lack of peer review, and as CIBER's studies have pointed out, these attitudes are slowly changing (Nicholas and Rowlands, 2011; Rowlands et. al 2011; Tenopir et al. 2013;).

The literature indicates that most of the world's scholarly research activity is concentrated in a few scientifically and technologically advanced countries, where spending on research and development is the highest. The scientific world is divided into centres and peripheries, a demarcation that is typically seen as corresponding to the divide between the affluent, industrialised states of the northern hemisphere and the less well-off and technologically less advanced nations of the south. Nonetheless, for a

variety of structural and cultural reasons, the 'newly industrialised' countries (NIC), such as India, Iran and China, are on the periphery of world science, too.

Clearly then peripheral countries merit investigation and we intend to make a start by investigating countries currently on the 'periphery' of the scholarly endeavour. This means we shall not only be able to determine how scholars from the periphery characteristically behave in regard to trust and authority, but also to determine whether they act differently in regard to sources and channels that originate from the core countries and the peripheral countries. To be sure, the inequalities in the discovery, usage, citation and publication of research hailing from countries on the outskirts of international scholarship are well known and have repeatedly been established. However, the move to digital scholarship, augmented as it is by the ever-increasing use of social media, on the one hand, and Open Access initiatives, on the other, may have served to break down the social and cultural barriers that prevent academics from the provinces of world scholarship taking their rightful place in the international research community. Overall, the studies on how scholars from the periphery countries establish trust in reading, citing and publishing in the current digital environment are limited and only one study (Nicholas et. al 2014) exist in this area, covering USA and the UK. The purpose of this paper is to understand what resources scholars choose for their reading, citing and publishing purpose and what their reasons are. And with the current research we shall establish whether that has come about for Malaysia, a country currently on the 'periphery' of the scholarly endeavour.

METHOD

The objective of the research is to examine the changing behaviours and attitudes of academic researchers in today's scholarly digital environment, as producers and consumers of scholarly information resources. The paper study sought to establish how they assign and calibrate authority and trustworthiness to the sources and channels they choose to use, cite, and publish in. That is, it is about academic researchers as both producers and consumers and how they deal with the trust and authority consequences of the digital transition, especially in regard to changing digital behaviours, social media and open access publishing. The key research questions are:

- a) What channels and scholarly resources do author trust to read?
- b) What channels and scholarly resources do author trust to cite?
- c) What channels and scholarly resources do author trust for publication?

This paper concentrates on the first data collection phase of the project in one element of the CIBER research project: the views and behaviours of academic science and social science. The focus group method was chosen as the approach to research into this topic. This method has been used successfully in a number of library and information science studies in recent years, most often to obtain client evaluation of library services. In comparison to face-to-face interviews, focus groups studies tend to focus on the participants' rather than the researcher's points of view, and offer the opportunity to observe a large amount of interaction in a short period of time. Moreover, the spontaneous nature of focus group attributes to the participants interacting with one another. Five groups were held during December 2013 to April 2014 at three

universities in Kuala Lumpur, Malaysia. The participants, covering scientists and social scientists, and a mixed-subject group comprised information science academics, were established and conducted in each of the case setting. The focus group sessions were conducted by the first author and the author is not affiliated with any of the groups being studied. The groups were comprised as follows:

- a) Two focus groups at university A, comprising physical scientists, biological scientists, engineering and a handful of medical researchers. (18 participants)
- b) Two focus groups at university B, comprising mainly social and information scientists, and computer science researchers (20 participants)
- c) One focus group at university C, comprising early careers researchers from engineering, physical sciences and social scientists. (10 participants)

The participants were recruited in two ways: first, through personal requests by the authors, and second, through nomination from peers who think that the nominees would make good participants. A total of 60 participants who are familiar with the topic, known for their ability to respectfully share their opinions, and willing to volunteer about 2 hours of their time were contacted. A total of 48 researchers finally attended the focus group sessions, which were conducted in English Language. Eight to ten people were covered in the focus groups. The demographic breakdown of participants is given in Table 1. The Trust focus group questions in Tenopir et al. (2013) were used. Only notes were taken during the focus group sessions. For accuracy purposes, these notes were shared with a representative from the university hosting the focus group, who attended the group as an observer. Lunch and refreshments were provided for the focus group participants.

Table 1: Participants' Demographic based on Gender, Academic Rank, Academic Discipline and Years in Academia

Gender	Total	Academic Rank	Total	Discipline	Total	Years in academia	Total
Male	26	Professors / Associates	18	Science	21	More than 5 (Senior researcher)	34
Female	22	Senior Lecturers	30	Social Science	27	Less than 5 (Early career researcher)	14

RESULTS

This section presents the findings in responding to the project's research questions identified earlier. The participants' quotes presented are the verbatim reports of the conversation. References after each quotation include participant's academic discipline and research experience (S – Science; SS – Social Science; SR – Senior Researcher, ECR – Early Career Researcher).

RQ1: What channels and scholarly resources do author trust to read?

Authors in general identified two channels and six characteristics of scholarly resources in that they choose to read in regards to trustworthiness. Indexed-journals in global citation databases and journals subscribed by library databases are the two channels social scientists choose to find resources to read in regards to trustworthiness.

I prefer current publication indexed in Scopus and ISI (SS, ECR)

I will get journals from online databases subscribed by the university library. In addition, materials from established publishers such as Elsevier, Science Direct and Emerald would also be read and use as they mainly publish articles related to my area (SS, SR)

...referring to journals that are subscribed by the university, thus no worries much on the reliability side. (SS, ECR)

I read indexed journals, they normally select papers on current hot topics of research, although they may miss on novel innovations.(SS, SR)

The following response indicates the trust academics put on the library as the authoritative body to evaluate scholarly resources: *And Ulrich's should always be a good source of reliable information about journals, if we forget about impact factor and such. And you could always ask the library - they are usually quite well informed and willing to help. (SS, SR)*

In terms of the characteristics of scholarly resources, authors trust articles that have the following characteristics: (a) current; (b) relevant; (c) written by credible authors; (d) peer-reviewed; (e) having credible reference list; (f) published in reputable journals; and (g) having an online platform. Table 2 details the responses of the focus group.

One academics expressed her concern about having people reading journals that do not undergo a proper peer review process: *a researcher I follow in ResearchGate wrote about this paper published in Science, the results are surprising that over 50% of the Open Access journals accepted a purposely fabricated article. Is it true that all those open access journals do not conduct peer review? Is this what we want our students to read? (S, SR)*

Table 2: Respondents Verbatim Statement about what Scholarly Resources Authors Read

Characteristics of Article to Read	Example statements
Current	1) Novel information and its timely dissemination are both equally important aspects of recognition and adoption of my research work (S, ECR) 2) Reliable sources...this can be evaluated through the date [of publication] (SS, SR) 3) I prefer current publications indexed in ISI or Scopus (SS, ECR) 4) I will go for current literature, less that 5 years old (S, SR)
Relevant	1) [the article should] fit for the purpose – relevant to my need.

	(S, ECR) 2) It should be somehow like this... valid information that is correct and can be used for the [research] purpose (SS, SR) 3) Accuracy and relevancy of the information to my research need. (SS, ECR) 4) The relevance of the content is very important – simply because of what they are! (S, SR)
Credentials and authorships	1) Authors who are well-known and active in producing papers. (S, ECR) 2) Most of the time I will look for the originator of the information such as who are the author, editor, and/or contributors and what are their qualifications, experience and education. (SS, SR) 3) Article must have proper qualified and credible authors with contact information and department or organisations they are affiliated with. I will check the authoritativeness by looking at this. (SS, ECR) 4) I prefer to read articles from scholarly journals where the authors credential and affiliation is included in the article. (S, SR)
Peer-reviewed	1) The academic community identified the peer-reviewed journals as a way of determining quality, and have latched onto it with such vigor (S, ECR) 2) I will read articles that have gone through a very stringent process of expert review because these are really qualified publications. (SS, SR) 3) Journals that conduct peer review. (SS, ECR) 4) ..not from those predator publishing group, the group lacks transparency in the editorial process (S, SR)
Having credible reference list	1) I will choose article that cite credible sources in an extensive list. (S, ECR) 2) By browsing the references (cited articles) could be the best way to establish the reliability of a source. (SS, SR) 3) [I trust on the] sources that are cited in literature review. (SS, ECR) 4) I read an article that provides me with a lot of background reading, the cited references point the way to more useful resources (S, SR)
Published in reputable journals	1) When I decide to read, I check the indexation status, I avoid reading banned journals (S, ECR) 2) High circulation and reputation of the journal (SS, SR) 3) Most of the indexed-journals are excellent in content (SS, ECR) 4) Reading a good journal is as important as writing a good article, I read articles published in prestigious journals (S, SR)
Having an online platform	1) There must be an online channel for it; even though the channel is totally print, there must be evidence that it exist and

- mentioned on the Web. (S, ECR)
- 2) I will read articles that are available online..full-text (SS, SR)
- 3) I read pre-prints, but they must be accepted for publication..they are quickly available online (SS, ECR)
- 4) I begin my search on Google, I mainly read online journals or those with online version (S, SR)

RQ 2: What channels and scholarly resources do author trust to cite?

When talking about what authors trust to cite, the channels identified are again from indexed journals by global citation databases and journals subscribed by the library databases.

I will have to use the reliable source subscribed and purchased by the library. They have to follow certain criteria as the cost to purchase and subscribe is not cheap. It is the task of the library to determine reliability of the source. The lecturer could work closely with the librarians who are liaisons of the library. To me, I always practice by referring journals that has been subscribed by the university. (SS, SR)

It's still this way, journals are the best indicators of research quality, I read good indexed-journals, and I cite the articles...relevant articles (S, SR)

As I read I would use and cite relevant publications from the journals in Scopus (S, ECR)

I read and finally, cite journals subscribed by the library databases (SS, ECR)

In terms of the characteristics of scholarly resources, authors cite articles that have the characteristics similar to that they read: (a) current; (b) relevant; (c) written by credible authors; (d) peer-reviewed; (e) having credible reference list; and (f) published in reputable journals. Table 3 presents the findings. Unlike reading, it appears that none of the participants indicated that they were likely to cite a resource that has its web presence or the version found on the open web. This shows that they were more likely to read, not cite, by ease of access factors. When this was probed during the focus group, one participant indicated *"citing the published version of the article, but reading the pre-print or the online version found on the Internet"* (S, ECR)

Table 3: Respondents Verbatim Statement about what Scholarly Resources Authors Cite

Characteristics of Article to Read	Example statements
Current	<ul style="list-style-type: none"> 1) I will cite the most recent source on a topic (S, ECR) 2) Very important when producing a paper that you cite the most current sources. (SS, SR) 3) First I will choose the articles, check who the author is, his background and the date information. Will cite recent articles (SS, ECR) 4) I cite recent articles from journals. The reviewers would prefer you to cite the latest publication (S, SR)
Relevant	<ul style="list-style-type: none"> 1) I believe that reliability is so important when I decided to

	<p>read or use that source. For example if there is no expert/competent nature then I might find another source rather than to use risk sources. (S, ECR)</p> <p>2) I cite journals in the area that I publish in, so it is a matter of relevance to me. (SS, SR)</p> <p>3) I believe that relevance of the content is so important when I decide what to cite. I want to point to my readers to sources that may be useful to them (SS, ECR)</p> <p>4) When I cite, I give credit for related work, homage to my peers. (S, SR)</p>
Credentials and authorship	<p>1) When you talk about authority, the factor [which] should be critically considered is author authority. You cite credible authors' works. (S, ECR)</p> <p>2) The credibility of the author that wrote the article, that the reason as well, I prefer to refer to those articles from scholarly journal where the author's credentials are affiliation are included in the article. (SS, SR)</p> <p>3) Personally I am more concerned about citing the works, works that have quality, and they are mainly co-authored by known authors in that field (SS, ECR)</p> <p>4) In my area, I know who the main-players are, so I have the tendency to cite their works. (S, SR)</p>
Peer-reviewed	<p>1) I mainly cite journals articles, they have been reviewed by the experts. (S, ECR)</p> <p>2) I use them because the content is reliable, the articles have gone through academic-peer reviewing and come from high quality research. (SS, SR)</p> <p>3) I make it a point to cite journals to which my article is submitted for publication to increase chances of acceptance (SS, ECR)</p> <p>4) When I cite, I refer to those peer-reviewed journal articles. Citing papers mentioned by reviewers to increase chances of acceptance too! (S, SR)</p>
Having credible reference list	<p>1) When you talk about what article to cite, I will consider the number and quality of references. (S, ECR)</p> <p>2) If the paper has list of original publications in which an idea or concept was discussed, I will definitely cite the paper. (SS, SR)</p> <p>3) I will cite based on how many references the article has, an article with many references will get often my attention. (SS, ECR)</p> <p>4) I tend to cite articles with high quality references, this make you manage your references much easier as the citation information is already available. (S, SR)</p>
Published in reputable journals	<p>1) I will cite my works or any other relevant works published and cited in international citation databases (S, ECR)</p> <p>2) When you talk about authority, one factor that we should</p>

consider for citing is the journal standing. ISI and Scopus cited journals could be the most popular chosen journals for citation. (SS, SR)

3) I would look for a good journal if I were submitting, so I would cite articles in published in good journals in my topic. (SS, ECR)

4) We have this term as cited document in our field, and journals are considered as citable documents, prestigious.. as the contents are seen as accurate and reliable. (S, SR)

RQ3: What channels and scholarly resources do author trust for publication?

There is uniformity among authors, irrespective of disciplines and publishing experience, that only journal is the channel and the scholarly resource that they trust for publishing and disseminating their research works.

It seems incredible but it's still this way, journals are the best indicators of research quality according to my latest survey. Researchers believe that Google Scholar is still unreliable, and no university is looking or demanding it seriously; since appointments are often much depends on your publications in journals. (S, SR)

The characteristics of the reliable journals publications are as follows:

a) Journals that have high impact:

In case of journals by publishers I do not know, I always check from the ISI Web of Science if it has an ISI impact factor or not, and I also check from Scopus if it is listed there. You see, some predatory publishers lie, they claim their journals are indexed/listed but this is not true), if not, then I will not submit my paper there. (S, ECR)

My last paper has just been published in a Q1 Journal listed at JCR Thomson, and you? What is your methodology to select journals? (S, SR)

b) Journals that are indexed by global citation databases

It must be indexed either in ISI, Scopus or if published by open-source publisher, need to be indexed too. There must be something behind it because editors and scientists still don't rely entirely on open access journals (S, SR)

The two main international and multidisciplinary databases of academic journals are ISI and Scopus. These two are usually used in the evaluation of academic performance in many countries. I make sure the journals I submit to, are indexed in both WOS and Scopus. (SS, SR)

Priority is to send to indexed journal such as ISI and Scopus, then send to other indexed journals (SS, ECR)

c) Journals that are reputable in one's field

This is becoming important in my discipline, researchers who are highly prolific, has good research and publish in high-impact journals in medicine..they are well-known in medicine, highly cited, has a high h-index, well..isn't this denotes quality. (S, ECR)

I go for good journals in my field, and they always come from well-known publishers as a reliable channel for this matter. (S, ECR)

Now I mainly go for reputable journals in my field, and those covered in the Web of Science database are reputable. I think we're going crazy with so much pressure to publish in these journals. (SS, SR)

The reputation of a journal is important if I decide to publish my research works. To do research is not overnight, and not cheap. Hence, to ensure other researchers would cite our work we have to pay particular attention to the credibility of the journal. (SS, SR)

d) Journals that peers are publishing in

You can also check where most researchers in your field publish which can be a reliable source of future publishing. Also as Wong [another focus group participant) mentioned that you can check Web of Science, Scopus, PubMed to check publication history and impact factor (S, SR)

As long as I see my colleagues use the channel that is sufficient for me to determine the choice of a channel. (SS, SR)

e) Journals that have an online presence

As print journals take a lot of time for publishing, e-journals are more accessible. I especially like those with the online submission (S, ECR)

I will submit to journals that make my article available fast upon acceptance, Online First, that is ahead of the printed issue (SS, ECR)

f) Journals that are approved by the Ministry of Education or other governing bodies

Journals that are included in Research Management Institute sites such as IRMIS and PRISMA, and also any databases suggested by RMI like Emerald, Proquest, Scopus (S, ECR)

University requirement. So the fastest way is to check the ranking like ERA, SETARA, as well as other characteristics like ISI-indexed or not (SS, SR)

I just follow the one determined by my university. Of course my university has determined the most reliable channel based from the elements given and as a faculty member, I just follow (S, ECR)

So my university does demand publications in journals with high IF, there is a pressing demand to publish in Tier 1 journals, this measure.. it is now becoming important to me. (S, SR)

Early career scientists also regard conferences as a reputable channel for the dissemination and publication of their research, and emphasize the indexation status of the conference proceedings:

Conferences that produce proceeding papers that are indexed in Scopus and ISI could be the attraction to researchers.

I channel my research work through conference proceedings. How I choose which conference to go will highly depend on either the conference is indexed or not.

Sending research paper to any conferences held by trustable and well known organizer will be one of my criteria. Their papers are indexed.

I will prefer to publish my research paper in conference proceeding indexed by ISI and SCOPUS. Sending research paper to the IEEE indexed conferences held by trustable and well known organizer will be one of my criteria.

Using the above-presented findings of the conditions as the basis for analysing trustworthiness in the digital scholarly environment, Figure 1 presents the dimensions of trustworthy scholarly information source and channel when they read, cite and publish in. Authors view that scholarly resources that are current, relevant, authored by credential scholars, peer-reviewed, having credible reference lists, published by reputable journals, and having online presence are fit for scholarly utilisation. The extent to which authors are prepared to believe that the scholarly information source and channel are trustworthy for publication rely on it in view of its impact, indexation status, reputation, peers' recommendation, accessibility and visibility, and authority's approval.

DISCUSSION AND IMPLICATION TO LIBRARY'S ACADEMIC SERVICES

The study has shown similar views, perception and behaviours of authors in respect to scholarly channels and resource they trust to read and to cite. Peer-reviewed journals are still the central to the authors, however they seem to have more freedom in relation to journals they read and cite, compared to publish. Library and publisher platforms are still central to discovery of these journals, and Google Scholar appears to be more influential among scientists and early career researchers. New forms of communication such as social media or new journal models are not much used in formal scholarly communication or on the verge of being more used. If they are indeed used, it is mainly for promotion of research activities and to alert peers to new publications of interest.

Formal academic websites and blogs written by prominent scholars can be regarded as trustworthy and credible, but I afraid social media like Twitter and Facebook are not a credible source of information since these tools have established their nature as purely social communication media. (S, ECR)

What do scholarly channels and resources

I don't make use of social media as a source of scholarly literature, yes, once I in while I communicate about my publications or what I think about my research on Facebook. (S, ECR)

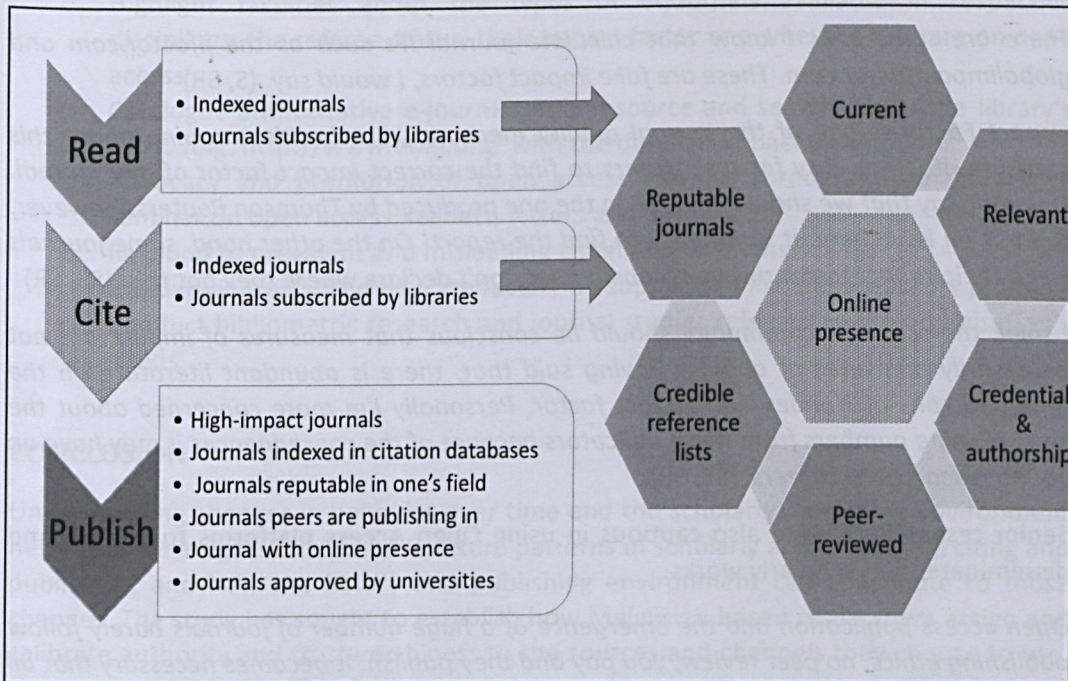


Figure 1: Scholarly channels and resources do author trust to read, cite and publish in.

This shows that there is a general lack of awareness and understanding, and therefore trust in social media platform, which researchers largely saw as popularity indicators rather than anything more substantive, although younger researchers were more likely to trust them.

Also, article level metrics like altmetric.com and download data (like on plosone.org) are positive innovations. (S, ECR)

Scholarly metrics and status of indexation count when looking for a place to publish, but not generally when looking for something to read and cite.

Nowadays people will understand you when you say you've published in a Q1 JCR (S, SR)

Previously, I didn't take ISI serious enough, but now it gives certain degree of quality weightage. I don't really know the trend of which metrics are becoming more or less important. Few years back, my only concern is the Australian ERA ranking for journals and conferences (Rank A+, A, B or C), because that were the metrics used by the university I was studying at. (SS, SR)

My knowledge on said issue is very little. As far as I know, the metrics measurement is important if individual would like to apply for higher post in my University (i.e. associate professor & above). Besides, to become internal reviewer (represent faculty/subject matter expert) for any national/university grant, this metrics measurement is a part of

Abrizah, A. et al.

criteria for them to be chosen. As I see in the context of my University, it become more important as the university is targeted to become research university. (SS, SR)

However, there were issues regarding ascertaining journal impact indicators revealed in this study.

There are some sites I know that calculate journal IFs such as the jifactor.com and globalimpactfactor.com. These are fake impact factors, I would say. (S, SR)

Impact Factor is one of the journal quality measures, but besides arguing about this measure, it is not easy for researchers to find the correct impact factor of any journal. One may say that we should depend on the one produced by Thomson Reuters. However, there is an issue here: it is not easy to find the report! On the other hand, some journals write their impact factor on their website, but don't declare where they got this. (SS, SR)

I think the scientific community should be conscious that measures of impact are not necessarily measures of quality. Having said that, there is abundant literature on the pros and cons of H-index and impact factor. Personally I'm more concerned about the cons of using numbers from these indicators because of the consequences it may have on young researchers' careers. (SS, SR)

Senior researchers were also cautious in using Open Access platforms to publish and disseminate their scholarly works.

Open access publication and the emergence of a huge number of journals barely follow publishing ethics, no peer review, you pay and they publish. It becomes necessary that all journals must be screened by the authority based on the editorial and reviewer board, scientific content and other criteria. I have noted some online journals publishing more than 100 papers quarterly. (S, SR)

Its seems that they don't put weight on the quality of Open Access journals, the iniquity of APCs [Article Publishing Charges] [APCs], the absence of peer review but the lecturers face the pressure to publish. I personally am aware of a degree of naive of some researchers in relation to Open Access. The response I give is better education would avoid expensive mistakes which may be regretted in the future. (SS, SR)

Very important to exercise caution in open access, in where you publish because I believe that when you publish your work in a reliable channel, you can expect those who locate your research in that particular channel are those who also share a similar belief and work ethics as you... who are prone using truthful sources rather than "anything can do" attitude. (SS, SR)

However, one author remarked: *I'm in for the open access, since that's the ultimate idea behind the research to spread of knowledge. In some of the journals you can ask for the fee waiver if you do not have sufficient funds to pay. SageOpen or PNAS. (S, SR)*

Looking at the authors' trust-related views, needs and issues in scholarly communication, it is emphasised that academic librarians apply their understanding of scholarly communication towards delivering the right services to meet the needs of the academic community. The findings of this study recommend the following activities incorporated in library's academic services:

- Provide advice to the faculty with regards to ranking of journals, journal impact factor and related indicators.
- Make academics aware that most scholarly e-journals are refereed and some are highly cited
- Highlight faculties about the types of e-journals available in respective disciplines, the referee status, their impact factor and whether they are on open access
- Catalogue authoritative e-journals as a resource and searchable in the library's OPAC (e.g. <http://www.doaj.org/> with the detailed impact description.
- Advocacy and promotion of open access journals through liaison librarians, seminar on open access, leaflets, letters and e-mails.
- Respond to prevalent and misleading Open Access myths
- Evaluate journals, and educate faculty on suppressed list and predatory journals.
- Conduct bibliometric research and journal studies relevant to the organisation's needs

CONCLUSION

Understanding changes in behavior over time and the scholarly publishing environment helps provide insights into possible future patterns of scholarly article reading, citing and publishing, and how the library and publishing environment can contribute to those changes. The study has sought to establish how Malaysian-based researchers assign and calibrate authority and trustworthiness to the sources and channels they choose to use, cite, and publish in. This is achieved by conducting three focus groups with 48 Malaysian-based authors in three universities in Kuala Lumpur. The results are tentative and exploratory, as it was a product of just one data collection technique at the beginning of an 18 month project. On the basis of the data obtained from the focus groups, an interview schedule has been developed, and an online questionnaire has been built and currently administered to thousands of Malaysian-based researchers. These techniques empower the project by providing triangulation, to facilitate validation of data through cross-verification from two or more sources.

ACKNOWLEDGEMENT

We sincerely thank all the research participants for their precious time and valuable insights. We acknowledge funding received from the University of Malaya Malaysia (UMRG- RP005C-13ICT), which made it possible to undertake this research.

REFERENCES

- Abrizah, A., Erfanmanesh, M., Rohani, V.A., Thelwall, M., Levitt, J.M., & Didegah, F. 2014. Sixty-four years of informetrics research: Productivity, impact and collaboration, *Scientometrics*, 101(1), 569-585.
- Antelman, K. 2004. Do open-access articles have a greater research impact? *College & Research Libraries*, (65), 372-382.
- Becher T. and Trower P. 2001. *Academic tribes and territories: Intellectual inquiry and the cultures of disciplines*. Milton Keynes: SRHE and Open University Press.

- Bornmann, L. 2011. Scientific peer review. *Annual Review of Information Science & Technology*, 45(1), 197-245
- Bornmann, L. and Daniel, H.D. 2008. What do citation counts measure? A review of studies on citing behavior, *Journal of Documentation*, 64(1), 45-80.
- Cronin, B. 1984., *The citation process: The role and significance of citations in scientific communication*. Oxford, UK: Taylor Graham
- Cronin, B. 2001. Bibliometrics and beyond: Some thoughts on web-based citation analysis. *Journal of Information Science*, 27(1), 1-7.
- Davenport, E. and Snyder, H. 1995. Who cites women? Whom do women cite?: an exploration of gender and scholarly citation in sociology. *Journal of Documentation*, 51(4), 404-410.
- Ellis, D., Cox, D. and Hall, C. 1993. A comparison of the information seeking patterns of researchers in physical and social sciences. *Journal Of Documentation*, 49(4), 356-369.
- Evans, J. 2008. Electronic publication makes science and scholarship more narrow. *Science*, 321(5887), 395-399.
- Frandsen, T. F. (2009). Attracted to open access journals: a bibliometric author analysis in the field of biology. *Journal of documentation*, 65(1), 58-82.
- Garfield, E. 2006. The history and meaning of the Journal Impact Factor. *JAMA Journal of American Library Association*, 295(1), 90-93.
- Harnad, S. 1999. The Invisible Hand of Peer Review. Exploit Interactive, 5. Available at <http://www.exploit-lib.org/issue5/peer-review/>.
- Harnad, S., and Brody, T. 2004. Comparing the impact of open access (OA) vs. non-OA articles in the same journals. *D-Lib Magazine*, 10(1045).
- Johnson, B. and Oppenheim, C. 2007. How socially connected are citers to those that they cite?. *Journal of Documentation*, 63(5), 609-637.
- Kousha, K. and Thelwall, M. 2014. Disseminating research with web CV hyperlinks. *Journal of the Association for Information Science and Technology*, 65 (8), 1615–1626.
- Kling, R. 2004. The Internet and unrefereed scholarly publishing. In: Cronin, B. (Ed.), *Annual Review of Information Science and Technology (ARIST)*, 38, Medford, NJ: ASIS&T, 591-631.
- Kling, R., Spector, L. and McKim, G. 2002, Locally controlled scholarly publishing via the internet: The Guild model. *Proceedings of the American Society of Information Science & Technology*, 39(1), 228–238.
- Kurtz, M.J., Eichhorn, G., Accomazzi, A., Grant, C.S., Demieitner, M., Henneken, E.A. and Murray, S.S. 2005. The effect of use and access on citations, *Information Processing & Management*, 41(6), 1395-1402.
- Mas Bleda, A., Thelwall, M., Kousha, K., and Aguillo, I. 2014. Successful researchers publicizing research online: An outlink analysis of European highly cited scientists' personal websites. *Journal of Documentation*, 70(1), 148-172.
- Mohammadi, E., Thelwall, M., Haustein, S., and Larivière, V. (in press). Who reads research articles? An altmetrics analysis of Mendeley user categories. *Journal of the Association for Information Science and Technology*.
- McKnight, C. and Price, S. (1999) A Survey of Author Attitudes and Skills in Relation to Article Publishing in Paper and Electronic Journals. *Journal of Documentation*, 55 (5), 556-576.

- Nentwich M. 2005. Quality control in academic publishing: challenges in the age of cyberscience. *Poiesis & Praxis: International Journal of Technology Assessment and Ethics of Science*, 3(3), 181–198.
- Nicholas, D. and Rowlands, I. 2011. Social Media use in the Research Workflow. *Information Services and Use*, 31(1-2), 61-83.
- Nicholas, D., Watkinson, A., Volentine, R., Allard, S., Levine, K., Tenopir, C. and Herman, E. 2014. Trust and authority in scholarly communications in the light of the digital transition: Setting the scene for a major study. *Learned Publishing*, 27, 121-124.
- Polonsky, M.J. and Mittelstaedt, J.D. 2006. Publishing in socially oriented journals – the state of play in Asia, *Asia Pacific Journal of Marketing and Logistics*, 18(1), 61 – 71.
- Priem, J. and Hemminger, B.H. 2010. Scientometrics 2.0: Toward new metrics of scholarly impact on the social Web. *First Monday* 15. Available: <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2874/2570>.
- Rowland, F. 2002. The peer review process. *Learned Publishing*, 15(4), 247-258.
- Rowlands I, Nicholas D, Russell B, Canty N, and Watkinson A. Social media use in the research workflow. *Learned Publishing*, 24(3), 183-195
- Rusch-Feja, D. and Siebeky, U. 1999. Evaluation of usage and acceptance of electronic journal. *D-Lib Magazine*, 5(10). Available at : <http://www.dlib.org/dlib/october99/rusch-feja/10rusch-feja-full-report.html>.
- Sharif, M. A., and Mahmood, K. 2004. How economists cite literature: Citation analysis of two core Pakistani economic journals. *Collection Building*, 23(4), 172-176.
- Shema, H., Bar-Ilan, J., and Thelwall, M. 2014. Do blog citations correlate with a higher number of future citations? Research blogs as a potential source for alternative metrics. *Journal of the Association for Information Science and Technology*, 65(5), 1018–1027
- Sox, H.C. and Rennie, D. 2006. Research misconduct, retraction, and cleansing the medical literature: Lessons from the Poehlman case. *Annals of Internal Medicine*, 144 (8), E7-E11.
- Taylor, M. and Kamalski, J. 2012. The Changing Face of Journal Metrics. *Elsevier Connect*. Posted on 28 November 2012. Available at: <http://elsevierconnect.com/the-changing-face-of-journal-metrics/>
- Tenopir, C., King, D. W., Edwards, S., and Wu, L. 2009. Electronic journals and changes in scholarly article seeking and reading patterns. *Aslib Proceedings*, 61(1), 5-32.
- Tenopir, C. 2003. *Use and users of electronic library resources: an overview and analysis of recent research studies*. Report for the Council on Library and Information Resources, August 2003. Available from <http://www.clir.org/pubs/reports/pub120/pub120.pdf>.
- Tenopir, C., Allard, S., Levine, K., Volentine, R., Christian, L., Boehm, R., Nichols, F. Christensen, R., Nicholas, D., Watkinson, A., Jamali, H.R., Herman, E. and Thornley, C. 2013. *CIBER's trust and authority in scholarly communications in the light of digital transition: Final report*. University of Tennessee USA and CIBER Research Ltd UK.
- Thelwall, M. and Kousha, K. (in press). ResearchGate: Disseminating, communicating and measuring scholarship? *Journal of the Association for Information Science and Technology*.
- Vakkari, P. 2008. Perceived influence of the use of electronic information resources on scholarly work and publication productivity, *Journal of the American Society for Information Science and Technology*, Vol. 59, no. 4: 602-612.

- Warlick, S.E. and Vaughan, K.T.L. 2007. Factors influencing publication choice: Why faculty choose open access. *Biomedical Digital Libraries*, 4, (1). Available at: doi: 10.1186/1742-5581-4-1.
- Weller, A. C. 2001. *Editorial peer review: Its strengths and weaknesses* . Medford, NJ: Information Today, Inc.