Scholarly communication trends in the digital age: Informal scholarly publishing and dissemination, a grounded theory approach

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Abstract

Purpose – The purpose of this paper is to investigate scholars' attitudes toward informal publishing and dissemination to provide a view of the challenges and advantages of using such channels. Although considerable research has been carried out in relation to peer-reviewed scholarly publishing, relatively few studies have investigated the adoption of informal scholarly communication platforms in the scholarly publishing process.

Design/methodology/approach – The paper deployed a grounded theory approach using semi-structured interviews as a qualitative research tool. A theoretical sample of 40 researchers in 4 universities were interviewed to gather data regarding informal publishing, platforms, factors that affect the researchers' decision and the use of informal channels in dissemination.

Findings – Results of the interviews suggest that there is an increasing trend among researchers toward informal publishing and dissemination throughout the scholarly communication cycle. The paper shows that there are three types of scholars who are involved in the scholarly communication process: conventional, modern and liberal scholars. Each of these scholars carries different beliefs regarding the scholarly communication process.

Research limitations/implications – This paper was conducted on a relatively small sample of academic researchers, and therefore, the results cannot be easily generalized into a wider community of scholars.

Originality/value – The paper provides insight into informal scholarly publishing practices using a grounded theory approach. This approach helped to capture the changes in both scholarly publishing practices and the adoption of informal techniques among the scholarly community.

Keywords Scholarly communication, Informal publishing, Informal dissemination

Paper type Research paper

Introduction

In the past few decades, interest has increased concerning the future of formal scholarly communication and scholarly publishing in light of the recent changes in information and communication technologies (ICTs) (Waltham, 2010; Oppenheim et al., 2000; Borgman, 2000; Bohlin, 2004). Many scholars believed that ICTs would change the current scholarly publishing and dissemination practices by replacing traditional publishing platforms with new formal and informal publishing platforms. Therefore, it was suggested that publishers were moving quickly toward the use of the Internet as a platform for the distribution of their research, making the boundaries between formal and informal literature non-existent (Bohlin, 2004; Hurd, 2000; Stewart et al., 2013).

Interestingly, the Internet was also thought to lead the publishing world and provide academia with great resources, a threat to the existence of the traditional publisher (Oppenheim et al., 2000). However, despite this optimistic belief, recent studies found that there is no noticeable change in scholarly publishing practices. For all scholars, the only motivation to publish and disseminate their research through formal channels is to improve their academic career (Mulligan and Mabe,

2011; Procter et al., 2010).

This paper reports findings of a study conducted on a theoretical sample of 40

researchers at 4 universities in the UK regarding the change in their scholarly publishing activities, informal

publishing, factors that affect the researchers' decision on scholarly communication and the use of informal

channels in dissemination.

Literature review

Regarding the use of ICTs, particularly Web 2.0, in scholarly communication, it

was found that these technologies allow scholars, research groups, publishers and

institutions, such as universities, to publish, disseminate, review and retrieve

scholarly research. In addition, the open access movement, followed by institutional

repositories as a medium to publish articles, created optimism for the future of

scholarly publishing. For instance, Lynch (2003) argued that the importance of open

access would be that it could serve as an instrument for restructuring the

current economics of scholarly publishing. Notably, the movement toward open

access initiated discussion regarding the acceptance among researchers to publish

in open access journals. Chen *et al.* (2009) assumed that scholars would be more likely

to publish and use open access publications if these open access journals could be

recognized and accepted by the scholarly evaluation and promotion system.

Interestingly, empirical studies found that the use of open access journals in

developed countries is increasing, and there is a trend among researchers in these

countries to use open access journals more, as they are more cost effective

(Frandsen, 2009). In addition, it was suggested that open access publishing would have substantial net benefits in the longer term. In reality, however, the net benefits would not be realized immediately due to a necessary transitional period (Houghton *et al.*, 2009; Waltham, 2010; Stewart *et al.*, 2013).

Despite all of these developments in the formal scholarly communication system, traditional forms of scholarly publishing and peer review did not live up to all their demands and expectations. Traditional forms of scholarly publishing lack techniques of efficient communication and research in today's extremely diverse and rapidly evolving world of science. With the advent of ICTs, new approaches that would be used to review research papers developed to make the publication process faster while not affecting the quality of published papers. One of these techniques is open review. Open review is identified as "the process that does not attempt to mask the identity of authors or reviewers" (McCormack, 2009). Using the open review method in academic journals allows the author to publish the paper first as a discussion paper, then to receive comments from the readers which assess the quality of the paper. The benefit of this system is to help enhance the quality of the manuscript and help the reviewers submit fair reviews (Bornmann and Mungra, 2011). Despite the interest in open peer review as a new approach to evaluate research papers, many researchers believe that there will be several challenges in applying the system. Challenges expected include the questionable expertise of the reviewers, the acceptance of the model, unwillingness of authors to publish in journals that adopt open review and lack of software to support open review (Uhlir, 2003; Nentwich, 2005; Rowe and Fitzpatrick, 2010; Ford, 2013).

Regarding non-peer-reviewed publications, several studies investigated the importance of grey literature in scholarly communication and how it was affected by the digital age (Banks, 2006; Lawrence, 2012; Seymour, 2010; Pardelli *et al.*, 2011). Pardelli *et al.* (2011) investigated the role of social media in relation to traditional channels and how social media applications can be used for grey literature. In addition, Hutton (2010) investigated the use of grey literature in the digital age and whether researchers cited this type of material in their studies. Furthermore, many projects were established to provide support for open access and the grey literature movement. For instance, Correia and de Castro Neto (2002) identified arXiv.org as one of the biggest projects of non-peer-reviewed research reports repository available on the Internet. This digital repository is a fully automated electronic archive for research papers in physics and related disciplines, such as mathematics, non-linear sciences, computational linguistics and neuroscience. This repository allows researchers from anywhere to submit their non-reviewed papers and also download them from anywhere.

When investigating informal platforms, researchers found that social network sites (SNSs) are also used by scholars as a dissemination platform, as they encourage knowledge sharing, knowledge production, researchers' interaction and collaborative writing among academics. However, it was found that the adoption of SNSs has reached only modest levels so far (Forkosh-Baruch and Hershkovitz, 2012; Gu and Widén-Wulff, 2011; Nentwich and König, 2014; Procter *et al.*, 2010). Although the use of social networking to disseminate scholarly research has brought many benefits, some concerns have also been raised among researchers. For instance, concerns regarding intellectual property and the possibility of losing it because of informal dissemination were discussed (Collins and Hide, 2010). Additionally, there are many factors, such as the traditional scholarly communication system, institutional support, experience, user skills and

awareness, that would make academics and research staff feel dissuaded from using new social media that might otherwise aid their work (Acord and Harley, 2013).

Methodology

This study utilized a grounded theory research approach. A sample of 40 academic researchers at 4 universities representing 2 different geographic places (England and Wales) was interviewed between August 2013 and February 2014. Theoretical sampling was used as the sampling technique.

Applied science	3	5	–
Formal science	1	3	2
Social science	6	6	2
Humanities	–	4	–
Natural science	1	4	3

Table I. Sample distribution

The saturation of the data was reached after interviewing 32 participants; however, the researcher continued to interview 8 more participants to confirm the results concluded from the first sample (Table I).

Initially, this study was intended to answer questions regarding the use of informal channels as a publishing platform. The main questions of this research are:

RQ1. Do scholars use informal channels, such as social networks, as publishing and dissemination platforms?

RQ2. Is the use of these channels for publication and dissemination an accepted scholarly practice among scholars?

RQ3. Do informal publishing platforms have academic value among scholars?

The process of analyzing qualitative data went through several steps. The researcher began by collecting qualitative data using semi-structured interviews. After these interviews, all the information received was transcribed. The researcher then selected codes from the text using open coding, at this stage, with codes that emerged while analyzing the interviews. Axial coding was the next stage of the coding process. At this point, the researcher tried to identify relationships among the open codes to see the connections via a combination of both inductive and deductive thinking. In the third stage, the researcher worked to identify the core codes via selective coding. As a result, all codes were grouped under five core codes: attitude, factors, importance, adoption and dissemination.

Findings

Attitude

Despite the belief that researchers need to publish in peer-reviewed, scholarly journals, many scholars asserted that it is a good practice to publish parts of the research, or to write their research findings, using informal platforms. The informal publishing platforms would be considered a way to shape the author's writing skills and a valuable channel for obtaining feedback. Therefore, many researchers encouraged informal publishing as a part of research activity:

It depends on the researcher. If they require feedback from the people before continuing the research, it is useful (FS 3 P).

I encourage people to publish their findings online, but unfortunately, they will not be promoted based on that (SS 7 P).

Having a system that involves the community in the review process and allowing the community to be in charge of deciding what is good for them and what is not was proposed during the interviews.

Participants believe that applying an open review system in academia would help support informal scholarly communication practices and encourage researchers to engage more in informal publishing. However, participants feel that it is still too early for the public peer-review model to be accepted in academia:

I would want to see a system where when you get the data, you publish it, and the community decides how good it is. But, in reality, people want to publish in peer reviewed journals (NS 36 A).

Not all scholarly research papers would be accepted and published in peer-reviewed journals. As a result, informal publishing represents an alternative publishing platform for researchers who were not able to publish their work in formal channels:

I think it depends on the research. If the scientific community does not accept the research, then some of the researchers tend to just forward it to informal channels because it does not mean much in the formal ones. What is not recognized in formal communication might be recognized in informal (NS 4 P).

Interestingly, one of the concerns about informal publishing is that it may affect formal scholarly publishing. Ideally, participating in informal social media and being active require a lot of effort and time. Thus, informal publishing would be considered a threat to the researchers' academic career, as it would waste researchers' time and reduce his or her productivity and research quality:

What I have seen is that it is a very hungry beast, the blog. So, you have to be prepared if you do not feed it very regularly. You get boring from people, and what I have seen happen is that I have seen some academics become so obsessed with their blogs and with keeping it going that really is all they write. That is good. They can develop a profile for themselves, but still, one day, they will apply for a job. They still have to publish in peer reviewed journals, and I have also observed the people who write in blogs. Mostly, they have trouble writing a journal article because they are not used to this kind of writing. Unless they are really, really amazing writers, they get into this discipline of writing a short piece of hyperlink text, but without the kind of structure like in a journal article (SS 32 A).

In contrast, a large number of participants do not support informal publishing and they think that researchers should focus only on peer-reviewed publications to maintain research quality. Fundamentally, informal publishing is a way to raise debates, or to disseminate research findings, in a less structured, academic format. In addition, it would help the researcher to target a wider audience. Many oppose informal publishing, as they cannot see any benefit from doing this. In their opinion, researchers should only focus on formal scholarly publishing. For those researchers, academia does not recognize or credit researchers who are involved in informal scholarly communication activities. In that case, publishing informally would have a negative effect on those who are involved in it: I think they need to focus on peer reviewed articles because that is the only way to maintain quality control (SS 16 A).

Factors

Undoubtedly, there are various channels on the Internet that would be considered as informal scholarly communication channels. However, not all of these channels are adequate to serve as a publishing platform for scholarly research. In addition, there are many factors that would affect the researchers' decision when he or she is selecting an informal channel to disseminate his or her findings or to publish informally. It was found that one of the main factors is the researcher's preference and their research interest. Initially, the researcher selects a channel that he or she is comfortable with and other scholars in the same field are using. As a result, the researcher is guaranteed to reach a wider audience and to participate in debates that he or she is interested in:I actually started my own blog because I felt that there is nothing out there that was really addressing what I'm interested in (SS 32 A).

The availability of informal channels for a wider audience was one of the reasons that would attract researchers to select a particular channel rather than another because the researcher usually seeks recognition from the wider research community, and it would help him or her to build a strong profile among these other researchers:

So the attractive thing about it was the timeline on it. It is a lot quicker, obviously, than working through the traditional peer reviewed mechanisms. It is also much more widely accessible to other stakeholders apart from academics. That is something that I think is important (SS 5 A).

Trying to be a role model and influencing others were also factors that motivated participants to select specific informal channels that they would publish their results in:

A big part of the decision […] to be honest, it is a small website for a small community. So, I really did not think about it too much because I really wanted to use it, and I was the editor. I have to be an example. That is why I did put it on there (SS 34 P).

Some respondents felt that particular channels are more used by researchers in the same field. Reasons to participate on these channels would be to increase their visibility and to get good feedback from people who participate on these channels:

Actually, I use academia.edu because I noticed that many researchers in my area are using it (AS 9 P).

Adoption

In terms of informal publishing, the interviews revealed that many had not tried to publish their findings online before putting them in a peer-reviewed medium. However, participants mentioned that they frequently contribute in online communities by writing unstructured posts that would be

scientific, but not written in a form that would be published or adequate for a scholarly journal.

Interestingly, the participant **SS 32 A** showed evidence of cognitive dissonance in his beliefs and behaviour toward informal publishing. He publishes in informal channels, but he does not believe it is the best way to disseminate research. This could be a result of carrying two beliefs toward this type of publishing, leading to cognitive dissonance:

Yes, through blogs. But, I regard those writings as different from actually my research findings. They all have the same structure and the same purpose. In fact, I do not really like writing blog posts. I do not like that form of writing. I do not enjoy doing it, though I have done it a few times. It is not my preferred way to disseminate my research. I like reading other peoples' posts, but I do not like writing myself (SS 32 A).

Yes, I use this website I told you about. I usually publish there when it was accepted or almost accepted. It is not the same paper that I publish, but it is the same content (NS 28 R).

In contrast, it was found that there are conventional participants who were not willing to publish informally or to participate in online communities. Instead of informal publishing, they prefer to focus only on formal publishing because they believe that they only will get credit from scholarly peer-reviewed papers:

No, I do not publish in informal channels because of the way the UK academic system works. You have to publish in a refereed journal. You will not get credit from publishing in informal channels (SS 35 A).

I am paid on the basis of publications, and nobody will rank my publications if I stick them on unrefereed medium. In addition, I do not think I will publish any in the future because I do not trust them (FS 38 A).

Engaging in online informal scholarly communities requires, from the researchers, some skills and training. One of the participants remarked that he was not a member of these informal scholarly communication channels until he was sent by the university to take a course to learn how to use social networks for research. Subsequently, the researcher stated that he began to use informal channels and started to publish in them. It was clear that with the appropriate training, the researcher was able to see the potential benefit to using informal media as a scholarly publishing platform. Notably, this participant showed a sign of cognitive dissonance, as he believes that informal publishing is important, but at the same time, he believes that he has to publish on formal channels. Interestingly, this participant tried to reduce this dissonance by balancing between the practices he used to follow and the new practices that he recently learned from publishing informally. In a way, he thinks that this procedure is consistent with his previous beliefs regarding scholarly publishing:

As academics, we do our research. We publish our findings in journals so various people read them. The university sent me on a course about using social media for public engagement. I never used twitter before that and twitter changed the way I'm doing my work completely. Because of my feelings, I wanted to communicate my research to a wider audience, particularly people in the field. People that work in that field are too busy to read academic journals. So, if I published a piece of work in a journal, I would put it on twitter also. In the past three or four months, I started my blog as well. With my blog, I rewrite my research in a way which is accessible to the audience. So yes, I publish my research to social media to blogs to twitter, but not the stuff I published in journals. I do it in a different way (SS 37 A).

Importance

It is clear that informal channels have created new platforms that could be utilized for scholarly publishing. In fact, social networks present a platform that could be used to publish scholarly research, share it with a wide audience, and with applying new reviewing and evaluation techniques,

such as public review, it may eventually replace the formal scholarly publishing and alter the whole scholarly communication model. Though many feel that traditional peer-reviewed journals are irreplaceable, as it is the only way to measure the researcher's contribution in science. Traditional peer-reviewed journals are considered a benchmark for their work that is used to measure researcher contribution. In addition, traditional peer-reviewed channels are credible as all articles that are published though it have passed the review process. Because of this, researchers can use the article without worry or need to double check the information. However, participants asserted that there are problems with the traditional peer-reviewed channels as it is not a perfect system and it will need to be developed:

It has created new publishing platforms, but there is a strong problem of peer review. Peer review is not perfect in academia; however, it is a benchmark. At least we can have some credibility. As soon as the information goes through the informal process, it tends to lose credibility because there is no objective viewpoint (NS 14 A).

Yes, I suppose they have created new platforms. Whether I use them or not, I suppose they have. The only things I have shared, so far, have been published in my field. I do not think I feel like I need to finish it. I feel in science it might be different because they may share raw data (H

27 A).

Both previous participants carry different beliefs regarding informal publishing platforms as they find informal channels to be a new publishing platform. At the same time, the informal platforms cannot replace the formal ones. Cognitive dissonance is also visible in their belief toward formal scholarly publishing, as there is a belief that the peer review system is not a perfect system. At the same time, they believe that peer-reviewed platforms are the only way to measure researcher productivity.

Conventional scholars believe that informal channels have not created new publishing platforms. Therefore, researchers still publish on formal channels and they do not publish in informal channels. In addition, even if the scholarly work is published in informal channels, it has no weight or impact, will not be taken seriously and the results will be questioned. Thus, even if they are new platforms that may be adequate as a scholarly publishing platform, they are not recognized by academia, and researchers should not waste time using them:

No, I do not think so. I think science still relies on a peer review process as a quality control. I do not think that will go away. I do not think that will change. I think what is changing is that peer reviewed journals will become more accessible. Open access, for instance (NS 17 R).

It is clear that social media has allowed researchers to publish their research and findings informally. The use of social media in research is opposed by many researchers, as they believe that scholarly research is meant to be published in peer-reviewed channels. Obviously, there is a tendency among researchers in science disciplines to use some of these channels, such as pre-print digital repositories, to publish initial findings or a draft of their research before being published in a formal, peer-reviewed channel. However, the problem is that not all researchers are aware of these channels or how to use them, making the change in the scholarly communication model slower than expected. Informal publishing has potential benefits for researchers if it is used in the right way. The potential benefits of publishing informally are: getting feedback from a larger community, improving researcher's skills, a faster medium for publishing and the method's simplicity and effectiveness:

I think the advantages are the immediacy of it. Otherwise, that kind of debate would take a long time before meeting people. The other advantage is having a dialogue with a wider audience. That is hugely important to me (AS 15 A).

Many felt that informal publishing did not make a difference for them. They did use informal channels to publish and disseminate their findings; however, they did not receive feedback or their research career did not change. Therefore, in their opinion, informal publishing does not have any importance:

It is difficult to see what difference is made. Actually, I do not know because we did not get huge feedback for our blog (SS 8 R).

One of the researchers remarked that being involved in informal channels and publishing on blogs did make a change with him, as he feels that other people are reading what he is writing and sometimes they talk with him about it. However, the problem is that he will not be rewarded for that effort:

I do not know. The other day, I was in the university and my manager was passing and stopped me and said, "Oh, you started a blog." How did he know? I did not tell him. So, obviously, the university must [have] paid attention. But, at the same time, it takes extra time. When I'm doing it, I think about why I'm bothering doing this (SS 37 A).

On the contrary, conventional scholars believe that informal publishing is not important and the researcher is wasting his time and effort if he publishes informally. In their opinion, the disadvantages of publishing in informal channels are the intellectual property, the lack of recognition and the work will not be reliable or credible:

I think it will be a disadvantage because people will wonder why I'm publishing it that way, and not in [a] formal route (SS 19 R).

I think if it did have importance, I would do it more? I think the key thing for people in science, my area of science, biological science, if you looked for things by which we are judged, then peer reviewed publications are what's important (NS 40 A).

Dissemination

Participants believe that they have to make information accessible to their readers as not everyone will be able to subscribe to academic databases. Initially, they may do that by sending parts, or all of their work, to other researchers, upload it in academic social networks or share links via Twitter:

To subscribe to a database costs hundreds of thousands every year. Most people would not ever have access to information. If I had free access, I would put papers up in informal websites so people can access information (NS 14 A).

However, conventional researchers believe that there are other informal means that they can use to share their findings. For instance, publishing the results in a magazine is an informal way for them to reach a wider community and magazines are accessible to everyone. In addition, a magazine publication will increase the researcher's contribution in the field. Ideally, these publications are not peer reviewed and not monitored by an academic body. However, publishing in magazines will help the researcher build his or her academic profile and reach a wider audience:

Because in some of the work we [were] doing in DNA tests, we were asked to produce an information booklet for the farmers. That is the nearest I get to informal publication. Pretty well everything else that I would do is publishing in a journal or in a conference (NS 40 A).

Despite the belief that disseminating research in informal channels would benefit the researcher, the participants think that there is no method to know how it would benefit them, as it is hard to measure the impact of informal dissemination. Additionally, there are policies that the researcher should follow if he wants to disseminate his research, so he would not breach journal copyrights. This would present an obstacle when it comes to dissemination of work informally:

I suppose publicizing your work through these channels will give your research impact. Academia can reward the researchers for that, but the way we measure the impact can not tell if your research has an impact or not if published that way (SS 18 A).

It was found that conventional participants do not share their research informally by using social media. According to the interviews, there are two main reasons. The first group believes that academic work is meant to be shared via proper peer-review channels, as that is how the academic system works and anything else will be a waste of time. They also believe that formal channels are widely used, and there is no reason to share the published papers on informal channels, as there is no benefit from it.

The other group does not know how to use informal channels or does not have time to use them. They are aware of these channels' existence, but they do not have the time, they do not know how useful it will be for them or they cannot see any benefit of using these channels:

I would feel uncomfortable sharing things [that are] not my final work (H 27 A).

Such data indicate that most of the participants find that sharing their research after it is published in peer-reviewed journals is a good practice, as it will increase the visibility of their research, and there will be wider access to their papers, allowing them to be cited in more journals. However, social media is not the only place to share research informally, as there are magazines that would

publish academic research in a less academic format. These magazines have a wider audience. Moreover, publishing in magazines would help build a good profile for the researcher and would increase his impact on the research. On the contrary, many do not share or disseminate their research after being published in the peer-review channel as they, in most of the cases, are not aware of the benefits or how to use informal networks to distribute their research.

Conclusion and discussion

The data denoted that there is a tendency among researchers to use informal channels as a platform to publish their findings or to contribute to scholarly discussions. However, this trend is faced with numerous obstacles, such as scholarly recognition and the traditional scholarly communication model. The only way to measure the impact of a paper is by publishing it in a peer-reviewed journal (Acord and Harley, 2013; Allen et al., 2013). Scholars believe that the current scholarly communication model cannot continue in the way it has, and there is a need to develop, improve and accept new forms of scholarly publishing. This could be attributed to the enormous developments in technologies that make it possible to utilize new channels in scholarly publishing. With regard to a peer-review system, it was suggested that it is possible to apply a public review system which would help promote worthy articles and make the process of scholarly publishing faster than before. Notably, many thought that the current peer-review system may prevent valuable papers from being published. This could be attributed to the imperfection of the peer-review system and what would be considered not significant for the reviewers may be considered significant for the readers (Ponte and Simon, 2011).

Even the participants who are not publishing informally are using informal channels to share their publications and to send it to other researchers. Participants find informal channels to be a handy tool to

publicize their research and make it accessible to a wider audience, helping raise their scholarly profile. Several recent studies found that many scholars do have accounts on SNSs, such as LinkedIn and Mandalay, in addition to their web pages, increasing the visibility and presence of those scholars (Bar-Ilan et al., 2012; Mas-Bleda et al., 2014).

Evidences of cognitive dissonance were visible in the data, particularly in informal publishing and dissemination practices. Most of the participants carried two or more beliefs regarding these activities, which are inconsistent with what they learned to do. It is clear that there is a belief in the importance of informal publishing and informal dissemination practices, but traditional scholarly communication practices are inconsistent with these beliefs. As a result, participants who carry both beliefs have to choose one of them while attempting to reduce dissonance by changing their behaviour or changing their beliefs.

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