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Institutional Repository based Open Access Scholarly Publishing System: A Conceptual Model

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Abstract:

Although Institutional repositories have been used as a strategy to improve the access to traditional scholarly content (such as e-prints) very often, their role in scholarly publishing has been discussed for a long time. Present study investigates the role of institutional repository as a scholarly publishing platform, and intends to propose an open access scholarly publishing model based on institutional repositories. For that purpose, related literature is reviewed to identify the current trends in scholarly publishing, open access movement and institutional repositories. Moreover, features of selected institutional repositories are discussed along with features of widely used institutional repository software platforms. The proposed conceptual model is developed accordingly. This study concludes that, by serving as a scholarly publishing platform, institutional repositories enable the institutes to take control of their research output while promoting accessibility to the institutional research in an open-access environment.

Keywords: Institutional Repositories, Open Access, Open Access Journals, Scholarly communication, Scholarly Journals, Scholarly publishing

1. Background and Purpose of the study

There are many academic and research institutes that have established institutional repositories by today. OpenDOAR, the Directory of Open Access Repositories, lists a total of 3519 repositories out of which 85.9% are institutional repositories. Scholars argue that there are two main reasons for setting up institutional repositories (Russel, 2009). The first as an attempt to modify the current scholarly publishing system, and tend to support the Open Access movement. In these cases, institutional repositories are a strategy to improve access to traditional scholarly content (Andrew, 2003). The second is to play more active role in scholarly publishing by breaking the publisher's monopoly. By proposing a disaggregated scholarly publishing model, divided into four components: registration, certification, awareness and archiving, Crow (2002) argues that institutional repositories can register, certify, provide awareness and archiving for e-prints.

Although Institutional repositories were first developed as an effort to reclaim previously published scholarship at individual institutions (Riddle, 2002), their role in scholarly publishing has been discussed for a long time. Institutional repositories can provide an immediate and valuable complement to the existing scholarly publishing model, while stimulating innovation in a new disaggregated publishing structure that

will evolve and improve over time. Furthermore, studies predict institutional repositories will be a platform for publishing original articles (original content) and related data in future (Chadwell and Sutton, 2014). However, most of the present day repositories serve as archives for pre-print or post-print versions of articles published in traditional journals, by providing green open access to scholarly output. In this way, institutional repositories' role as a scholarly publishing platform has not been fully recognized by most of the institutions.

2. Objectives and Methods of the study

Therefore, the purpose of this study is to identify the role of institutional repository as an open access scholarly publishing platform. Specific objectives of this study are to critically study the existing scholarly publishing system in order to identify its limitations in providing open access to scholarly research output; to explore the new trends of scholarly publishing with particular attention to the open access movement and institutional repositories; to study how institutional repositories fit into scholarly publishing, and finally, to propose a new scholarly publishing system based on institutional repositories.

For that purpose, related literature is reviewed to identify the current trends in scholarly publishing, open access movement and institutional repositories. Moreover, features of selected institutional repositories are reviewed along with features of some of the widely used institutional repository software platforms. The proposed conceptual model is developed accordingly.

3. Literature Review

3.1 Scholarly publishing: functions, issues and solutions

Scholarly publishing, a part of scholarly communication, is the process of through which the newly discovered knowledge is refined, certified, distributed to, and preserved (Association for Research Libraries, 2000). Four functions of a scholarly journal first identified by Oldenburg in 1665 are still recognized as core components of scholarly publishing (Dolechek et al., 2016). In other words, these functions need to be served whatever system(s) of scholarly communication exists. They are as follows:

- Registration: establishing the intellectual priority of an idea, concept, or research;
- Certification: certifying the quality of the research and/or the validity of the claimed finding;
- Awareness: ensuring the dissemination and accessibility of research, providing a means by which researchers can become aware of new research; and
- Archiving: preserving the intellectual heritage for future use.

Although learned societies led the scholarly publishing from the beginning of scholarly

journals in 17th century until mid of 20th century, commercial firms assumed increasing control over the journals market since then. Consequently, this led to the so-called 'serials crisis' in late 1980s, where subscription costs for academic journals increased faster while the budgets of most libraries remained flat (Young, 2009) that limited libraries ability to subscribe the journals required by their clientele. On the other hand, commercial publisher dominated scholarly publishing system created a conflict of interest among authors and publishers. Studies found that authors were mostly interested in creating new knowledge and disseminating it for citations and impact factors, and do not expect financial rewards (Swan and Brown, 2005). On the other hand, a substantial portion of such research was publicly supported, either directly through federally-funded research projects or indirectly through state support of researchers at state higher-education institutions. While research is publicly funded, authors are not paid, and publishers get content for free majority of scholarly information remained behind paywall. Transfer of rights from the author to the publisher in the traditional scholarly publication process became another significant problem. Even with the transition from print to electronic, the legal framework for journal use was changed from copyright law to contract law which required publisher licensing agreements limiting access and use that were permitted in print environment under the principles of fair use. With the electronic publishing, libraries faced the threat of losing long-term perpetual access to content unless subscriptions are renewed at the end of licensing agreements.

There have been various initiatives and solutions among the academic, research and library communities in response to the above situation. Developments of digital publishing and network technologies immensely contributed for that. Posting pre-prints of peer-reviewed journal articles in personal webpages and self-archiving them in online electronic archives were some early initiatives by academics and researchers. Physics related e-print service, arXiv, started at Los Alamos Research laboratory in 1991 is an example for that. Open access movement is an another major initiative. The basic idea of open access is providing online access to scholarly publications and making that access free of charge and without most copyright and licensing restrictions. Open access emerged as a direct outgrowth of as well as a solution to the scholarly communication crisis, that provides no-cost access to research while returning control of that research to its creators by allowing them to maintain copyright. Budapest Open Access Initiative (BOAI) in 2001 recommended a new model for scholarly communication by proposing two strategies to achieve open access to research information: (i) self-archiving of refereed articles in open electronic archives, and (ii) publishing articles in open access journals, which publish their content freely on the web (may be subjected to article processing charges by authors). Open access movement has strengthened and its success is marked by open access mandating by governments, funding agencies, international bodies, associations and organizations (UNESCO, 2015). Especially the accessibility to research findings supported by public funds have been firmly emphasized. Studies confirm that North American, European and many other countries passing law requiring open access to articles and data from federally funded research (Chadwell and Sutton, 2014). Furthermore, open access

mandates and policies are increasingly adopted by universities, research institutions and funding agencies.

3.2 Institutional repositories and scholarly publishing

Institutional repository is an accessible collection of scholarly works that represents the intellectual capital of an institute. Lynch (2003) defines institutional repository as “a set of services that an institution provides to the members of its community for the management and dissemination of digital materials created by the institution and its community members”. Although the first digital repositories emerged such as arXiv were subject repositories (Ginsparg, 2016), first academic institutional projects, the EPrints archive at Southampton (founded in 2001) and the DSpace initiative at MIT (in 2002), were begun in parallel with the Open Access Initiative (Cullen and Chawner, 2011).

Institutional repositories were first developed in an effort to reclaim previously published scholarship at individual institutions (Riddle, 2015). As a result, most of the existing repositories have become archives for pre-print or post-print versions of articles published in traditional journals. Some studies argue the way that it is often presented today, the institutional repository is a dead thing as they have become a place where authors post their papers after the fact: after peer-review, after publication, after they are done with them (Bankier and Perciali, 2008). However, objective of this study is to identify the role of institutional repository as an open access scholarly publishing platform. Therefore, it is important to explore to what extent the existing institutional repositories fit into the scholarly communication.

Studies identify that depositing a paper in an institutional repository immediately meets three functions that are integral to scholarly publishing (Prosser, 2004):

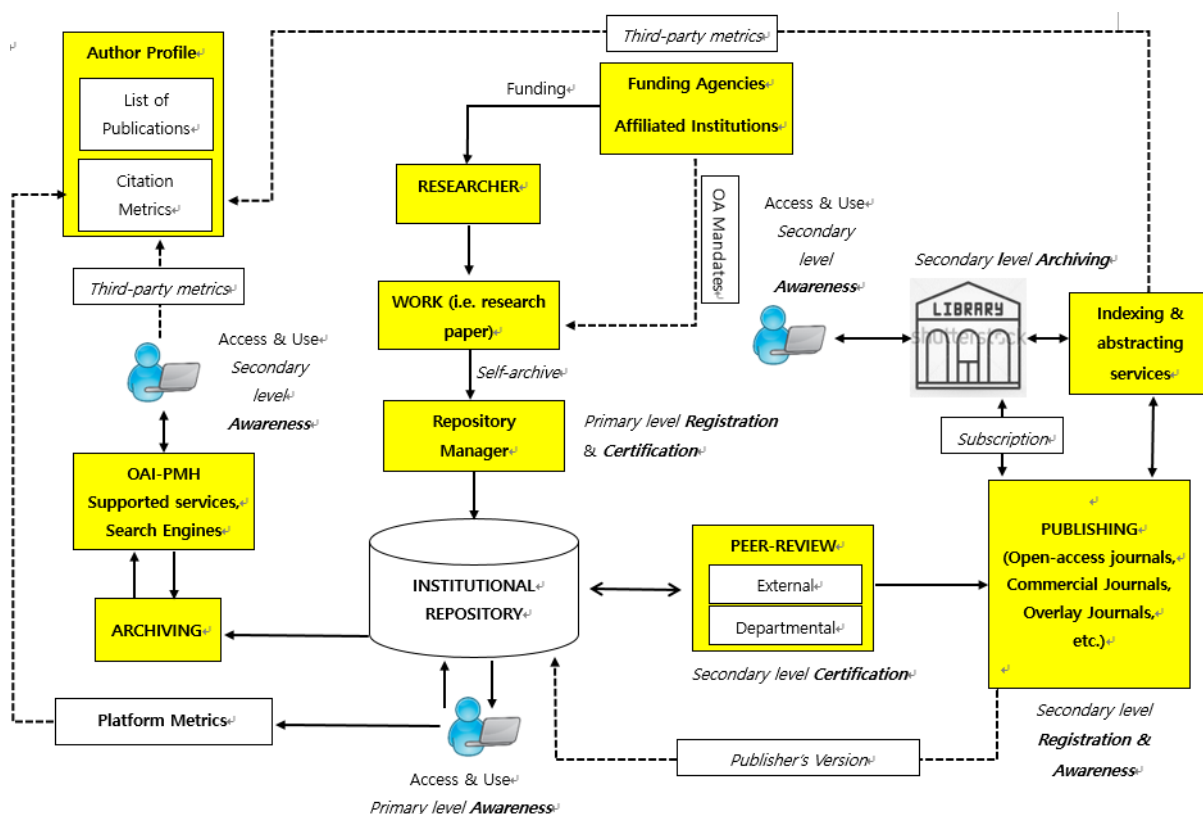
- Registration - by depositing in the repository the researcher would make claim for his/her work
- Awareness - by constructing the repository to OAI standards the institution would ensure that the researcher’s work would be found by search engines and available to their peers.
- Archiving - the institution would be responsible for maintaining the long-term archive of all the work produced by members of that institution.

However, the certification function of scholarly publishing, which ensures the quality of the research and/or the validity of the claimed finding, is not satisfactorily met in existing institutional repositories. Named as ‘trustworthiness’ in some studies: this refers to the level of trust a reader can place in a work and aligned with the concept of quality, where the work has been reviewed by knowledgeable peers who carefully read and judge the work (i.e. peer-review) and published in a reputed venue such as a journal (Kling and McKim, 1999). At the same time, studies identify that certification and registration functions are directly related to the recognition, academic reward

system and research impact, which are among primary motive factors for most of the academics and researchers in selecting a venue to publish their scholarly works (Warlick and Vaughan, 2007).

4. Institutional repository based open access scholarly publishing system

While the traditional publishing system integrates all functions, institutional repository enables disaggregated publishing model (Crow, 2002). In other words, in an institutional repository as an electronic scholarly publishing system, each of above functions can be handled in a discrete/distributed manner by different networked parties. Van de Sompel (2002) advocates logical separation of the content and service component is fundamental to disaggregated model. This separation allows repositories to be maintained independently of value added services fulfilled discretely by multiple service providers. Therefore, the present study proposes a disaggregated open access scholarly publishing model for an institutional repository as follows.



<Figure 1: Conceptual Model for an Institutional Repository based Scholarly Publishing System>

This conceptual model suggests a scholarly publishing platform centered around an existing institutional repository. It starts with research and writing supported by funding agencies and/or affiliated institutions such as universities. Once the work has been finished (i.e. research paper), it is submitted (self-archived) to the institutional

repository, as specified in open access mandates and policies of funding agencies and/or affiliated institutions. Submitted works go through authentication process, usually done by a repository manager (i.e. librarian) during which the initial registration and certification of the work is accomplished through verifying author(s) and their affiliation, as well as metadata and file formats. After the initial registration, work(s) become accessible to the end-users, commencing the initial awareness of the work. At the same time, institutional repository will archive the work(s) for maintaining the long-term access, based on its preservation policies. Aggregated services and search engines will increase the visibility of works deposited in the repository through the metadata harvested from the repository. So that the impact of the work becomes measurable via both platform metrics and third-party metrics. As the present study proposes a two-tier system, works deposited in the repository can undergo departmental and/or external peer-review. Peer-reviewed works will be published in departmental, commercial, or overlay journals which follow either subscription-based or open access business models. Institutional repository related policies will ensure author(s) retains copyright of their work(s) and publisher's version (post-print) is deposited in the institutional repository immediately after publication. At the same time, the institutional repository facilitates creating author profiles by providing a list of author's works with citation metrics. It will measure the impact of a particular work, an author or affiliated department and will serve as a showcase of the institution's research output.

Four functions of scholarly publishing are incorporated into the above proposed model and they will function as follows:

(i) Registration: As this model proposes a two-tier system for registration, institutional repository will do the initial registration function for research papers or other unpublished materials (i.e. electronic theses and dissertations). Subsequent certification can be effected via traditional publishing (subscription journals) or new mechanisms (i.e. open access journals, overlay journals, etc.). Initial registration through institutional repository becomes more easy and quick through self-archiving as the process removes time constraints inherent to traditional publishing model. During the registration process, authors will sign Creative Commons (CC) licenses which enables them to retain copyright of their works while ensuring the use of author's work for designated purposes.

(ii) Certification: This model proposes a two-tier system for certification as well. Initial certification can be done by the repository manager(s) by authenticating author affiliations and verifying the quality of metadata and file formats in the process of accepting the works into the repository. Secondary certification can be done either internally or externally. Internal secondary certification can be done by departmental peers through peer-review and the works gone through this peer-review can be published in departmental, institutional or overlay journals. External secondary certification can be done by any commercial or open access publisher or by an overlay journal. Technically this is feasible as some digital repository software (i.e. Digital

Commons of BePress) has been already designed to accommodate peer-review management features. Reviewed works can be published in external publishing venues (i.e. subscription journals), however the deposit of the publisher's version of the work in the institutional repository is mandatory.

(iii) Awareness: Awareness includes various activities such as dissemination, accessibility, discoverability, and publicity of the works deposited in the institutional repository. In the proposed model, this is primarily achieved through interoperability. Therefore, the proposed institutional repository is designed according to Open Archives Initiative-Protocol for Metadata Harvesting (OAI-PMH) protocol. This enables internet search engines and other federated repositories harvest the metadata of the works deposited in the repository. Proposed model suggests to use both platform metrics (i.e. number of downloads, uploads, access locations, citations) as well as third-party metrics (i.e. web analytics, citation measures, altmetrics) not only to measure the impact of works deposited in the repository, but also to measure the impact of authors and their affiliated departments. Moreover, proposed model creates a profile page for each user, somewhat similar to the 'scholar profiles' service of The Hong Kong University of Science and Technology's (HKUST) Institutional Repository, which will serve as a value added service for authors.

(iv) Archiving: Institutional repository ensures the long-term perpetual access to all the works deposited in it, including both items (works) and associated metadata. In some cases, repository software vendors provide necessary back-up services (i.e. Digital Commons of BePress). At the same time, mirror services and other archives based on OAI-PMH could collect works and metadata deposited in institutional repository (i.e. OAIster). Another strategy for preservation is having persistent identifiers (PID), which is particularly useful when the repository migrates to a new system.

5. Conclusion

Repository-enabled services will be critical in the future business models of scholarly communication. Therefore, present study proposed a conceptual model for institutional repository to serve as a scholarly publishing platform. By serving as a scholarly publishing platform, institutional repository empowers the institute to take control of its research output while ensuring accessibility to the institution's research output in an open-access background. It is important to position the repository as a complement to, rather than as a replacement for, traditional scholarly publishing. Although the task of implementing proposed model challenges existing institutional repository models, related policies and technologies, we believe that it provides novel opportunities for all stakeholders in the scholarly publishing system. To implement the above model, commitment of the stakeholders is necessary. Internal stakeholders such as administrators, academics, researchers, and librarians as well as external stakeholders such as funding agencies and publishers should work together to fully implement the proposed model. At the same time, clear policies and agreements among various stakeholders are necessary for the smooth functioning of the proposed model.

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