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Publishing in Sri Lanka:

Characteristics and Future Potential

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Open Access Journal Publishing in Sri Lanka: Characteristics and Future Potential

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Abstract

The purpose of this study was to identify the problems faced by the scholarly journal publishing industry in Sri Lanka and to explore the opportunities provided by online open access publishing to overcome those problems. Both qualitative and quantitative methods were used in this study. A literature review was used to identify the problems faced by developing countries, including Sri Lanka, in scholarly journal publishing. Open access journals published in Sri Lanka were identified through secondary sources such as open access journal directories and indexing services. Data were manually collected by accessing eighty-four (84) journal homepages systematically through the links provided by above directories and indexing services. The study has found that Sri Lanka faces problems similar to the other developing countries in the scholarly journal publishing. At the same time, the study has recognized open access as an opportunity for Sri Lankan scholarly journals to overcome those issues. Suggestions were made to improve the open access journal publishing in Sri Lanka and measures were suggested to overcome possible future drawbacks. Despite several studies related to open access initiatives, there have been no substantial studies on open access journal publishing in Sri Lanka. Hence, the present study intended to fill that gap by reviewing related literature and analyzing open access journals published in Sri Lanka.

Keywords: *Developing countries, Open access, Open access journals, Scholarly journals, Scholarly publishing, Sri Lanka*

Introduction

Scholarly publishing, a part of scholarly communication, is the process through which the newly discovered knowledge is refined, certified, distributed to, and preserved (Association for Research Libraries, 2000). Scholarly journals, first appeared in the mid-17th century, occupy a larger portion of scholarly publishing. Since then, the process of scholarly journal publishing has changed constantly mainly due to social contexts and technological advances. Meadows summarizes these changes as follows:

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...the most significant changes occurred as the result of the emergence of journals in the mid-seventeenth century, scientific societies in the eighteenth century, professionalization of research and expertise in areas of knowledge in the nineteenth century and, more recently, the emergence of the electronic world in the twentieth century. (Meadows, 1999, as cited in Costa & Leite, 2016, p. 34)

However, by the 21st century, scholarly journal publishing has been challenged due to several reasons. Firstly, researchers are dissatisfied with the traditional model of scholarly publishing that limits access to their research outputs. Secondly, developments in digital publishing, fueled by the Internet and related technologies, have enabled researchers to disseminate their research outputs without restrictions imposed by traditional publishing. These factors have contributed to the emergence of open access initiatives. The basic idea of open access is to “make research literature available online without price barriers and without most permission barriers” (Suber, 2012, p. 8).

Open access initiatives recommend a new model for scholarly communication by introducing two strategies. One of them is known as the “gold open access” that encourages researchers to publish their works in open access journals. The other is called “green open access” that encourages the works already published or accepted for publication to be deposited in digital open access repositories.

Although the open access movement was initiated by researchers and institutions mostly in developed countries, by today, developing countries are increasingly welcoming open access for two reasons. At first, open access enables researchers in these countries to access the literature once that was not affordable for them due to subscription costs. Secondly, open access increases the visibility of research works produced in developing countries.

Purpose and Objectives of the Study

Purpose of this study is to identify the issues faced by the scholarly journal publishing industry in Sri Lanka and to investigate the opportunities provided by open access publishing to overcome those issues. Specific objectives of the study are as follows:

- to identify the problems faced by Sri Lanka in scholarly journal publishing;
- to investigate the open access initiatives in Sri Lanka with special reference to open access journal publishing;
- to identify the characteristics of open access journals published in Sri

Lanka; and

- to recommend strategies to empower and sustain open access journal publishing in Sri Lanka.

Materials and Methods

This study used a mixed methods approach, and it is largely based on secondary sources. At first, a literature survey was carried out by using Google Scholar and Google search engines to answer the first two objectives of the study. Google Scholar was selected as it focuses only on scholarly literature such as journal articles. Google search engine was selected as it indexes gray literature such as reports, working papers, white papers, etc., that are not usually covered by Google Scholar.

The first objective of the study was to identify the problems faced by scholarly journal publishing in Sri Lanka. Authors conducted a literature search by using the following keywords and keyword phrases interchangeably: “scholarly journal publishing”; “scholarly publishing”; “journal publishing”; “scientific journals”; “Sri Lanka”; “challenges”; “issues”; “problems.”

However, the above search retrieved only very few articles relevant to the study as follows: Ranasinghe, Perera, and Abeygunasekara (2011); Yapa (2011); Amarasuriya (1991, 1999).

Therefore, authors expanded their literature survey to the other developing regions of the world where the scholarly journal publishing is facing issues that are similar to Sri Lanka. For that, the initial search query was modified and expanded by adding the keywords such as “developing countries” or region’s name (i.e., Africa, Latin America).

This extended literature survey retrieved number of relevant research articles and gray literature as follows: Hulagabali (2019); Harris (2018); Johnson (2018); Mishra and Neupane (2018); Ciocca and Delgado (2017); Costa and Leite (2016); Irfanullah (2016); Nobes (2016); Cage, Smart, and Cumming (2015); Murray and Clobridge (2014); Fischman, Alperin, and Willinsky (2010).

The second objective of the study was to identify the open access initiatives in Sri Lanka with special reference to open access journals. Authors conducted a literature search by using the following keywords and keyword phrases interchangeably: “open access”; “open access journals”; “open access initiatives”; “Sri Lanka”; “Sri Lankan.”

The above search retrieved a number of relevant studies and documents as follows: Mashroofa and Seneviratne (2016); Mashroofa (2016); Karunarathne (2013); Perera (2013a, 2013b); Yapa (2011).

A preliminary reading of the selected texts above allowed the identification

of citations from other relevant works. Findings of the literature survey were summarized and presented according to the research objectives.

Secondly, quantitative analysis was used to identify the characteristics of open access journals published in Sri Lanka. Secondary sources such as local and international online directories, indexing services and aggregators that provide authoritative lists of open access journals were mainly used to identify the open access journals published in Sri Lanka. They are as follows:

1. Sri Lanka Journals Online (SLJOL) is a database of open access scholarly journals published in Sri Lanka covering the full range of academic disciplines. There were eighty-one (81) journals listed alphabetically in SLJOL as of 21st December 2018.

2. The Directory of Open Access Scholarly Resources (ROAD) is a service offered by the ISSN International Center that provides free access to the ISSN bibliographic records of open access scholarly resources including open access journals (Directory of Open Access Scholarly Resources, 2019). ROAD was searched as follows: ROAD Homepage (<http://road.issn.org>) → Advanced search → Country → Sri Lanka. Accordingly, there were eight (8) Sri Lankan open access journals listed in ROAD as of 21st December 2018.

3. Directory of Open Access Journals (DOAJ) is an online directory that indexes and provides access to over 12,000 open access journals covering all subject areas (Directory of Open Access Journals, 2019). DOAJ was searched as follows: DOAJ Homepage (<http://doaj.org>) → Advanced Search → Journals → Country of Publisher → Sri Lanka. Accordingly, there were thirteen (13) Sri Lankan open access journals listed in DOAJ as of 21st December 2018.

Journals identified through the above sources were listed alphabetically and checked for duplication. Accordingly, 84 unique titles were identified as open access journals published in Sri Lanka. A web survey was conducted to collect data manually by accessing journal homepages through the links provided by the above secondary sources. Following data were collected from each journal home page: Journal name (title); Publisher; Subject Content; Publication frequency; Full-text availability; Language; Print version availability; Open access policy; Peer reviewing process; Copyright policy; and, Indexing. Secondary sources such as DOAJ and ROAD provided most of the above data in their bibliographic records. In such cases, those data were verified by accessing the individual journal home page.

Identification of the subject content of the journals was also associated with the data collection step. In DOAJ, journals are categorized using a subset of the “LCC subject categories” (Library of Congress Classification). In addition, “publisher’s keywords” are also given under each entry of the journal. However,

ROAD does not follow a consistent subject categorization, and uses both DDC (Dewey Decimal Classification) and UDC (Universal Decimal Classification) class numbers concurrently, along with subject names. On the other hand, SLJOL does not use a subject categorization at all and simply arranges the open access journals alphabetically. In that case, the subject content of each journal was determined by accessing each journal's homepage. Since there was no consistency in the subject categorization of journals among above three (3) services, authors decided to use the LCC based subject categorization used by DOAJ as the basis of their subject categorization of Sri Lankan open access journals. Originally, there were twenty (20) subject categories¹ used in DOAJ ranging from "Architecture" to "Technology". Most of the subject category names were used as it is, i.e., Agriculture, Medicine, Science, Technology, etc. In some cases, subject category names were modified, i.e., "Bibliography. Library science. Information resources" was adapted as "Library and Information Science". In some cases, the second level of the subject tree was used to better represent the subject content of the journals, i.e., "Fine Arts: Architecture" was used as "Architecture" and "Geography: Environmental Sciences" was used as "Environmental Sciences". On the other hand, the category named "Multidisciplinary" was newly added by authors to represent the multidisciplinary nature of several open access journals. Altogether, the study identified nine (9) subject categories as represented in Table 1.

Table 1 Subject Distributions of Sri Lankan OA Journals

Subject category	No. of OA journals	Percentage
Medicine	30	35.71
Social Sciences	15	17.85
Agriculture	12	14.28
Science	11	13.09
Multidisciplinary	6	7.14
Technology	4	4.76
Architecture	3	3.57
Library and Information Science	2	2.38
Environmental Sciences	1	1.19
Total	84	100

Source: Compiled by authors.

Data collection was carried out during the first three (3) weeks of December 2018. Collected data were transferred into an MS Excel Spreadsheet and the descriptive statistical methods were used to analyze and interpret data and the findings were presented through tables, charts, and graphs.

Research methods and materials selected for the present study have several limitations as follows. Authors had to solely depend only on the literature

¹ <https://doaj.org/subjects>.

review to identify the problems associated with scholarly journal publishing in Sri Lanka. Primary survey or interview methods could not be used in this study due to various constraints such as time and space. On the other hand, lack of a comprehensive list of open access journals published in the country resulted in authors having to limit their journal search to the aforementioned secondary sources. Thus, there is a possibility of inadvertently non-identifying certain open access journals.

Findings and Discussion

Problems Faced by Sri Lanka and Other Developing Countries in Scholarly Journal Publishing

Sri Lanka is an island located in the Indian Ocean with a total land area of 65,000 km² and a population of 22 million. Sri Lankan higher education system consists of fifteen (15) national universities, three (3) campuses and eighteen (18) affiliated institutes including eight (8) post-graduate institutes coming under the authority of University Grants Commission (UGC), Sri Lanka. In addition, there are five (5) public non-UGC universities in Sri Lanka. Also, there are nearly thirty (30) research institutes in Sri Lanka. Scholarly publishing in Sri Lanka dates as far back as the 19th century. Progress in scholarly publishing was closely related to the historical development of learned societies in the country (Yapa, 2011). *The Journal of the Ceylon Branch of the Royal Asiatic Society* is the first scholarly journal of the country which was published in 1845. The first scientific journal to be published in Sri Lanka was the *Medical Miscellany*, founded in 1853 (Senadhira, 1975). *The Journal of the Ceylon Branch of the British Medical Association* (forerunner to *The Ceylon Medical Journal*), founded in 1887, is the oldest surviving medical journal in Australasia.

According to Yapa (2011), there was a significant increase in the publication of scholarly journals in Sri Lanka from 1970 onward. As of 2010, there were one hundred fourteen (114) print scholarly journals published in Sri Lanka and the highest number (34%) of them were humanities and social sciences related, followed by medical related (28%) and natural and physical sciences related (24%) journals. The majority of these scholarly journals were published by universities, professional associations and research institutes in Sri Lanka and virtually there were no commercial publishers engaged in scholarly journal publishing in the country.

The literature survey has revealed a number of studies that discuss the key issues faced by the scholarly journal publishing industry in developing countries including Sri Lanka. Scholars such as Hulagabali (2019), Irfanullah (2016), and Cage et al. (2015) discuss the issues associated with scholarly journal publishing in South Asian nations. While Johnson (2018) discusses the challenges faced

by scholarly journals in the Arab world, Murray and Clobridge's (2014) report focuses on the key issues faced by African scholarly journals. Studies carried out by Ciocca and Delgado (2017), Costa and Leite (2016) and Fischman et al. (2010) provide an insight into the situation of scholarly journal publishing in Latin America. Harris (2018), Mishra and Neupane (2018), and Nobes (2016) discuss the issues related to scholarly journal publishing in developing countries in general. Few studies (Amarasuriya, 1991, 1999; Ranasinghe et al., 2011) discuss the issues faced by scholarly journal publishing in Sri Lanka. Common issues faced by developing countries including Sri Lanka in scholarly journal publishing can be summarized as follows.

Researcher's preference of journal is dependent on the quality of a journal, especially on whether they are indexed in key databases. Academic and research institutes in developing countries prefer publishing in international journals over local journals and give more credit to them. According to Murray and Clobridge (2014), African universities' promotion policies reward authors for publishing in overseas, high impact factor journals. Therefore, developing country researchers being driven to publish their works in indexed journals with high impact factor. The number of submissions to local journals is decreasing, and the number of papers published in local journals is also decreasing as a result of it (Mishra & Neupane, 2018). Irfanullah (2016) says, getting quality manuscripts remains one of the biggest challenges for most of the journals published in Bangladesh. He further says the manuscript quality has to be severely compromised to publish an issue on time, leading to a sub-standard journal. Discussing the problems associated with medical journal publishing in Sri Lanka, Ranasinghe et al. (2011) say that most locally published journals are lack of high-quality articles and are not visible to the rest of the world. According to Amarasuriya (1991), local journals face a limited supply of suitable articles because local academic and research institutes prefer publications in international journals over local journals and give more credit to them.

On the other hand, lack of submissions causes the irregularity of publication leading very few journals from developing countries to be indexed in key databases. Studies have found that very few journals from developing countries are indexed in key databases such as PubMed, Scopus or Web of Science (Nobes, 2016), despite the efforts of editors to improve the quality of their journals. They further identify the struggle of local scholarly journals to consistently attract quality submissions per annum. It results in inconsistency in the journal's publication and creates a vicious cycle of being not indexed in key databases. As Fischman et al. (2010) say, the regularity of the publishing cycle is one measure of quality assessed by indexes such as ISI Web of Science. The rise of predatory

journals² (also called as pseudo-journals), which exploit the above situation, has created further challenges to journals based in developing countries. According to Nobes (2016, p. 26) “many unsuspecting researchers have lost valuable research to questionable, non-peer reviewed journals that are unlikely to be read and used.” In his interview with Hulagabali (2019), Jeffery Beall says that “South Asia has a world reputation for being a center of predatory publishing.” This unacceptable scholarly practice has badly affected the reputation of scholarly journals published in developing countries. Nobes says:

... this has led some journals to seek alternative indexing and metrics to prove their worth, and so open themselves up to exploitation from yet another “predatory” player on the market—fake indices and metrics that charge journals for the privilege of their dubious impact factor. (Nobes, 2016, p. 29)

Lack of funds is another issue which affects the scholarly journal publishing in developing regions. According to Harris (2018), lack of funding or resources is among many challenges faced by journal publishing in the Global South. Murray and Clobridge (2014) reports that nearly one-third of journals in Africa operate in a cashless environment. Without any income or revenue, instead, they rely on volunteers and in-kind support from institutions. According to Cage et al. (2015), journal publishing in Bangladesh incurs significant expenses for printing, followed by graphic design, typesetting, and page layout, mailing and distribution as well as for managing editorial offices. Nobes (2016) reports that more than half of the Bangladesh journals run without any financial assistance at all. Most of the journals in developing countries are published by publicly funded non-profit organizations (such as universities, research institutes) or by learned societies. According to Murray and Clobridge (2014), the majority of African journals are published by a group based out of a university, scholarly society, or professional association. According to Fischman et al. (2010), in Latin America, universities are the largest single owners of the journals and in terms of funding, more than half of these journals are entirely funded by universities. They further say that journals are not treated by scholarly society or commercial publishers as a means of creating profit, and the journals that have experienced pauses in publishing, over one-third have cited financial constraints as the reason for that. According to Johnson (2018), financial strengths and weaknesses of these institutions and organizations determine not only the frequency of the journal's

² Predatory journal (definition): “online journals characterized as ‘predatory’, which actively solicit manuscripts and charge publications fees without providing robust peer review and editorial services.” (Shamseer et al. 2017).

publication but also how consistently copies of issues are distributed. Researchers have also found that scholarly journal publishing in developing countries does not have large commercial publishers such as those in North American and European countries (Costa & Leite, 2016; Murray & Clobridge, 2014) while some studies report the complete absence of commercially published titles (Fischman et al., 2010). Ciocca and Delgado (2017) point out another indirect impact of the lack of funds on scholarly publishing as follows. According to them, Latin American scientists prefer to publish their discoveries in journals that do not charge for publication costs since it is very difficult to pay those charges from their modest research grants. Very often these journals are the ones with lower impact factors, which negatively affect the ratings and the visibility of scientific research output. When it comes to financial constraints, Sri Lanka also has no exception in this regard. Studies have found that local journals face lack of funds to continue publishing and even publishing a single issue of a journal incurs a significant cost to the publisher (Ranasinghe et al., 2011). Main sources of funding for Sri Lankan journals are not subscribers, but advertisers, donors and societies/institutes. As a result, the continuance of these journals may be affected by local or global economic conditions. Amarasuriya (1999) found that most of the local journals are vulnerable to be irregular and ceased publication after a short time. According to her, most of the journal publishers are publicly funded non-profit organizations, and they do not publish journals for profit making. As a result, these scholarly journals become less competitive and less sustainable. As a consequence, most of the research output in developing nations become less visible and accessible, resulting in less acknowledgment and citations by the scholarly world. This continues as a vicious cycle for researchers and scholarly journal publishing industry in developing countries.

Finally, studies report that the scholarly journals in developing countries face numerous issues related to the management of their journals including lack of trained, dedicated, full-time editors and other staff. According to Fischman et al. (2010), administrative or editorial issues and human resource shortages were commonly cited as one of the reasons for discontinuing titles in Latin America. Finding good peer reviewers to evaluate the articles remains a consistent challenge for editors. The study further says issues related to the day-to-day operation of the journals prevent Latin American publications from reaching full maturity. Irfanullah (2016) says the supply of editors and reviewers has become less than the demand. He further says a significant number of individuals could be seen engaged with several journals with overlapping scopes. Such individuals often become overburdened, the editorial and reviewing process becomes slower, even if the supply of manuscripts is healthy. Murray and Clobridge (2014) also

mentions finding good peer reviewers as a constraint that African journals faced. According to Harris (2018), many Global South journals are set up, managed and edited by practicing academics who are doing publishing tasks in their spare time. Amarasuriya (1991, 1999) identifies that the same problems are faced by Sri Lankan scholarly journal publishing as well. She says that journals published in Sri Lanka face the shortage of professionally-qualified editors, inadequate refereeing and lack of adherence to internationally accepted standards and norms of scholarly publishing. Lack of qualified and dedicated human resources to manage journals also results delays in printing, poor circulation, distribution, and marketing of local journals.

Open Access as an Opportunity for Scholarly Journal Publishing in Developing Countries

A number of studies have identified that open access as a great opportunity for scholarly journals published in developing regions to overcome the above challenges. Suber observes that researchers in the Global South are among the most determined advocates for open access (Poynder, 2013). Schöpfel says:

...they [researchers in the Global South] want it [open access] not only as readers, to have access to international research, but also as authors so that their own work can be known to colleagues elsewhere. Open access is not only access and consumption but also and above all, production and dissemination. (Schöpfel, 2017)

This situation is well represented in the world's largest open access journals directory, DOAJ, which indexes open access journals published in the world. According to DOAJ statistics, Indonesia (1,404 journals) and Brazil (1,321 journals) occupy the second and third ranks respectively as far as the number of open access journals published by different countries is concerned (as of February 22nd, 2019).

According to Harris (2018), open access offers a chance to journals in the developing world, those who face challenges in becoming known and respected in the international research landscape, to make them visible. Johnson (2018) identifies open access can contribute to solving the problem of journal distribution. Nassi-Calò (2016) says that open access has led to the elimination of the print version of most journals, greatly reducing the costs of publication. In a study based on five emerging countries called BRICS—Brazil, Russia, India, China, and South Africa, Schöpfel (2017) identifies that open access is great in the developing world as it can contribute to solving problems related to access gaps.

Studies have recommended open access as a solution to the problems faced by scholarly journal publishing in Sri Lanka. Mashroofa (2016) proposes

that Sri Lankan scientists must adopt open access for scholarly communication practices to maximize visibility and to earn high impact for their research. She also encourages funding agencies, universities and research institutes to formulate open access policies, establish institutional repositories, and motivate researchers to publish in open access journals and archive in digital repositories. Mashroofa and Seneviratne (2016) recommend the institutions to formulate their own open access policy and make open access mandatory in order to maximize the openness of scholarly output.

Some other studies have found that there is a welcoming environment for open access in Sri Lanka. Perera (2013a) focused on Sri Lankan academics' and researchers' attitudes and awareness on open access reports that eighty-four percent (84%) of Sri Lankan academics and researchers are aware of open access, sixty-nine percent (69%) of them use open access articles for their research and forty percent (40%) of academics and researchers actively publish their research work in open access journals and/or repositories. Study further reports that senior researchers are more positive towards open access than juniors. Karunaratne (2013) reports the results of a case study where a local journal, *Journal of the National Science Foundation*, shifted from delayed open access to immediate open access in June 2013. According to her, the journal has experienced exponential growth in terms of downloads of articles as well as submissions from international authors.

Holdom (2005) argues that the lack of a commercial publishing industry in Latin America has stimulated the growth of online publishing initiatives in the region. Costa and Leite also express the same view by saying that

...this is because journals are traditionally free in the region, not having large commercial publishers such as those in North American and European countries. Thus, for Latin America, the advent of information technology and open access initiatives means a chance to establish the necessary infrastructure to expand the dissemination of scientific production as it has never focused on profit. (Costa & Leite, 2016, p. 34)

Scholars from Sri Lanka also have the same view. Ranasinghe et al. (2011) identify several good qualities of (medical) journal publishing in Sri Lanka including free access to articles, minimum charges for authors and potential for online availability. These authors suggest that Sri Lankan (medical) journals should shift from the traditional publishing model to online publishing models with a minimum number of printed copies. Yapa (2011) identifies the introduction of online open access publications as an opportunity to make Sri Lankan scholarly

journals freely available to anyone, resulting in greater accessibility and visibility to local research. Lack of profit-making intentions of local journal publishers is seen as potential support for such efforts (Yapa, 2011).

Open Access Journal Publishing in Sri Lanka

Although the scholarly journal publishing has a long history, open access journals are relatively a new concept for Sri Lanka. The National Science Foundation (NSF), with the mandate to serve and strengthen the science and technology sectors in the country, has played a key role in open access movement in Sri Lanka. First open access repository was established by NSF in 2006 and the number has increased up to thirty-one (31) repositories since then (Search Sri Lankan Institutional Repositories, 2019). These include institutional repositories of research institutes, national universities and the NSF of Sri Lanka. NSF actively supported the establishment of these open access repositories as a part of the National Digitization Project (Perera, 2013b).

International Network for the Availability of Scientific Publications (INASP) was instrumental in introducing open access journals in Sri Lanka. Collaboration between the INASP and developing country libraries and journals led to the creation of the journals online (JOL) platform that help local journals in Asia, Africa, and Latin America to gain greater visibility and reach to local as well as international audiences (Mishra & Neupane, 2018). In other words, the JOL project of INASP aimed to improve the accessibility and visibility of developing country research. It used the Open Journals System (OJS), open source software created by the Public Knowledge Project (PKP). INASP believes that local journals play an important role in communicating Southern research. Through the JOL Project, INASP has helped to develop a number of online open access platforms, beginning in 1998 with the African Journals Online (AJOL) platform. In addition, INASP has set up The Central America Journals Online (CAMJOL) which hosts journals primarily appeared in Spanish. CAMJOL was originally called the Latin American Journals Online (LAMJOL). In Asia, Bangladesh Journals Online (BanglaJOL), Nepal Journals Online (NepJOL), and Sri Lankan Journals Online (SLJOL, see Figure 1) have continued to grow and around ninety-five percent (95%) of articles are full-text open access (Nobes, 2016).

It has been ten years since first open access journals were launched in Sri Lanka. SLJOL project was initiated in 2008 with the support of INASP. SLJOL is a database of scholarly journals published in Sri Lanka, covering the full range of academic disciplines. Managed by the NSF of Sri Lanka, the objective of SLJOL is to give greater visibility to the participating journals, and to the research they convey. Since the year 2015, a new SLJOL website was launched in collaboration with Ubiquity Press.



Figure 1 SLJOL Homepage

Source: Sri Lanka Journals Online (2019a).

Journals are selected for inclusion on SLJOL using the following criteria:

1. Journals are scholarly in content and contain original research.
2. Journal papers are peer-reviewed and quality controlled.
3. Journals should provide all content (tables of contents, abstracts, and PDFs of full-text) in electronic format.
4. Journals should be published within Sri Lanka (Sri Lanka Journals Online, 2019b).

So far, 81 scholarly journals have been hosted on SLJOL and have provided access to the table of contents, abstracts, and full-text of over ten thousand (10,000) articles via the Internet.

Characteristics of Open Access Journals Published in Sri Lanka

A quantitative web survey was carried out to identify the characteristics of open access journals published in Sri Lanka. Secondary sources, mainly DOAJ, ROAD and SLJOL were used to identify the open access journals published in Sri Lanka. Eighty-four (84) open access journals identified through the above sources were evaluated to identify their characteristics and the findings are presented and discussed here.

Overall subject distributions of Sri Lankan open access journals are displayed in Table 1. According to available data, science and technology field dominates the open access journal publishing in Sri Lanka as the majority of journals (67.84%, $n = 57$) fall under that category. Among the science and technology journals (57 journals in total), most of them (52.63%; $n = 30$) are medicine related, followed by agriculture (21.05%, $n = 12$) and natural and physical science (19.29%, $n = 11$) journals. However, these findings are in

contrast to the findings of Yapa (2011) who revealed that the highest number of print journals published in Sri Lanka were humanities and social sciences related. These findings confirm that while humanities and social sciences related journals dominate the traditional print journal publishing industry, science and technology related journals dominate the open access journal publishing in the country.

Academic institutes and professional associations are the major publishers of open access journals in Sri Lanka (Figure 2). They occupy eighty-eight percent (88%, $n = 74$) of open access journals published in the country. Here, academic institutes incorporate universities and other higher education institutes. Professional associations (societies), also known as learned societies, publish journals related to their academic disciplines or professions. A small percentage of journals is published by research institutes, government departments, and non-governmental organizations. It is interesting to note that virtually there are no commercial publishers engaged in open access journal publishing in Sri Lanka. These findings tally with previous studies (Yapa, 2011) which identified academic institutes, professional organizations and learned societies as the major contributors of scholarly journal publishing in Sri Lanka.

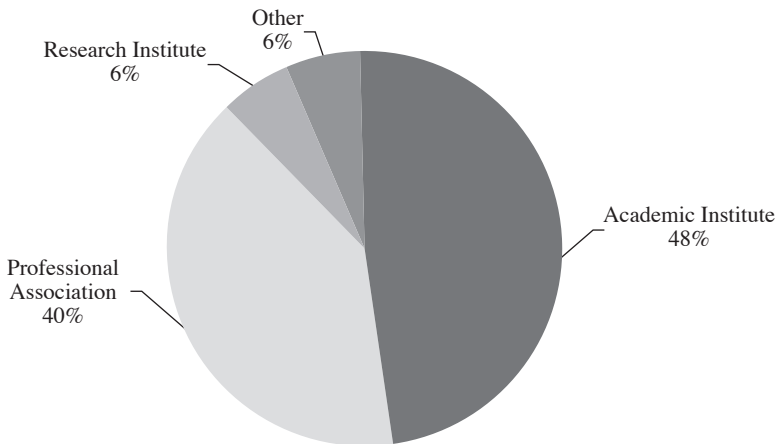


Figure 2 Sri Lankan OA Journal Publishers

Table 2 offers an overview of the publisher-wise distribution of open access journals. Accordingly, the highest number of medical journals (80%, $n = 24$) are published by professional associations. Another few titles (13.33%, $n = 4$) are published by academic institutes. The vast majority of (80%, $n = 12$) social sciences journals are published by academic institutes. More than half of (63.63%, $n = 7$) natural and physical science journals are published by academic institutes. Half of the agriculture and social sciences related journals are also published by academic institutes. In this way, professional associations in Sri Lanka publish

Table 2 Publisher-wise Distribution of OA Journals

Subject category	Publisher-wise distribution of OA journals	
	Publisher	N (%)
Medicine (30 Journals)	Academic Institute	4 (13.33)
	Professional Association	24 (80)
	Other	2 (6.66)
Social Sciences (15 journals)	Academic Institute	12 (80)
	Research Institute	1 (6.66)
	Other	2 (13.33)
Agriculture (12 Journals)	Academic Institute	6 (50)
	Professional Association	3 (25)
	Research Institute	3 (25)
Science (11 Journals)	Academic Institute	7 (63.63)
	Professional Association	2 (18.18)
	Research Institute	1 (9.09)
	Other	1 (9.09)
Multidisciplinary (6 journals)	Academic Institute	5 (80)
	Professional Association	1 (20)
Technology (4 journals)	Academic Institute	2 (50)
	Professional Association	2 (50)
Architecture (3 journals)	Academic Institute	2 (66.6)
	Professional Association	1 (33.33)
Library and Information Science (2 journals)	Academic Institute	1 (50)
	Professional Association	1 (50)
Environmental Sciences (1 journal)	Academic Institute	1 (100)

Source: Compiled by authors.

more open access journals on medicine while academic institutes publish more open access journals on other subject areas.

As far as the frequency of open access journals published in Sri Lanka (Table 3) is considered, sixty-three percent (63.09%, $n = 53$) of them are published biannually. Fourteen percent (14.28%, $n = 12$) of journals publish only a single issue per year (annually). Only twelve percent (12%, $n = 10$) of open access journals are published quarterly. The subject-wise analysis reveals that more than half of the medical journals (56.66%, $n = 17$) are published biannually, whereas only sixteen percent (16.66%, $n = 5$) of medical journals are published quarterly. Another sixteen percent (16.66%, $n = 5$) of medical journals publish only a single issue per year. The vast majority of (80%, $n = 12$) of social sciences journals are published biannually. Forty-one percent (41.66%, $n = 5$) of agriculture journals are published biannually, whereas another twenty-five percent (25%, $n = 3$) are published annually. The majority (54.54%, $n = 6$) of natural and physical science journals are also biannual publications.

Table 4 summarizes the findings related to the article processing charges (if any), immediate open access to the articles published, copyright policy, peer

Table 3 Frequency of OA Journals Published in Sri Lanka

Subject category	Frequency of publication	
	Frequency	N (%)
Medicine (30 Journals)	Annual	5 (16.66)
	Biannual	17 (56.66)
	Continuously published online	1 (3.33)
	No information	2 (6.66)
	Quarterly	5 (16.66)
Social Sciences (15 journals)	Annual	2 (13.33)
	Biannual	12 (80)
	No information	1 (6.66)
Agriculture (12 Journals)	Annual	3 (25)
	Biannual	5 (41.66)
	Every two (2) years	1 (8.33)
	Three (3) issues per year	1 (8.33)
	Quarterly	1 (8.33)
	No information	1 (8.33)
Science (11 Journals)	Annual	3 (27.27)
	Biannual	6 (54.54)
	Quarterly	2 (18.18)
Multidisciplinary (6 journals)	Biannual	4 (66.66)
	Quarterly	1 (16.66)
	Three (3) issues per year	1 (16.66)
Technology (4 journals)	Biannual	3 (75)
	Quarterly	1 (25)
Architecture (3 journals)	Biannual	3 (100)
Library and Information Science (2 journals)	Biannual	2 (100)
Environmental Sciences (1 journal)	Biannual	1 (100)

Source: Compiled by authors.

Table 4 Other Characteristics of OA Journals Published in Sri Lanka

APC available N (%)	Article Processing Charges (APC)		Total N (%)
	APC not available N (%)	No information N (%)	
3 (3.57)	79 (94.04)	2 (2.38)	84 (100)
Immediate OA N (%)	Immediate vs. Delayed Open Access		
	Delayed OA N (%)	No information N (%)	Total N (%)
79 (94.04)	—	5 (5.95)	84 (100)
Pub. retains copyright N (%)	Journal's Copyright Policy		
	Author retains copyright N (%)	No information N (%)	Total N (%)
35 (41.66)	34 (40.47)	15 (17.85)	84 (100)
Peer-reviewed N (%)	Peer-Review Process		
	Partially peer-reviewed N (%)	No information N (%)	Total N (%)
80 (95.23)	4 (4.76)	—	84 (100)
English articles only N (%)	Language of Publication		
	Trilingual N (%)	No information N (%)	Total N (%)
81 (96.42)	3 (3.57)	—	84 (100)

Source: Compiled by authors.

review process and language of publication of Sri Lankan open access journals. According to the findings, only very few journals (3.57%, $n = 3$) charge any article processing fee from authors as they are operated with non-profit motives of their publishing institutes. At the same time, almost all the journals (94.04%, $n = 79$) offer immediate open access to full-text of articles without any delay. In many cases, publishers retain the copyright of the works published in their journals (41.66%, $n = 35$) and authors are required to get the permission from the journal editor or publisher to reproduce their work. An almost equal amount of journals (40.47%, $n = 34$) allow authors to retain the copyright of their works through Creative Commons licenses. Study findings further revealed that all the open access journals published in Sri Lanka undergo some form of peer review. Some journals (4.76%, $n = 4$) peer review the articles only submitted to the peer review section of the journal. Almost all the open access journals published in Sri Lanka (96.42%, $n = 81$) accept articles only written in English, while only very few journals accept articles written in local languages (Sinhalese and Tamil language) in addition to English language articles.

Among the indexes, directories and aggregators that cover open access journals published in Sri Lanka, the most cited aggregator is SLJOL, out of eighty-four (84) open access journals, eighty-one (81) journals (96.42%) were part of SLJOL (Table 5). The next most frequently cited were DOAJ (15.47%, $n = 13$), ROAD (9.52%, $n = 8$), Scopus (5.95%, $n = 5$), CAB Abstracts (2.38%, $n = 2$)

Table 5 Indexing and Abstracting Services That Cover Sri Lankan OA Journals

Indexing/Abstracting service	No. of OA journals	Percentage
SLJOL	81	96.42
DOAJ	13	15.47
ROAD	8	9.52
SCOPUS	5	5.95
CAB Abstracts	2	2.38
Global Health	2	2.38
Medline	1	1.19
EBSCO	1	1.19
SCIE	1	1.19
Chemical Abstracts	1	1.19
TEEAL	1	1.19
Ulrich's	1	1.19
Agricola	1	1.19
Biological Abstracts	1	1.19
Zoological Abstracts	1	1.19
BIOSIS Previews	1	1.19
ESCI	1	1.19
CIRAD	1	1.19

Source: Compiled by authors.

and Global Health (2.38%, $n = 2$) respectively. In addition to that, a single journal is indexed in each of the following indexing services: Medline, EBSCO, SCIE, Chemical Abstracts, TEEL, Ulrich's, Agricola, Biological Abstracts, Zoological Abstracts, BIOSIS Previews, ESCI, and CIRAD.³

As far as the search engine visibility is concerned, almost all the journals (97.61%, $n = 82$) are within top five entries on the first page of the search results on "Google" and "Yahoo!" Search engines (Note: Journal title in phrase search was used as the search technique). Only very few journal names (2.38%, $n = 2$) were confused with another journal.

Conclusions and Recommendations

Findings have indicated that the overwhelming majority of Sri Lankan open access journals are published either biannually or annually. The frequency of publication is closely associated with print counterparts of these journals. Usually, print and online versions of a journal issue are published simultaneously. However, online publishing platforms enable a journal to be published as a continuous volume and issue throughout the year irrespective of the frequency of the print counterpart. Already there are such initiatives by certain open access journals such as "Sri Lanka Journal of Radiology" which publishes as a continuous volume and issue throughout the year. Known as "continuous publication model", this enables articles to be made available as soon as they are ready to be published, without any unnecessary delays. We recommend the other open access journals also to move into this model to enable the rapid dissemination of research findings, rather than confined into the conventional model that publishes issues at fixed intervals.

Study findings revealed that only a few of Sri Lankan open access journals are covered by international indexing and abstracting services. Since local journals are the sources of indigenous knowledge, wide coverage of them in international indexing and abstracting services will provide credit and acknowledgment for local research findings in the international arena. Therefore, it is necessary for Sri Lankan open access journals to be adhered to international standards of scholarly journal publishing to ensure that they are covered by international indexing and abstracting services including DOAJ.

It was reported that virtually none of the open access journals published in Sri Lanka charge any article processing fee from authors. This is due to the non-profit motives of journal publishers in Sri Lanka. Although this can be considered as a favorable situation for Sri Lanka's scholarly publishing, it is worthwhile to

³ Several journals are indexed in more than one indexing service, i.e., *Ceylon Medical Journal*, *Journal of the National Science Foundation of Sri Lanka*.

note that open access is not for free. Even though it has to be freely accessible to the end users, somebody has to bear at least the essential costs associated with publishing an open access journal. So far these journals are being continued with institutional funding or support from generous donors. In the absence of such funding sources, open access journals published in Sri Lanka are vulnerable to be discontinued. Because the other alternatives such as author paid model of open access, used in developed countries, won't work well in the Sri Lankan context. Therefore, securing regular financial support from the government of Sri Lanka is necessary for the sustainability of open access journals published in the country.

On the other hand, research works that are financially supported by the public universities and research institutes should be encouraged to publish in open access journals. Moreover, these universities and research institutes shall establish and/or strengthen their open access policies to mandate the deposit of either pre-print or post-print versions of the journal articles produced by their institutional members in its open access institutional repository. Otherwise, if the present open access journals hosting and/or supporting services come to a standstill or if these services decide to shift into profit-making business models in the future, these academic and research institutes will lose the access and control over the works produced by their members and/or works funded by them. In such instances, institutional repositories could serve as substitutes for open access journals.

At the same time, there is a need for introducing standards and policies to regulate and quality control the open access journals published in the country. It will ultimately contribute to minimizing the risk of emergence of predatory open access journals within Sri Lanka. At the same time the awareness on predatory journals, fake indices and metrics should be enhanced among academics and researchers to avoid them from being the victims of such bogus services. Academic institutes and professional associations, as well as libraries and librarians, have a big responsibility in this regard.

Although the previous studies have revealed that most of the print journals published in Sri Lanka are related to humanities and social sciences, the present study observed that open access journal titles related to humanities and social sciences are very few. Usually, in Sri Lanka, most of the humanities and social sciences journals are published in local languages. Non-availability of these journals on open access platforms hinder the research output appeared in local languages. Therefore, it is necessary to support these journals to have an online presence through open access platforms. It will particularly enable the indigenous knowledge to be available to the global readership.

At the same time, capacity building among open access journal editors, reviewers, and the other staff is necessary to improve the quality and the

standards of open access journals published in Sri Lanka. On the other hand, authors must be trained on how to produce quality manuscripts. At the same time, any misconceptions about open access publishing among the authors must be eliminated by enhancing their awareness on the importance of open access publishing. Further, awareness of open access among the policymakers and the high-level management in the institutions as well as in the government should be enhanced in order to get their support for the sustainability of open access initiatives.

In view of this, if properly planned, Sri Lankan scholarly journals are in a favorable position to reap the benefits of open access scholarly publishing. Adherence to international standards in journal publishing, securing constant financial support, formulating open access policies at institutional and national levels, raising the awareness on the importance of open access among relevant bodies as well as capacity building among key stakeholders would ensure the realization of those benefits. However, access to the latest research output that appears in internationally reputed journals would still be retained as a challenge for Sri Lankan academic and research community due to escalating journal prices and decreasing library budgets.

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