NATIONAL CONFERENCE
OF
UNIVERSITY LIBRARIANS ASSOCIATION
2017

INFORMATION FOR SUSTAINABLE DEVELOPMENT

PROCEEDINGS

NATIONAL CONFERENCE

OF

UNIVERSITY LIBRARIANS ASSOCIATION OF SRI LANKA

(NACULA 2017)

INFORMATION FOR SUSTAINABLE DEVELOPMENT

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Message from the Chief Guest

Senior Professor Lakshman Dissanayake

Vice-Chancellor, University of Colombo

It gives me a great pleasure to issue this message on the occasion of the National Conference of the University Librarians Association, 2017. This year they have opened the doorways to enhance the collaboration with the academia at its annual National conference by providing a common forum for the communication of research and development activities conducted by the university librarians and academics of other disciplines.

The theme of the National Conference 2017, ***Information for sustainable development*** is a timely theme capable of capturing multidisciplinary research. Librarians who are the facilitators for information dissemination can drive the society towards sustainability through increased access to information and knowledge, strengthened by universal literacy. University libraries have a great responsibility to work together to develop knowledge and technology innovations that can contribute to economic and social wealth to nation within the framework of protecting intellectual property rights.

I hope this forum will motivate young academics towards achieving long-term goals of sustainable development in Sri Lanka. In this context, the libraries have to play a critical role.

While congratulating the Council of University Librarians Association of Sri Lanka for organizing the National Conference, 2017 I wish the conference all the success.

Message from the President, ULA
Conference Chair, NACULA/2017
Mrs. Anuja Silva
Senior Assistant Librarian, University of Colombo

On behalf of the Organizing Committee, I am honoured and delighted to welcome you to the National Conference of the University Librarians Association of Sri Lanka 2017.

University Librarians Association strongly identifies the importance of building collaboration among the academia. Thus, for the first time in the history of ULA, this National Conference is planned to collaborate the University Librarians and academics of other disciplines. This conference will provide a platform to researchers of all disciplines to disseminate their research findings, exchange knowledge and build partnership to enhance the bondage of faculty-library collaboration.

The theme of the conference is ***Information for sustainable development*** while subthemes address wide arena including: Right to information & ICT for sustainable development, role of the Libraries for sustainable development and sustainability through economic & social development.

I would like to extend my gratitude to Senior Professor Lakshman Dissanayake, the Vice-Chancellor, University of Colombo, for gracing the occasion as the Chief Guest and Mrs. Geethanjali Ranawaka, Director General of National Intellectual Property Office of Sri Lanka for accepting our invitation as the Keynote Speaker.

The success of any event is the result of teamwork. I had an excellent team to support me in organizing this National Conference 2017 and I thank them most sincerely. I also take this opportunity to thank all our sponsors for their support to make this event a success.

Finally, I would like to congratulate all the paper presenters and wish them all an enriching and enjoyable experience.

Keynote Speaker

Mrs. Geethanjali Ranawaka

Director General

National Intellectual Property Office of Sri Lanka

I am indeed honored and happy to have been invited to the National Conference of University Librarians Association 2017 to present the keynote address on the topic ***Information for sustainable development.***

The concept of sustainable development could be defined in many ways. The most widely adopted one was published in the report. "Our Common Future" (also known as the Brundtland Report) by the World Commission on Environment and Development in 1987, which defined sustainable development as:

"***Development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.***"

Therefore, it is a process of meeting continuous developmental goals. For sustainable development to be achieved, it is crucial to harmonize three core elements: economic growth, social inclusion and environmental protection. These elements are interconnected and are all crucial for the well-being of individuals and societies.

Information is that which informs. In other words, it is the answer to a question of some kind. It is thus related to data and knowledge, as data represents values attributed to parameters, and knowledge signifies understanding of real things or abstract concepts.

At its most fundamental level, information is any propagation of cause and effect within a system. Information is conveyed either as the content of a message or through direct or indirect observation of anything. That which is perceived can be construed as a message in its own right and in that sense; information is always conveyed as the content of a message.

Reproduction of copyrighted works by Librarians

The history of library is ancient old, and continues to play a pivotal role in enhancing the knowledge of society. It is widely believed that it was the ancient Greek philosopher Aristotle who was the first to have put together a collection of books and to have taught the kings in Egypt how to arrange a library. Books in those days referred to works written on papyrus and some parchment rolls. Over all these years, society has always felt the importance of libraries in human society. Libraries are today part of educational institutions, and many governments have set up public libraries for their people. Some of them are mobile libraries that bring books to rural areas. Parents who have realized the importance of libraries set up home libraries. I must say that an average bookworm would love to have all the books he loves at his own home library. However, either owing to lack of space or funds, he is not able to set up such a huge collection in his home. It is here that the public libraries come into picture. These libraries generally get huge financial allocations and donations to have huge collection of books and there are usually several individuals and NGOs, which may donate books.

Libraries come with a set of laws, especially intellectual property laws, more importantly copyright laws. As the Director General of National Intellectual Property Office of Sri Lanka, I am duty bound to do my part in explaining some of these principles of copyright laws. The works that are found in the libraries have authors who are either still living or dead. Some of their works may have fallen into public domain that is beyond the protection period. The Berne Convention for the Protection of Literary and Artistic Works of which Sri Lanka is a member, well defines the form of respect the authors need to be accorded. Any citation of their works for research purposes have to be well acknowledged and we have to make sure that the quotations that we may borrow are not distorted or mutilated. No prior permission is needed, if the quotations are used for purely non-commercial purposes. The only condition is to quote the source, according to Article 10 of the Berne Convention.

There is an element called plagiarism. That is copying the works of another author and ascribing your name for them. This is one of the cardinal issues surrounding the researchers. The Internet is a source that is extremely rich in providing ample information at just one click. Therefore, more and more people are relying to this rich trove of information for their research work. While this reliance is understandable, one has to take cognizance of the fact that mere cutting of a certain part from an existing document and pasting is

not a welcoming act. There are software that could detect if any piece of work has been cut and pasted. The software takes you to the very source of the exact page on a particular website, and gives the dates on which such an act was performed. Therefore, the Copyright Laws not only governs the physical environment, but also the digital environment, including the Internet.

Let me now touch on a rampant activity that takes place in libraries. I am talking about the students making photocopies of several pages of books or even the entire book. In technical terms, photocopying copyrighted work is a common practice that can be seen particularly among university students, researches and legal practitioners. Many educators and librarians inquire about the fair use and photocopying provisions of the Copyright Law. Since photocopying is a means of reproduction, Copyright Law has an important impact on photocopying of books, journal articles and other material, which are protected by copyright.

According to the Intellectual Property Act No. 36 of 2003, subject to certain exceptions, 'the owner of copyright of a work shall have the exclusive right to carry out or authorize the 'reproduction of the work'. Accordingly, the term 'reproduction' includes 'the making of one or more copies of a work ... in any material form'. Thus, photocopying of a copyrighted work requires the permission or authorisation of its copyright owner in the event that such photocopying does not fall under any of the exceptions provided in the Intellectual Property Act.

In some countries, students who take photocopies from books will have to pay royalty for their authors. This is called Reprographic right. This is not the case in Sri Lanka, as we do not have reprographic rights societies as yet. However, they do exist in Europe and other parts of the world. Although, photocopying by students is argued as a non-commercial activity, the issue of royalty payment still prevails. Since this is not the case in Sri Lanka yet, I am just making a passing statement.

According to Section 11 of the Intellectual Property Act No. 36 of 2003, the fair use of a work, including such use by reproduction in copies or by any other means specified by that Section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship or research, shall not be an infringement of copyright.
When determining whether the use made of a work in any particular case is fair use, the following factors shall be considered.

a) the purpose and character of the use, including whether such use is of a commercial nature or is for non-profit educational purposes;
b) the nature of the copyrighted work;
c) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
d) the effect of the use upon the potential market for, or values of, the copyrighted work.

Rights of differently abled users

Another important issue with regard to the sustainable development aspect of the IP rights are the relationship between copyright and the needs of differently abled people who are unable to use copyright works in the form in which they have been published. In particular, there should be an appropriate balance between the interests of right holders on the one hand, and physically impaired users of copyright works and those assisting them on the other hand where exceptions to rights are provided, but it also looks at other possible solutions to the copyright problems that have been identified.

Let me now inform you about the coming into force of a new treaty that hinges upon library sphere as well. There has been a highly deserving and yet a deserving segment in society that had always needed some concern, including usage of library. It is the blind or what is respectfully called the visually impaired people. In 2013, the World Intellectual Property Organization or WIPO concluded the Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired or Otherwise Print Disabled. The goal of the Treaty is to help to end the book famine faced by people who are blind, visually impaired or otherwise print disabled. The Treaty requires countries, which ratify the Treaty to have an exception to domestic copyright law for visually impaired and print disabled people. This means that countries, which ratify the Treaty, must ensure their laws allow blind people and their organisations to make accessible format books without the need to ask permission first from the holder of copyright (e.g. author or publisher). The Non-profit organizations, libraries, educational institutions and government need to take advantage of these provisions to actually deliver the accessible books that people with disabilities need for education, employment and full social inclusion. I am happy to mention that Sri Lanka also proposed amendments to the IP Act under fair use provisions facilitating to publish audio copies to be used by the visually impaired people without having to obtain the permission of the

original author of the printed matter or the book, and the amendments are currently being finalized by the legal draftsman.

Further, considering the importance of this exception to copyright laws Government of Sri Lanka ratified the Marrakesh Treaty in 2016 and preparations are underway to implement the activities upon receiving the approval of the Parliament.

Conclusion

From a broad sustainable development viewpoint as described above, it has been identified that there are an increasing number of links between intellectual property protection as against providing of information and sustainable development, which need to be carefully considered. Although IP and sustainable development are two areas that have until recently been largely considered in isolation, IP might relate to a number of aspects of a country's social and economic development that need to be sustainably managed.

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A Comparative Study on the Fair Use Doctrine in Copyright Laws of Sri Lanka and Japan

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Abstract

This is a comparison on clauses regarding fair use doctrine between the Sri Lanka Intellectual Property Act No. 36 of 2003 and the Japan Copyright Act No. 35 of May 14, 2014. The objective was to shed light on the Sri Lankan copyright law from the more recent upgrade of relevant Japanese law. Observations confirmed that the influence of librarians on the preparation of the copyright law in Japan had been remarkable, to counterbalance the pressures from Publishers. Also, the Japanese librarians actively engage in protecting the copyright of owners while providing access. Relevant Sri Lankan law also supports public lending and reprography for personal use. However, it should be made more comprehensive on the extent allowed for copying, especially regarding copying of digital content. In addition, it is recommended that Sri Lankan librarians be trained on copyright laws and relevant court cases on an ongoing basis. However, the proper balance should be maintained between control and provision, as Sri Lankan scholars still lack access to content when compared to Japan.

Keywords: Copyright law, Intellectual property law, Fair use, Japan, Sri Lanka

1. Introduction

It is understood that copyright issues will never be completely solved as new issues arise with the changing socio-economic and technological environments. Also, it is a complex phenomenon related to all branches of human activity.

Because libraries are concerned on acquiring, organizing, and delivering of information, libraries have had a strong eye on the development of the concept since its inception. Academic libraries have a responsibility towards protection of intellectual property, and provision of instructional services to communities they serve.

Protection of copyright and provision of information are opposite phenomena; one controlling the other. If owner's copyright is not protected, the production of knowledge will be at a standstill. If readers are given the opportunity to copy without obtaining permission, it supports scholarship. Therefore, copyright owners usually agree for lowering some of their conditions for justified fair use. In fact, lending of materials by the library is solely based on fair use. These conditions for when the controls can be lowered are written in many IP laws, and is called the 'fair use doctrine'. The doctrine of fair use plays the role of the bedrock for the continuity of IP (Halbert, 2014). However, governments increasingly find defining permissible uses, challenging (Elkin-Koren & Fischman-Afori, 2017).

2. Objectives

The International Federation of Library Associations and Institutions (IFLA) is inviting its partner organizations for ensuring the widest possible access to information for everybody, in accordance with the Glasgow Declaration on Libraries, Information Services and Intellectual Freedom ("IFLA", 2016). Open access is becoming increasingly important (Eve, 2017).

Within this scenario, there is a need to constantly review existing fair use practice in a country within the statutory environment.

3. Methodology

This is a qualitative comparison between the fair use doctrines of Sri Lanka and Japan. Main areas of prospective copyright protection with a special reference to library practices were explored.

The author is employed in the University of Colombo, Sri Lanka. He got an opportunity to do research at the Tsukuba University, Japan between January to March 2017. Observations on practice and facilitation of fair use in the two University libraries, and review of the main statutory documents related to IP rights of the two countries were the main sources of data.

The study focused attention on the fair use, reproduction and lending only. It did not consider contracts (eg: subscription to journals and books, software licenses etc.), trademarks, trade secrets, patents, public performance or adverse effects of technology on protection of copyright (eg: illegal file sharing). It also did not consider laws related to the protection of cultural heritage and traditional knowledge. Judicial decisions and real cases are out of the scope of this study.

Both countries have signed the Berne Convention (Japan: 1899 AD and Sri Lanka: 1948 AD). The relevant current law enacted in Sri Lanka is the Sri Lanka Intellectual Property Act No. 52 of 1979, as amended up to No. 36 of 2003 ("NIPO," 2005). The relevant law currently active in Japan is the Copyright Act No. 48 of 1970, as amended up to Act No. 35 of May 14, 2014 ("CRIC," 2015).

In the Sri Lankan IP law, fair use is covered under Chapter 1, article 12 (Act of fair use). Article 12.5 mentions provision for libraries. In the Japanese law, it is given in Chapter II sub section 5 (Limitations on Copyright). Here we have considered articles 30, 31, 38.4, 42ter and 42 quater only. Article 31 has been dedicated to mention libraries and archives. In addition, Japanese Copyright Research Information Center provides a commentary for library related copyright provisions by means of a case study ("CRIC," 2017). Hereafter, the relevant sections of the two laws will be mentioned as Sri Lankan Copyright Law (SLCL) and the Japanese Copyright Law (JCL) for this paper.

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4. Results

4.1 Extent of coverage

Both have covered the core requirements of copyright concerns, such as copyright protection, fair use, reprography of works, etc. JCL is much extensive in description, while SLCL is abstract.

SLCL is included within the broader document of Intellectual Property (IP) Law, which includes protection of logos, patents, and contracts. JCL is dedicated for copyright related clauses.

'Public lending' has been defined in SLCL (Article 5). However, it has not been described. JCL defined it as 'right of lending' in Article 2 and included relevant clauses in Articles 26ter, 95ter, 97ter, 38 (4).

4.2 Provisions for fair use

JCL refers to the fair use doctrine as 'fair practice', while the SLCL refers to the same concept as 'fair use'.

Limiting protection in justifiable cases is necessary for promotion of scholarship. Also, there is a requirement for doing so if the protection affects the rights of a community. These provisions have been explained in JCL in detail. These include reproduction by libraries, for the use of the library and for the use of individuals including for personal use by physically handicapped persons. SLCL describes everything in summery form, under the heading 'fair use' (Art.12). However, SLCL has not separately mentioned provisions given for the benefit of the physically handicapped.

4.2.1 Reprography

Both enactments allow non-commercial copying of copyrighted materials except works of architecture, musical notations, databases, and computer programs. Permission for copying of a non-substantial portion by a physical person from a lawful copy of such work exclusively for his/her own personal purposes is granted. SLCL does not specify the extent of the non-substantial portion. Japanese text

("CRIC," 2017) suggests that part means 50% of the whole. Further, provisions for each kind of material has been mentioned. Accordingly, copying a single page from an encyclopedia is prohibited as each entry is considered a complete work (100%). In contrast, SLCL has allowed copying of a work by an individual. However, Sri Lankan librarians have self-imposed rules, for example to allow copying only 10% of the work.

JCL (Art.30) has fully restricted copying the whole work inside a library including the National Library of Japan (National Diet Library – NDL), without getting permission from the rights owner. Even if a part is copied, it should be carried out in close supervision of a professional librarian trained on copyright issues. In practice, however, users carry out copying with a professional librarian working in the vicinity.

In Japan, special notices on restrictions have been displayed on photocopying machines, inside the library, on institutional Websites, notice boards etc. In Sri Lanka, user education is less formal.

4.2.2 Public lending by libraries

SLCL has allowed public lending of works by libraries. In contrast, the Japanese libraries should pay a compensation to the producers of cinematographic works at the time of purchase, including CDs and DVDs. Such materials have a special seal on the cover.

Recitation of materials (eg: reading books for children and visually impaired persons) has been specially mentioned in Japanese law, preventing recitation without prior approval if a payment is made to the reciter.

Japan's librarianship is a graduate profession. The Library Law clearly expresses who a librarian is. Therefore, the Copyright Law refers to the Library Law and states who should take control of copyright matters in libraries.

5. Discussion, conclusion & recommendations

It was recognized that Japan's fair use doctrine is much more detailed, complex and restrictive. It is also fully endorsed by libraries. The JLA is playing an active role in negotiating with publishers and policy makers to pave the way for a conducive environment for users and providers both. Also, it had been mandatory for librarians to have a special education in copyright protection. Japan's Library Law and Copyright Law have been mutually supportive. Users are advised in strict sense, and copyright infringement by library users is prohibited by every possible way. Some active clauses of the copyright law are temporarily on hold until a proper system is implemented. Librarians are updated on copyright and fair use on regular intervals. A training program has been made mandatory for those who regularly deal with copyright issues.

Comparatively, Sri Lankan fair use doctrine is less comprehensive. Librarians have not been active as a decisive force in negotiating with the legislative. Also, there is no mechanism to educate librarians on copyright issues. Therefore, librarians are mostly unaware of the correct copyright practice. Thus, users are free to infringe copyright, and the economic interests of authors and publishers are ignored.

It was obvious that Sri Lanka and Japan are in two extremes of copyright protection and provision of access. Japanese libraries are too restrictive while Sri Lanka has a loose control in libraries, with respect to copyright protection. Therefore, it is recommended that Sri Lanka should consider making the fair use provisions more comprehensive. It is understood that currently the intellectual property law of Sri Lanka is being updated. Librarians should canvas for improving access to users while protecting copyright, especially because Sri Lankan scholars lack access to current scholarly information when compared to Japanese scholars.

In addition, Sri Lankan librarians should be educated on copyright law and fair use. It is recommended that a course should be designed by

professional organizations to educate local librarians on an ongoing basis.

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A Critical Investigation of the Possible Compliance Standards of Academic and Research Ethics under the Right to Information Act of Sri Lanka

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Abstract

This extended abstract critically investigates the possible new compliance standards of academic and research ethics that may result from the implementation of the Right to Information Act (RTIA) of Sri Lanka. The RTIA was enacted in quick succession to the 19th Amendment of the 1978 Constitution of Sri Lanka enacted on 4th August 2016. The 19th Amendment made the right to information from public bodies a constitutional right (Article 14A). The provisions of the RTIA could have profound legal ramifications on the way in which research is conducted in Sri Lanka: especially with respect to non-medical research, that involves private data.

Keywords: Research ethics, Right to Information Act, Freedom of information

1. Motivation

Information is a significant component of scientific research. This includes data generated from scientific experiments and data collected for survey and statistical purposes. Honesty, integrity and transparency during handling, utilization and interpretation of this data is paramount among research and academic ethics, especially when privacy of individuals are involved (Kuper, 1983). Thus, it is worthwhile critically investigating any possible legal and ethical ramifications that may result in such information due to the 19th Amendment to the 1978 constitution and RTIA.

2. The Right to Information under Article 14A

Article 14A (1) of the constitution explicitly states that it is enacted to allow the access of information from government bodies for the purpose of exercising or protecting fundamental rights. In Article 14A (2) it is stated that access to such information can be restricted when it conflicts with national security, territorial integrity of the country or public safety, when it can cause crime or disorder, compromise public health or morals or harm the reputation of an individual. Judicial matters such as contempt of court and compromising the impartiality of the judiciary and undermining the authority of the court can also be grounds for denial of access. Furthermore, confidential communications are also exempted. It can be said that Article 14A permits reasonable restrictions that are in the best interest of a democratic society. Hence, under this constitutional right, a person who seems to have been denied the right of due process during a selection or promotion as in case of Karunananda vs. Open University (1984) can request the proceedings to be surrendered by the relevant institution. This provision can also be used for increased transparency in financial procedures in government bodies.

3. The Right to Information Act

Compared to Article 14A, the provisions of the RTIA are broader and vaguer. Section 3 (1) simply states that every citizen has the right to access information in the possession, custody or control of any public authority. The definition of information is also broad and no purpose of access is mentioned, enabling even trivial access. Section 4 states that the RTIA will prevail over all previous written laws. Provisions for restricting access to information under Section 5 of the RTIA are further diversion from that of Article 14A. Though fiduciary relationships are exempted, confidential information is not. Furthermore, the disclosure of private information is subjected to a consequentialist test where should the public interest outweigh the damage due to invasion of privacy, it can be allowed. The RTIA also disallows denial and criminalizes any form of deliberate obstruction of release of such information under Sections 38 and 39 respectively.

Though public interest litigation such as the Eppawala case has been a significant judicial development in the best interest of the public, it is equally possible that it could turn out to the contrary at the expense of the privacy of individuals as in the numerous spying scandal in the United States of America (American Civil Liberties Union V. National Security Agency, 2006) (Liu, Nolan & Thompson, 2014).

4. Benefits to Research and Ethical Compliance

Despite the broader and vaguer scope of the RTIA it does have significant benefits in terms of promoting ethical practice in scientific research. The main benefit will be access to research data for verification purposes. This will undoubtedly discourage research fraud such as fabrication or falsification of data (Borrell, 2009; Rossner, 2006) when the researcher may be required to surrender the necessary data by law. However, this benefit is not available for medical research because under Section 5 (1) (e) personal medical records are protected and cannot be disclosed without consent. This is despite the reported apparent increase in medical research fraud (Steen, 2010).

The provisions of the RTIA will require new standards for informed consent for non-medical research. Under Section 6 of the act, records with medical and non-medical information can be subjected to severability (i.e, selective disclosure of non-medical information only). The conduction of a survey will have to be fundamentally different. In order to comply with the RTIA, a participant of a survey providing private or confidential information will have to be recorded such that he or she will be contactable to enable Section 29 (2) (e) to be enacted for a denial under Section 5 (1) (i). However, according to Section 5 (2), denial of such information cannot be enforced if the information is more than ten years old. Furthermore, private information that fall under Section 5 (1) (i) can also be subjected to Section 5 (1) (a) when the personal and confidential information are severable. Therefore, it would be advisable to inform participants in a survey that the possibility of their response becoming public under Sections 5 (1) (a), 5 (1) (i) and 5 (2) exists under the RTIA. Alternatively, their prior

consent to disclosure can be sought at the time the response is made. Either method may deter an individual familiar with the confidential survey accessible only to the researcher, reducing participation in surveys.

5. Conclusion

Though the RTIA can have clear benefits for research in terms of verification, the overall content of the RTIA is broader, vaguer and lacking in the reasonable limitations of Article 14A of the constitution. This is therefore likely to lead to new compliance standards in research ethics.

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ICT Education in Universities and its Relevance to Job Market: Perspectives from University and Industry Employers in Sri Lanka

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Abstract

ICT has fast become a crucial part of our global society and it is dramatically transforming the world, facilitating innovation and increasingly, connecting people and communities, and improving standards of living and opportunities across the globe enabling the compression of time and space. This phase caused for a paradigm shift in higher education in Sri Lanka in capturing ICT in a large scale in creating a technologically sound graduates who can effectively face the challenges in this rapidly changing job market demands with technological advancement. With those implementations, Sri Lankan higher education institutions now rely mainly on computers and the Internet for all aspects of their activities: administration, teaching, learning and research. Further, conventional universities have made the highest investment in ICT infrastructure.

Moreover, higher educational institutions increasingly rely on ICT to develop their students' skills as there is an immense growth in the use of computers and the Internet. However, literature reveals that ICT adoption has not taken place among Sri Lankan university students to achieve its best use. Employers expect graduates to be "ICT fluent" and to continue trend to have more opportunities in the job market. Therefore, it seems a less demand for Sri Lankan graduates in the job market. These circumstances constitute why undergraduates do not use ICTs up to the desired level even under a regular improvement of ICT facilities in universities. This study aims to explore the present situation regarding ICT facilitation in universities and the views of the

university and job market personnel necessity regarding the ICT skills for the job market, factors affecting the use of ICT and strategies to promote using ICT among the students in universities.

The study followed the phenomenological approach of qualitative paradigm through semi structured interviews and focus group discussions. Altogether 24 semi structured interviews and focus group discussions were conducted. Nine (9) interviews were conducted with ICT coordinating lecturers who were in charge of ICT activities in the Faculties of Arts, Science/Applied Science and Management, five (5) interviews with ICT instructors and with one Librarian (1) from the University of Colombo, the University of Sri Jayewardenepura, the University of Ruhuna and the South Eastern University of Sri Lanka. Three (3) focus group discussions were conducted with undergraduate students and each group consisted of more than ten students from Arts, Science/Applied Science and Management Faculties from selected universities. Six (6) interviews were conducted with employers who are engaged in recruitment of employees for jobs in leading fields in Sri Lanka such as Aitken Spence Company, Ministry of Public Administration, Hirdaramani Garments Industry, Ceylon Electricity Board, People's Bank and Sampath Bank. The data collected were analyzed using thematic content analytical techniques.

The majority of the participants had considerable working experience and experience with ICT. Moreover, most of them had at least a Bachelor's Degree level education. Results revealed that universities had made efforts to produce ICT literate graduates who are able to create a global demand for their products by enhancing their facilities, resources and more ICT courses and students are also immersed in this ICT environment in their faculties at respective universities. According to the views of university community and the employers, the basic ICT is an essential component for today's job market and advanced ICT skills attract higher positions. It was found that Word, Excel, Power Point, e-mail and Internet searching and its applications are the essential basic ICT tools for fresh graduates. Moreover, it was revealed that even though, most of the students have identified this necessity; there are some who do not accept ICT as an essential element. On the

other hand, job market employers seek ICT knowledgeable employees. They further emphasize on the job market demand with ICT and believe that a graduate can easily capture a highest position with advanced ICT skills. Ease related to ICT, availability of more infrastructure facilities, community to which students belong, prior ICT experience, gender, subject streams, the university attached and the lecturers' beliefs in students' use of ICT were the main factors identified for using ICT in universities. An interesting feature of the perceptions of the interviewees was that though all of them have experienced individual differences in the performance on ICT of the students/graduates, exact reasons could not be identified by all of them. They believe that it might be due to the students'/graduates' attitudes and the self-efficacy towards the work and ICT. The strategies suggested by the respondents were to encourage undergraduates to use ICT in universities, to enhance the ICT environment of universities including infrastructure in the universities with less facilities, staff, and courses, to promote ICT based education, and to form strategic plans to encourage students to make the most use of ICT in universities. Most commonly, the employers reported that even though the students were knowledgeable in using ICT they are reluctant to use their knowledge at their work places. Some private sector employers claimed that they prefer if fresh graduates would be able to use e-mail and social media such as Skype and Facebook. Finally, a novel view emerged through the perceptions of employers. They believe that the students can build up a self-demand at the job market by improving their individual use of ICT during the undergraduate period. It is recommended that the strategies brought up the interviewees could be implemented at university level to improve the ICT education.

Keywords: ICT, Undergraduates, Fresh graduates, Lecturers, Employers

Mobile Application for University Library Management System

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Abstract

Library is a place where there is a large collection of reading materials are available for reference. It provides enormous support to all kinds of knowledge seekers for a range of purposes. However, with the introduction of new technology, behavior of academics and students' life style has changed. They tend to seek knowledge via mobile devices and computers rather than physically visiting libraries to refer materials which they found convenient and more over it saves their time. Statistics show that smart phones were owned by more than 80% of the student population. With advancements in technology and the rise in smart phone usage, people are taking advantage of being connected to data wherever they are. Mobile phones aren't just phones anymore: they can be used to access e-mail, search the web, video chat, play games and many more services. Even mobile devices like iPad and iPod touch can bring social media, productivity tools, and entertainment literally into the palm of your hand.

It is important that libraries adapt their services to this new technological environment expanding their services to the students and all categories of staff members, 24 hours throughout the year. The purpose of this paper is to present the university library's experiences of adopting mobile services and explain how libraries can play a leading role by providing support to the university community.

Applying mobile applications for library management system is increasingly important as libraries compete in the always changing technological world. Hence, the purpose of this paper is to carry out a case study in order to better understand the possibilities of using a mobile application in the process of library management system, and this application is based on Android platform. After identifying and analyzing the needs of library staff, academics and students developed a mobile app which could be followed by the other universities. This illustrates how library services can be adapted to the mobile environment and how the library can play a role in broader campus mobile initiatives. The main purpose of the system is to make the library in the user's palm.

In this application modules of the system capture user data and various databases. The mobile application development used here is Java standard language for Android application development within the Android Studio and used MySQL, for backend development. Since all these technologies are open source which enabled to complete the project with minimum cost.

This mobile application has many features which are generally not found in contemporary library management systems. For example, this app enables to track book location and reservation before going to library. It has a facility for system administrators to login through which he/she can monitor the whole system. It also has a facility for students to log into their account and check the list of books that has been issued to them. Further this enables them to check the issue date, due date and any due fines. All these services are available at their fingertips. The Mobile app enhances its services to the library staff enabling them to add, remove and edit books as well as members and their details. It allows the library staff to provide their services at any time anywhere. This will enable the work flexibility.

With the rapid development of internet technology and the gradually accelerating rate of information technology, most of the library functions were enabled in the web based environment. However to

facilitate that, users need to have computers and internet facilities. Unfortunately, most of the undergraduates in the state universities do not possess computers or laptops. Therefore, the web based library access is not that popular; however, the mobile technologies in the smartphone surpass such barriers. The most surprising and encouraging reality is that almost 80% of our undergraduates possess smart phones or even those who do not have could easily afford to have one. This mobile application is being developed to help the students as well as the library staff to maintain the library in the best way possible. Also this new mobile app will reduce the human efforts to increase the efficiency in library activities. All libraries will be interested in exploring the library services that are developed and adapted for mobile devices of particular interest. Eventually, academic libraries will be the place which creates collaborative relationships with other academic departments to provide services to students. Once this service is set up, it will create a conducive environment for student centered learning activities, where the higher education teaching methods encourage, over to use teacher centered learning. Finally, the results of the study will illustrate how library services can be adapted to the mobile environment and how the libraries can play a significant role in broader campus mobile initiatives.

Keywords: Library, Management Information System, Tracking, Mobile application.

Broadening the Access to Information: Enhancing Code of Ethics for LIS Professionals in Sri Lanka

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Abstract

LIS professionals play an extremely vital role by linking the society with the heritage of information. To deliver effective and high quality services LIS professionals are expected to follow certain ethical standards, which are typically codified in "Codes of ethics". Many LIS organizations around the globe, including the Sri Lanka Library Association (SLLA) have adopted codes of ethics. This research paper highlights how the SLLA code of ethics could be enhanced, for the utilization by LIS professionals to broaden the access to information in Sri Lanka via the incorporation of international best practices into the code. The study attempts to support decision making regarding future reforms of the SLLA code to be in par with the changing technology and social norms. This study is a comparative analysis of the core area of "access to information" in prominent international LIS codes of IFLA, ALA and CILIP with the SLLA code. Further analysis was conducted by applying ICME and ICN codes. The study renders useful insights into the clauses of the SLLA code through suggesting the important views of international codes that can be incorporated for the enhancement of the SLLA code. Also, this study aids Sri Lankan LIS professionals to further develop the code for the well-being of the society.

Keywords **:** Code of ethics, Information access, Intellectual property, SLLA, Library and Information Science, Sri Lanka.

1. Introduction

Library and Information Science (LIS) professionals play an imperative role serving as resource persons for the entire community. Their main function is linking the right information seekers with the right information at the right time, most importantly in the right way. It is the responsibility of LIS professionals to provide access and professional guidance to relevant information for intended users with diversified needs. LIS professionals have a special responsibility of facilitating and promoting the equitable dissemination of quality information to present and future user generations. It is critical that this mission of information dissemination is conducted in an ethical manner. The ethical standards that LIS professionals are expected to follow are typically codified in "codes of ethics". According to Shachaf (2005), "The code of ethics focuses on principles and values that govern the behavior of a person or group with respect to what is right or wrong". These codes of ethics offer the foundation for ethical practices in the delivery of effective and high quality professional services. Code of ethics can transform professional relationships with the society (Baker, 1999). Many LIS organizations over 60 countries around the globe have adopted codes of professional ethics. The Sri Lanka Library Association (SLLA) has also adopted "code of ethics" to serve as the framework for professional conduct and ethical decision-making of the LIS professionals in Sri Lanka. It ensures effective and high quality professional services while adhering to the highest standards of honesty, integrity and ethical practices. Moreover, the status of the LIS profession in Sri Lanka is enhanced via this code. The Council of Sri Lanka Library Association (SLLA) adopted the first Code of Professional Conduct and Ethics on 6th December 1997. The first revision was done in 2015. It is important to have reforms in Code of ethics of any profession to be on par with the changing social norms, technology and resources. This study is conducted to support such reforms to come by suggesting suitable embellishments in relation to information access. Sri Lanka as a developing country has limited access to most of the fee based information sources. Therefore, it is important to prioritize "access to information" within the code of conduct. This will lead to proper and ethical use of available

information and broaden the access to otherwise inaccessible information through networking among different professionals of different professions.

There is evidence on the existence of a common ground for the values and principles that are stated in the codes of ethics relating to the LIS profession around the globe (Adejumo & Oye, 2015). Yet, "a comparative analysis of code of ethics for librarians shows disparities in approach" (Kochler & Pemberton, 2002; Vaaghan, 2002 as cited by Odero, 2012). Froehlich (1997) highlights the importance of exploring and determining the common values shared by librarians worldwide. However, there is a dearth of research that focus on comparing librarians' codes of ethics and in particular there is a lack of studies that analyze the SLLA code in comparison to other global codes of ethics. This study attempts to identify the commonalities in several selected codes of ethics while comparing those with the SLLA code of ethics and to determine clauses that can be included for further improvement the SLLA code in the principal area of information access. The focus of the study was to analyze how the "information access" component in the SLLA code of ethics could be enhanced for the use of Sri Lankan LIS professionals to broaden the access to information in Sri Lanka via the incorporation of international best practices into this code.

2. Method

This study employed the comparative research method. The authors analyzed the core areas relating to "access to information" in the international LIS code of International Federation of Library Association and related institutions (IFLA) (adopted in 2012) and prominent national codes of American Library Association (ALA) (adopted in 1939, amended in 1981, 1995 & 2008) ("Code of Ethics of the American Library Association," 2006) and Charted Institute of Library and Information Professionals (CILIP) (adopted in 1983) in comparison with the information access clauses in the SLLA code of ethics. Further analysis was done with the International Code of Medical Ethics (ICME) (adopted in 1949, amended in 1968, 1983 &

2006) ("International Code of Medical Ethics", 1949, 2002) and The International Council of Nurses Code of Ethics (ICN) (adopted in 1953, most recent with review and revision completed in 2000) ("Code of Ethics for Nurses," 2017) to suggest adoptable clauses from them. These two codes were considered since they are well established and involve highly sensitive information related to patients. Most importantly these two different professional groups sustain cooperative relationships to fulfill their duty and the information profession is also entirely dependent upon cooperation with other professions.

The methodology was extracting out the "access to information and intellectual property rights" content from LIS related codes and suggesting adoptable content for the enhancement of the SLLA code of ethics. The above mentioned sections were selected since those involve the two parties who seek information and who create or own the creation. In this study, a qualitative analysis was performed focusing on the LIS professional's perspective. Grounds of commonality of the codes were also determined in the LIS based codes. The responsibility of the professionals in the provision of access to information was identified under three categories, namely the information providing process, user with the right to information and intellectual property holder.

3. Results and Discussion

The study revealed grounds of commonality of the codes of ethics. All codes of ethics highlighted the importance of providing free-flow of information with minimum barriers and equitable access to all types of users. The SLLA code of ethics stress the importance of paying special attention to the information needs of differently-abled users. IFLA code also state that socially disadvantaged people should not be excluded in rendering access to information.

In addition to that, areas that were unique to each code of ethics under study were identified. Suggestions were made to consider the inclusion

of important clauses that appeared in the international and national codes of ethics and that could enhance the SLLA code of ethics further. IFLA code of ethics included the areas of information needed as "for personal development, education, cultural enrichment, leisure, economic activity and informed participation in and enhancement of democracy" (IFLA, 2012) and also that access to collections and services must be rendered free of cost to users. These unique clauses of the IFLA code can be incorporated into the SLLA code. The CILIP code highlights the obligation towards long-term preservation and conservation of growing information and data heritage for future information needs. These sections could be suggested to include into the SLLA code of ethics. Another sector that can be considered to incorporate with suitable changes is encouraging the government to establish an intellectual property regime. According to the IFLA code LIS professional should encourage governments to establish an intellectual property regime. Already there are two acts in action in Sri Lanka: "Intellectual Property Act, No. 36 of 2003" and "Right to Information Act, No. 12 of 2016". As the professionals who are actively involved with two parties, who has or creates the information and who needs the information a clause could be incorporated to suggest changes to these acts.

The International Code of Medical Ethics has a patient focus section stating that, whenever an examination or treatment is beyond the physician's capacity, he/she should consult with or refer to another physician who has the necessary ability. This can be incorporated in information and user perspective of the SLLA code, since information professionals, direct users to subject specialists and primary information sources to obtain accurate information. The International Council of Nurses Code of Ethics has a section stating that the "nurse sustains a cooperative relationship with co-workers in nursing and other fields" (ICN, 1953). This could also be suggested as an important section since networking with other professions is always vital to be in touch with subject specialists.

4. Conclusion

The purpose of the code of ethics is to provoke the highest standards of professional behaviour among LIS professionals and such a code attempts to uplift the profession of librarianship in Sri Lanka. Through the SLLA code the LIS professionals in Sri Lanka convey their inclination to respect the rights of information seekers in Sri Lanka which is a multi-ethnic and multi-cultural community. The current study comply to the study of Adejumo & Oye (2015) who concluded that international codes were created to address the same issues in their comparison of the Librarians' Registration Council of Nigeria (LRCN) code with international codes including IFLA. The study suggests incorporating suitable sections from other well established codes of ethics into the SLLA code of ethics. The current study supports LIS professionals to further develop the SLLA code of ethics for the well-being of the society via broadening the access to information while safeguarding the intellectual property rights. In conclusion clauses can be suggested to apply for the future reforms of Code of ethics are "individual development scheme", "Free access to collections and services", "long-term information preservation and conservation for the future", "Establishment of information regime", "Formation of cooperative relationship among different professions".

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Multi-Facet Roles of Libraries in the Age of MOOCs: A Review

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Abstract

Massive Open Online Course (MOOC) opens up greater opportunities for online learners. To reap the intended benefits of MOOCs, the libraries have a significant role to play. The reliability of MOOC learner support can be promoted by the libraries if they are equipped with additional roles to play in order to provide assistance for efficient information management with the proliferating high-speed Internet technologies and software tools.

Keywords: MOOC, Online learning, Open distance learning, ODL, Learner support, Reliable information management

1. Introduction

With the advent of new concepts for education, our conventional roles as education providers and service facilitators need to be changed innovatively. In the recent past, Massive Open Online Course (MOOC) has opened up a gateway for continuing education opportunities while it creates global learning communities that benefit both students and universities, and generate unique challenges and opportunities for academic entities (De Waard et al,. 2011). Presently, Open and Distance learning (ODL) creates an active engagement of students in their respective studies through self-organization, common learning objectives and resources, both online and offline to sustain the studies over a period of time. Herein, MOOC get facilities to access courses over a defined period of time to cover a syllabus with learning resources like video lectures, sets of homework problems, tests, etc.

In general, MOOCs consist of four types of activities: aggregation (wide variety of reading), remixing (reuse of resources in different formats), repurposing (learners encouraged to create something on their own) and finally feeding forward (learners are encouraged to interact and share their learning experiences, subject matter, etc) (Kop, 2011; Mahraj, 2012; McAuley et al., 2010). In addition, all MOOCs have four types of phenomena, namely, internal diversity of learners, internal redundancy with common learning objectives for them, neighbor interactions among the learners and decentralized model where participants are in control of their own learning (De Waard et al., 2011). When the MOOC activities cannot cater to the above mentioned four phenomena, certain issues such as the inability to interact with peers, inability of the learners to sit for lengthy written papers and the issues related to sharing the learning and teaching resources also arise.

Traditional library systems facilitate various services to the learners in both conventional and modern categories in institutes of ODL mode of delivery. The role of a library and its staff is more significant for a MOOC and the organization which is coordinating it. The dependability of the MOOCs can be further enhanced by using the support from the libraries. In order to understand the potential contribution of the libraries towards MOOCs, it is important to analyze the potential failures in the absence of such support. In this context, this research aims to discuss the roles a library can play in order to support the MOOC learning process towards minimizing the above mentioned issues.

2. Methodology

Failure tree analysis (Rausand & Arnlijot, 2004) is used as an underlying reliability analysis methodology since it has a Boolean logic to identify systems related issues. In order to develop a failure tree, it is necessary to identify the potential failures. Here, the failure is characterized by the dissatisfactory information management for MOOC learner support. This is mainly due to the insufficient support rendered to the learners to perform the above said activities and

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scenarios. Based on the existing literature, the following failure events can be identified.

F1: Failure to access the course/lesson materials

F2: Failure to use the information given in different formats

F3: Failure to discuss and share ideas to create a thought process to do something creative and novel

F4: Failure to self-organize and manage learning due to resource unavailability

It is also noted that performance of these roles are not in conflict with the services that are already rendered by the libraries in educational institutes. Based on the above mentioned failures, a failure tree (Rausand & Arnlijot, 2004) was constructed integrating on the failures of MOOC learner support results linking with an OR gates as shown in Figure 1.

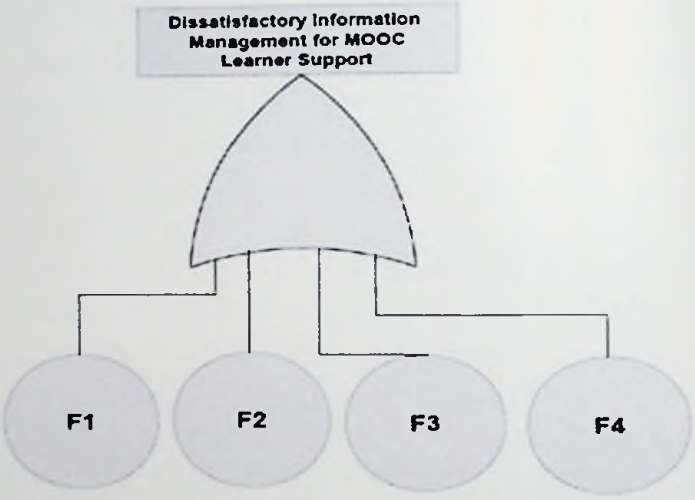

Figure 1: Failure tree for dissatisfactory information management for MOOC learner support.

In Figure 1, the fault tree shows the events or the conditions, which satisfy the end result of dissatisfactory MOOC learner support. As evidenced by the fault tree, if any one (or more) of the failure conditions occur, the result is a dissatisfactory MOOC learner support. The roles of the libraries would then be to minimize the above identified failure conditions (Table 1).

Table 1: Innovative roles of the libraries to prevent the failure conditions.

Innovative Role of the Libraries	Failure Event
Resource facilitator: to facilitate access conforming to right-to-information access laws, to interact with the other libraries for inter-library loans to share the learning resources	F1
Learner support in terms of conducting resourceful and informative sessions (or workshops)	F2
Event planner, to develop to develop mechanisms to foster interactive learning incorporating group activities such as competitions, student symposiums, conferences etc.	F3
Resource aggregator to disseminate learning material without violating the information sharing principles, associated laws and ethics	F4

3. Discussion

Adopting MOOCs in institutes offering education in ODL mode as well as conventional universities will continue to grow with an ever-increasing demand for quality and affordable education. Evidently, the libraries have greater challenges to function as service providers with additional roles to play in order to achieve the learning objectives. To a greater part, the libraries are expected to support their educational institutes and the learners to effectively manage the learning resources to reap the intended benefits of MOOCs.

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School Librarianship and Service of the School Libraries: A Case Study at Kekirawa Educational Zone in Anuradhapura District, Sri Lanka

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Abstract

The purpose of this study is to identify the current situation of school libraries and identify school librarian's role at Kekirawa educational zone of Anuradhapura District. There were 65 school libraries selected for the study. Questionnaires were distributed among them. Response rate was 100%. According to the analyzed data, 86% of school librarians are belong to Sri Lanka Teacher grade and 2% is belong to Sri Lanka principal service grade. Only 12 % are school librarians. 88% of teachers take care of the library duty while teaching another subject. 68% of libraries are closed when school librarians are involved or while they are on leave. Only 6% of libraries are kept open daily for the students and teachers. According to the analyzed data 12% school librarians are having the technical knowledge in library science. They did not have adequate time to allocate for the library service since their main responsibility lies with teaching. Most of the school librarians do not have sufficient knowledge on library resources and the library functions. This study revealed that permanent school librarians are to be recruited for the schools and trained school librarians are compulsory to be recruited for smooth functioning of school libraries.

Keywords: School Libraries, School Librarians, Anuradhapura District, Sri Lanka.

1. Introduction

Various school library development projects funded by national and international organizations, workshops, seminars and training programs conducted by a variety of organizations helped considerably in the development of school libraries and the library profession in the country. Several studies have focused on school librarians in past decades. Government of Sri Lanka was mainly targeting to improve school children's literacy skills. According to that the "Teacher Education and Teacher Deployment" (TETD) project commenced by the MOE (Ministry of Education) with the aid of World Bank in 1996 was the most comprehensive project ever undertaken to measure and to improve school librarians training and qualifications in Sri Lanka. This project was completed in 2005. The main objective of this project was to improve the quality, cost effectiveness and coverage of education in Sri Lanka (World Bank, 1996). Presently there is no evidence on identifying any trained school librarian under above project at Kekirawa educational zone.

2. Objectives

The purpose of this study is to identify the current situation of the school libraries and to identify the School librarian's role at Kekirawa Educational Zone of Anuradhapura District.

3. Methodology

A survey was carried out to collect data from school libraries at Kekirawa Educational Zone. A structured questionnaire was developed to collect information. The first section of the questionnaire consists of background information, such as school name, whether a library is available or not, gender, experience of the librarian etc. The second section of the questionnaire gathered information about school librarian's current position, qualifications, library collection, user profiles, library facilities and physical resources and the final section of the questionnaire focused on library services , school community and library functioning. 65 school libraries were selected for the study at Kekirawa Educational Zone in the North Central province under

ministry of Education. Sixty-five structured questionnaires were distributed among them in personally because all the school librarians of the Kekirawa educational zone gathered to a one-day workshop organized by Library services Board –North Central Province at zonal educational office Kekirawa.

4. Data Analysis

Response rate was 100%. Collected raw data were entered into a Microsoft Excel spreadsheet, analyzed and interpreted using descriptive analysis. All schools are having own libraries. According to the demographic data of the study, 31% school librarians were male and rest 71% was female. The professional qualifications of school librarians were low, only 6% of the respondents had professional qualifications in the field of Library Science. 86% of school librarians' possessed Sri Lanka Teacher grade position and 2% possessed Sri Lanka principal service grade. Only 12% were school librarians. School Librarians had Library Science professional qualifications and recruited directly for the school libraries. Only 12% school librarians had the technical knowledge about library science. 95 % of the schools assigned only one teacher or a school librarian to the library without any supportive staff. When she or he was absent or on leave library has to be kept open.

Analyzed data indicated functioning of the libraries in that area: out of 65 libraries, 88% of teachers cover the library duties while teaching one other subject. 68% libraries were kept when school librarians were teaching. Only 6% libraries were kept daily for the students and teachers.

Physical resources in school libraries were analyzed and it shows that about 5% of the libraries were functioning almost well with basic requirements and a permanent qualified school librarian. 85% schools have a permanent separate library space with basic requirements. Others had a small room with minimum requirements. 51 % of libraries had 101-500 users because 69% schools of the Kekirawa Educational Zone were primary schools, they used "*room to read*" concept for their

libraries. 17% of libraries had more than 3000 books. 31% of libraries had a collection between 250-500. Generally, 40% of libraries had a collection of more than 1000 books. Analyzed data represents the usage of the libraries by students. 51% libraries had 101-500 users 85% libraries had 501-1000 users and 4% libraries had 2001-2500 users. These libraries had permanent school librarians. 62% of respondents said that time allocated for the library was unsatisfactory. Because 21% of schools did not have a time slot for the library timetables while primary schools had properly arranged the timetable for their library. All libraries updated their collections based on government allocations and donation from other parties. Primary schools developed their collection using the donation system within the school. Students donated books to the library on their birthdays etc. All "room to read" school libraries classified their books using a colour code classification system. School librarians who were involved in teaching rarely have time to allocate to improve the library services and activities as such school libraries did not develop. Respondents reviled that school authorities did not provide opportunity to explain the value of the library for their students. Because majority of responded supposed that decision-making process of their libraries was centralized to the principal of the school. Most of school librarians did not have sufficient knowledge on library resources and library functions. All of the respondents requested that training opportunities is a must to gain knowledge about cataloguing, classification and other main activities of library functioning.

5. Conclusions

This study concludes with the following findings; permanent school librarians should be recruited for the school libraries. Less qualified school librarians with no professional librarianship (Wickramanayake, 2016); manage the majority of school libraries in Sri Lanka. The present study furthermore shows that trained and qualified school librarians are compulsory to be recruited for the smooth functioning of school libraries at the Kekirawa Educational Zone.

6. Suggestions

Since school librarians do not have sufficient knowledge or training on library activities authorities should provide training opportunities for them. The education authorities of the country are to give utmost attention to introduce a standardized system for recruiting school librarians to increase literacy skills of the school children and the quality of school libraries. The Educational Ministry of North Central Province should identify their existing school libraries in the area and their human resources and physical resources and then should attempt to develop school libraries in the area the process which in turn will develop information literacy skills among students and the entire school community.

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A Study on the Usage of Electronic Journal Databases by Undergraduates of Selected Health Science Libraries of University of Peradeniya

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Abstract

Electronic information resources play a major role in provision of information. As e resources are more expensive than print resources, the librarians have to find out the usage of e resources. The present study was conducted to find out the usage of electronic journal databases by undergraduates in Dental, Veterinary Medicine and Animal Science and Medical faculties of University of Peradeniya. A random sample of third and final year students was used for the study. Most of the students use e resources to enhance the subject knowledge and improve the lecture notes. However, majority of students prefer to use print resources. Students prefer to promote e-resources through user awareness programmes.

Keywords: Electronic Information Resources, Electronic Journal Databases, Undergraduates, Health Sciences Libraries, User Awareness Studies

1. Introduction

With the advent of Information Communication Technology and the Internet, the electronic information resources were introduced to the libraries and it plays a major role in the provision of information. There are different types of electronic resources such as e-books, e-journals etc. Journals and books are available in both print and electronic formats but users and library employees prefer electronic format due to various reasons. The library staff spend lot of time to maintain the print journals from the date of receipt by entering to computer,

monitoring of missing issues, preparing them for binding, allocation of space for both unbound and bound periodicals, cleaning and maintaining the collection regularly. The workload is reduced if electronic journals are acquired to the library. The users too prefer them as they get access to e-journals before they receive the print counterpart and also due to additional features such as searching facilities, linking to other sites, setting alerts etc.,

However, the cost of acquiring electronic journals is very much higher than their print counterparts. Therefore, the librarians have to encourage the use of these resources. Thus, it is important to find the reasons for low usage and take necessary actions to improve the usage.

2. Literature Review

Several studies on the use of e-resources by undergraduate students have been carried out all over the world. In a study conducted in India on e-resources, it was indicated that there is not much of a difference in the use of e journals and printed journals. The researcher has found that the use of Web OPAC is less than expected (Swain, 2010). Another study done on the usage of electronic resources at Redeemer's University Nigeria showed that although the students were aware of the availability of e resources, but the usage was low. The reasons were mentioned as lack of searching skills, unawareness of filtering information after searching, delay of downloading information, high costs etc. (Adeniran, 2013).

A study conducted to examine e-resource usage and information literacy among staff and students at Caledonian University, Glasgow found that there was a growth in the usage of e-resources among students and most of them access e resources through off-campus internet access (Crawford, Vicente & Clink, 2004). Emmanuel, Benake-ebide and Ubogu (2011) in their study revealed that majority of the students were not aware and did not use the e resources such as MEDLINE, HINARI, databases, as sources of information to retrieve materials related to medical literature. The study further found the lack of skills to use the e-resources, lack of time, poor user

education programmes and slowness of server as some factors militating against the effective use of e-resources of the students.

Although there are numerous studies carried out to examine e-resource usage among various user categories, there is little evidence of research on use of e-resources of undergraduate students in Sri Lanka. In the Sri Lankan context, a study conducted in the Faculty of Veterinary Medicine and Animal Science and Allied Health Science at the University of Peradeniya in the year 2015 showed that the usage of e resources by the 3rd and final year undergraduates is less due to lack of awareness (Dehigama & Dharmarathne, 2015). In a study conducted by Murugathas and Chandresekar (2013) at the University of Jaffna found that although all students who responded to the questionnaire stated that e-resources were either very important or of moderate importance 69% of them preferred to use print formats for their studies. The study further revealed that 89% of the respondents believed that e-resources were very useful for their studies and they mainly used e resources for their course work and for updating knowledge.

3. Objectives

The present study was conducted at three faculties in the University of Peradeniya. They are Medical, Dental and Veterinary Medical and Animal Science faculties. The objectives of the study are;

- To study the preferred type of information resources by undergraduates
- To examine the usage of e-resources provided by the library
- To find out the search techniques used by the students to access information
- To study the role of e-resources for improvement of their academic activities
- To identify preferred methods to promote e-resources among undergraduates

4. Methodology

The study was conducted by selecting three faculties namely Faculty of Medicine, Faculty of Veterinary Medicine & Animal Sciences and Faculty of Dental Sciences at University of Peradeniya. The study population was selected from the third and final year students from each faculty as they have more experience in using the library for their academic activities.

The simple random sampling method was applied to select the study sample and out of the total population of each batch, 10% was selected for the study. When the population was below 100, 20% sample was drawn from the batch. Accordingly, a total sample of 115 was selected for distribution of questionnaires. A close ended questionnaire was distributed among the sample and 108 (93.9%) responded.

5. Data Analysis

5.1 Demographic data

Out of 108 respondents, 43 (39.8%) were Medical undergraduates while 33 (33.6%) were Veterinary Medicine undergraduates and 32 (29.6%) were Dental sciences undergraduates (Table 1).

Table 1: Faculty wise distribution

No	Faculty	Frequency	%
1	Dental	32	29.6
2	Medicine	43	39.8
3	Vet	33	30.6
	Total	108	100

According to the year wise distribution, the majority (n = 59, 54.6%) were from the 4th year followed by 32 (29.6%) from the 3rd year and only 17 (15.7%) from the 5th year, the reason may be only the Faculty of Medicine conducts 5 year undergraduate programme (Table 2). The 4th and 5th year undergraduates were selected for the study from the Faculty of Medicine.

Table 2: Year wise distribution

No	Year	Frequency	%
1	3rd	32	29.6
2	4th	59	54.6
3	5tfrom	17	15.7
	Total	108	100

5.2 Preferred types of information resources

The findings revealed that 83.3% of the respondents preferred to use printed formats and only 46.3% (50) preferred for e-resources. On the other hand 18 (16.7%) mentioned that they did not prefer to use print information resources whereas 58 (53.7%) mentioned that they did not like to use e-resources and 9 (8.3%) did not mark any preference. Information format they preferred is depicted in Table 3.

Table 3: Preferred information resources

	Information format	Yes	%	No	%
1	Printed	90	83.3	18	16.7
2	EIS or e-journals	50	46.3	58	53.7
3	No preference	9	8.3	99	91.7

The respondents were asked to mark their choice as to whether e-resources should existing printed materials or represent new resources. Of the respondents, 49 (45.4%) agreed that the e-journals represent new resources while 32 (30%) mentioned the e-resources replaced existing print materials and 27 (25%) of the respondents refrained to mark any choice given (Table 4).

Table 4: Perception of e-resources vs. Print resources

No	Perception	Frequency	%
1	Replaced existing printed materials	32	29.6
2	Represent new resources	49	45.4
3	No response	27	25.0
	Total	108	100

5.3 Usage of e resources provided by the library

The respondents were asked to mark when they accessed e-resource recently. Four options were given and Table 5 indicates the results. More than 65% of the respondents access to e-journals either within the previous week or the previous month.

Table 5: Access of E-journals

No	Access	Frequency	%
1	Within the last week	47	43.5
2	Within the last month	24	22.2
3	Within last semester	18	16.7
4	Never	19	17.6
	Total	108	100

Under the usage of e-resources, the places where they have accessed were analyzed and following results were obtained. As indicated in the Figure I, more than half of the respondents accessed to e-resources from the library followed by 33% accessed from faculty or off campus.

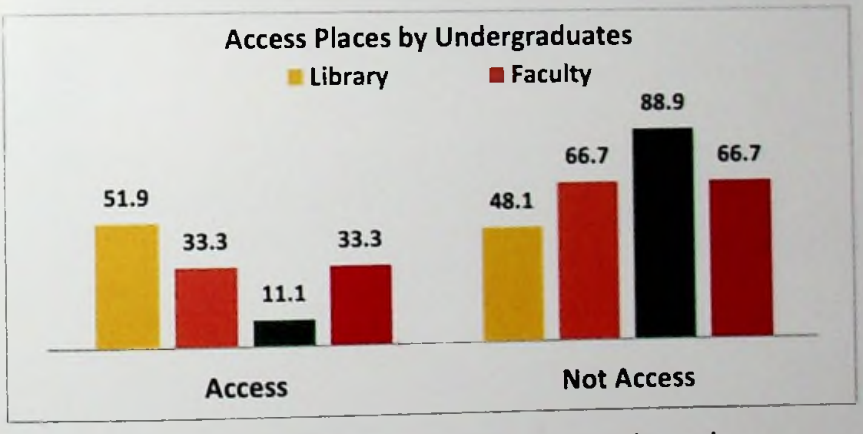

Figure 1: Place of access of e-journals by undergraduates

This question was set up to find out the usage of different electronic databases given in the library webpage. Table 6 indicated the results of the usage of electronic databases.

Table 6: Electronic databases available in the library web page

Database	Used	Not used	Total
HINARI	43(39.8%)	65(60.2%)	108
AGORA	01(0.9%)	107(9 99.1)	108
OARE	03(2.8%)	105(97.2%)	108
JSTOR	00(0.0%)	108(100.0%)	108
SAGE Research Methods	00(0.0%)	108(100.0%)	108
Emerald	00(0.0%)	108(100.0%)	108
Taylor & Francis	00(0.0%)	108(100.0%)	108
Wiley	00 (0.0%)	104 (96.3%)	108
Oxford University Press	22(20.4%)	86(79.6%)	108
ASA	01(0.9%)	107(99.1%)	108
AIP	00(0.0%)	108(100.0%)	108
Chocrane Library	07(6.5%)	101(93.5%)	108
EUP	02(1.9%)	106 (98.1%)	108
Geological Society	01(0.9%)	107(99.1%)	108
IMF	02(1.9%)	106(98.1%)	108
University of Chicago	02(1.9%)	106(98.1%)	108
Any other	05(4.6%)	103(95.4%)	108

In general, the usage of e-resources by health science undergraduates is poor. The highest used resource is HINARI (39.8%) and the second highest is Oxford University Press (20.4%). The usage of other databases is below 10 % of the respondents (Figure 2).

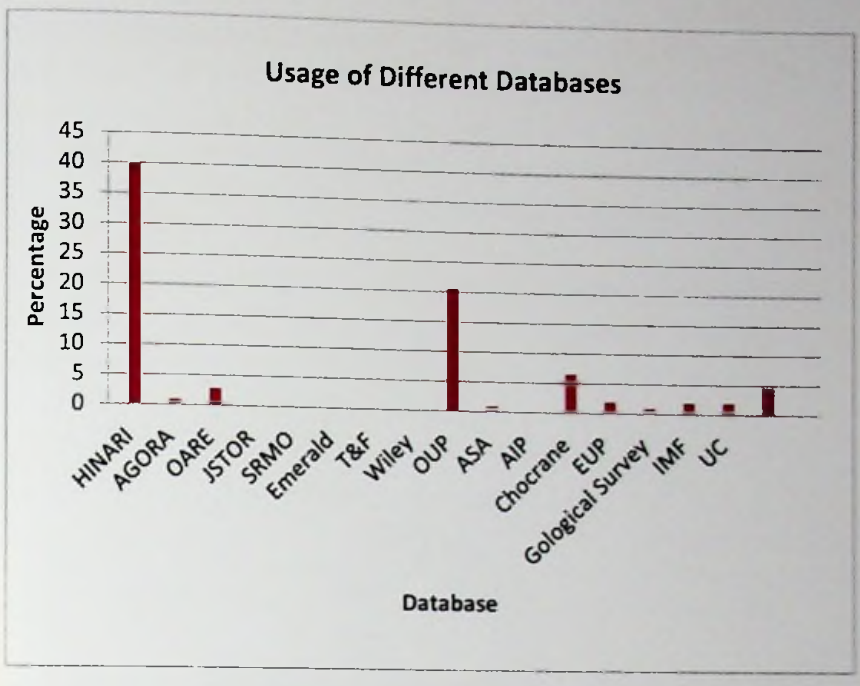

Figure 2: Usage of different databases

5.4 Information searching and problems encountered

The next question was forwarded to know the search techniques that undergraduates have used to locate the relevant Electronic Information. To get the most useful method they used. five searching techniques were given.

Table 7: Searching Techniques used to locate e-journals

Searching Techniques	Used	Not used	Total
Brows by title	48 (44.4%)	60 (55.6%)	108
Brows by subject	07 (6.5%)	101 (93.5%)	108
Simple search (using one word)	28 (25.9%)	80 (74.1%)	108
Advanced search (using two or more words)	21 (19.4%)	87 (80.6%)	108
Searching phrases	08 (7.44%)	100 (92.6%)	108

According to Table 7, brows by title is the mostly used method to perform the searches and secondly they used the simple search by using a single word (26%). Out of the total, only 20% used advanced searching methods but it is apparent that they have not used many techniques to find e-journals.

The results were analyzed to know whether the undergraduates have reported problems encountered when accessing e-resources. The reported results indicated that most of the undergraduates (78%) have not reported the accessing problems anywhere (Figure 3).

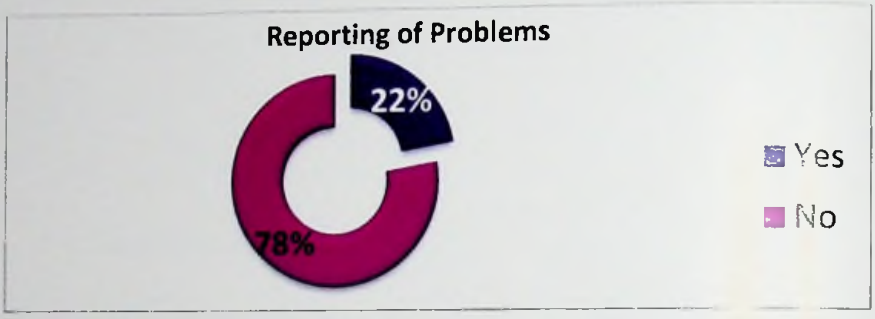

Figure 3: Reporting the problems related to access of e-resources

Then it was analyzed to see whether they are satisfied with the action taken regarding the problems reported (Figure 4). Out of the total sample 82% mentioned that action was not taken to solve the problems reported. It was indicated that 78% had not reported the problems encountered, and as a result the fraction of action not taken is also high.

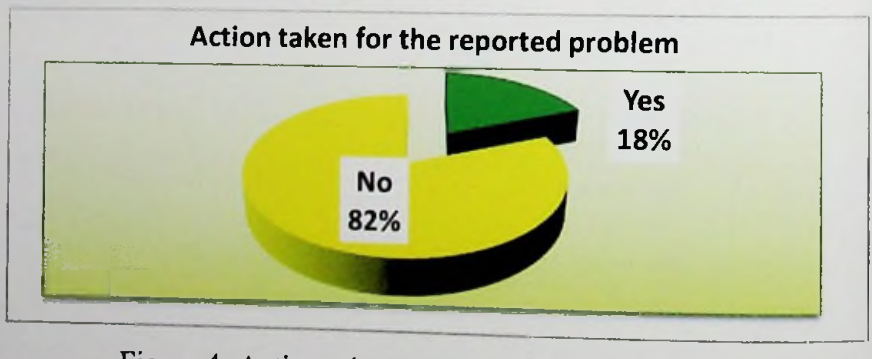

Figure 4: Action taken regarding problem reported

The undergraduates were asked whether the library staff responded to their individual learning needs regarding e-journals. Four ranks were given and most of them (42.6%) mentioned they have fulfilled their individual learning needs by the library staff while 24.1% mentioned that somewhat fulfilled (Table 8).

Table 8: The way of library staff responds to their individual learning needs

Option	% Given
Completely fulfilled	14.8%
Fulfilled	42.6%
Somewhat fulfilled	24.1%
Not fulfilled	7.4%
Not answered	11.1%

5.5 Use of e-resource for academic purposes

The undergraduates were asked whether the use of e-resources had helped them to improve their standard of work. The responses showed that 83 (76.9%) of the undergraduates have agreed that their academic standards improved after using e- resources (Figure 5).

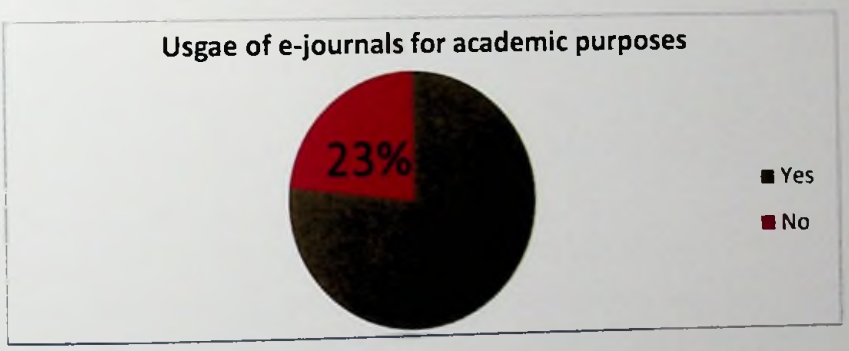

Figure 5: Usage of e-journals for academic purposes

The respondents were asked whether the e-journals support their course work and 76 (70.4%) students have said that the e-journals helped them to follow the course successfully (Figure 6).

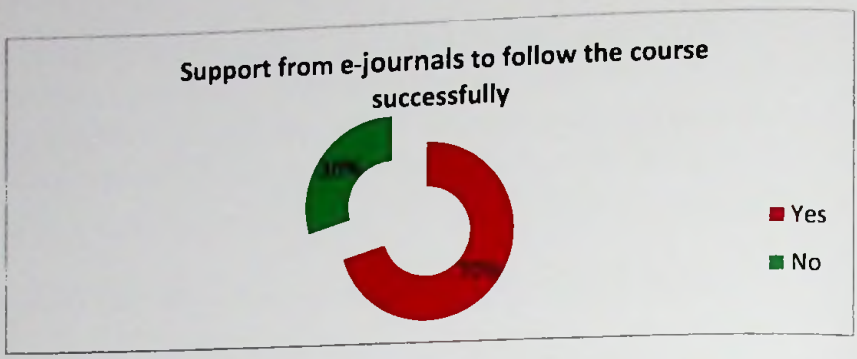

Figure 6: Support from e-journals for course work

The next question was asked about the support of e-journals to change their approach in their academic work and Table 9 presents the results.

Table 9: Purpose of accessing e-journals for improvement of academic work

Influence	Frequency	Percentage
To improve lecture notes	54	50%
To enrich assignments	36	33.3%
To enhance subject knowledge	58	53.7%
To work on research project assignment	26	24.1
Other	00	0.0%

More than 50% of the undergraduates have stated that the e-journals have helped to enhance their subject knowledge (53.7%) followed by 50% stated that the e- journals improve their lecture notes.

5.6 Preferred method of promoting e-resources

The undergraduates were asked about their suggestions in promoting e-resources effectively. Majority of students (61.1%) said that the user awareness programmes were the best way to promote e-resources while 32.4% mentioned that the user guides and 25% mentioned hands on training as effective methods in promoting e-resources.

Table 10: Promotion of e-resources

Method	Frequency	Percentage %
User awareness programmes	66	61.1%
Hands on exposure	27	25%
Leaflets banners posters	19	17.6%
Guides	35	32.4%
Any other	03	2.8%

6. Conclusion

It can be concluded that the highest response received from the Faculty of Medicine and highest respondents are from the 4th year. Majority of the respondents preferred to use print resources and more than half of the respondents do not like to use e-journals. Nearly half of the respondents (45%) accepted that e-resources represent new resources while nearly 30% believed that e-resources replaced existing printed materials.

Majority of the undergraduates have not accessed e-resources from anywhere and only 52% accessed it from the library. Most of them used title and simple search to locate the relevant e-resources from the web.

The health science undergraduates do not use most of the medical related databases. More than 70% of the undergraduates have mentioned that the e-resources have helped to follow their courses successfully. Although the usage is poor the students who use them have realized that e-resources are useful for their academic work. Majority of the students believe that e-resources help them to enhance their subject knowledge and to improve lecture notes. The student could use e-resources to enrich assignments and also in their research work. This may be due to lack of awareness. At the same time, most of the undergraduates have not reported the problems they have encountered when using e-resources and therefore, most of them were not satisfied with the action taken regarding the reported problems. However, only 43% fulfilled their individual learning needs regarding

the e-resources and 15% mentioned that they completely fulfilled their learning needs.

The students prefer to promote e-resources through user awareness programmes. Although the hands on exposure is the most effective training method, the students have not selected this mode to promote e-resources. Even though, the medical and dental faculties conduct training programmes for 1st and 2nd year students, it is important to have information literacy training in every year to suit their curriculum before starting their research projects.

7. Recommendations

Awareness of e-resources can be done by providing small group discussions, banners and computer popup programmes. Through that students can be approached and find out how to fulfill their information needs.

The techniques of use of e-resources need to be improved at classroom level with practical sessions within the semester programme, orientation of the library can be done at departmental level and providing subject guides with necessary information of how to access e-resources and through a video clip. It is important to conduct sessions in all academic years to fulfill the specific information needs according to the curriculum. Further, it can made aware about the reference and referral services of the library to get the required information for their individual leaning needs.

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Awareness and Usage of National Library of Medicine Classification (NLMC) System in Health Libraries in Sri Lanka

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Abstract

The present study addresses NLMC use in Sri Lankan Health and Medical libraries. The objectives of this study were to investigate whether NLMC is used in Sri Lankan Health and Medical libraries and awareness about NLMC among health and Medical Librarians. Also, it was aimed to find out the present classification system/s and possibilities for future alterations. The participants of this study were all the Librarians who are in-charge of Health and Medical Libraries in Sri Lanka who are the members of the HELLIS Network Sri Lanka. A descriptive survey was applied for data collection. An open-ended questionnaire and interview were conducted after relevant literature review. Results of this study showed that majority of Medical Librarians who are in Sri Lankan Medical libraries rarely used the NLMC for their cataloguing purposes. The study summarized NLMC is not popular among medical libraries in Sri Lanka, due to lack of awareness of the system and the influence of the mother institute or lack of popularity of the system within the country. This study suggests that LIS education system in Sri Lanka has to pay more attention towards NLMC to include LIS curricula.

Keywords: Library Classification Systems, National Library Medicine Classification System, Health and Medical Libraries, Sri Lanka

1. Introduction

The National Library of Medicine (NLM) classification system is a library classification system, which covers the field of medicine and preclinical basic sciences. NLMC contains clear division between preclinical and clinical topics and it contains highly enumerative structure and support mnemonics (Parker, 2007). According to Giustini (2014) "The genesis of the NLM classification" was a survey of the Army Medical Library, published in 1944, which recommended that the 'Library be reclassified according to a modern scheme' and that new scheme be a mixed notation (letters and numbers) resembling that of Library of Congress.

Many hospital libraries and medical libraries all over the world use National Library of Medical Classification system because this classification is specially tailored for biomedical literature. As an annually updated, well-organized classification system, it covers the main subjects of medical and health related books. Though most of the health and medical libraries use NLMC for classifying books, it seems that Sri Lankan Medical and Health libraries are not adopting this system yet. Therefore, it is very important to study about present status of usage and awareness on NLMC and future trends towards it, which will be helpful in incorporating the resources with other medical and health libraries worldwide.

2. Literature Review

Few studies have been found in relation to use of NLMC in Health Libraries in Asian countries though there were some studies conducted in other regions. Also there were only very limited literature in recent years. No literature was found in this regard in Sri Lanka.

According to Scheerer and Hines (1974) generally accepted classifications in medical libraries were (by date of origin), Dewey Decimal Classification-1876 (currently updated), Boston Medical Library Classification, 1879 (no longer updated), Library of Congress Classification, 1910 currently updated), Cunningham Classification

(1929 no longer updated) and National Library of Medicine Classification,1951 (currently updated).Though medical classification systems such as Cunningham Classification System and Boston Medical Classification system have been used over the years, they have moved to NLM due to number of advantages. Apart from the merits of the NLM Classification system for organizing bio medical literature in to a useful shelf arrangement, the medical librarians who had also switched from other classification schemes to the NLM Classification System cited many other factors. These advantages: frequent updates; currency, availability of cataloguing Information through OCLC, availability of Subject Headings (Medical Subject Headings -MESH), ease of application, simplicity of Notation, appropriateness for use in large and small libraries, correlation with the LC schedules, feasibility of converting from other systems.

Womack (2006) had studied about the classification systems used in academic health libraries in Boston. According the findings majority of libraries have used the NLM classification scheme. Her findings revealed that 42.5% use the NLM classification exclusively while some libraries use it in addition to one or more systems. It further stated that the additional system is used for a part of a collection, such as government documents or audiovisual materials. For most libraries, the main factor for selecting NLM classification was that this system is the most detailed, most appropriate for a medical collection, and that it provides the best coverage for the subject area.

3. Objectives

The main objective is to investigate whether NLMC is used in Sri Lankan Health and Medical libraries and awareness about NLMC among health and medical Librarians. Also, it was aimed to find out the present classification system/s and possibilities for future alterations.

4. Methodology

Survey method was employed as the research method. The population of this study consisted of all the Librarians in-charge of Health and

Medical Libraries in Sri Lanka who are the members of HELLIS Network Sri Lanka. The total membership of HELLIS as at 01/08/2016 was 27, which included academic, special, governmental as well as non-governmental libraries. Also World Health Organization Library was included into the sample as it is a prominent and sponsoring agent of HELLIS Network Sri Lanka. The whole population was considered as the sample (N=100). The sample consisted of 15 academic libraries, 05 special/ research libraries, 06 government libraries and 01 non-governmental libraries.

A questionnaire and interviews were used as data collection instruments. A questionnaire with open-ended questions was administered to the Medical and Health Librarians included in the sample. Also interviews (over the phone) were conducted in order to get clarifications about some questions. The questionnaire and the interviews were focused on getting data on present classification system/s used, the reasons and awareness on NLM and their willingness for future applications.

Data were analyzed using Microsoft Excel 2016 and SPSS (version 22) software packages. Variables related; type of the libraries, professional qualifications and experience, awareness of NLM and usage patterns were analyzed using non-parametric statistical tests. Rate of response was 89%.

5. Results

According to demographic data, 22% of respondents were male librarians and 78% were females. 65% of the respondents possess experience of more than 10 years. 74% of the respondents have obtained postgraduate qualifications in (MA/MSSc/MLS/MIM) while others are Diploma holders. According to results, a majority (52%) of health libraries use DDC (Dewey Decimal classification) while 35% of responded libraries use UDC (Universal Decimal classification). Only 03 libraries in the sample out of 23 (13%) use NLMC. It was found that 39% of respondents were not aware of the NLMC. 61% of respondents have known about the existence and structure of NLMC but they do not use it. None of the medical librarians in the sample

have learnt about NLMC at Diploma/undergraduate/postgraduate levels in LIS education. Almost all the respondents have completed Diploma or postgraduate studies in Library and Information Science. Also no training has been obtained by none of the respondents on NLMC. When asked for future applications only two librarians preferred to go for NLMC near future. Others stated that without any knowledge, it is difficult to convert the existing system and they preferred to continue with the existing system. All the respondents have expressed their willingness in getting a training on NLMCor to learn NLMC.

6. Conclusions

Based on the results it can be concluded that though NLMC is specifically designed for biomedical literature and used by Health and Medical Libraries all over the world, it is not adopted by the majority of Sri Lankan Health and Medical libraries. This may be due to lack of awareness of the system, influence of the mother institute or lack of popularity of the system within Sri Lanka. It seems that though a majority of librarians possess more than 10 year experience still they have not learnt or not aware of NLM classification system. Also it can be concluded that most are reluctant to change from the existing systems.

7. Recommendations

The present study suggests and recommends that awareness of NLMC among Health Librarians should be developed. Since most of the librarians in Health and medical libraries are not subject specialists, it would be easier to use NLMC. HELLIS Network can play a major role in providing training on NLMC. Though all the respondents are holders of either Diploma or postgraduate degrees in LIS, it seems that there is a gap in knowledge about such specialized classification schemes. Therefore, this study suggests that LIS education system in Sri Lanka has to pay attention towards this to include NLMC in curricula. However, more in-depth studies should be conducted before

making suggestions in converting to the existing systems used by Health and medical libraries to NLMC.

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Awareness of Information Retrieval in Online Environment: A Study on Newcomers to the Faculty of Engineering of General Sir John Kotelawala Defence University

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Abstract

Undergraduates, in their first year, usually perform poorly in their studies and it has been attributed to the inability of students to effectively retrieve information for academic work. At present there are many problems in retrieving information and proper use of information. The prime objective of the study is to give the newcomers of Engineering Faculty at Kotelawala Defence University, an awareness on information retrieval and thereby to propose methods to teach them to retrieve information and the proper use of information for their study. The total study population is all students of 34th intake of engineering students consisting both cadets and day-scholars. Survey strategy was applied by means of structured questionnaire circulated among students before and after the Information Literacy Instruction (ILI) program, so that it could be collected back at the end of the program. The collected data were analyzed by using SPSS version 20. As per the result of post survey after Information Literacy Instruction Program, the awareness was increased in retrieving information. Hence, it is recommended to conduct more practical oriented lectures on information retrieval in order to uphold their knowledge.

Keywords: Information retrieval, Information literacy, E-resources, Library usage, Information literacy instruction

1. Introduction

In Sri Lankan Higher education system, there are 15 conventional universities offer degrees in various fields under the purview of University Grants Commission, Sri Lanka. Apart from that, another few universities and higher educational institutions are also recognized by UGC offer degrees of which General Sir John Kotelawala Defence University is an important and unique one as it offers degrees including medicine, engineering, architecture, computing and so forth. In the present context, the retrieval of information and effective use of information is a challenging task as Information Technology (IT) plays a crucial role than before. Earlier days, finding information was a challenging task as scholars depended only on printed sources and at present, the availability of information is not a challenging task as we have a sea of information to swim through, but, retrieval of information and effective use of information became as a challenging task after the impact of information technology by which we retrieve information in printed and non-printed formats. Hence, it was intended to identify the students' capacity of retrieving information.

In the Sri Lankan context, students are selected from various backgrounds with regard to the availability of library usage. As we know from our experience, considering the students who are selected to the Faculty of Engineering come from towns or else they might have studied in town schools with a few exceptions. In addition, these students studied mathematics stream in G.C.E (A/L) and expected to be competent in computer technology as well. However, we need to know whether they are aware of accessing information effectively, especially in an online environment. Hence, researcher did pre and post survey of their knowledge to discover the nature of students in information retrieval.

2. Literature Review

With regard to this study area, countless studies were carried out in the past. When we see the content, most of the studies were focused on the Internet usage, e-resources, semantics in web search and so forth,

which are related to the Internet and web search. There were numerous studies conducted in the field. Among the studies Eynon and Malmberg's research (2011) is an important one in this field, it focused on youths who live in a village in the United Kingdom, but not focused on university students. They measured how those youths in that village retrieve information and show the information seeking behaviors of the youths. Similar to this, scholars from Manipal University, Jessy, Bhat and Rao (2010) did pre and post survey of students' information seeking attitude. Their essay on 'Assessing the Effectiveness of Information Literacy Instruction Program: Pre and Post Evaluation Case Study' deals with the same subject, but is a different angle.

Balasubramanian,Catherin, and Suthakar (2014) did a survey on the information retrieval of students, but the study population was postgraduate students who are considered as a learned society. Their intention was to see what types of format the students like to refer. They mainly focused on what types of formats were preferred by the students.

Fordjour, Babu and Adjei (2010) concerned the overall performance of students, especially post-graduate students. According to them, the use of information retrieval tools to retrieve relevant information depends on the information needs of the student and there was no relationship between awareness of information retrieval systems and facilities. As per the study, the information retrieval skills training program should be embedded in the curriculum, undertaken at an appropriate time and supported by academic staff of the University. MacFarlane, Petrie and Jones (2010) conducted a survey of students' needs and information retrieval, but it focused only on disability or dyslexia. This study focused on those who wanted special information needs as it covered dyslexia. Dyslexia's information seeking behavior and the information needs is different.

William et al., (2011) carried out a study to evaluate pre and post awareness of information retrieval. They did a pre-survey about the awareness and immediately after the lecture. However, the target

groups were senior and junior medical students. Medical students' information seeking behavior and the information needs are different from the target group that they have taken.

Even though there have been numerous researches carried on the subject, which were done in this area of study, our present study is unique and it has attempted to find different problems in a different context. The target group is engineering newcomers who were not selected to conventional universities and they have been selected to pursue their studies after selection of examination and interview. Hence, it was intended to do a pre and post survey on their nature of information retrieval in the online environment.

3. Objectives

To identify the nature of existing information and the level of information retrieval among the undergraduates and propose the methods which are to be adopted to improve information retrieval in the online environment.

1. To show the information gaps of undergraduates in an online environment
2. To measure the nature of information retrieval culture in undergraduates
3. To propose suitable and proper methods to be adopted to improve information retrieval in an online environment

4. Methodology

The study was undertaken using a quantitative research design. The total student population was 113 (34thintake) students from the faculty of Engineering of General Sir John Kotelawala Defence University. All students, both cadets and days-scholars were taken for the study. Structured questionnaire with close-ended questions were distributed among the students and they were circulated and collected in pre and post information retrieval instructions (ILI) done by the library. Considering both the pre and post questionnaire respondents, 95 have

duly completed and returned the same. SPSS version 2.0 was used to analyze the results. Based on the results, recommendations were derived.

5. Data Analysis and Interpretation of Findings

This study examined the awareness of information retrieval in online environment of the newcomers to the Faculty of Engineering of General Sir John Kotelawla Defence University. Questionnaire were distributed to all registered first year students of the Faculty of Engineering at the Information literacy instruction (ILI) program which was conducted by the Main library of KDU and it was circulated before and after the ILI program. Out of which ninety-five (95) respondents completed and returned with a response rate of 84.1%.

The analysis and the interpretation of data were based, on the responses received. Data collected from the questionnaire were analyzed using frequency counts and simple percentage by using SPSS version 20.

5.1 Demographic variable

Table 1: Distribution of the respondents by Sex

Sex	Frequency	Percentage
Male	87	91.6
Female	08	8.4
Total	95	100

From Table 1, it shows that 87 respondents were male who represented the 91.6% of the entire respondents. While only 8 respondents were female who represented 8.4% of the entire respondents. The results then showed that more males were captured during the admission of the first year undergraduates for the Engineering stream.

5.2 Previous experience on library usage

Respondents were asked to mention their previous experience on library usage and the results are demonstrated in the following table.

Table 2: Previous experience on library usage

Previous experience in library use	Frequency	Percentage
Local Governmental Library	32	33.7
School Library	61	64.2
No response	2	2.1
Total	95	100

Table 2 shows that 61 (64.2%) of the respondents had previous experience of using school libraries, while 32 (33.7%) of the respondents had experience by using local government libraries.

5.3 Awareness of the library website

Every university library has maintained its own library website in order to provide the comprehensive information about its services, resources and promotes its usage. User awareness of the library website assists to gather detailed information on library and its resources, which will help to improve the resource utilization.

Respondents' awareness on the library website and its resources was analyzed before and after the ILI program. Pre-test results showed that only 5.3% of the respondents were using the library website for access to e-resources. However, the post ILI feedback data indicated that the use of library website for access to e-resources have increased up to 65.3%. The details are demonstrated in the Table 3.

Table 3: Awareness of the Library website

Awareness of the library website and its use	Number of respondents before ILI (n=95)		Number of respondents After ILI (n=95)	
	Frequency	Percentage	Frequency	Percentage
I never check KDU library website	14	14.7	0	0.0
I check KDU website but not library website	75	78.9	33	34.7
I check KDU library website for access to e-resources	5	5.3	62	65.3
No response	1	1.1	0	0.0
Total	**95**	**100**	**95**	**100**

5.4 Awareness of the type of library resources

Students' awareness of the type of library resources was analyzed in the pre and post-test by using a questionnaire. The pre-test results revealed that the respondents' lower level awareness of the resources like online databases 8 (8.4%), CDs/DVDs 6 (6.3%) and e-journals 11 (11.6%) available at the library. However, the post-test results showed that the respondents' awareness of all types of library resources increased highly. Respondents' awareness of online databases, CDs/DVDs and e-journals comparatively increased from 8.4% to76. 8%, 6.3% to 73.7% and 11.6% to 68.4% after ILI session. The Figure 1 depicts the details of the responses given by the participants.

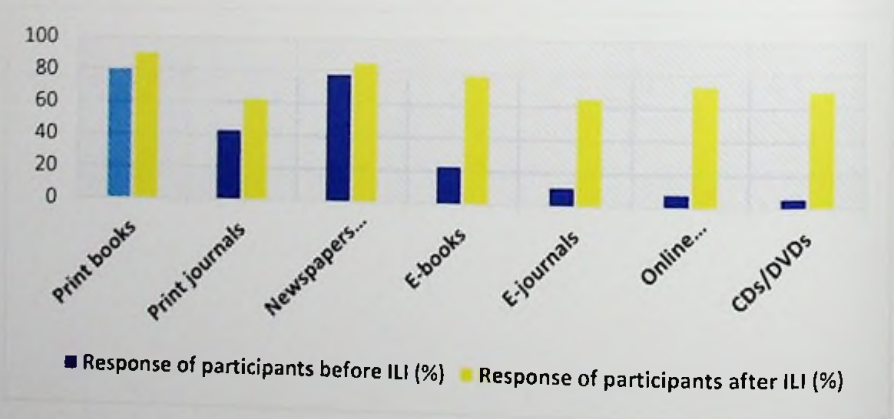

Figure 1: Awareness on the type of library resources

5.5 Awareness of library catalogue

In order to get the maximum benefit from the library the student should be aware about the library catalogue. Therefore, in this study, students were asked to mention their awareness on the library catalogue. The majority 91 (95.8%) of participants were not aware about the library catalogue. However, after the ILI session the participants' awareness about the library catalogue increased from 4.2% to 100%. The details results are given in the following table.

Table 4: Awareness of library catalogue

Awareness of the library catalogue	Number of responses before ILI (%) (n=95)	Number of responses after ILI (%) (n=95)
Yes	4 (4.2%)	95 (100%)
No	91 (95.8%)	0 (0%)
Total	95 (100)	95 (100)

5.6 Familiarity with e-resources

The participants were asked to mention their knowledge about e-resources. Pre-test results showed that the participants had a lower level of familiarity with e-resources. The results of the pre-test showed 63.2% of the respondents do not know about e-resources and only 21.1% have been using e-resources for educational purposes. 15% of the respondents replied that they have heard about the e-resources but not used. However, the post-test ILI session feedback revealed that an increase in the number of respondents. 82.1% who used e-resources for educational purposes as indicated in the Figure 2.

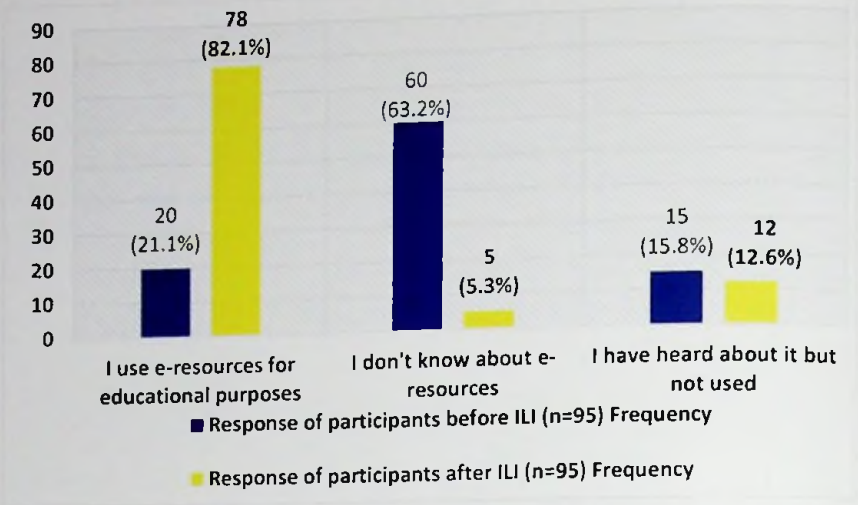

Figure 2: Familiarity with e-resources

5.7 Knowledge about anatomy of URL

Respondents were asked to state their knowledge about anatomy of a URL (Uniform Resource Locator) which is a basic knowledge for access resources on the Internet. The results of the pre-test showed that only 27 (28.4%) of the respondents aware about the anatomy of the URL. However, the post-test results showed that majority 77 (81.1%) of the respondents were aware about the anatomy of the URL. The response to the question administrated in the figure below.

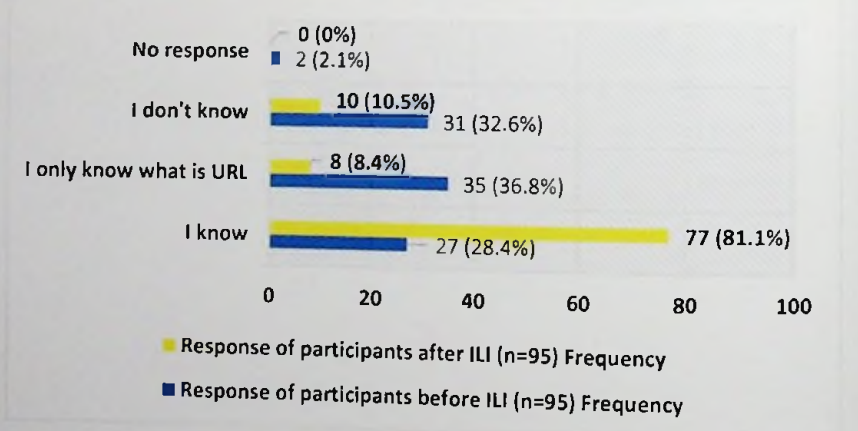

Figure 3: Knowledge about anatomy of URL

5.8 Knowledge about the Internet Search Engines

Students were asked to mention their knowledge about the Internet search engines and the results of the pre-and post-test are depicted in the Table 5.

Table 5: Knowledge about the Internet search engines

Knowledge about internet search engines	Response of participants before ILI (n=95)		Response of participants after ILI (n=95)	
	Frequency	Percentage	Frequency	Percentage
I know	83	87.4	92	96.8
I don't know	11	11.6	3	3.2
No response	1	1.1	0	0.0
Total	95	100.0	95	100.0

As per the Table 4, there were no big difference about the knowledge on the Internet search engines by students in the pre and post-test. According to the results of the pre-test 83 (87.4%) of the respondents were knowledgeable about the internet search engines and it was increased up to 92 (96.8%) after the post-test of the ILI.

5.9 Knowledge about Search Methods

Students were asked about the knowledge on search methods that they used. The pre-test results revealed that lower level knowledge of the respondents about search methods like Boolean operators 8 (8.4%) phrase searching 11 (11.6%) and field searching 13 (13.7%). Further, it was remarkable to state that none of the respondents were aware about the truncation method. Further, it was revealed that majority 66 (69.5%) of the respondents did not respond to this question due to their lack of knowledge about search methods. But in the post-test ILI session feedback revealed that an increase in the number of respondents who aware about the search methods. The details are given in Figure 4.

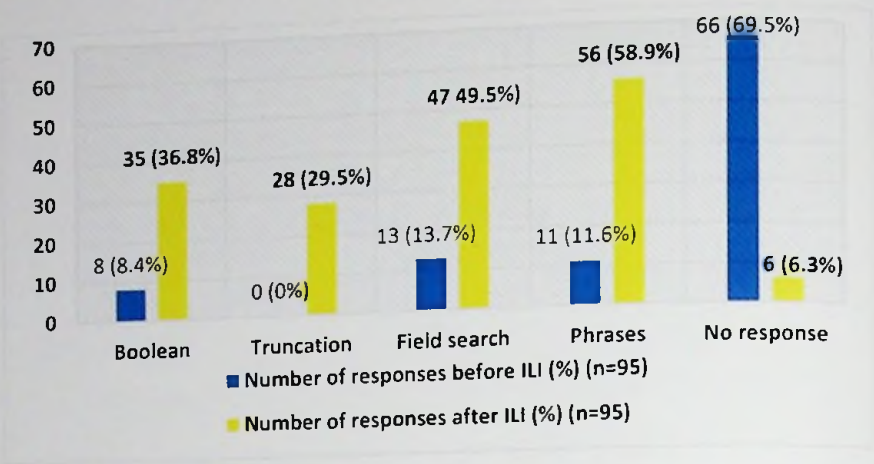

Figure 4: Response of the participants about their knowledge of search methods

5.10 Feedback about the instruction

Evaluating the feedback on the library instruction program is very essential to assess the librarians' efficiency and to improve the effectiveness of the ILI program. The students' opinion on the librarians' efficiency was also gathered from the participants' feedback. The majority of the participants were either highly satisfied (66.3%) or satisfied (28.4%) with the instructional methods in imparting information seeking skills. The details of the participants' response are given in the Table 6.

Table 6: Respondents' feedback about the instruction

Response of participants	Number of respondents (n=95)
Highly satisfied	63 (66.3%)
Satisfied	27 (28.4%)
Not sure	5 (5.3%)
Unsatisfied	0
Highly unsatisfied	0
Total	**95 (100)**

In response to the open ended question inviting suggestions from the participants for the improvement of ILI programs, they suggested that this kind of programs should be done at a regular intervals as well as hands-on sessions may be included in the future ILI programs.

6. Conclusion and Recommendations

The results of the present study for assessing the effectiveness of ILI program for the first year undergraduates of the Faculty of Engineering, demonstrated the satisfactory improvement in the information competency skills of the students.

The results of the study revealed the following:

- Participants' awareness about the type of library resources and the awareness of library website increased substantially after ILI program.
- The post-ILI program feedback indicated that 100% of the students were able to aware of the library catalogue and their familiarity with e-resources increased considerably.
- The participants' knowledge of the anatomy of the URL and the search engines increased to a great extent (from 28.4% to 81.1% and from87. 4% to 96.8%) after ILI.
- Participants' awareness and skills on search methods, including Boolean operators, truncation, index phrases and field search also increased to a significance level after ILI.
- ILI program conducted by the library has been effective and created awareness about various resources of the library, search strategies as well as services and facilities of the library as evidenced from the students' responses and comments.

Based on the above results of the study, the following recommendations have been made.

- In order to examine the impact of ILI program, user oriented studies may be conducted in a regular intervals.
- Opportunities for hands-on session should be given to the participants for effective of ILI programs.

- It is recommended to incorporate the ILI program with the students' curriculum for better understanding of the methods for information resources utilized.

In the pre evaluation study conducted at the library, it has been identified the actual level of awareness among the students about the library website and resources of the library, knowledge about the library catalogue, knowledge about the URL and internet search engines, search methods and their previous experiences of using a library. Further, from the post-test feedback, it is revealed that the ILI program was effective and helped to improve the information literacy skills of the participants. In addition, it was identified the important areas to be focused upon while designing the future IL programs to be organized by the library for their user community. Even it is expected that engineering students have knowledge to handle online environment, the fact is contradictory. Hence, it can be concluded that this method of pre and post evaluation study is helpful in assessing the effectiveness of information literacy programs in the academic libraries, and that the newcomers can access information effectively.

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Forex Trading as a Part Time Earning Opportunity and as a Method of Earning Foreign Currency: A Primary Study Done in Sri Lankan Context

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Abstract

The word "Forex" which troubles us to understand stands for Foreign Currency Market. Many people know about Foreign Currency Market, but they do not know about Forex, as it is an unfamiliar word for them. However, as it is mentioned, Foreign Currency Market is a place where Foreign Currencies are exchanged. In Forex, foreign currencies are exchanged between buyers and sellers and ultimately it determines the value of a certain currency in the market. Actually, Forex is the largest exchange market in the world. In addition, this is the only place that any person can join and earn without any conditions. Therefore, it is possible to say that this is a large job market. There are no limits to the available job opportunities in Forex. In addition, it is opened 24 hours per day and anyone can join it through internet at any place using the computer or Android devise. Therefore, if someone can join the Forex and behave in a profitable way he can earn an extra income as well as foreign currency for his country. However, the problem is, in Sri Lanka Forex trading is not legally authorized. As the foreign currency account of Sri Lanka is a closed one it is not allowed to invest in foreign currency market for the general public.

Keywords: Forex Trading, Self-Employment, Sri Lanka

1. Introduction

The word "Forex" which troubles us to understand stands for Foreign Currency Market. Many people know about Foreign Currency Market, but they do not know about Forex, as it is an unfamiliar word for them. However, as mentioned, Foreign Currency Market is a place where

Foreign Currencies are exchanged (Lubrication, n.d.). In this place, most commonly used currencies in the world such as EURO, USD, JPY, AUD, and GBP are exchanged. It is something like our stock market in Colombo. In stock market, the shares of leading companies in Sri Lanka are exchanged among buyers and ultimately investments are gathered for companies. Similarly, in Forex Market, Foreign Currencies are exchanged between buyers and sellers and ultimately it determines the value of a certain currency in the market. In world scale, the values of Forex market are determined by economic changes that take place in the world. Especially the main bank systems of world's powerful countries and economies of countries such as America, England, Australia, New Zealand, Japan and Europe directly affect the status of the financial market. However, it is only for relevant currencies. Actually, Forex is the largest exchange market in the world just like the stock market in Sri Lanka. Also this is the only place that any person can join and earn without any conditions. Therefore, it is possible to consider this as a large job market. There are no limits to the available job opportunities in Forex. Also it is open 24 hours per day and you can join through internet from any place through your computer or using your android devise. Forex Trading is trading currencies from different countries against each other. Forex is acronym of Foreign Exchange.

For example, in Europe, the currency in circulation is called the Euro (EUR) and in the United States, the currency in circulation is called the US Dollar (USD). An example of a Forex trade is to buy the Euro while simultaneously selling US Dollar. This is called going long on the EUR/USD (Direct FX / Global Forex Brokers, n.d.).

Forex trading is typically done through a broker or market maker. As a Forex trader, you can choose a currency pair that you expect to change in value and place a trade accordingly (Barbosa & Belo, 2008). For example, if you had purchased 1,000 Euros in January of 2005, it would have cost you around US$ 1,200. Throughout 2005, the Euro value vs. the U.S. Dollar value increased. At the end of the year 1,000

Euros was worth 1,300 U.S. Dollars. If you had chosen to end your trade at that point, you would have a US$ 100 gain.

Forex trades can be placed through a broker or market maker. Orders can be placed with just a few clicks and the broker then passes the order along to a partner in the Interbank Market to fill your position. When you close your trade, the broker closes the position on the Interbank Market and credits your account with the loss or gain. This can all happen literally within a few seconds (Lai, Yu & Wang, 2004).

Therefore, if someone can join the Forex and behave in a profitable way he can earn an extra income as well as he can earn foreign currency for his country. In Sri Lanka, in resent past we could see that so many websites published the required knowledge to the general public to behave in the Forex trading in a profitable way. Some foreign companies started Skype helping and email helping in Sinhala language too to motivate the Sri Lankan people to earn profits through Forex trading.

2. Purpose of this study

In the above context, if someone behaves in the Forex Trading in a profitable way it will be beneficial for him as well as for the whole country but if he behaves in the Forex market in an unprofitable way it will be other way around. In Sri Lanka, up to now, no study on this area has been conducted to find out whether Forex Trading can be improved as a profitable part time work by engaging in small scale with the approval and assistance of the government without affecting the foreign currency account of Sri Lanka. Therefore, in this study the researcher would like to conduct an investigation to understand whether any person without any higher education can do the Forex trading in a profitable way using the information published on the websites.

3. Main Objective

To find out whether any person can conduct the Forex trading in a profitable way without having higher education and whether it can be improved as a part time carrier opportunity.

4. Methodology

According to the major FOREX agent company called NORDFX, currently there are about 25,000 people in Sri Lanka conducting online trading under the company. As such, the researcher contacted that company and obtained a list of 60 Sri Lankan people selected randomly who had registered under the NORDFX Company and obtained their consent to use their information for the research.

The company provided only the first name and the email addresses of above registered persons due to the security reasons and to protect the privacy of the above 60 people. Questionnaires were prepared to collect data from above persons and sent them through email. Response rate was 60% and 6 responses were rejected due to incomplete data. As such, finally, 30 respondents were selected for the analysis.

Questionnaire was comprised with 20 close ended questions and no personal information were collected to protect the respondent privacy as the Forex Trading is not legal in Sri Lanka and to increase the accuracy and the response rate.

5. Results

These 30 respondents represent all the provinces in Sri Lanka except the Northern and Eastern. However, among the rejected 6 responses, there were 3 Eastern people. All the respondents are conducting the Forex trading as a part time earning opportunity and have only an average skill of working with computers and internet. According to them, they got to know about the Forex trading through web advertisements and had a small online training by reading the

information provided through websites of the Forex broker agent companies.

According to Table 1 the average initial investment in Forex, trading is US$ 103. That means most of the people who engage in Forex trading from Sri Lanka start trading by investing an average of 103 US$. Table 2 shows the average working hours per day on Forex trading by the investors and it is around 4 hours per day. According to the Table 3 most of the people engage in Forex, trading in Sri Lanka is in the age limit between 25 to 40 years. About 75% of the respondents belong to the age limit of 25-40 years. In Table 4 it is demonstrated that the average earning per day of a respondent is around 3 US$.

Ultimately, according to the above results, it has been found out that with an initial minimum investment of US$ 100 one can earn at least US$ 3 per day by trading in the foreign exchange market at least 4 hours per day without having any losses. That means if anyone work 30 days per month he can earn US$ 90 per month. In Sri Lankan Rupees, it is around Rs.13, 500. If anyone can invest more and can spend, more time the earning will be higher.

6. Discussion

However, in Sri Lanka, Forex trading is not a legal thing. Due to the closeness of the foreign currency account of Sri Lanka, it has not been allowed to invest in foreign currency market for the general public. According to the Exchange Controller Department of Sri Lanka, it is a punishable offence to engage in Forex trading under the provisions of section 5(1) and 7(a) of the Exchange Control Act. Forex is not an illegal thing like the pyramid system because Forex trading is a Legal trading opportunity all over the world but according to the exchanger controller act passed in 1986 it is prohibited to invest in foreign countries for the individuals in Sri Lanka. It is mentioned as follows in the Exchanger Controller Act 1986. 5. (1) Except with the permission of the Bank - (a) no person other than an authorized dealer, shall in Sri Lanka buy, borrow or accept any gold or foreign currency from, or sell or lend any gold or foreign currency to, or exchange any

foreign currency with, any person other than an authorized dealer, and7. Except with the permission of the bank no person shall in Sri Lanka - (a) make any payment to or for the credit of a person resident outside Sri Lanka, or (b) make any payment to or for the credit of a person resident in Sri Lanka by order or on behalf of a person resident outside Sri Lanka, or (c) place or hold any sum to the credit of any person resident outside Sri Lanka.

Also in the "A Guide to foreign exchange transaction Sri Lanka", it is mentioned the allowed credit card payment to foreign countries as follows:

Credit, Debit and other Electronic Fund Transfer Cards (EFTCs) may be issued to residents of Sri Lanka by authorized dealers. However, such cards may also be issued to NRFC, RNNFC, RFC and FCBU account holders, irrespective of their resident status provided that expenditure incurred on such EFTCs would be debited to the above mentioned accounts. It has been stipulated in the Government Gazette Notification No.1411/5 of 19th September, 2005 that any EFTC with global access shall be used to make foreign currency payments only for following purposes.

Payment to be made abroad by a cardholder for services of a personal nature including travel, accommodation, medical, living and educational expenses.

Payment for purchase of goods abroad for personal use. ω Payment for import of goods into Sri Lanka for personal use subject to a limit of US$3,000 (c.i.f) or its equivalent in any other foreign currency per consignment.

Payment of registration fees, examination fees and annual subscription fees of a personal nature payable to a foreign professional body or academic institution.

Payment to be made in respect of insurance premium only for travel and health insurance of personal nature.

Therefore, under the above guidance too it is illegal to transfer money to Forex trading through Credit cards. However, up to now it has been not published in the media that it is an illegal thing to do Forex trading inside Sri Lanka. Also it is allowed to publish details about Forex

trading and to motivate people to conduct Forex trading through many web sites. Therefore, without knowing that this is an illegal and punishable offence many people in Sri Lanka are involved and engage in Forex trading. According to the one of a major agent company called NORDFX, currently there are about 25000 people in Sri Lanka doing online trading under that company. There are so many other companies too. Then definitely there will be more than 100,000 persons who engage in Forex trading in Sri Lanka.

7. Conclusion

According to the above results, it can be seen that the Forex trading in a small scale could be conducted in a profitable way. Therefore, it is advisable to relax the foreign exchange rules by the Sri Lankan government and motivate this as a part-time career opportunity in Sri Lanka under the supervision of the government. Then it will be beneficial to the public as a part time or full time career opportunity and to the government as a method of foreign currency earning for Sri Lanka. Main limitation of this study is that the sample size is very low due to lack of responses. Therefore the Researcher would like to suggest to conduct a more comprehensive research on this topic by the government to get more understanding about the situation and to check whether the results will be same or not. If that study also shows same results, the government can make the Forex Trading legalized as early as possible with necessary rules and regulations for the benefit of the Sri Lankan people.

Table 1: Average initial investment by persons who engage in Forex trading in Sri Lanka

Respondent	Initial Investment in $	Respondent	Initial Investment in $
R-1	100	R-16	100
R-2	110	R-17	100
R-3	120	R-18	100
R-4	90	R-19	50
R-5	95	R-20	70
R-6	105	R-21	120
R-7	85	R-22	140
R-8	95	R-23	110
R-9	100	R-24	100
R-10	100	R-25	105
R-11	110	R-26	100
R-12	80	R-27	105
R-13	50	R-28	90
R-14	150	R-29	95
R-15	200	R-30	120
Total Investment	3095		
Number of Investers	30		
Average Investment	103		

Table 2: Average working hours per person per day on Forex Trading

Respondent	Time spend per day (Hr)	Respondent	Time spend per day (Hr)
R-1	4	R-16	3
R-2	3.5	R-17	5
R-3	5	R-18	4
R-4	5	R-19	2.5
R-5	4	R-20	5
R-6	3	R-21	2.5
R-7	5	R-22	3.5
R-8	4	R-23	4
R-9	3	R-24	4
R-10	4	R-25	5
R-11	5	R-26	4
R-12	4	R-27	5
R-13	2.5	R-28	4
R-14	3.5	R-29	5
R-15	2	R-30	4
Total Hours	118		
Number of Investers	30		
Average Hours Spend	4		

Table 3: Age limit distribution of the persons who engage in Forex Trading in Sri Lanka

Age Limits	Numbr of Investors
20 -25	1
25-30	8
30-35	7
35-40	7
40-45	4
45-50	3
50-55	0
55-60	0

Table 4 : Average earnings per day by persons who engage in Forex trading in Sri Lanka

Respondent	Average earning per Day ($)		Respondent	Average earning per Day ($)
R-1	4		R-16	3
R-2	4		R-17	3
R-3	4		R-18	4
R-4	2		R-19	1
R-5	2		R-20	1
R-6	3		R-21	4
R-7	2		R-22	4
R-8	1		R-23	3
R-9	3		R-24	3
R-10	3		R-25	3
R-11	4		R-26	3
R-12	2		R-27	3
R-13	1		R-28	2
R-14	6		R-29	1
R-15	8		R-30	3
Earning per Day		90		
Number of Investers		30		
Average Earning per Day		3		

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Perspectives of Library Staff on Outreach Activities of Library, University of Moratuwa

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Abstract

Introducing outreach activities to an academic library is a novel experience to the university library staff. It's even considerable when the resource persons for such activities are managed by the library staff of the university. Aiming to serve the communities in the vicinity of University of Moratuwa, the Library launched several outreach activities. To review the outcome of these outreach activities, a survey was conducted with the library staff of University of Moratuwa as the target population. All the library staff members including academic, administrative and non-academic staff participated as the population. Data collection was done by using a semi-structured questionnaire. Forty-nine responses were received from the library staff members. Majority of the staff members had positive attitudes about the activities conducted by the Outreach Services Division. They felt the need of continuing such programmes as they had a positive effect on the helpful services offered for the learning environment of the children. The results revealed the positive commitment of library staff towards continuing outreach activities targeting lower age groups of the society for their future endeavors.

Keywords: Outreach Librarianship, Academic Libraries, Community and Libraries, Teaching and Learning, Community Services, Future Librarianship

1. Introduction

Outreach services division (OSD) of the library was established in the Library, University of Moratuwa in September 2013 to serve the

community, going an extra mile beyond the traditional role of libraries. The programme initiated two projects namely Child Development Programme-Sumudu Preshool, University of Moratuwa and Reading Camp for WP/PIL/Bodhiraja Vidyalaya. Later the OSD is looking forward to design more programmes to expand their services. Mathematical Skills Development Programme for WP/PIL/ Sri Rahula Maha Vidyalaya, Information Literacy Skills Development Programme for trainees attached to German Technical Institute (Kodithuwakku, Seneviratne & Kiriella, 2015) and Guest Lectures were also added if and necessary. A reading camp was organized to develop the reading habits among the younger generation. OSD expanded their services to enhance mathematical skills of upper school children as a further step forward. To facilitate the very own community within the university, information literacy programmes were conducted for the undergraduates and diploma holders.

Reviewing the literature on outreach, Dennis (2012) defined outreach as "reaching out to non-traditional library users, extending beyond borders of a physical library and promoting under-utilized or new library resources". Focusing on the vision of the outreach division it was presented that,

> Outreach activities of University of Moratuwa library are still at the inception and have to travel many more miles to reach its goals. Dedication and enthusiasm of staff and integration of staff with village inhabitants and community is essential in achieving the goals. Making a child walking through the gates of the university would be the ultimate goal of the outreach activity (Kodikara, Seneviratne and Punchihewa, 2013, p.21).

With the inception of the project it was revealed that all the staff members at the library were on sole expectation to offer their helpful hands to children in need where they were successful in building relationships with the community as well. Basler (2005) describes the community outreach projects at Medical University of South Carolina, which targeted largely on rural and minority populations. For example, Enterprise Community Programme was developed to address community problems in environmental health, and information was

provided via computers in community centers, schools, churches and public libraries. Also, Healthy Southern Carolina Gateway programme served to provide access to electronic health information for public libraries.

The literature on outreach activities around the globe reflects that the academic libraries have designed programmes for the various information seekers disregarding the age, location and educational backgrounds to disseminate new knowledge to them. To add up, University of Moratuwa recognizes the importance of being a premier university in providing education responsive to the national needs and expectations of industry and society in its strategic plan (University of Moratuwa, 2013). Developing the reading habits of school children as well enhancing information literacy skills of youth has been recognized as a national need. Therefore, it is worthwhile conducting outreach services as teaching skills.

However, nature and role of library workers is challenging in the age of internet era. To survive as library professionals in their own institutions, library staff has to equip themselves with new skills. Hence new learning, research and training abilities should be developed. The need has arisen to identify between national contribution as well as the institutional contribution. Most important thing is to survive as a library professional in this context. University of Moratuwa outreach services has a short history of three and a half years. At this juncture it is essential to highlight, review of activities carried out so far. Though perspectives of beneficiaries of outreach programmes have been surveyed by Kodithuwakku and Senevirathne (2016), a survey has not been conducted to measure the perspectives of library staff members. Success of these programmes entirely lay on the hands of the dedicated library staff where there participation is much needed in community activities.

2. Objectives

- To identify the perspectives of library staff members about outreach activities
- To identify the types of activities which have most impact on resource persons
- To obtain an evaluation about the outreach activities of library staff members about outreach activities

3. Research Methodology

The targeted population was the library staff members of University of Moratuwa. Present library staff members including academic, administrative, non-academic and contract staff categories were regarded as the population. While adopting the survey methodology, a semi-structured questionnaire was designed to obtain views from the staff of the library. Likert method of summated ratings was used to identify the perspectives of the library staff on outreach programmes. To measure the perspectives, strongly agree, agree, moderate, disagree and strongly disagree were the attitudes used for the twelve statements. Positive statements regarding outreach activities were assigned 5,4,3,2,1 and negative statements were assigned 1,2,3,4,5 respectively for the attitudes. Total score for each statement was calculated and then the average score value for each statement was calculated. The average score value per statement was 3.3.

4. Results and Discussion

Out of 50 questionnaires distributed, forty-nine responses were received from the library staff members.

4.1 Respondents Profile

Responses were received from six academic staff members, an administrative staff member and forty-two non-academic staff members belonging to various professional levels. The respondents'

categories of the library staff of the University of Moratuwa are shown in the Figure 1.

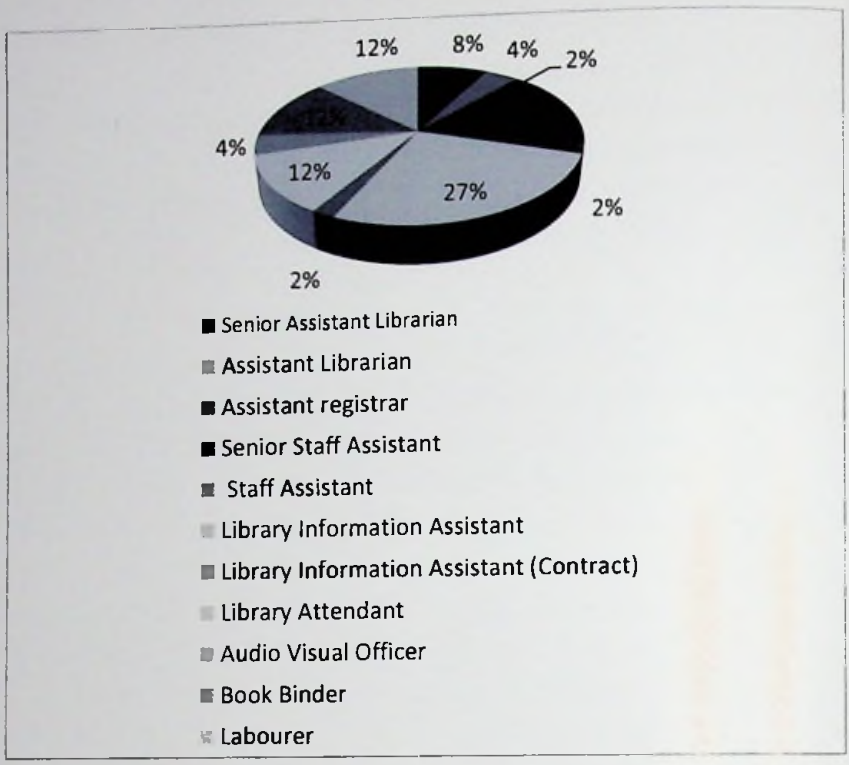

Figure 1: Respondents profile of the library staff of the University of Moratuwa

4.2 Participation for outreach programmes

Majority (84%) of the library staff members have participated in the various programmes conducted by the outreach services division of the library of University of Moratuwa. Majority (70%) of the library staff had participated as resource persons for the outreach programmes. Twenty three percent of staff had been involved in the outreach activities of photocopy, binding. Those who supported in organizing outreach activities remain 7%.

4.3 Perspectives about the Outreach Activities

Personal response of each library staff member depicts that majority (65%) of them prefer the programmes conducted by outreach services division of the library.

Library staff perceived that 49% agree and 45% having moderate views about the activities as a whole. Further 46% of the respondents think that the university staff agrees with activities.

4.4 Participation for the Programmes

Majority (42%) of the library staff had participated in the child development programme conducted for the Sumudu pre-school of the University of Moratuwa. Participation for the reading camp (29%) conducted for Bodhiraja Vidyalaya, Katubedda was the second highest. The participation for the Mathematical skills development programme which was newly initiated received 11%.

4.5 Preference of Programmes

Out of the activities conducted by the outreach services division, Mathematical skills development programme received the most attention and the staff preferred Child development programme conducted for Sumudu pre-school as well. The preferences of staff members are figured out in Figure 2.

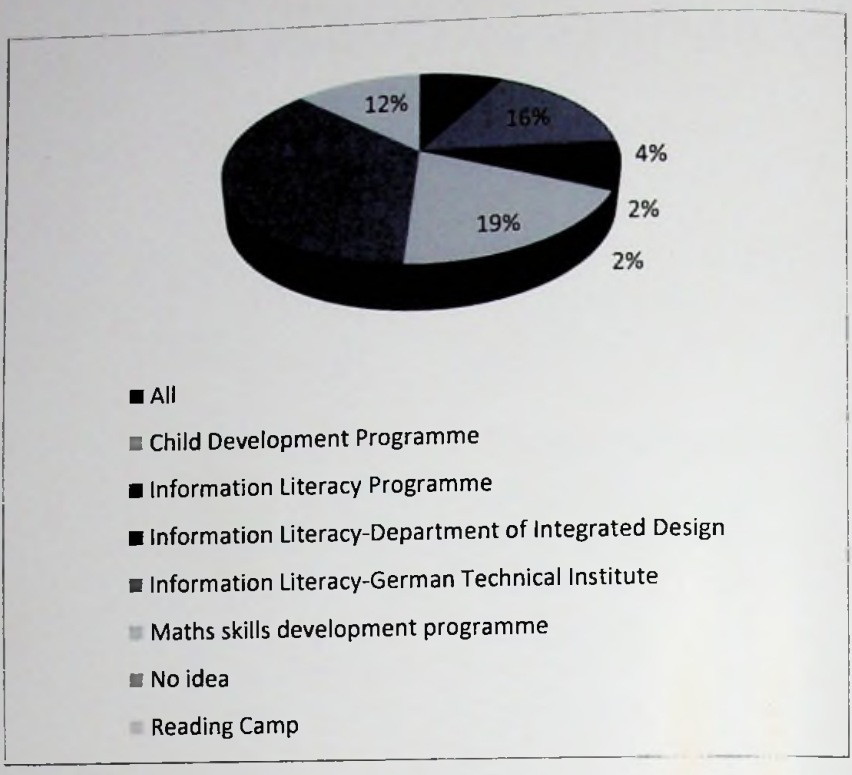

Figure 2: Preference of programmes by the library staff

4.6 Feedback about outreach programmes

Table 1 brings out the summary of the feedback about perspectives of programmes by library staff members who participated or viewed these programmes and their remarks implied that the majority showed their awareness and positive preference for the activities. As positive responses, most members stated that they agree on them and they showed their disagreement towards negative responses. The comments received by the library from the university were highly appreciative (47.7%) by the library staff. At the same time they were very content about providing their service voluntarily towards the national contribution (47.6%). Staff members showed their opponent views (60.9%) on the statement on regarding that the being an academic library it should not design community projects. They were not of the view that the university resources were wasted on these projects (60%). Total agreement was shown (34.8%) for the exemplary nature of the

library for other academic libraries to create new programmes for the community. They showed their total disagreement (24.3%) on the response, which indicated that people, could be neglecting their office work by participating in these sessions.

Table 1: Feedback of Staff members

No.	Response	Totally Agree	Agree	Moderate	Disagree	Totally Disagree	Total
1	A platform for explicit my hidden talents	23.5	35.2	32.3	5.88	2.94	34
2	An opportunity to build relationships with the community	16.2	45.9	35.1	2.7	16.2	37
3	Targeted objectives couldn't be achieved	4.8	7.3	29.2	39	19.5	41
4	Attention received by the library from University is commended	29.5	47.7	18.1	4.54	-	44
5	Extra Burden amidst library work	2.3	2.3	28.5	47.6	19	42
6	Made mind free from routine library work	15	35	35	12.5	2.5	40
7	Wastage of University resources	-	5	20	60	15	40
8	Time that could be spared for the development of library got wasted	-	5.4	27	48.6	18.9	37
9	An example for all libraries	34.8	46.5	16.2	2.32	-	43
10	These programmes are not suitable for an academic library	-	4.8	17	60.9	17	41
11	An opportunity for work neglecters	-	4.8	19.5	51.2	24.3	41
12	Lucky to render service for a national purpose	23.8	47.6	23.8	4.76	-	42

4.7 Continuation of Programmes

From the results of survey, it was evident that the majority (80%) of respondents expected these programmes to be continued. None of the staff member felt that these kinds of programmes should be put to an end.

The library staff members were of the view that the programmes conducted by the library should be notified to the public through facebook, University of Moratuwa newsletter etc.

4.8 Expectations for future

The library staff members stated their expectations for future of the outreach service programmes in a very positive manner. Their valuable comments are highly appreciated by the outreach services division to design the programme structure for the years ahead. By highlighting the importance of such activities to the University and University Grants Commission, one believes that this division will be able to create more fruitful programmes. At the same time, requesting services from the other divisions of the university, they think that library will get helpful hands. According to their views, by connecting the institutions around the University premises the community services can be widely spread to the society and collaborations with other academic libraries will benefit the person in need. The staff members mentioned that they eagerly participated in these programmes and they have gained strength to engage in more programmes in future. The library staff members believe that the authorities should identify their capability on designing such programmes. They feel that a training should be given to the library staff before they conduct the sessions and all library staff should be requested to participate in any programme as the intention of such programme is to provide knowledge, virtues and habits to the community. The respondents feel that the university staff and undergraduates should also be the beneficiaries where quarterly a programme should be designed for the students by the library. They wish that a programme will be designed with entertainment to facilitate school children in a rural area in future.

Some pointed out that it is difficult to participate in such community activities when there is a heavy workload in the library.

Some believe that certain institutions which receive guidance from OSD do not positively consider the services rendered by the outreach services division and their collaboration is lesser to initiate programmes in their vicinities. Respondents are in a mind that the community services are a complicated process than these programmes and it is better if they can provide drinking water facility to a village or a school.

5. Conclusion

As a family, irrespective of their worker categories and divisions University of Moratuwa library staff members participated in outreach programmes without hesitation. Amidst the daily routine work they got an opportunity to serve both inner and outer communities to show their hidden talents and skills. OSD designed a platform for the silent multi-talented persons where they were able to explicit their skills as resource persons or technical providers. At the same time, staff member was the programme designer and they were keenly preparing for the activity even two or three before. Not only the staff members of the library but other academic and non-academic members of university have also participated in special activities conducted by the OSD.

One can feel that the OSD explode the walls of traditional academic library and paved their way forward to rural community with the support of energetic staff to volunteer these multi tasks. The University of Moratuwa library has become an exemplary to the other academic libraries to initiate outreach activities to serve their vicinities. A mutual relationship has been growing up day by day between the staff members by sharing their knowledge and skills to others. To avoid burden of workload, to stage hidden talents, to build relationships with various communities the outreach services conducted by the University of Moratuwa has been highly praised by the staff members of the library and they are looking forward to participate in more

programmes in future to render their supportive services to a national career.

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A Study of Potentials to Determine Urban Areas Using Remote Sensing Indices

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Abstract

The conversion of Earth surface to urban uses is one of the prominent land use changes in both developing and developed countries. Quantitative assessments of these changes using remotely sensed data is a growing interest among researchers at present. This study aimed to assess the potential of vegetation indices to determine urban areas in Colombo municipal council and surrounding suburb regions. Colombo has revealed a fast growth towards outer skirt areas having a rapid urban expansion and socio-economic activities. Therefore, an assessment of urban areas and their pattern using remotely sensed data can be identified as effective methodology in assessing quantitative and qualitative information on distribution pattern of urban areas. The results will be useful for urban planners and policy makers. At the initial stage of the study, an attempt was made to address the spatial distribution pattern of urban areas calculating NDVI (Normalized Difference Vegetation Index) and SAVI (Soil-Adjusted Vegetation Index). The Land sat 8 with Thermal Infrared Sensor (TIRS), Operational Land Imager (OLI) image on the 2nd July 2016 downloaded from the USGS web site was selected for the study. ERDAS IMAGINE 2014 and ArcGIS 10.1 along with Excel software packages were used for the analysis. The results revealed that there is an interrelationship between SAVI and NDVI results. Thus, SAVI and NDVI assessments will be very much useful in environmental research using Land sat imageries.

Keywords: Satellite imageries, Remote Sensing indices, NDVI and SAVI

1. Introduction

Aerial photographs and satellite images are identified as appropriate remotely sensed data sources for land use and land cover change analysis (Shalaby & Tateishi, 2007; Akin, 2013). The assessment of urban land use and land cover pattern and changes are highly necessary for policy makers and regional planners. Data acquired from satellite imageries can converted into meaningful, qualitative and quantitative information such as land cover maps using Remote Sensing and Geographical Information Science technological analysis. These techniques create opportunity to produce accurate and up to date mapping. The Normalized Difference Vegetation Index (NDVI) (Rouse et al., 1973) is one of most commonly used vegetation indices for land cover classification (Özyavuz, 2010). Spatial and temporal deviation of greenness can be evaluated by NDVI (Mambo & Archer, 2007). The Soil Adjusted Vegetation Index (SAVI) (Huete, 1988) measures soil status, namely soil colour, moisture, texture and presence of organic matter, which has an impact on the spectral reflectance of vegetation (Huete et al., 1985).

In the early 1980s, the urban growth rate of major cities, including Colombo, was below 1%. Since the mid-1980s in Sri Lanka, Colombo has expanded rapidly having a fast progression of building density and socio-economic activities (Karunathilake, 1981; Gunetilleke & Cade, 2004; Turning Sri Lanka's Urban Vision into Policy and Action, 2012). The Colombo Municipal Region (CMR) was identified, which has the highest rate of urbanization in the country (Turning Sri Lanka's Urban Vision into Policy and Action, 2012). However, the Island's main seat of administration continued to remain in Colombo with the time and spread outwards every corner of the city. With the development of commercial, industrial and other supporting services, the city started existence a competition for limited land resource (Sri Lanka's New Capital, 1982). Thus, an assessment of urban areas using remotely sensed data would be a useful method to disclose quantitative and qualitative information on distribution pattern of urban areas, which will be important for urban planners and policy makers.

Therefore, the objective of the study is to assess the potential of NDVI (Normalized Difference Vegetation Index) and SAVI (Soil-Adjusted Vegetation Index) to determine urban areas in Colombo municipal council and surrounding suburb areas. At the beginning of this study series, an attempt was made to address the spatial distribution pattern and the condition of urban areas.

2. Study Area

The study area is Colombo municipal region. Sri Jayawardhanapura kotte municipal region, Thimbirigasyaya Divisional Secretariat Division and Dehiwala-Galkissa municipal region. The location of the study area showed in Figure 1. The area receives an average annual rainfall of 2500 mm as it is situated in the wet zone of the country. The mean average day temperature is 30 C° and mean average night temperature is 27 C°. The topography of the region is gently undulating.

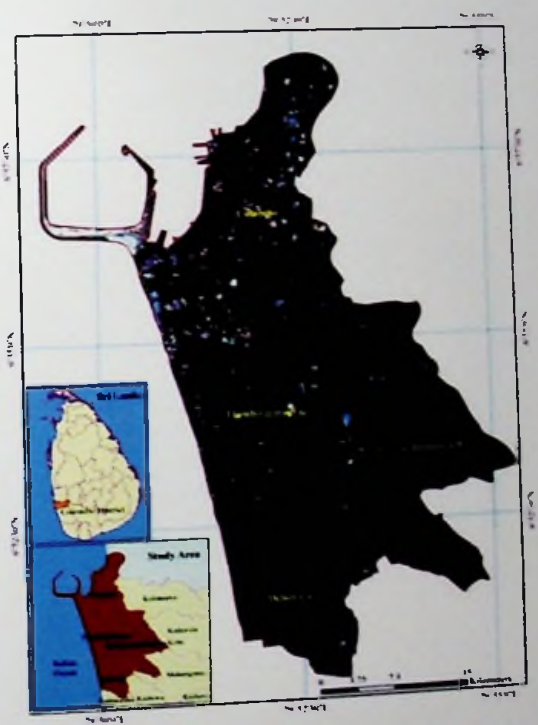

Figure 1: Location of the study area

Source: Land sat 8 Operational Land Imager (OLI) the 2nd July 2016

3. Methodology

In the present study, Landsat 8 with Thermal Infrared Sensor (TIRS) Operational Land Imager (OLI) image on the 2nd July 2016 was used. Band combination of the image is indicated in Table 1.Red (Band 4) and Near Infra Read (Band 5) bands were used for the present analysis (Figure 2). Landsat image was down loaded from the USGS web site, which was freely available.

Table 1: Band combination of the Land sat 8 Operational Land Imager (OLI)

Band name	Spectral resolution (μm)	Pixel size
Band 2 – Blue	0.45 – 0.51	30
Band 3 – Green	0.53 – 0.59	30
Band 4 – Red	0.64 – 0.67	30
Band 5 – Near Infrared (NIR)	0.85 – 0.88	30
Band 6 – SWIR 1	1.57 – 1.65	30
Band 7 – SWIR 2	2.11 – 2.29	30
Band 8 – Panchromatic	0.50 – 0.68	15

Source: Land sat 8 Operational Land Imager (OLI) the 2nd July 2016

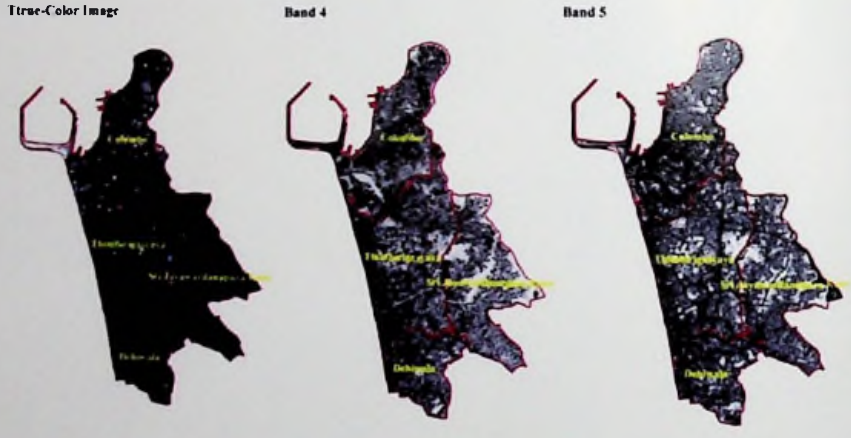

Figure 2: Landsat image with selected bands

Following steps were followed for the analysis of the preset study, First step was Calculating Reflectance value from the Satellite imagery data,

the second step was correcting the Reflectance value with sun angle the last step was calculating the indices. NDVI (Normalized Difference Vegetation Index) and SAVI (Soil-Adjusted Vegetation Index) were calculated using ERDAS IMAGINE 2014 and ArcGIS 10.1 software packages. Following formulas were used for the calculation of indices. Spectral reflectance values, were used for the detection of built up and bare soil areas.

- Formula for NDVI (Normalized Difference Vegetation Index)
- Formula of SAVI (Soil Adjusted Vegetation Index)

  SAVI is a hybrid between NDVI and PVI (Perpendicular Vegetation Index).

NDVI and SAVI values range from +1.0 to -1.0.

4. Results

According to the NDVI analysis the values ranges from -0.3509 to 0.778. The SAVI values range from -0.5264 to 1.1669. Highest values represented the dense vegetation areas. Lower values represented built-up areas and water bodies in the regions. Areas with NDVI values between 0.007-0.198 and SAVI values between 0.011– 0.297 presented for urban characteristics, which contain high density of building (Figure 3).

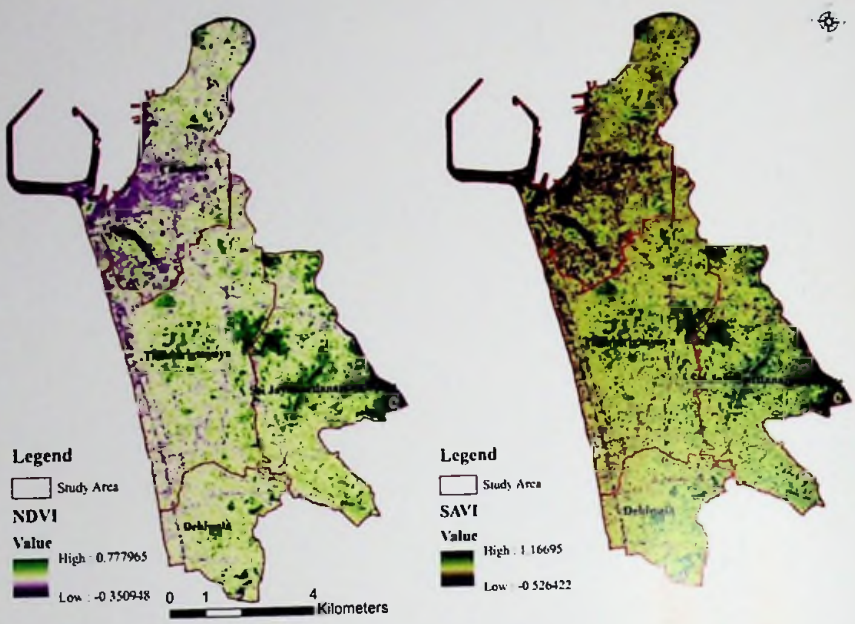

Figure 3: NDVI and SAVI classificati

5. Conclusion

NDVI and SAVI assessments will be very much useful in environmental research using moderate resolution imageries. Further, research using more indices can be recommended.

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A Heuristic Approach to Find Optimal Paths: An Application of Lingo

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Abstract

The conceptual background of the shortest path problem is almost depending on the variable of 'distance'. Researchers have been used the Geographical Information Science environment to solve this problem in plenty of research applications. In a broad sense, the problem when considering the variables such as 'cost' and 'time' including the qualitative differences of routes, then it becomes the optimal path problem. According to the heterogeneity desires of travelers (especially tourists), their ultimate goal is to finding an efficient as well as cost-effective route for (final) destination. In contrast, this consists of reducing congestions and other negative externalities. Road networks data were generated based on the Google-Earth imagery. In this context, the aim of this study is to apply an effective heuristic method to find an optimal path from Katunayake International Airport to Sinharaja tropical rainforest reserve, in LINGO environment. LINGO can be considered as one of the effective optimization modeling software, which is significant for convex and non-convex programming applications. Following optimization equation was applied to model and solve the problem.

$$Minimize \sum_{i} \sum_{j \in \Omega_i} d_{ij} X_{ij} \, (1)$$

Subjected to:

$$\sum_{j \in \Omega_{katu.}} X_{katu.j} = 1 \quad (2), \quad \sum_{i \in \Omega_{sinha.}} X_{isinha.} = 1 \quad (3), \quad \sum_{i \in \Omega_k} X_{ik} - \sum_{j \in \Omega_k} X_{kj} = 0 \quad \forall k \neq katu., sinha. \quad (4), X_{ij} = \{0\ 1\} \forall (i,j) \quad (5)$$

Where, i ensures that the index of nodes in considered network (j and k also ensures index nodes), Ω_i represents the set of nodes connected directly to node i by an arc (i,j), d_{ij} indicates distance /cost of arc (i,j), *katu.* and *sinha.* denotes the nodes that corresponding to origin and destination of path respectively, X_{ji} =1 indicates 'if path traverses arc (i,j)' and X_{ji} =0 ensures 'otherwise'. Equation(s) (1) represents, minimizes the total cost of arcs in considered network. (2) ensures that one arc incident to the origin *katu.* node must be selected. (3) denotes that one arc ending at the destination node *sinha.* is selected. (4) defines that if an arc is selected that leads to node k, then an arc will be selected that leads away from node k. (5) corresponds that integer restrictions are imposed.

According to the above methodological background, the distance and cost of each and every arc (road segment) were considered as weighting factors which is ranged from 0 to 1 ($\sum w = 1$). The cost of arc segments were calculated based on the current fuel prices of Sri Lanka. The considered network topology consisted of 63 nodes (cities) and 61 road segments with all possible alternative routes to the destination. Finally, the problem was structured in the LINGO environment. The analysis of the solution was revealed that the total cost of the optimal path is 22.3 $ (this amount is subjected to be varied according to the existing exchange rate) and the distance from origin to destination is 142.1 kilometers. The solution optimal path consists of 12 nodes and 11 arcs. The road segments included in the optimal path are

Xkatunayake-peliyagoda, Xpeliyagoda-kaduwela, Xkaduwela-kottawa, Xkottawa-gelanigama, Xgelanigama-horana, Xhorana-bellapitiya, Xbellapitiya-egaloya, Xegaloya-udugalakanda, Xudugalakanda-wathukaragama, Xwathukaragama-ayagama, Xayagama-sinharaja. The renovated road networks in regional areas influenced the solution. This sophisticated approach is potential to be applied for the complex networks topologies by considering a range of variables in 'mobile' environment.

Keywords: Optimal path, GI Science, Heuristic approach, LINGO