Document delivery and OER sharing services assessment in an ODL library in Malaysia

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Document Delivery and OER Sharing Services Assessment in an ODL Library in Malaysia

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ABSTRACT:

The rapid evolution of the Internet, technological innovation and increased flow of information (information overload) has modernized academic libraries and it is difficult to keep up with the virtual delivery of scholarly information. It is to be relevant within this digital economy ecosystem, improvement as change is vital. The purpose of this paper is to show case two case studies carried out in a private open distance learning (ODL) University's library in Malaysia. The first case study refers to how the integration of EBSCO Discovery Service (EDS) federated search engine widget into the Moodle virtual learning environment (VLE) has significantly provided wider access to library learning resources and improved the document delivery services provided by the library. The second case study relating to the developing two open access repositories on open educational resources (ROER) using a Japanese open source system, WEKO can support collaboration on resource sharing across the university and other academic libraries**.** On the first case study, the author co-worked with the Moodle system's stakeholder from the Educational Technology and Publishing Unit to integrate the EDS widget into the university's virtual learning environment platform as another library learning spaces for users to retrieve and request learning resources. As for the second case study referring to building ROERs, a pull to push design approach strategy was used whereby metadata of scholarly open access materials were harvested using an Open Archives Initiatives Protocol for Metadata Harvesting (OAI-PMH) method into another open knowledge platform (WEKO) for discovery by other users. Library leverages digital solutions to improve and facilitate customer requests, delivery and sharing of information. This approach coincides with the University's quality philosophy of delivering the right and sustainable scholarly information. Document delivery and resource sharing services of OERs are inter-related for libraries through the use of new technologies and information supply techniques. It has also increased inter-department cooperation and local-international libraries. This paper provides value addition to the library personnel in advancing knowledge dissemination and building institutional repositories services as the sharing and preservation of knowledge.

Keywords: Academic library, Document delivery, Open educational resources, Repositories, Resource sharing, Open distance learning.

1. INTRODUCTION :

Modern libraries have been slowly transformed into digital libraries with the rapid emergence of open access, web technology, Internet of Things (IoT) and e-publishing.

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We are now into the era of the 4IR (Fourth Industrial Revolution), which is all about the use of artificial intelligence (AI), robotics, genomics, and process, creative design and high-speed computing (Sheng, 2018). Library users are engaging with smart devices through ever increasing touch points including websites, social media, and apps. Disruptive technologies are rapidly redefining our library roles and our businesses. It is reported that by 2020, more than seven billion people and businesses and at least 30 billion devices will be connected to the Internet (Raj, 2017). No one can deny that the power of technology is in the hand of the learners to get instant knowledge. It has changed the modern learning environment. As we live in a world where "knowledge" and "know-how" become the main drivers for economic growth, and going to the next level would mean to become the developers of knowledge ("Acceleration business events transformation in Malaysia", 2017). Library patrons now communicate, engage and share using digital technology. Therefore, if patron behavior is evolving as a result of disruptive technology, libraries must find ways to bring quality resources to patrons, if not it will be left behind. In this digitally competitive information world, the patrons decide what they need.

Today's public and private open distance learning (ODL) universities are in a dilemma of the emerging technological trends, libraries are not spared either. According to Lumantha & Floor (2017, p.2), open distance learning (ODL) is a system which combines the methodology of distance education with concepts of open learning and flexible learning. It is learning-centered where learners determine what, how, when and where they want to learn and as they learn, they self-assess as well and determine their career direction. Online learning is supplemented and gradually blended with face to face traditional teaching. The lifelong learning market sees learners returning later to their careers to take up further courses in order to keep up in their ever-changing knowledge domain.

Another form of open and free learning education in the digital age is Massive Open Online Course (MOOC), besides libraries, open textbooks, and educational broadcasting. MOOC is a modern version of educational broadcasting (Bates, 2015) and is one of the impacts of innovations. In the MOOC model, questions were raised how and where library services fit in (Becker, 2013). The implications of both fully online, blended learning and MOOC to the library are massive services disruption in the world of libraries due to the delivery of high-quality content from world-renowned universities. Tianzhen & Jiangping (2014) analyzed the position of the university library in the MOOC environment and the challenges faced, however, proposed that university library had a unique advantage to carry out services in the MOOC environment through innovative services such as providing multi-channel embedded information literacy education.

According to Bates (2015), open educational resources (OER) are another recent development in open education where digital educational materials are freely available over the Internet. The implication of the development of OER in open learning are OERs are disrupting business models built on intellectual property rights (Kanwar, 2018).

Moving forward such as rapidly evolving Education 4.0, where it impacted on access and costs, this paper discusses two areas - (1) the library's productive effort in capitalizing on a new e-learning space, the LMS system of the University through collaboration work with the aims to expand the scope of information retrieval and requests of scholarly resources, thus increasing library's visibility and empower librarians to understand resources' strength and weaknesses; and (2) development of institutional repositories which can be seen as a species of digital libraries (Adolphus, 2014), a strategic move for library to support educators in searching, sharing, reusing of existing contents, and creating

additional resources through collaboration with other institutions in a structured way (Chew, Kamsiah & Ch'ng, 2016).

In a distance education environment via web-based learning, having access to online resources is of utmost importance. Both studies are needed due to the rapid development and changing the landscape of education in order to remain competitive and relevant. Developing a resource-sharing network is challenging, but librarians consider it as very important. The current resource sharing activities are rather at a minimal level, as all local libraries do not actively participate.

2. BACKGROUND:

2.1 About WOU Library

Wawasan Open University Sdn Bhd (WOU) is a private, not-for-profit university, established in the year 2006 under the Private Higher Educational Institutions Act 1996 (Act 555) of the Government of Malaysia (WOUa, 2012). WOU has expanded its nationwide delivery as full-time on-campus learning (Penang state only) and part-time programmes through open distance learning (ODL). At the end of 2017, WOU has about 5300 active students offering a total of 57 academic programmes, out of which 44 programmes are already fully accredited by the Malaysian Qualifications Agency (MQA). To date, more than 20,000 students have experienced the ODL opportunities provided by WOU. The total number of WOU graduates up until 2017 stands at 3,097, comprising 863 postgraduates and 2,234 undergraduates (WOUc, 2018). WOU students represent a cross-section of Malaysia ranging from 21 years to the oldest at about 71. They are those who have left school after their secondary schools with many years of work experience such as homemakers, clerks, technicians, teachers, office workers, manual workers and even Ph.D. holders (Dhanarajan, 2007).

At WOU, the official name of the Library is Tun Dr Lim Chong Eu Library (to be referred to as the "Library") provides vital support for its distance learners, complementing the University's academic activities. A wide range of information services, quality resources and comfortable facilities suitable for individual or group learning are provided at the main campus library in Penang and four other libraries at WOU Regional Centres in Kuala Lumpur, Ipoh, Perak state, Johor Bahru, Johor state and Kuching, Sarawak state. Given the dispersed geographic distribution of WOU students, many of the services provided utilize the latest electronic technology. Many of the e-resources can be accessed via desktops and mobile devices. Latest information, reference enquiries, and library alerts are disseminated using various social media tools. The Library's website (http://woulibrary.wou.edu.my) too has been given a makeover in the year 2015 to cater to the WOU-DISTED College (sister institution) library merger, as a result, it is now more user-friendly.

The Library continues to make changes for the better. Statistics showed an increase in the number of visitors to the library as well as in the circulation of materials and document delivery/inter-library loan usage. The new generation of library services platform aims to manage a broader representation of library collections including electronic and digital materials in addition to print since the existing integrated library system (ILS) only manages a portion of the library's materials.

2.2 Student surveys towards understanding the use of resources

In the year 2015, a library survey study by Vighnarajah et al found that 19 percent of sample size (WOU distance learners) were not able to locate information, while 12 percent of them were not aware that relevant information (printed or digital copies) were available in the library. They further recommended for the library to provide proper guidance to distance learners in searching for information. Measures were implanted to

enhance older adult learners' services since then such as the use of social media, making information relevant, visible, change of website structures, provide relevant websites for research through subject guides and produced customized interactive video tutorials. Agreeing to Schull (2013), despite the predominance of outdated terms and practices, libraries should be on the path to fulfill potential as information hubs to benefit its midlife patrons through its long-respected expertise in information services.

Recent in-house surveys data on the use of library resources have confirmed that the library users continued desire to meet their needs. Using the 2015-2017 electronic surveys conducted by the WOU's Educational Technology and Publishing Unit across 6 semesters period (two semesters per the calendar year), it supported the statement that resources are seen as underutilized which exhibited lack of understanding of locating and evaluating information, how to search

Table 1. Survey results on the usefulness of library services and resources

Statements	Overall Mean					
	Year 2015		Year 2016		Year 2017	
	S1 [N=2,018]	S2 [N=2,463]	S1 [N=2,988]	S2 [N=2,306]	S1 [N=1,516]	S2 [N=2,891]
Needs						
I find the library resources adequate for my course	3.30	3.30	3.35	3.43	3.29	3.35
My Digital Library resources are relevant to my course	3.33	3.33	3.32	3.39	3.28	3.38
Searching						
The library website provides the necessary links to information which are required in my studies	3.35	3.28	3.32	3.40	3.36	3.34
I could find relevant resources in *My Digital Library* which helped me in completing my Tutor Marked Assignments (TMAs)	3.24	3.24	3.26	3.32	3.23	3.27
The library website provides comprehensive links which assist me in this course	3.29	3.28	3.32	3.44	3.24	3.34
Customer service delivery						
The Library "help desk" responds promptly to all my queries.	3.24	3.25	3.29	3.40	3.23	3.33

Note: Strongly disagree = 1, Disagree = 2, Neither agree or disagree = 3, Agree = 4, Strongly agree = 5
(S1 refers to Semester January; S2 refers to Semester July)

and low engagement with the librarians. The data collection is from a questionnaire on teaching and learning experience and effectiveness, based on 5-point Likert scale assessment, which was then interpreted according to statistical procedures.

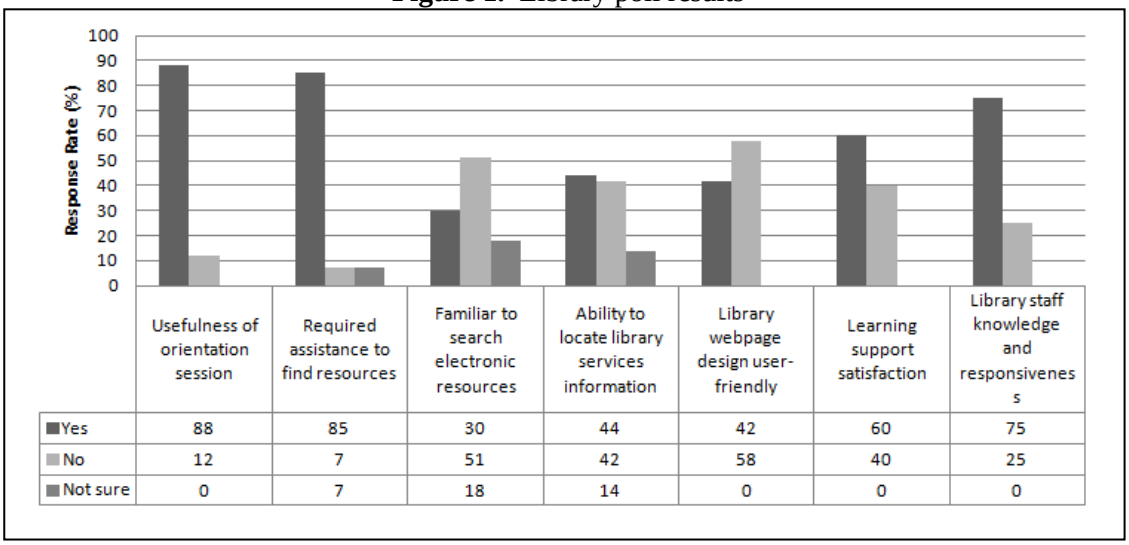
The Likert scale items comprised of Strongly disagree (1), Disagree (2), Neither agree or disagree (3), Agree (4) and Strongly agree (5).

The quantitative results presented in Table 1 are extracted and focused on statements related to library services only to give an overview of the usefulness and usage level of library services and its resources.

The survey results highlighted three main areas on library services – needs analysis, individual searching and customer service delivery. As shown in the above Table 1, the mean score of all constructs was less than 3.5 which is considered neutral. These results offer a sense that library resources presence and perceived usefulness are still not strong enough to the undergraduates and postgraduates. The above indicators have signaled that a new approach is needed and based on the real data from the year 2015 to 2016, with continuous assessment hereafter; this has led to piloting of integrating the EDS widget into the LMS in July 2016. The most significant difference of integrating this widget in the LMS is that information about library large collections that have been scattered previously in different sites were integrated into a single point of information access. The OPAC capabilities are being enhanced and aligned in the search engine widget. As electronic resources have become an important percentage of library collections, the delivery of information to its users must be enhanced. The use of faceted and limiting browsing tools in this widget allowed users to limit the search records, filter by language and date of publication, for examples. There was a slight improvement in all three areas.

On a regular practice, the Library has also posted few poll questions using a free site, Poll Code (htpps://pollcode.com) on every new semester to get general opinion from the users in the areas of website usability and awareness, learning support satisfaction, skills in finding relevant information, library orientation and library staff customer services and knowledge provided. The analysis results as depicted in Figure 1 below, though the response data received is not big, it does help the Library to identify areas for improvement.

Figure 1. Library poll results



	Usefulness of orientation session	Required assistance to find resources	Familiar to search electronic resources	Ability to locate library services information	Library webpage design user-friendly	Learning support satisfaction	Library staff knowledge and responsiveness
Yes	88	85	30	44	42	60	75
No	12	7	51	42	58	40	25
Not sure	0	7	18	14	0	0	0

(Data source: https://pollcode.com, 2018)

2.3 Document Delivery Services

An analysis in the Google Scholar literature on electronic document delivery and resource sharing (Hu & Jiang, 2014; Babbar, 2018; Fresnido & Yap, 2018) in

the ODL context in academic libraries identified these few themes:

- Evaluating electronic resources and services
- Examining the digital divide and electronic access in an institution with limited resources
- Utilizing tools to promote access

The reviews highlighted the importance of assessment, user studies, collaboration, skills instruction and technologies in fostering access in academic libraries.

The Library began offering document delivery service (or sometimes referred to as inter-library loan, ILL) more actively for users through the use of EBSCO Discovery Service federated search engine widget tool available on the library website and virtual learning environment (VLE) in August 2016. By May 2018, there were about 626 document delivery requests received through the EBSCO platform where a default form was customized and sent to Reference Librarian's email. For the Library, journal articles are the most frequently requested items. From the statistics, requests have a great increase in the year 2017 because the Library continues to promote the usage of social media tools.

According to Fang and Hangsheng (2014), the speed of delivery is very important for the document delivery service in order to prevent users from losing their patience and meeting their needs. In the ODL environment, though some of the requested papers are available on the Internet, our adult distance learners probably do not have the time or good searching skills to locate them. The turnaround time for the delivery service is currently 24 hours to 36 hours from the start of the processing request. For turn-away requests, relevant alternative reading materials were supplied.

Patrons expect more and more from the collection of materials available, including the availability of electronic books.

Meeting the changing needs of users, acquiring quality printed materials and electronic books that support the learning and scholarship functions of the University and overcoming fiscal restraints were some of the challenges faced by the Library (WOU, 2012).

2.4 Developing OER repositories for resource sharing

The Malaysian higher education system has been evolving over the years to stay abreast with global advancement in technology. The Malaysia Higher Education Blueprint (MEB) 2015-2025 focuses on five aspirations, i.e. access, quality, equity, unity, and efficiency. The MEB outlines 10 transformational shifts to spur excellence in higher education in the country. Shift#9 focuses on the development of globalized online learning, encompassing the use of blended learning, use of OER and MOOC ("Malaysia Education Blueprint", 2015). An online search exercise conducted by WOU revealed that less than twenty higher education institutions in Malaysia are actively involved in OER related activities. OER resource sharing between libraries in Asia has typically not been robust.

Karunanayaka & Naidu (2014) cited that the concept of OER movement emerged in the late twentieth-century with the development of open and distance learning amidst a culture of open knowledge, open source, free sharing, and peer collaboration. OER, as defined by UNESCO (n.d., para. 3), provides teachers and learners with high-quality teaching and learning materials that allow for free use, adaptation and distribution.

WOU has been one of the pioneer's adopters of open educational resources in course development and delivery. In 2012 the university instituted two essential policies namely, WOU Open License Policy and WOU OER Policy to provide an enabling environment for building OER awareness, training, use and reuse in course development, and research (Ho, Bhandigadi & Chew, 2016).

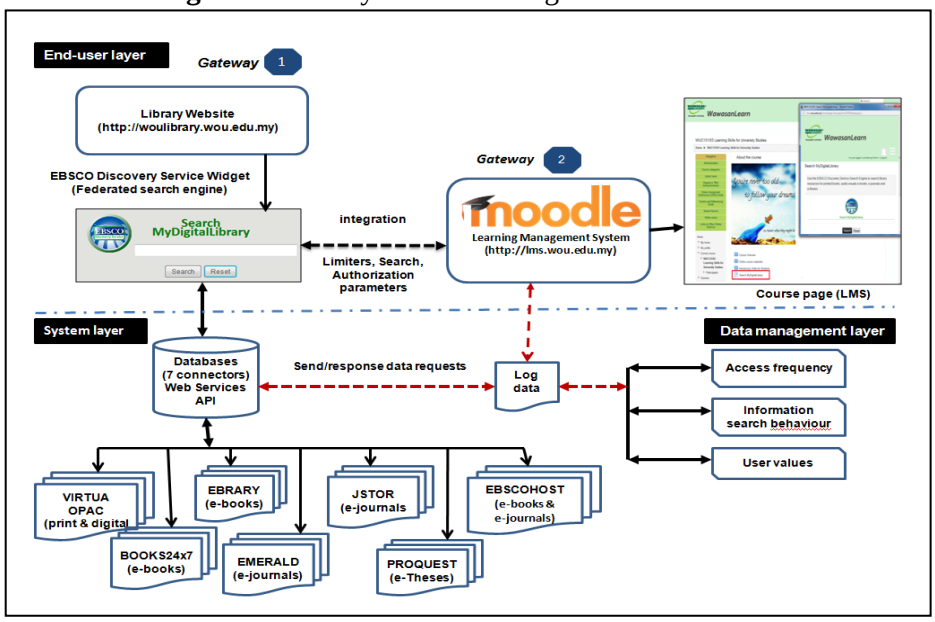
The Library has been promoting the creation and utilization of its OER and by network partner institution to promote resource sharing. Two such repositories on OER were launched in the year 2014 using a Japanese open source software, called WEKO and we continued to look for other local or Asian partner institutions to share their OER resources. A total of 541 records are available from the WEKO's repository.

3. METHODOLOGY:

3.1 Document delivery services

Since the University's learning management system (LMS-Moodle) continues to be a powerful tool to help facilitate learning, generate wider participation and provide opportunities for adult learners to collaborate and interact actively, the Library seized this opportunity to make its presence visible in this e-learning environment. Kampa (2017) has concurred that library services and resources are noticeably missing. This advocated a collaborative space between the library and the LMS system. A simple methodological approach was designed as shown in Figure 2 below. There are three sections involved that deal with end-users searching for information, delivery of electronic resources through the LMS space and library's EZproxy server service and data management for analytics purpose.

Figure 2. Library resources integrated into LMS



Integrating document delivery comes in the form of EBSCOHost tool would utilize both the find and request system. On the metadata aspect, EDS supports loading of library catalog in MARC21 (machine-readable records format) and integrate with few other core databases from other publishers. It also provides customized document delivery/inter-library loan (ILL) form which has been made available as a hyperlink on the search results list with detailed citation or journal's table of the content page. Patrons are then presented with an already filled citation information and ready to submit the Library to source for the material.

The instrument used to access appropriate data for mining is via each databases' statistics and reporting tools, LMS Moodle system and also an internal compilation of document delivery requests received (Yamaji, 2014).

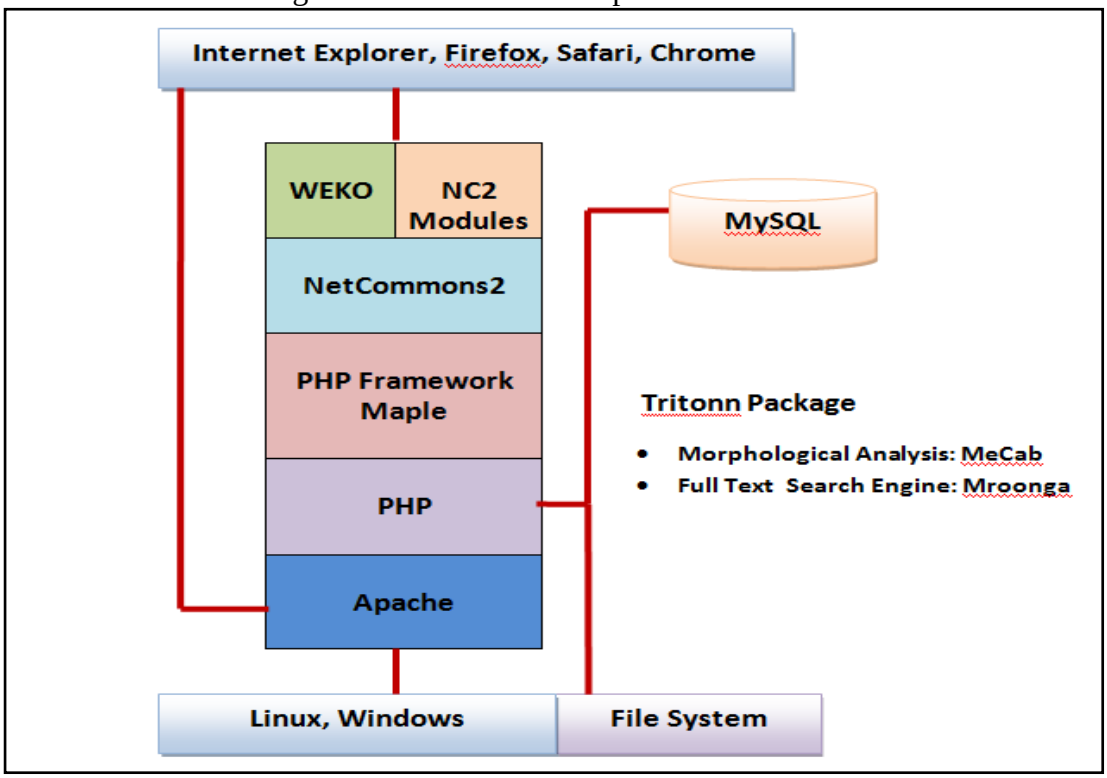
In establishing the electronic document delivery and resource sharing services, copyright legislation consideration is the utmost important area and will continue to be so. Anyone requesting for items via our online request form service is required to read a standard copyright declaration notice and submission of request is taken as the patron has read and agreed on the declaration. Staff members will spend some time to accessing copyright or permission issues. Such measures are similarly cited in Aitken, et al (2003) & Moreno (2012).

3.2 Building repositories on open educational resources (OER)

WOU stands for OER is to help provide resource sharing and giving greater access to information resources freely. WOU is tapping into academician's expertise to produce OER-based course materials to save costs.

The repositories on OER were built based on a pull to push design approach strategy whereby metadata of scholarly open access materials are harvested using an Open Archives Initiatives Protocol for Metadata Harvesting (OAI-PMH) method into another open knowledge platform (WEKO) for discovery by other users.

Figure 3. Architecture component of WEKO



Source: Yamaji, 2014

As per the above Figure 3, WEKO, an open source application is developed by the National Institute of Informatics, Tokyo, Japan. It uses AJAX-oriented Content Management System called NetCommon2 (an information sharing system). It is OS independent and WOU uses Linux CentOS.

4. FINDINGS:

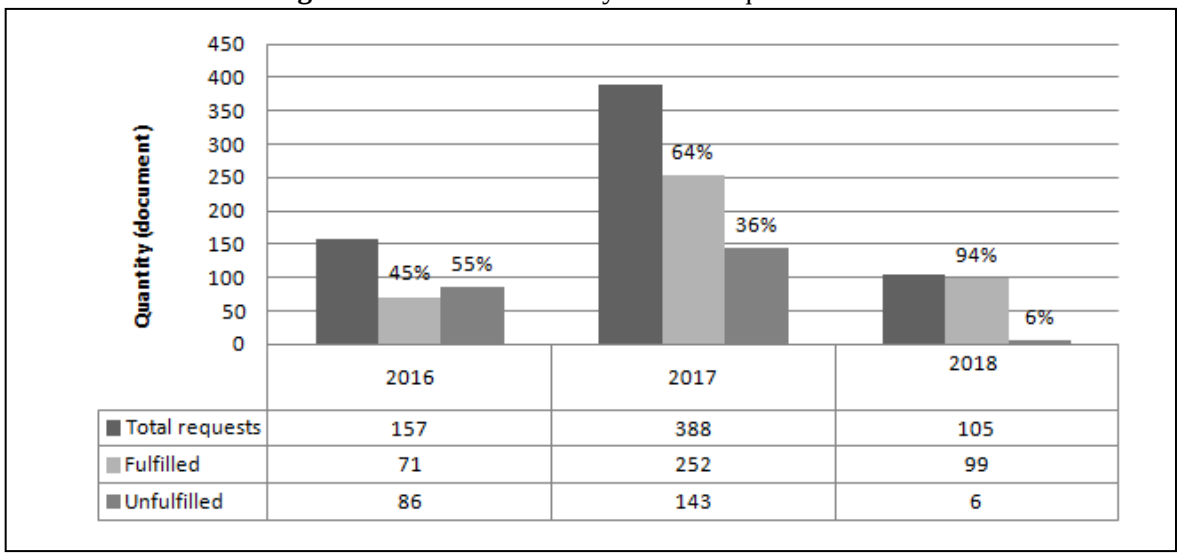
4.1 Statistical data analysis on document delivery services

One of the library's major strengths is the document delivery service. Librarians sourced and distributed items electronically on a timely basis according to the service standards and few items on

printed copies by mail. With patrons dispersed widely across Malaysia, the library has always concentrated upon providing the right information at the fastest time possible. Documents are supplied at no charge.

Figure 4 depicts the volume of document delivery service requests received by the Library and fill rate over almost 2.5 years (August 2016 to December 2018).

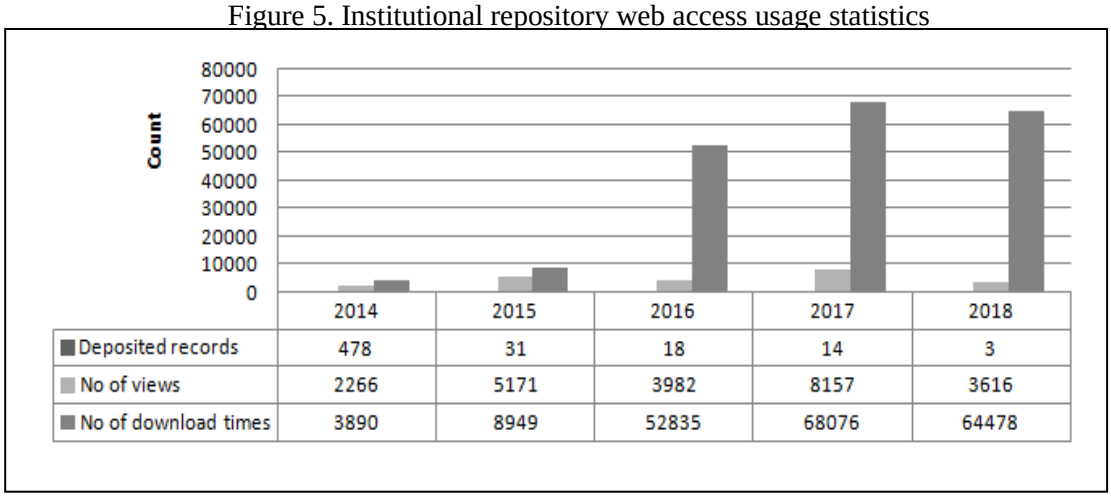
Figure 4. Document delivery service requests statistics



In summary, requests were received in the fields of business, management, administration, education, humanities, social sciences, computer science and technology which postgraduate students accounted for 34%, undergraduates 59% and faculty 7%.

The library has supplied 422 (65%) full-text papers for users. Based on the unfulfilled requests but substituted with relevant articles, collection building is very much needed in the field of construction management, manufacturing, law and childhood education (WOU, 2018).

Figure 5. Institutional repository web access usage statistics



3.1 Statistical data analysis on OER repositories

On the resource sharing context, it demonstrates collaboration and the Library becomes a central component of library consortia.

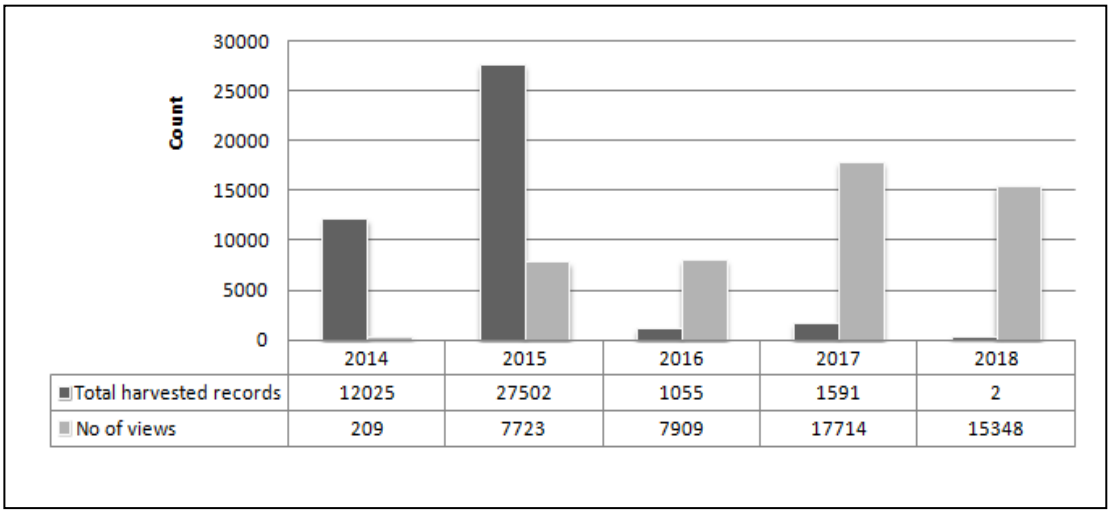
However, this requires a challenging task to expand the consortia and establish new cooperation among members to share their resources.

Usage statistics indicate 23,192 views were recorded during the year 2014 to 2018 with 198,228 download times out of which more than 12% of downloads were done by external agencies/individuals based on Internet Protocol (IP) address assessment. Another developed federated repository, called the OER@AsiaHub Repository (http://oerasia-repository.wou.edu.my) currently holds 42,175 records. Records indicate that it has been accessed many times (48,903 clicks) by many, including external individuals and agencies. The state of the art of both repositories that house research, teaching and learning materials developed can be described as functional and growing. These repositories are freely accessible to anyone on the Internet and become an important resource for learners and instructors.

Among the records in the institutional repository, six WOU OER course materials have been made available for public access freely, namely BBM102/05 Introduction to Microeconomics, BBM210/05 Entrepreneurship Development, BBM208/05 Business Ethics, EED502/05 ICT in Education, TCC121/05 Programming Fundamentals with Java, and TCC242/05 Web Database Application. Menon & Bhandigadi (2018) exploratory study demonstrates that reuse and integration of OER into course materials is not an easy process but the textual material such as case studies were found helpful and of high quality by WOU course learners (educators and teacher trainees). From the repository's usage reporting tool, the OER contents have been viewed and downloaded globally from countries such as Denmark, France, Germany, India, Mexico, Russia Federation, Romania, UK, Venezuela, and the USA. It has shown a significant contribution that WOU has made on increasing the OER movement and initiative and visibility.

For the OER@AsiaHub federated repository, the number of metadata harvested has increased to about 251% (30,150 learning objects) since the year 2014. This repository currently holds 42,175 records with links to The Open University of Japan and University Putra Malaysia's repositories. Continuous efforts have been made to invite more institutions to share their OER resources into this repository. Records indicate that it has been accessed many times (48,903 clicks).

Figure 6. OER@AsiaHub Repository web usage statistics



	2014	2015	2016	2017	2018
Total harvested records	12025	27502	1055	1591	2
No of views	209	7723	7909	17714	15348

(Data source: WOU, 2018)

The yearly usage analysis (the period from the year 2014 to 2018) by a number of views, as shown below in Figure 6. The number of downloads is not available from the system.

5. DISCUSSION AND RECOMMENDATIONS:

Based on these issues, a discussion of both cases studies are presented below.

5.1 Document delivery services

Academic libraries, especially those operating in the open and distance e-learning environment, have a critical role to play as a data provider for both on-campus and off-campus students. On the trend of academician and students engaging with the library, the integration of EBSCO EDS widget embedded in LMS since the year 2016 has increased library patrons, in particular, remote students' requests to ask for document delivery of materials. This indicates library visibility and usage of scholarly resources, thus improving student's learning and research process in their assignments or final work project.

The Library is unable to afford top-rank, higher peer-reviewed international journal subscriptions from Web of Science and Scopus. For many students, document delivery service provides a solution to pay-wall journals, however, it is not free or available at requested institutions and cannot solve the problem of access for users. Acquisition priorities for printed collection are sizeable to support existing and new programmes. Fang and Hangsheng (2014) stressed the need to better networking with other libraries to expand the supply chain management of information resources. It is essential to redesign document delivery outside the local collection.

According to Bowley (2018), interlibrary loan is a central part in fulfilling the information sharing mission of libraries, but it can be expensive, require significant staff time, fees for processing and copyright. Because the library does not belong to the local consortium libraries being a private entity, it cannot deliver papers outside its scope of databases subscriptions.

In order to fulfill the requests, it opted for available open source platform, Google Scholar, Research Gate, OER sites, Internet resources and inter-library from local public libraries. Students are mostly satisfied with this service. In order to enhance access and ensure adult learners are getting access to quality resources, the Library will continue to leverage digital technologies based approach and align closely with library 4.0 revolution.

The Library continues to subscribe to almost all publisher databases previously subscribed. At times few will be dropped and substituted if usage is low. To strengthen its electronic collection, about 753 perpetual e-books were purchased and added to the collection. The Library Subject Guides collection continues to expand. A number of new guides have been developed covering topics such as Entrepreneurship, Humanities, Manufacturing, Physics and Psychology. A total number of subject guides developed is now at 22, which are available on the library's website at http://woulibrary.wou.edu.my/help/subjguides.asp. It is important to think in terms of embedding videos and multimedia components approach in the creation and packaging of available knowledge to users – creating a multimedia-rich learning environment as a new learning environment. In designing web-based instruction for library patrons, the library converts conventional instructional content into a web-based format. This includes embedding hyperlinks and features to facilitate interaction with the librarian.

5.2. OER Resource Sharing

What can we expect in opening a platform for resource sharing such as OER? This is a direction that WOU library can consider given that we have

the means and knowledge to develop repositories and for WOU, to develop more print and multimedia course materials.

Opening access through OER raised some questions for discussion as to why course materials are packaged as OER and be made available for as resource sharing. It is hoped that other institutions of practice in OER would benefit from its use and quality content in the relevant fields such as business, computing, and education. The content is relevant to the local context and at par with global standards.

As there are different Creative Commons (CC) licenses, it is necessary to decide which one should be applied to every OER materials. In the case of WOU OER-based course materials, there is a need to check which CC license is used that is integrated with the course materials. Since the year 2012, the University is adopting the Attribution Non-Commercial Share Alike (CC-BY-NC-SA) open license policy freely accessible at https://weko.wou.edu.my/Open-Licence-Policy/.

In short, the rise of online education system won't make a physical library to be obsolete, there will always be a need for university campuses and library for a variety of reasons. Students meeting up to work and discuss projects and searching for scholarly resources. There is a need for a continuous strong library-to-schools integration and collaboration in the context of new courses development or revision of existing courses or programmes offered to students. This is to ensure library resources are relevant and well stocked-up. Naturally, it should be a two-way process to minimize scholarly resources gaps or imbalance in school collaboration.

Future research should examine technology and data analytics which are good online technology to improve user experience, satisfaction and drive down costs when expectations are fulfilled. Library sustainability and liveability demand for good networking connections and opportunities.

The library should not just provide information but developing collaboration projects related to student courses as part of active student engagement in the library.

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