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## **FOREWORD**

The International Conference on Libraries (ICOL2017) held in Penang, Malaysia on 2-3 August 2017, was the sixth international ICOL conference, a once-every-two-years opportunity that provides platform for participants and presenters to access the best information, discover new ideas and network with people in the profession.

More than 20 abstracts submitted by interested authors, however, after being reviewed, only 18 papers have been accepted. Two accepted papers were withdrawn by their authors by the time of publishing. There were two speakers sponsored by the vendors who gave inputs on topics relevant to the conference but not included in this proceeding. A total of 14 full papers are included in this publication which covers the section of Managing Libraries; Creativity and Innovation; Right Tool at the Right Time and Improve while Reduce.

The conference hopes that it has fulfilled its objectives in providing a platform for information sharing, expertise, experience and professionalism through paper presentations and research finding; fostering the strategic networks, promote cooperation and exchange of experiences in the field of librarianship; providing an overview of the lean management concept and its applications in the library and discussing on issues, challenges as well as strategies to strengthen the implementation of lean management through intellectual discourse.

The success of the conference is the result of the high commitment and dedication of the committee members, university libraries and organizations, vendors and sponsors, not forgetting the authors and presenters who have given their best through participation and supports to ensure the realization of ICOL2017. Thank you very much.

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## **Session A: Managing libraries**

Transformation Of Libraries; Change Management; Leadership & Organizational Culture; Acquiring Knowledge And Skills; Learning Organization; New/Changing Roles For Librarians.



Paper 1:

**CHALLENGES IN THE INITIAL STAGE OF INSTITUTIONAL REPOSITORY IMPLEMENTATION: A STUDY OF MALAYSIAN PUBLIC UNIVERSITIES.**

*Knowledge management has been received the widespread attention from higher education institutions in their practice of managing institutional repository. With the significant growth in the need for managing and sharing information across different departments, the need for managing digital repository is felt more than ever. An institutional repository may include a wide range of digital contents such as journal articles, conference papers, book chapters, monographs, research reports, theses, patent, presentations, audio material and multimedia materials. The purpose of this research is to investigate the implementation of institutional repositories practice in Malaysian public universities. This paper presents the initial findings from electronic survey conducted at Malaysian public universities. Recently, many Malaysian public universities are now have built their institutional repositories, while some considering or working towards implementing them. There is no doubt academic library has its new challenge in managing its institutional repository not only from technological aspect but also management support and librarian skills. The conventional role of academic library is changing to meet new requirement of skills in information science and information technology in supporting knowledge management approach. It is prime concern for any academic library to understand the current challenge of managing institutional repository and to identify the prime supporting activities for its librarian to better serve the needs of academic community.*

**KEYWORDS:** Knowledge Management, Institutional Repository, Higher Education, Library

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Paper 2:

## **MANAGING E-RESOURCES DURING CHALLENGING TIMES**

*E-Resources have become fundamental scholarly resources for libraries due to drastic development in publishing ecosystems. Growing numbers of scholarly journals and books are made available via online platforms either by publishers or online aggregators. As expected, many academic libraries in Malaysia are migrating from developing and maintaining conventional collections to managing electronic resources, to provide better access to scholarly contents among library users. Unquestionably, excellent features of online platforms have successfully contributed towards resource optimization in higher education institutions. Moreover, these platforms are fully equipped with automatic recordings of logins, searches and full-text downloads to allow qualitative assessment of e-resources. Other plugins and applications were installed by libraries to manage remote access to e-resources that successfully lead to realization of digital library component in academic institutions. While access to scholarly contents has been improved tremendously, libraries are facing with many uncertainties in managing electronic resources. These include ownership issues, access control, access rights, licensing policies, copyright restrictions and most importantly, pricing models and schemes. Major publishers are imposing on Big deal packages that provide access to greater number of journal titles directly from publishers' platforms. Apparently, Big deal packages have become increasingly serious problems due to its inflexibility to cater libraries in numerous scales and focuses. As library budgets have fallen relatively, libraries are facing huge challenges to maintain subscriptions to increasing subscription cost of Big deal packages. This paper aims to explore concepts of Big deal packages, issues and challenges and possible solutions for libraries during challenging financial times.*

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## **INTRODUCTION**

Electronic resources and its huge digital contents have significantly changed the process of information discovery among library users. Value added features including powerful search engines, dynamic and user friendly platforms, personalisation facets have successfully served as advanced tools to support teaching-learning and research activities. Its ability to complement 24/7 access to scholarly contents is among the most powerful features of e-resources in the academic settings. Libraries continue to invest on developing huge collections of e-resources while maintaining access to scholarly contents.

Undoubtedly, library spending on subscription to e-resources is growing at the rate of 8-10% annually with additional subscription cost is directed to platform maintenance. Undoubtedly, optimizing e-resources has helped the library community to enhance quality access to scholarly contents. Over the years, promoting use of e-resources through user education program, information literacy approach and strategic library campaigns are successfully influencing users' preferences towards digital contents. Libraries across the globe observed greater increase of e-resource utilization in terms of number of searches, number of sessions and full-text downloads while borrowing transactions of printed collections are dramatically reduced.

Demand towards e-resources among academic and students community is getting stronger and libraries are obliged to secure access for long term utilization. This scenario led to major challenges to libraries as subscription to licensed contents are costly and required long term commitment of budget expenditures. In Universiti Malaysia Perlis or UniMAP, 82 percent of its total collection development budget is spent on electronic resources. Within ten years (2007-2016), print book budgets are declining and huge amount of financial resources are used to support the increased costs of e-resources. During challenging economic situations, academic libraries are facing significant budget cuts and this is seriously affecting ability to secure access to licensed electronic contents.

## **ELECTRONIC RESOURCES IN THE MALAYSIAN PUBLIC UNIVERSITIES: A BRIEF BACKGROUND**

Electronic journals (e-journals) were introduced to the Malaysian Public Universities in various mediums and subscription package. Access to e-journals via CD-ROM network was made available in most established public universities and continues to stabilize in the Internet environment. In the beginning, e-journals were optimized by academic libraries to complement access to printed journals. Libraries were willing to pay higher price for combo subscription package offering access to both printed and electronic journals. Indeed, e-journals remarkably provide better experience to both libraries and users in terms of speed of access and delivery.

"Ten years ago, we noted other weaknesses in the print system of publication. Print journals are often times slow to appear (the time from submission to publication can be many months), and they come to libraries through a distribution system replete with pitfalls, not the least of which are contributed by the world's postal systems." (Ann Okerson, 2000).

Concerns over access versus ownership were observed within the library community since e-journals were made available in the market. As a matter of fact, academic libraries expect to offer access to electronic resources while simultaneously maintaining traditional print collections. Ten years ago, journal collections in public universities comprised of mixing print, fully electronic and dual-format subscriptions. Many of us believe that this approach will help the library to remain its role as warehouse of information besides enhancing access to scholarly contents. Back then, the future of electronic only version and its sustainability in academic library setting were very much speculative. Apart from that, adequate budget allocation allowed Malaysian academic libraries to subscribe to both formats and continue experimenting with e-journals.

In 2004, selected major international publishers introduced e-only subscription model to Malaysian Public University Libraries. Among major attractions of e-only model as claimed by publishers include access to huge coverage of scholarly articles from both current and back issues since year 1996. Moreover, publishers' platforms outstandingly offer dynamic and user friendly features to enrich users' information discovery experiences. A report by the American College and Research Libraries (ACRL) entitle 'The E-Only Tipping Point for Journals: What's ahead in the print-to-electronic transition zone' summarized four (4) driving change factors among librarians; user expectations and demands, reallocation of resources to support demand, acquisitions budgets, operational savings and space constraints (Richard K. Johnson and Judy Luther, 2007).

Our initial projections over the last decade that subscription to e-journals will be inexpensive compared to print journals is not true. Today, Malaysian Public University Libraries are dealing with only small number of commercial, society and scholarly publishers that are dominating in the global publishing industry. The Malaysian Public University Libraries are spending huge amount of financial resources to subscribe to Big deal package offered by the selected few dominating publishers. Since 2009, Consortia pricing in Malaysia indicated significant impact for academic libraries in dealing with large packages or bundles. In fact, early adoption of electronic books or e-books in selected new public universities was initiated by the Malaysian Online and E-Resources Consortia. This consortia arrangement is remarkably successful in acquiring sufficient funding for subscription to common highly used databases for public universities. Nevertheless, Public University Libraries in Malaysia are still striving towards achieving true spirits of consortia purchasing while making scholarly contents more accessible to the nation.

#### **ANALYSIS AND TRENDS**

This paper analyses subscription data of 20 Malaysian Public University libraries for two years covering 2016 to 2017. Data collection conducted by the Malaysian Online e-Resources Consortium (MOLEC) shows that more than thirteen (13) public university libraries reported budgetary decreases in year 2017 while seven (7) others were granted with additional budget allocation. Unexpectedly, data analysis shows that selected university libraries experienced almost 50% to 70% budget cuts in the fiscal year. Nevertheless, small number of university libraries was successfully justified for 20 to 25 percent budget increases within this context.

It is interesting to note that the Malaysian public university libraries subscribed to more than 554 databases covering e-journals, e-books, e-reference, discovery tools, library tools and aggregator resources in year 2016. As expected, budget cuts in 2017 have significantly reduced the libraries purchasing power and only 493 databases were collectively offered to the library users in the public universities. Within the specified budget in 2017, only four (4) institutions were able to maintain subscription to the same number of databases or e-resources. Other institutions are obviously facing challenges to survive in terms of securing access to digital scholarly contents. It turns out that many factors are forcing e-resources pricing including foreign exchange rates, number of titles coverage, merging of publishers, and acquisition of high-impact journal titles, changes of subscription models, enhancement of publisher's platform, provisions of archival rights and many others. Therefore, it is almost impossible for one library to secure renewals for all the subscribed titles even with the same amount of budget allocated in the previous year.

Data analysis also highlights an interesting fact about growing number of subscription duplication across public university libraries. At least 18 databases were subscribed by five (5) different institutions in Malaysia. *ScienceDirect* appears to record the highest number of subscribers (15 institutions) and followed by both *IEEE Explore* and *ACM Digital Library* (14 institutions). This figure suggests that 50% of the public university libraries in Malaysia have strong interests towards scholarly contents available on *ScienceDirect* platform. Electronic journals platforms are dominating the top ten (10) most duplicate subscriptions besides library tools, economic and financial research data.

Strong needs towards e-books subscriptions and acquisitions for all institutions are not manifested in the subscription listing. Libraries are seen as providers to specialised e-books contents offered by subject-focused publishers rather than investing into huge e-book packages. While analysing budget allocation for 20 institutions during challenging economic situation, current listings of subscribed databases reflect the most required resources for each institutions. It briefly describes how libraries are dealing and coping with budget realities.

#### **KEY CHALLENGES**

Most academic libraries look to direct funding from their institution to support library operations including collection development programs. Managing electronic resources is very much depending on the overall budget allocated for academic libraries to support both development of information resources and information infrastructures.

#### **New Technologies, New Requirements**

Shifting from print medium to electronic resources indicates that academic libraries are ready to transform their physical infrastructures, network capabilities and accessibilities as well as provisions towards digital and electronic services. For instance, Online Public Access Catalogues (OPAC) is no longer adequate to help library users discover relevant resources and retrieve significant information for their teaching-learning and research works. Additional investment on efficient discovery service is already mandatory for academic libraries to ensure efficient access to licensed electronic resources. In actual situation, academic libraries are maintaining licensing to both integrated library systems and Resource Discovery Service (RDS) as well as other relevant solutions such as remote access systems and software and other related monitoring tools. This scenario also suggests that providing access to

Information Discovery Services or Resource Discovery Services is already part and parcel of the academic library roles and responsibilities towards users.

The one-stop shop experience offered by RDS was regarded as a major step forward in terms of enhanced user experience. Access to almost all library resources through a single interface linked to full text was perceived as meeting the demands of students, particularly those of undergraduates. For this reason, the participating libraries were highly satisfied with their RDS and with the way users could search across resources and retrieve quality academic content. (UKSG, November 2013).

### **Big Deal Package**

Big Deal Subscription was first introduced by Academic Press (AP) in 1996, providing access to large bundles of electronic journals published by AP. Big Deal package was once considered as a definite solution to serial crisis faced by librarians and academic libraries. Scholarly printed journals that used to be expensive were made available at an affordable price. For that reason, Big Deal Subscription Package was welcomed by academic libraries across the globe as Just-in-Time (JIT) initiative. Pricing became a push factor for academic libraries to shift from print journals to electronic only journals. Basic question was, why pay more for limited number of journal titles while libraries can have full access to huge collections of high impact e-journals?

However, the Big Deal Subscription is no longer perceived as success story for academic libraries in Malaysia. The Malaysian Public University Libraries discovered that the Big Deal Package can eventually consumed most of their serials budget. It is now a major challenge for academic libraries to secure access to selected Big Deal Package such as *ScienceDirect*, *SpringerLINK*, *IEEE Explore* and many others. We begin to notice that for the next ten years, most of the Malaysian Academic Libraries can only sustain access to one Big Deal Package Subscription if budget allocation remains constant. According to Anderson (2011), three (3) issues and concerns related to the Big Deal are budgetary concerns, policy concerns and systemic concerns.

“From a *budgetary* perspective, purchasing journals in this manner essentially reduces an institution’s budget to a handful of large fixed-block expenditures, seriously undermining any budget flexibility.” (Richard Poynder, 2011)

### **Effective Consortia Purchase**

The emergence of e-resources in the Malaysian academic libraries led to formation of Commercial Database Committee (CDC) in 2000. CDC served as an excellent platform for academic Libraries to evaluate, select, negotiate and manage the online electronic journals databases subscription. However, CDC’s most successful achievement is towards providing huge and high impact exposures towards electronic resource management among library managers and practitioners in Malaysia. After 17 years of its establishment, CDC’s roles and responsibilities remain relevant to the Malaysian Public University Libraries as e-resources are expanding rapidly, but with many uncertainties.

For that matter, CDC was then rebranded as Malaysian Online e-Resources Consortium (MOLEC) in 2010 to better serve as a truly consortium body to the Malaysian Public University Libraries. MOLEC demonstrates the highest achievement in securing additional funding from the Ministry of Higher Education (MOHE) since year 2009. The Malaysian Public University Libraries are benefiting from MOHE Consortia that provide access to common databases notably *Scopus*, *EBSCOHost Academic*

*Search Premier, EBSCOHost Business Source Complete, ProQuest Dissertations & Theses and OCLC's WorldCat Discovery.*

Questions arise whether MOLEC has already successful in providing solutions to the Malaysian academic libraries in critical issues related to consortia subscription deal and cost efficiency. At present, MOLEC is still relevant as the only information sharing platform for library managers and practitioners is issues related to databases pricing, negotiations and licensing matters.

### **Staffing Changes and New Competencies**

It is interesting to note that libraries are dealing with new environment and new technology that required news skills and competencies level. Managing electronic resources is complicated because the academic libraries in Malaysia are exposed to global economic situations, new business experiments, changing technology, legal and copyright restrictions and many others. These external factors are impacting us in all aspects including the library profession and the new skills and qualities required for librarians. Conger (2004) suggests that the librarian must be able to meet the many changes of the electronic environment with adroitness and a weather eye towards future filled with a more change.

In this context, electronic resource librarian or a particular librarian in-charged for managing electronic resources must have these qualities; flexibility, multitasking, problem solving and technological capability (Weir, 2012). We are facing with challenging job tasks and enlightened library leaders to make decisions that are relevant for another decade, at least. This scenario reminds us about our previous high impact decision to shift from print materials to combined print-electronic subscription and lastly to electronic only subscription. Looking back, our knowledge and experiences did not allow us to predict the future of electronic resources and foreseen this reality. Nowadays, more information is available to more readers than ever before making prices higher than ever before!

### **STRATEGIES AND INITIATIVES**

The Malaysian Public University libraries were optimist about the promising future of electronic resources for academic libraries globally. Our community has successfully adopted relevant and required technologies related to electronic resource management. In fact, selected academic libraries in Malaysia are employing emergence technologies to better serve their users. With regards to electronic resource management, we have seen selective participation in determining the future of electronic resources in the Malaysian academic libraries or in the smaller contexts – the Malaysian Public University Libraries. We are still experimenting with relevant resources and easy to customize technologies to fulfil specific institutional needs and requirements. At the end, resources were not sustained and we are heading towards adopting financial-based decision making for electronic resources. This paper outlines specific initiatives than can be explored wisely by the Malaysian Public University Libraries.

### **Access versus Ownership**

Access versus ownership is still an interesting point of debates among librarians, information providers and financial decision makers. Librarians are still striving towards providing access to archival contents even in the electronic environment. Giant publishers that offer Big deal packages optimize this situation by offering two subscription components including core titles and access to full collections. The core titles component represents contents that we own perpetually and will be made accessible

to users via publisher's platform with applied terms and conditions. However, the academic librarians in Malaysia are facing the same challenges with libraries globally.

Many find ourselves struggling with: large, inflationary price increases, decreasing budgets, and fluctuating exchange rates creating budget uncertainties (Bosch & Henderson, 2015). Very few options that are available to libraries include cancellation to core titles, cancellation to the full collections segment or cancellation to the whole packages. Based on institutional needs and limited budget situations, focusing on access rather than ownership is seen viable to libraries. In 2017, UniMAP has decided to move from the combined access with ownership subscription oriented package to access only options for selected databases.

### **What's In Store?**

There are many factors to be considered in deciding on electronic resources renewal and cancellations. Based on my personal experience in the institutional context, deciding on cancellations is always tougher than justifying for databases renewal. In many situations, the academic libraries in Malaysia will sought for cancellation if the last attempts for price negotiations failed. Interestingly, our scope of negotiations is limited to present subscription model, its terms and conditions and possible discounted rates. It is advisable for electronic resource librarians or serials librarians to collect information on other subscription packages which are available on other consortia websites. Dedicated websites such as International Coalition of Library Consortia (<http://icolc.net/>) or dynamic consortia such as Council of Australian University Librarians or CAUL, Council of New Zealand University Librarians (CONZUL) will provides information on huge listing of offers from publishers.

### **Digital Archiving**

Since 2009, the Malaysian Public University Librarians were exposed to digital archiving or digital preservation program that is available in the market covering PORTICO, CLOCKSS and LOCKSS. However, aspects related to digital asset management is often overlooked by library administration and understated in library operations (Oehlerts, 2013). The Malaysian Public University Libraries are focusing solely on securing access to electronic resources through subscription renewals rather than preserving digital contents for perpetual access. Therefore, access to licensing contents is not made possible in many trigger events when titles are no longer available from the publisher or other sources.

### **Trust and Readiness towards Cooperative Collection Development**

Resource sharing is always considered key to collective development for all the Malaysian Public University Libraries. Many resource sharing platforms in the academic libraries such as Document Delivery Service, participative contents development through repositories, training and development are created based on mutual cooperation. However, resource sharing in changing environment of digital contents is not fully explored by the Malaysian Librarians. Number of duplicate database subscriptions is still high as reported by the Malaysian Online e-Resources Consortia (MOLEC) in 2001 and 2017 even in challenging budget situations. In similar context, the number and type of resources we must acquire with our limited collections budgets are greater and more diverse (Jakubs, D.L., 2013). As such, our institutional commitments and directions towards strengthening individual library collections to serve the dedicated community are no longer efficacious. Strategies and initiatives towards cooperative collection development are urgently needed to address future challenges; collection development in the institutional niche areas for digital contents, cooperative archiving platforms, participative repositories and digital preservations.



### **High Impact Consortia**

Library Consortia will continue to play an important role in achieving cost savings to libraries through effective negotiations and collaborations. As Burk (2010) pointed out those consortia become more important than ever as library budgets shrink and the old ways of operating become economically flawed. Very often, consortia pricing in Malaysia is creating more values for publishers and vendors rather than the member libraries. The Malaysian Public University Libraries are seen to encourage more participating libraries in the consortia to reduce subscription rates for individual institutions.

This approach intends to help publishers and vendors to optimize their market segments rather than contributing towards cost efficient consortia purchasing. For future endeavours, Malaysian Online e-Resources Consortium should be able to expand its roles and responsibilities in other resource sharing strategies that include attracting more participating members, strengthening loose consortia purchase, flexible access to digital contents via access fees and tokens, Pay Per View (PPV) options for small scale libraries and colleges, and implementing cooperative digital preservations. The Malaysian Online e-Resource Consortium is also critically needed to examine opportunities towards greater access to scholarly contents through Open Access (OA) movements. Optimizing OA models can definitely help libraries to achieve large savings as OA dissemination is considerably lower than the prices of subscription based journals.

### **Survival and Sustainability**

Managing electronic resources in the academic libraries is no doubt; involve a complex and complicated process. New generation of academic librarians are facing with great challenges in understanding and mastering various pricing models of electronic resources and changing subscription packages which is always towards the publishers' advantages. Broad knowledge, communication skills and in-depth experience of Electronic Resource Librarians will ensure survival and sustainability of the academic libraries in Malaysia in this digital era. Shahbazi, R and Hedayati, A (2013) identified eight (8) newly emerging-IT based librarian job titles covering Systems Librarian, Metadata Librarian, Electronic Resources Librarian, Digital Archivist, Web Services Librarian, Digital Initiatives Librarian, Digital Librarian and Emerging Technologies Librarian.

The findings suggest that the 21<sup>st</sup> Century Librarians must be able to optimize the IT-based opportunities to solve numerous challenges in electronic resource management. For example, decision to cancel expensive and highly used subscription packages need to be accompanied by relevant strategies such as Pay Per View service option, article delivery via ReadCube, well planned digital preservation and archiving, customization of open source platforms and many others.

### **CONCLUSION**

Managing electronic resources will continue to be part and parcel of the academic librarian's roles and responsibility. Dynamic changes in publishing ecosystems will also continue to affect the academic libraries approach and strategies towards providing timely and relevant access to scholarly communication. The Malaysian Public University Libraries need to collaborate towards cooperative digital content development, national initiative for digital preservation and enhancing roles of the Malaysian Online e-Resources Consortium to face numerous socio-economic situations.

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Paper 3:

### **PAPERLESS LIBRARY: THE FUTURE OF OUR LIBRARIES?**

**Problems of Reading Society:** *Youth today are typically seen scrolling down their smartphones on Social Media, instead of flipping through pages of a real book. Even young children are more often seen with a tablet, than holding on to a storybook. Hard-core book readers are undeniably dwindling as e-books becomes easily available online with thousands offered as free downloads! Kindle, (first e-book reader device) was released by Amazon on November 19, 2007. Amazon is now offering over total of 3.7 million e-books.*

*How is our conventional Library keeping up with this changing phenomenon of youth's dwindling reading habits and advent of paperless technology?*

**Solution:** *World's first Paperless Public Library BiblioTech was opened in Texas, USA on 4 February 2014. The traditional library has been replaced with high-tech gadgets that cater to both adults and children. Universiti Sains Malaysia's Hamzah Sendut's Library also now offers free Digital Collections of resource collating thousands of digital collections that includes subscribed journals, databases, e-books and Malaysiana collections. On 8th October 2016, the first Public Digital Library in Malaysia opens, here in Penang, offering 3,000 curated e-books, e-magazines and reference journals. These paperless set-ups has proved how technology can be a bridge to bring back reading habits amongst the young.*

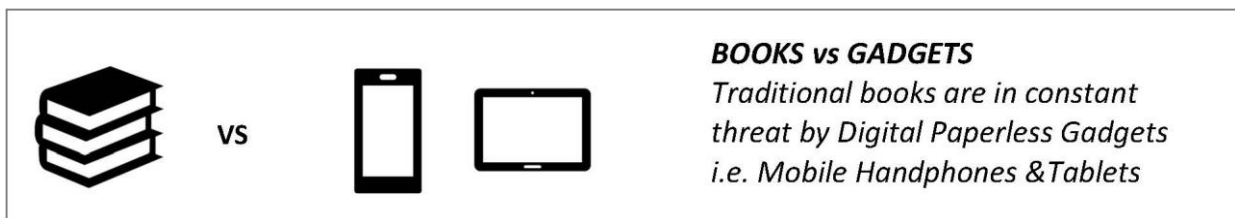
**Way Forward:** *The paper intends to consider the phenomenon of paperless library and how Public / University libraries could evolve with changing times to remain lean, relevant and effective by embracing technology. Other objectives are to share emerging innovative architectural design in creating a more engaging, fun and unconventional reading ambience*

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## INTRODUCTION

The main Objective of this paper is to dwell on the relevancy of our Conventional Library and how its roles are being challenged and eroded by the advent of Digital Technology. The paper also intends to identify social phenomenon that we're facing and analyse how it's changing the game for conventional libraries. Coupled with libraries' current struggle to stay relevant and keep lean (in terms of physical space and management), will digital technology alter the essential idea of the library and push it to the brink of extinction? Are there other socio-economy issues that justifies our concern to rethink the role of our Library?

As we struggle with the challenges faced by Conventional Libraries, digital solution has emerged in recent years offering a possible solution, an elixir, perhaps a second life to our aging image of Library. Digitalised books are managed online and housed in a physical 'library', aptly named as Digital Library offers a paperless setup offering thousands of E-books with no single book in sight. We will identify their advantages, analyse weakness and challenges faced within our local community mindset. What will then be the ideal model for a Digital Library to thrive within the aging community and retain interests among the youth?



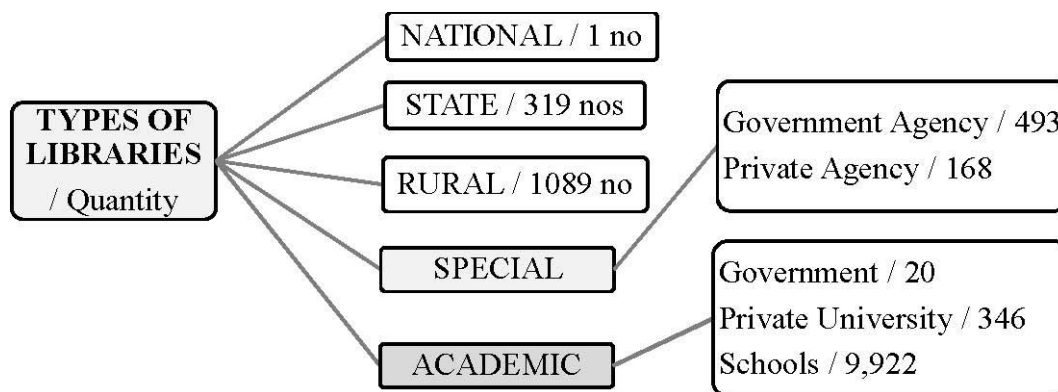
## CONVENTIONAL LIBRARY | Traditional Roles Pre-Digital Age

Since ancient times of Mesopotamia, libraries have been known as the repository and collection of written knowledge, history and stories. Apart from this core role as a knowledge hub, conventional public libraries were also essential for its roles listed below:

- a. **Community Center:** Community activities, meetings, training workshop and services.
  - b. **Community Information Center:** Provides current information, news, regulations.
  - c. **Formal Education Support Center:** Offers knowledge support to formal courses of study.
  - d. **Independent Learning Center:** As advocator of lifelong learning for all ages
  - e. **Popular Materials Library:** Offers Current, in-demand, popular materials for the masses.
  - f. **Pre-schoolers' Door to Learning:** Encourages reading interests amongst young children.
  - g. **Reference Library:** Provides timely, accurate, useful information for community residents.
  - h. **Research Center:** For research, investigate specific studies, and create new knowledge.
- Intepreted from Source: Planning and role-setting for public libraries (1987)*

Malaysia's own family of libraries is commendable with its strong advocacy in promoting reading through the National Library Malaysia (NLM) Strategic Plan (2009-2013), ICT Strategic Plan (2010-2013) and directions by Ministry of Information, Communications and Culture's Long Term Strategic Plan 2010-2020. Below tabulate types of libraries available tin Malaysia.

## TYPES OF CONVENTIONAL LIBRARIES IN MALAYSIA



Statistic Source : *Library Services and Trend in Malaysia, National Library Of Malaysia, 2012*

## CHALLENGES FOR CONVENTIONAL LIBRARIES IN MALAYSIA TODAY

### Internal Challenges

- Limited Physical Space:** With the emphasis on storage and preservation of physical items such as Reports, Manuals and Historical archives, most libraries will eventually run-out of physical floor space to sustain growing collection of books, archives and records.
- Staying Lean In Library management:** Traditional library tasks of reference and cataloguing services, loan books collection and use of library space consumes time and human resource, which translates to high operation costs. Staying lean becomes a real challenge.
- Keeping up with new digital knowledge and literacy:** Librarians themselves are under pressure to keep up with digital know-how, remain relevant by embracing digital technology.
- Budget:** Conventional Libraries struggle to justify huge financial budgets for upgrading. With effortless convenience of “Google” online search, why go to libraries?
- Interior ambience to keep in-trend:** Due to lack of budget, conventional *passé* reading rooms look dated, unable to keep up with trendy interiors of cafes as the new meeting place.

### External Challenges

- Declining interests in reading and literacy:** Youth are so drawn to social media that genuine reading interests are declining. Online American video-sharing website YouTube has become the new learning platform. Why read a book when you can watch quick video?
- E-books:** E-books are available online, more affordable, available anywhere and anytime you need it. Libraries that boast collection of books are losing its appeal competing with eBooks.
- Social Media:** Social media is now the main platform to interact with friends and families. Youth spends more time online messaging, than physically travel to a Library to meet friends.
- Rise of online education:** Online degrees programmes offers much sought-after flexibility of time and duration. Learning outcsearh works are heavily dependent on online data and resources due to massive collection of reseach journals, academic papers and scientific data.

## REINVENTING CONVENTIONAL LIBRARY into PAPERLESS LIBRARY

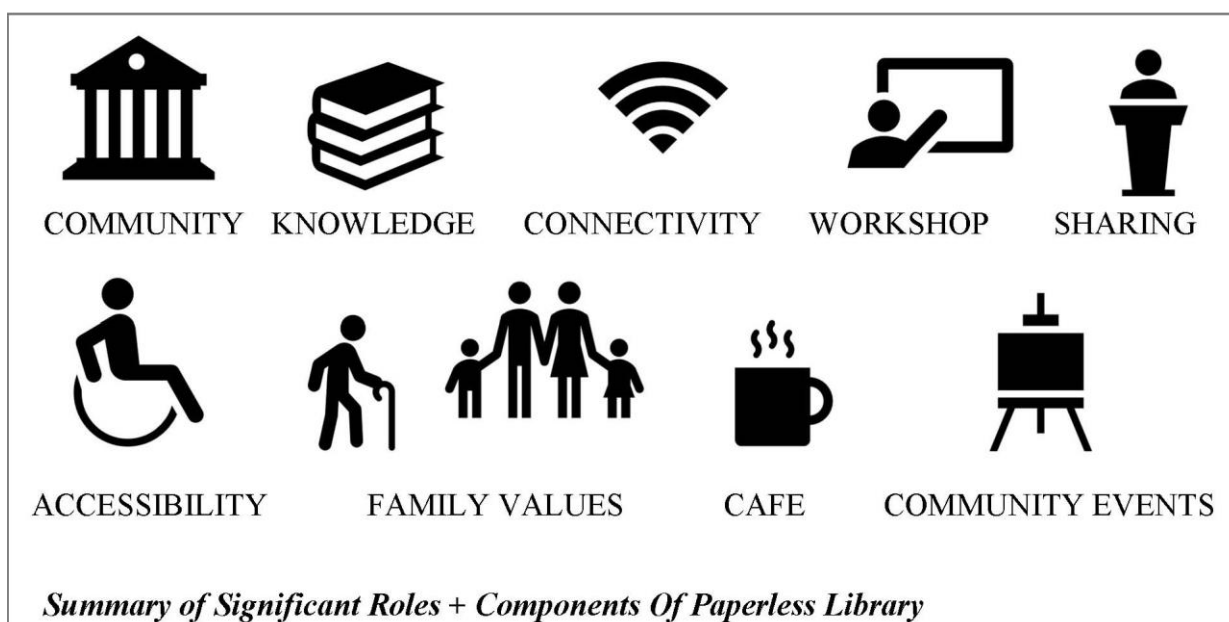
Going paperless will address many Conventional Libraries’ pursuit to become leaner in management organisation and space utilisation. Physical shelves give way to more space for user interaction and community spaces. Book loan transactions are all carried out online in Paperless Library, which greatly diminishes space consumption.

CONVENTIONAL LIBRARY	PAPERLESS LIBRARY
Loan books shelves	Users Reading Area Discussion Spaces Brainstorming Rooms
Users Reading Area	
Administrative Books Collection	
Returned books holding area	
Archives Repository	
Librarian Office	Librarian Office
Public Washrooms	Public Washrooms

*Comparison of Space Provision between Conventional Library vs Paperless Library*

**ROLES OF PAPERLESS LIBRARIES**

Some academics questions the role of a physical Digital Library. Why need a building when all books and curated information are available online? If these books are easily accessed via internet at home/school/office, what’s the justification for a physical building? Paperless libraries must stay relevant as a Community Public Space, Knowledge Centre that promotes lifelong learning which engages interaction between young and old.



**PENANG DIGITAL LIBRARY | Precedent Case Study Of Public Library**

On 8th October 2016, the first Public Paperless Library in Malaysia opens, here in Penang. Penang Digital Library (PDL) aims to redesign how information is accessed, curate disseminated knowledge, channel needed material in the most effortless method.

PDL also identifies the detached human interaction by pursuing “A Humanized Collaboration” where infrastructure and spaces are designed to encourage mingling and faceto-face discussions, sharing sessions and cross-discipline engagements. In the long run, PDL aims to be the core for collaborators to get connected and expand their networking.

It devotes an entire building of 4000 sft to operate as a full-fledged digital library. With not a single physical book in-sight, the library boasts of 3000 e-book titles accessible via tablets for e-reading in a high-speed broadband service. By eliminating book shelves, storage space and archives room, physical

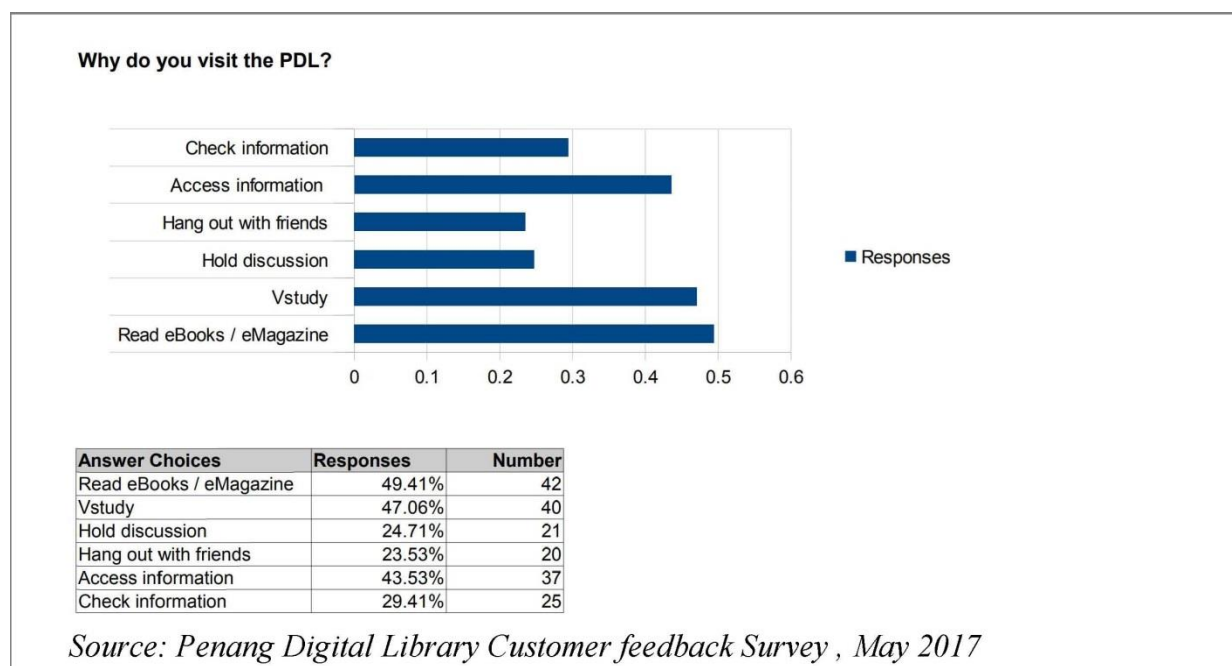
floor space is optimised as reading areas, discussion corners, meeting rooms, mini amphitheatre and even a cosy patisserie café.

To date, PDL has seen enormous overwhelming responses amongst students, young entrepreneurs and even mature working professionals. The discussion areas are often packed with users brainstorming on assignments and collaborative works. It has become a buzzing hub of interactions and exchange of ideas, knowledge and information. On 1<sup>st</sup> May 2017, PDL began its 24-hour operations to allow more access for working professionals pursuing postgraduate research, young techno-preneurs engaging in overseas tele-conference and college students studying in a conducive safe environment.

Will this model of paperless library become the future of all our local traditional libraries? With PDL's success and popularity amongst the youth, it demonstrates how libraries can emerge as a multi-purpose, versatile techno hub of information yet still remain relevant in our society.

### PENANG DIGITAL LIBRARY STRENGTHS

In May 2017, PDL conducted a Survey involving 85 respondents. It reveals that 49% of respondents' objective of visiting PDL is to read eBooks and study.



### Crowd-pulling Factors of Penang Digital Library:

- 1) Complimentary Use of High Speed Broadband.
- 2) Cheerful, Conducive and Cosy Interiors.
- 3) Convenient Meeting point of collaboration of ideas.
- 4) Curated Content of E-books, magazines and journals.
- 5) Complimenting Café Serves Good Coffee and pastries .
- 6) Ample complimentary Car Parks.
- 7) Safe, 24-hr secure surveillance compound.

### CHALLENGES | Social Issues To Further Address

- 1) Engage genuine interest in reading .
- 2) Creating future generation of Knowledge Society.
- 3) Digital Inclusion of Senior Citizen.
- 4) Universal digital accessibility for users of physical or mental disability.

### INNOVATIVE IDEAS IN LIBRARY SPACES

Modern Libraries built around the world, showcases Innovative Ideas which is recorded as below, each with strong reference to a built precedent.

- 1) Bold usage of Colors and Forms to break the monotony of silent reading spaces.
- 2) Fun Children Spaces to Encourage Interaction and Learning through play.
- 3) Visual Connectivity to Distant Views / Outdoors.
- 4) Smart Energy Consumption features (motion-sensor of task lighting, renewable energy).
- 5) Semi-private Collaborative Spaces where users are allowed to discuss openly.
- 6) Enclosed phonebooths where phonecalls can be made within library spaces.

## CONCLUSION

Undeniably, libraries of the future will remain as one of the most influential Social Public Space in our society. It should become a universally inclusive place for community members of all ages and physical abilities. By appealing to Youth, libraries can potentially inspire genuine human interaction and cross-fertilisation of ideas with peers and members of the Community. Libraries today must evolve to become a Place to learn, no longer entirely from shelves of books but from engaging users in learning and interactive activities.

Community libraries are integral part of the fabric of every city. Changing our thinking about the role of libraries as a place where communities are built and sustained, takes us beyond books. Future libraries will emerge as destinations that support Creativity, Spirit of Lifelong Learning, Community Inclusion, Innovation and Entrepreneurialism. It must evolve with Digital revolutions and lifestyle trends to ensure its survival and place in urbanisation.

Paperless Library possess endless possibilities to transform Malaysia to become one of the top 20 countries in the world by the year 2050. The transformation and digitalisation of all Conventional Libraries in Malaysia must commence to yield successful outcome by 2050.

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## **Session B: Creativity and innovation**

Continuous improvements; improved products; improved services; improved processes; analysis of metrics; big data; productivity and efficiency; best practices; technology transfer and innovation; research

Paper 1:

**ENGAGING STAKEHOLDERS, STUDENTS, FACULTY AND LIBRARIANS TO IMPROVE THE READING LIST SERVICE AT SMU LIBRARIES: A LEAN CASE STUDY**

*A current trend in Libraries is to use Lean to improve processes and services while doing more with less. The SMU Libraries has been on a Lean journey since 2013, partnering with the Office of Business Improvement to train Library staff in the use of Lean Six Sigma to improve productivity and service levels. Recently, the SMU Libraries and the Office of Business Improvement collaborated with students enrolled in the Managing Process Improvement course to review one of the key services provided to students and faculty. The team applied the Lean Six Sigma methodology to the Reading List service, looking closely at the persistent link and scanned chapter workflows. The goal of the project was to reduce the lead time for the Reading List service. This paper presents a case study to illustrate the application of Lean Six Sigma tools in identifying and investigating the root causes of the problem, analysing the process metrics, prioritizing potential solutions, running experiments and creating a control plan to sustain the improvements. Based on the information given by SMU Libraries and faculty members, the students suggested some alternatives to improve the processes and conducted experiments to test their recommendations. The project quickly resulted in better engagement between the Libraries, faculty and students and showed early indications of faster turnaround time by faculty, enabling the Libraries to provide better service to both faculty and students.*

**KEYWORDS:** Lean, Stakeholder Engagement, Library Services, Continuous Improvement, Library Assessment, Performance Measurement

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## **INTRODUCTION**

Singapore Management University (SMU) Libraries consist of two libraries, known as Li Ka Shing Library and Kwa Geok Choo Law Library. Kwa Geok Choo Law Library is the latest addition to the SMU Libraries, opening on 3 January 2017. Services are centralized and include Research Consultation, Interlibrary Loan, Document Delivery Service, Lending, Items Reservation and Reading List Services. The Reading List Service includes Scanned Chapters, Persistent Links, Course Packs and Course Reserves. The Scanned Chapters involves checking the copyright rules, scanning, photocopying and uploading the copyright materials into an online platform called e-Learn. The Persistent Links involves providing the persistent links of online articles that are available in the library collection. The Reading List Services team assists in buying cases and makes them ready for students to purchase at the beginning of the term. The team also works with faculty, academic support staff and teaching assistants to acquire textbooks for the courses offered in SMU. These textbooks will be placed in the Reserves section in both Libraries and are accessible for students to borrow for a 3-hour loan period.

The Office of Business Improvement (OBI) is a department in SMU dedicated to working with the schools and other offices across the University in a joint effort to improve effectiveness and productivity. OBI's core services include leading Lean Six Sigma (LSS) Black Belt projects, training and coaching LSS Green Belts, managing improvement projects and building a culture of continuous improvement through active engagement of stakeholders and sharing of best practices.

The SMU Libraries has been on a Lean journey since 2013, partnering with the Office of Business Improvement to train Library staff in the use of Lean Six Sigma to improve productivity and service levels. According to Cribb (2017), over eighty percent of the staff of SMU Libraries have attended training in Lean Six Sigma (Green Belt). Since 2013, SMU Libraries have applied the Lean approach to improve the library services.

In January 2017, the SMU Libraries and the Office of Business Improvement collaborated with students enrolled in the Managing Process Improvement course to improve the Reading List Service, one of the key services provided to students and faculty.

## **PROBLEM STATEMENT**

Reading lists play an important role in resource sharing and fostering meaningful learning experiences for students. In an academic year, the Library will process the reading lists for 200 faculty members and process over 500 digitized resources that require copyright management, over 1,000 persistent links to library resources and 400 course reserve titles. The process of preparing and delivering reading lists to students is very labour-intensive. Faculty build their reading lists by getting materials from various sources manually. A number of services provided by the library to support this exercise are manual processes and prone to delays due to a number of factors.

About two months before the academic term starts, the "Call for Course Reading" email will be sent out to faculty. However, faculty members usually submit their reading lists one day before the start of the term or even later. Due to late submissions by faculty, Library staff has very little time to prepare the necessary work. There are times when backend tasks such as book orders, course pack preparation and eLearn material preparation have to be expedited in order to make sure that the students are able to access the reading lists on time. This and a host of other things that need clarification before the course readings can be processed cause delays in the reading list service.

## **METHODOLOGY**

The student team applied the Lean Six Sigma methodology taught in their Managing Process Improvement course to the Reading List service. Using the Lean Six Sigma methodology will allow the students to apply the easy-to-understand principles and techniques to improve the Reading List Service (Tamera, 2011). DMAIC, as it is known, is a five phase methodology which uses a scientific and data

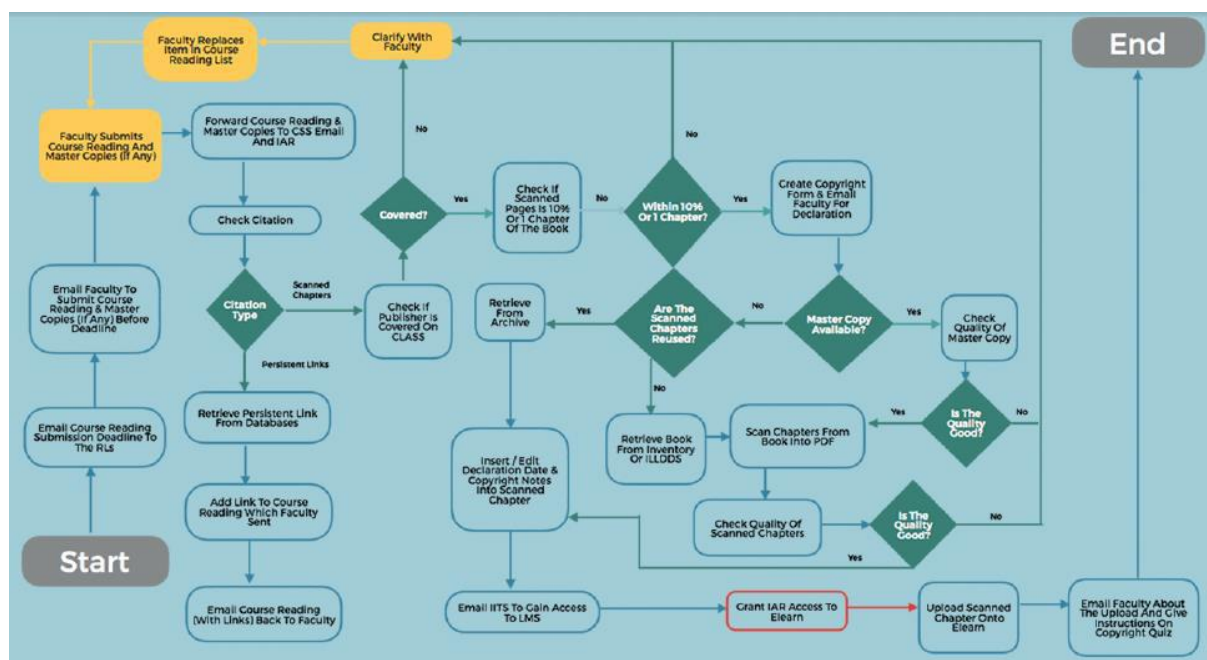
driven approach to find the optimal solution to a business problem. It is an improvement process model that uses data as a quality strategy. DMAIC is an acronym for the five phases that make up the process:

**1. Define**

The Define phase aims to specify the problem and goal of the solution. In the first engagement with SMU Libraries, the Librarians raised various pain points highlighting the main issues they face with faculty members. It was agreed that the project would focus on reducing the lead time for reading list preparation and delivery from 160 days to an average of 60 days. The process in study starts from the time SMU Libraries sends their ‘Call for Course Reading’ email to the time reading lists are uploaded onto eLearn, a platform accessible to students.

Due to the time constraint, as the students needed to complete the project in 15 weeks, the scope was limited to persistent links and scanned chapters.

To better understand the process, the project team reviewed and updated the workflow diagram for the Reading List service. The cross-functional diagram below shows the need to minimize flow back and reduce the need for clarifications.



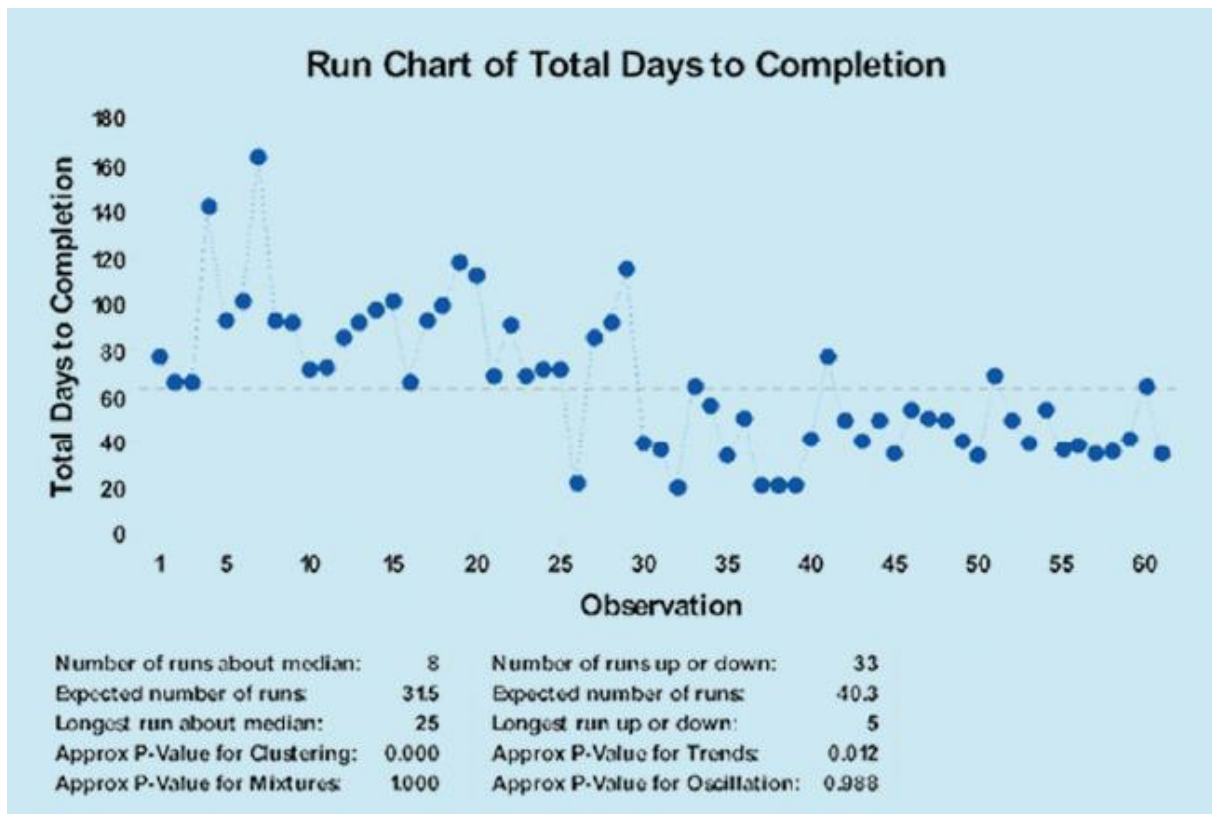
**FIGURE 1** Workflow for Scanned Chapters & Persistent Links

**2. Measure**

The Measure phase aims to collect baseline information on the project metrics. This phase also ensures that the right data are collected from the right place and methods of getting the data are accurate.

The student team requested data from SMU Libraries in order to identify the largest contributor to the long lead time and variation at different process steps. The Library team provided information for 30 faculty members availing of the Reading List service across 2 academic terms, 6 schools and 13 course types.

As shown in the run chart below, there is a huge variation among faculty in terms of the total lead time for the entire process.



**FIGURE 2** Total Days to Completion

The timestamp information for each process step is captured through email exchanges between Library, faculty members and the IT department. Although the manual extraction of data is tedious, the source of metric information is nevertheless stable and reliable. In the absence of an automated system, it will be too time-consuming to monitor the duration of each process step but getting the start and end dates of each transaction is doable.

### 3. Analyze

The Analyze phase aims to identify and verify the critical factors that impact the key project outcomes. Most of the crucial data analysis is performed at this stage. This phase usually leads to exposing the root causes of the problem and provides insights into how to eliminate them.

After gathering inputs from process maps, the team also facilitated a brain writing session with the Librarians using a tool called KJ Analysis. The question asked was: “Why does it take longer than expected to prepare the course readings”. The main takeaway from the session is that: The main cause of delay is lack of timeliness of faculty responses and this could be due to faculty concerns and technological issues.

The inputs gathered so far have all been from the side of the service provider, SMU Libraries. To get feedback from the faculty side, the students interviewed select faculty members. Some of the concerns raised were: Faculty members were unaware of what they need to do; some of them missed the email as they were away during the period it was sent. Their inputs have been added to the Affinity Diagram shown below.

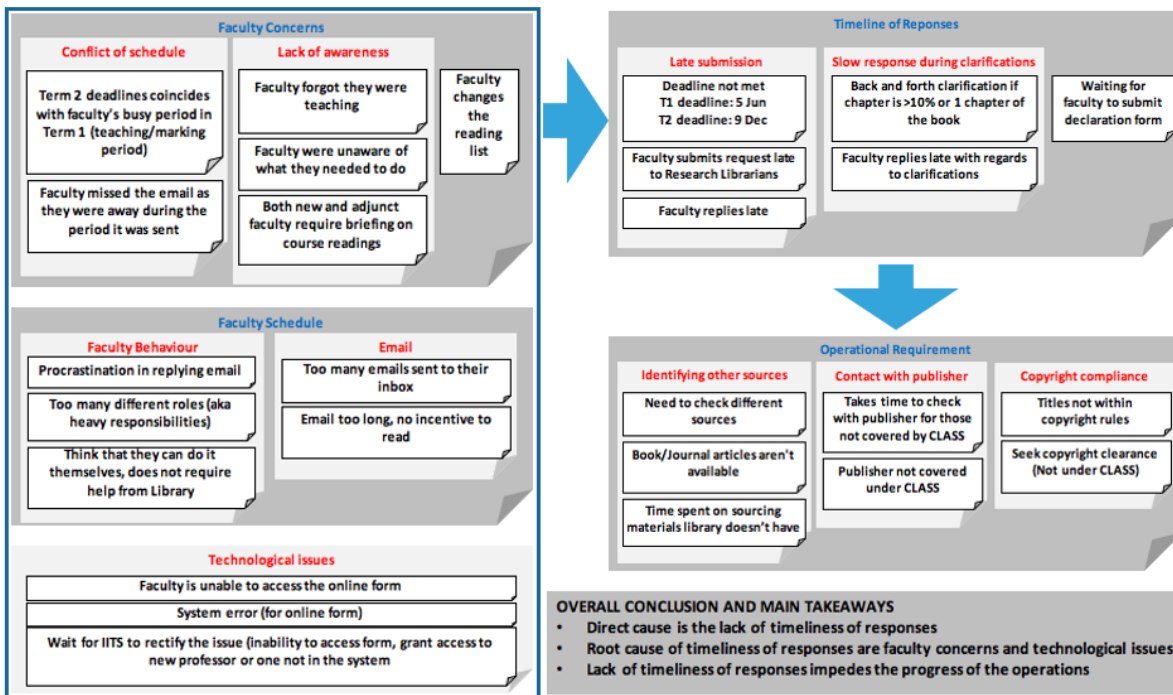


FIGURE 3 Affinity Diagram

The students also conducted Cause & Effect analysis sessions with the library team. A total of 28 distinct inputs were laid out and each was rated according to their impact to the relevant outputs. Figure 4 below shows the Cause & Effect Matrix and the Pareto diagram highlighting the inputs with the highest correlation scores. These inputs were down selected for further investigation.

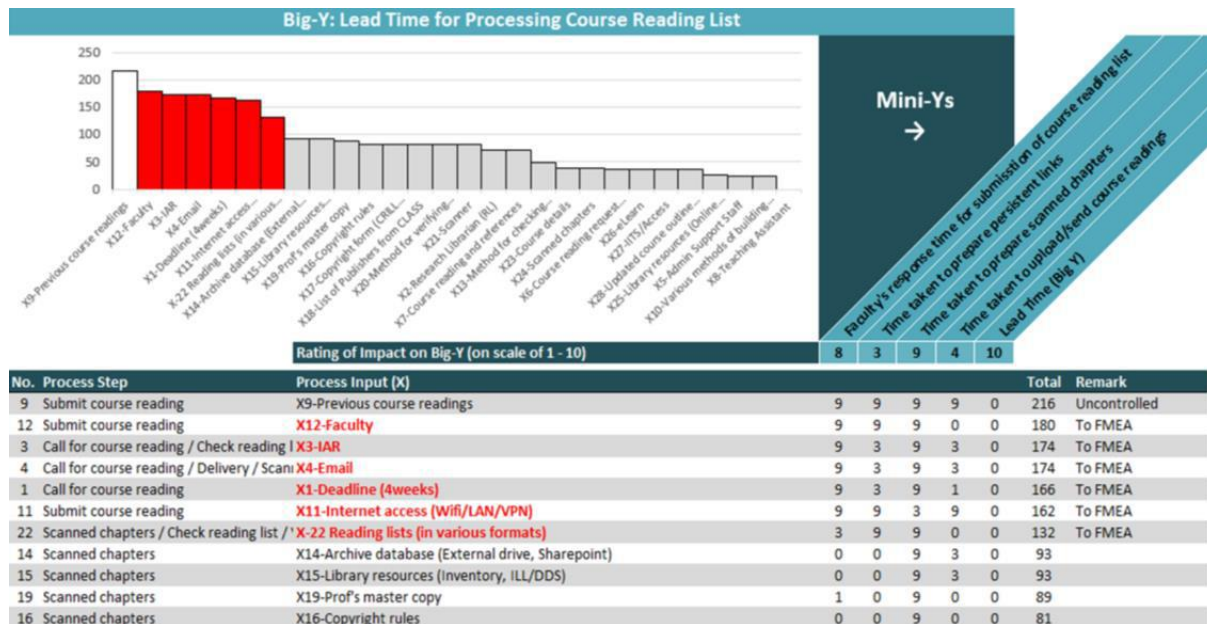


FIGURE 4 Cause & Effect Matrix

The team continued with their qualitative analysis by facilitating a Failure Mode and Effect Analysis (FMEA) session. Process FMEAs analyze the key inputs and potential failures of each step of a process, and consider the effect of process failure on the service concerned. After the session, the team identified the following as the top potential root causes, all of which are related to the most critical factor, **Faculty**:

- Faculty submits after the term starts
- Faculty is uncontactable
- Faculty ignores/misses email
- Procrastination on the part of faculty
- Conflict of schedule
- Faculty is away or on leave

Based on historical data provided by SMU Libraries, the team tested a number of hypotheses including the following:

No.	Null Hypothesis (Ho)	Alternative Hypothesis (H1)	Method	Result
1	Early submission does not reduce average lead time	Early submission reduces lead time	2-Sample T-Test: P-Value < 0.05	Reject Ho
2	Decreased number of email exchanges does not reduce average lead time	Decreased number of email exchanges reduces average lead time	2-Sample T-Test: P-Value > 0.05	Do not reject Ho

**TABLE 1** Hypothesis Testing

The students also ran a survey and reached out to 360 faculty members. They got 62 responses with survey completion from 59 full-time faculty members and 3 adjuncts. 75.81% of them have been teaching in SMU for more than three years. Table A-1 lists the survey questions sent out to the participants. From the survey results, the key findings and insights can be illustrated as;

- **Q1, Q2, Q3;** A vast majority (91.4%) of the respondents check their emails more than twice a day. Consider revising the email header to encourage more immediate action.
- **Q4;** With the exception of 12pm to 2pm and 6pm onwards, faculty usually check their emails during the remaining of the time periods. Avoid sending emails during lunch time (12 to 2pm) and after work (6pm onwards).
- **Q5;** 80% of our respondents decide to get back to the email at a later time. A process of submitting the course reading has to be simplified. A more urgent call to action also has to be reflected in the email.
- **Q8;** 21.8% indicated that there were too many actionable items within the email, and clarity can be improved. Revise the email to be more direct, with clear and simple actionable items.
- **Q9, Q10;** More than half (53.4%) of our respondents know if they will be requiring the service before the 'Call for Course Reading' and have either usually (39.7%) or always (16.4%) prepared the course reading lists prior to the call. Thus, gather an initial expression of interest for the course reading service, prior to the call for course readings, such that the Library can have a more accurate forecast of manpower hours needed.
- **Q14;** 54.8% were familiar with the librarians managing the service. Increase the awareness of the roles of library specialists and research librarians amongst the faculty, such that they know who to go to for a certain category of issue.
- **Q16;** 77.5% of the respondents felt that a standardized template will help. A standardized template with the flexibility of uploading of supporting documents is welcomed.
- **Q17;** 67.6% feels that the CLASS list will help in their preparation. Concerns include, teaching materials should not be restricted to those under the CLASS list, and that they do not think it

is their job to know about this. The team thinks the CLASS list should be provided, but educating the professors on how to interpret it is required.

- **Q18;** The idea of re-using previous reading lists or a template was the best received, with 87.5% of the respondents liking it. Other better received ideas include importing the list onto eLearn (75%), automatically creating/updating of reading list (60.9%) and the tracking of views/downloads of specific ideas (67.2%). Most professors do not change their reading lists that often, resulting in them wanting to just reuse the reading list. Integration of various systems would help, which includes eLearn, the creation of reading lists and submission of course outlines.

#### 4. Improve

The Improve phase aims to develop, select and implement the best solutions, with controlled risks.

The team came up with a number of potential solutions based on insights generated from the survey results, investigation and best practice research findings. After evaluating against key criteria using a tool called Pugh Matrix, the team concurred that it is more effective to combine several of the solutions and implement them together.

The team proposed to convert the ‘Call for Course Reading’ email to an infographic, incorporating an Express Interest function that will allow the faculty to express their interest in availing of the Reading List service. The infographic includes the link to the standardized submission form. The FAQ and the list of approved publishers from CLASS will also be attached to the infographic. It was also proposed that the Call for Course Reading be sent two weeks in advance. The template in Figure 5 below has been approved by SMU Libraries for immediate implementation in Academic Year 2017/2018 Term 1.

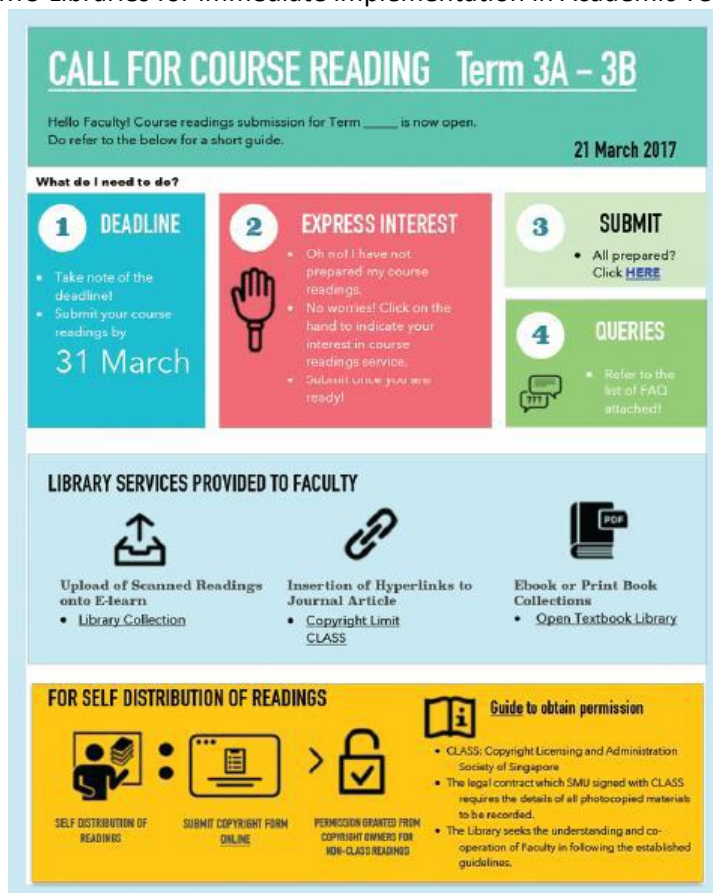


FIGURE 5 Call for Course Reading Infographic



The team piloted some of the improvements in Academic Year 2016/2017 Term 3A. SMU Libraries sent out the revised email reminder to faculty and attached the standardized submission form, FAQ and list of approved publishers from CLASS. SMU Libraries immediately got 3 responses along with feedback on the standardized submission form. The feedback was considered and further improvements were made.

## 5. Control

The Control phase aims to ensure that the solutions that have been implemented become embedded into the process, so that the improvements will be sustained after the project has been closed.

The team handed over the solutions to SMU Libraries—the infographic template, standardized submission form, FAQ, simplified workflow documentation. The following Control Plan was also presented to and well-received by the Library team

Process Step	Critical X/Y	Control Method	Details of Control	Reaction Plan	Responsible / Accountable
Call for Course Reading	X12-Faculty	Visual Control – Infographics	To be included in the FAQs. Illustrates process flow, what is required at each step. Helps faculty understand the intricacies that they be unaware of.	Clarify with faculty	Library Specialist
Submission of Course Reading	X12-Faculty	Dashboard – QlikView	<ol style="list-style-type: none"> <li>1. Monitor “Express Interest” responses, submissions (number, response time)</li> <li>2. Send a reminder email to all 2 weeks before the deadline, and once more to those who have indicated interest 1 week before</li> </ol>	Highlight to respective Research Librarian	Library Specialist
Call for Course Reading	X4-Email	Documentation – FAQ	<ol style="list-style-type: none"> <li>1. FAQ to be included as part of the call for course reading email</li> <li>2. Review the document every term to reflect updates</li> </ol>	Clarify with faculty	Library Specialist
Submission of Course Reading List	X22-Reading Lists (in	Documentation – standardization	1. To be included as part of the Call for Course Reading email	Clarify with faculty Review and alter the	Library Specialist

	various Formats)		<p>2. Required fields within the form to ensure that appropriate information is captured</p> <p>3. File uploads are restricted to MS Word documents</p> <p>4. Format for requesting textbook titles are guided as well</p>	<p>form according to the feedback of faculty</p> <p>Long term: Incorporate in RLMS</p>	
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**TABLE 2** Control Plan

**CONCLUSION**

SMU Libraries, being proponents of Lean, have always been open-minded to new ways of envisioning their work. Change is inevitable to the organization and they are aware that they need to keep improving in order to provide high quality services to the SMU community. The students and staff members worked well together and established a good relationship. The students were also able to leverage on their relationship with their Professors who have been supportive of this project. The SMU Libraries in turn benefitted from this by getting constructive feedback from the faculty. This turned into a virtuous cycle as the project ultimately aims to provide better service to faculty and students.

The students were very pleased as well to have applied what they learnt in the classroom in solving not just a real-world problem but one that involves their own community.

Running this Lean Six Sigma project to improve SMU Libraries’ Reading List service was not about completing every step of the DMAIC model, but more of teaching people to see waste, the evils of variation and value and non-value added tasks. Lean Six Sigma need not be perceived as bureaucratic. Be flexible to what makes sense.

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## APPENDIX

No.	Survey Question
1	The above shows the Email Header for the Call for Course Reading email. When you receive this email, how likely are you going to read it immediately?
1	The above shows the Email Header for the Call for Course Reading email. When you receive this email, how likely are you going to read it immediately?
2	If you chose options "Very unlikely" and "Unlikely", what are some possible reasons?
3	On average, how often do you check your emails a day?
4	When do you usually check your emails?
5	Upon reading this email, what is your immediate response? (If you have been using this service several times, choose the option that is more relevant for you)
6	You selected "You decide to get back to it later", approximately how long do you take to get back to the email?
7	What are the possible reasons why you took the stated amount of time to get back to the email?
8	Based on the email above, are you clear on what is required from you for the service? (If "No", please state why)
9	On average, when do you know that you require or not require the library services?
10	On average, how often do you prepare your course reading lists prior to receiving the email?
11	On average, how long do you take to prepare your course reading list?
12	What are some of the reasons why you chose the duration stated above to prepare the course reading list?
13	What are your current views on the course reading submission process?
14	Are you familiar with the librarians who manage the course reading list service?
15	Have you ever made adjustments to your course reading list even after you have submitted?
16	Do you feel that having a standardised template for submitting the course reading list will simplify the process?
17	The Library proposes to provide faculty with the list of approved publishers from CLASS. Do you feel that this initiative will help in your course reading list preparation? If not, why?
18	How likely are you in welcoming a system that will allow you to do the following: a) Automatically create/update reading list b) Import reading lists into E-learn (LMS) c) Create structured, Annotated reading lists d) Re-use previous reading lists or template e) Track views, downloads of specific items f) Allow students to give feedback, rate/star/like on specific items on their reading lists
19	Full-time/Adjunct
20	Duration of Teaching in SMU
21	Frequency of Usage of Course Reading List Service
22	Based on the email above, are you clear on what is required from you for the service? (If "No", please state why)
23	On average, when do you know that you require or not require the library services?

TABLE A-1 Survey Questions

Paper 2:

### **COMPARATIVE ANALYSIS OF REFERENCE DESK SERVICES: THE CURRENT TRENDS IN A DIGITAL AGE**

*Recent studies show that library trends in reference usage patterns are shifting. User preference for using online resources is increasing and becoming more predominant in many Malaysian academic libraries. The decline in the number of students using the physical library has lessened the need for librarians. In order to get library resources, users do not have to be physically presents into the library building. User trends and patterns have changed and now library users favor the use of online assistance, consultation, advisory and guidance to meet their information needs. Changes in user query have impacted the way the library provides services, but traditional reference services will still remain as the core of information services. This paper aims to 1) provides a unique snapshot of a reference service in an academic library, where both online and offline reference services are taking place; 2) to described on how a reference services librarian may have the best influence on the visibility and operational of an academic library. By analyzing the trends from the usage statistics, this study can be used as a continuous improvement where reference librarians need to enhance their digital competencies in providing reference desk assistance.*

**KEYWORDS:** Reference Services, Information Services, Reference Librarian, Digital Competencies

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## **INTRODUCTION**

The main purposes of reference services are to meet the information research needs and to enable clients to learn strategies for information research and the use of information retrieval tools available through the library (Simmonds & Syed Saad Andaleeb, 2001). Recent studies show that library trends in reference usage patterns are shifting. User preference for using online resources is increasing and becoming more predominant in many Malaysian academic libraries. The decline in the number of students using the physical library has lessened the need for librarians. In order to get library resources, users do not have to be physically presents into the library building.

User trends and patterns have changed and now library user favor the use of electronic assistance, electronic consultation, electronic guidance and electronic library resources compared. According to (Diamond & Pease, 2001) as a strategy, librarians need to improve their methods for providing answers to questions posed in the digital environment. Changes in user query have impacted the way the library provides services, but traditional reference services will remains as the core of information services among academic libraries. Librarians need to explore the needs of their user, to ensure they are effectively reaching users who are no longer seeing the needs of coming to the library.

In the academic setting, librarians could build good collaboration with faculty and provides reference assistance and guidance for students with many approaches which not necessarily are effectively served at a reference desk (Buckland, 2008). A good understanding of library services and engagement will enable faculty members to use the library more effectively as a learning resource for their students. This study provides a unique snapshot of a reference service in an academic library, where both online and offline reference services are taking place. This papers described on how a reference services librarian may have the best influence on the visibility, functionality and operational of an academic library. Stated by (Okoli, 2005) librarians of today must be ICT adequacy for effective reference services which will reveal their inadequacy to use and operate in the digital environment.

### **Objectives**

This paper aims to 1) provides a unique snapshot of a reference service in an academic library, where both online and offline reference services are taking place; 2) to described on how a reference services librarian may have the best influence on the visibility and operational of an academic library. To address this need, by analyzing the trends from the usage statistics, this study can be used as a continuous enhancement where reference librarians need to enhance their ICT competencies in providing reference desk services in a digital reference environment.

## **LITERATURE REVIEW**

### **Online Reference Service vs Offline Reference Service**

The paradigm shift from stand-alone libraries to library and information networks, available via the Internet, can provide end-users with connection to Internet-based services. Moreover, we are surrounded by automated, digital, and virtual libraries as well as by networked data, specialized networks, and library networks. The field of reference service is vast and dynamic and many new developments have taken place in it during the last ten years. A decrease in directional questions and mediated searching and an increase in in-depth reference and consultations were observed where ready reference questions have remained a consistent proportion of all questions asked (Mastromatteo, 2009). In spite of increasing online access to both information resources and library services, more users' access reference services at the library reference desk than they do online.

As mentioned by (Groote et al., 2007) the total number of reference questions has disproportionately decreased despite the availability of online services, indicating a large gap between the questions once asked at the reference desk and the questions now asked either online or in person. While online reference is well established as a service, the technology employed by online reference is still developing rapidly. Reference librarian on duty should be able to provide equitable reference

assistance to all clients regardless of whether the user has come to the library, telephoned, emailed, online chat or used other medium of communication technologies.

### Digital Competencies of Reference Librarian

Developments in computers, microelectronics, and communication technologies have radically changed the library and information environment. Gone are the days of stand-alone libraries, in which a library was judged less by the quality of its resources and services than by the quantity of materials it had available. The introduction of end-user search systems beginning in the late 1980s initiated a wave of change at the traditional reference desk as users began to use library services in new ways (Kelley & Orr, 2003). Library users often approach the search for information without a clear concept of what they need. Reference staff should assist and guide to define their needs in terms of the type and amount of information required for their purpose.

According to (Scherrer & Jacobson, 2002) in response to falling entrance statistics and increasing online collections, libraries have reached out to patrons in new ways. These many changes have encouraged additional reevaluation of traditional reference services and initiation of new programs and services. Although different models of reference services have been studied exhaustively in libraries, there has been no empirical examination comparing both models of reference services (traditional and virtual) at an academic library. The perceptions and needs of patrons are important to measures the quality and impact of reference services to meet their information needs. From current trends, academic library can develop user education program that highlighted several areas that were lacking by their user.

### METHODOLOGY

The study will report the finding from the usage generated from reference service by analyzing the detailed data from the usage generated of reference questions at library UiTM Cawangan Selangor, Kampus Puncak Alam in four category which includes; Reference Desk Transactions, Reference Desk Session, Question Type Analysis, and Reference Desk Enquiries. The study analyzed reference transactions received between Jan-May 2016 and Jan-May 2017.

### FINDINGS AND DISCUSSIONS

No.	Months	Reference Desk Session
1.	January-May 2016	138
2.	January-May 2017	577

**TABLE 1: Reference Desk Session**

No.	Months	Face to Face	Live Chat	Phone	Email	Social Media	TOTAL
1.	January-May 2016	47	2	36	22	9	<b>138</b>
2.	January-May 2017	220	258	30	68	1	<b>577</b>

**TABLE 2: Reference Desk Transaction (Medium)**

Table 1 and Table 2 shows the results of reference desk session and reference desk transaction from January-May 2016 and January-May 2017. It shows that there has been a slight increase in the number of reference desk session and reference desk transaction. Since October 2015, the main Reference Services Desk is located nearest study carrel area on the 3rd floor, PTAR Puncak Alam Library. Since January 2017, library management had decided to re-allocate reference services desk to a new location at level 2. The new location is located nearest customer service counter and at the entrance to the library. The main intention of the new location is to promote the visibility of reference desk librarians and at the same time to contribute users' awareness of the services offered. Recent research has

suggested when only librarians staffed the reference desks at the strategic location inside the library buildings, they could be held accountable for the quality of service provided (Rusuli, Saufi, Tumari, & Hasman, 2014). This allowing users especially new students to approach only one desk for assistance rather than wondering where to go for help. One of the strategy that had been taken were also designing poster, digital signage and information blast via library Facebook promoting about reference desk services to our users.

No.	Question Type	Jan-May 2016	Jan-May 2017	TOTAL
1.	Online Databases	35	377	<b>412</b>
2.	Digital Collection	9	93	<b>102</b>
3.	Internet	1	21	<b>22</b>
4.	WEB OPAC	1	137	<b>138</b>
5.	Others	7	67	<b>74</b>

**TABLE 3: Question Type Analysis**

No.	Reference Queries	Jan-May 2016	Jan-May 2017	TOTAL
1.	Quick Reference	35	242	<b>277</b>
2.	Research Reference	6	198	<b>204</b>
3.	Search Technique	37	408	<b>445</b>
4.	Advice and Guidance	33	378	<b>411</b>

**TABLE 4: Reference Desk Enquires**

As Table 3 shows, the most frequently asked reference questions by type were about online databases (412) and WEB OPAC (138), digital collection (102), others (74) and internet (22). The findings determined that library users are lacking information and knowledge about online databases subscribed by the library. This data will be used in improving information literacy skills classes and hands-on session will stressed more on online databases and WEB OPAC. According to the analysis of the Table 4, reference desk enquiries assist by the reference librarian were search technique (445), advice and guidance (411), quick reference (277) and research reference (204). This indicates there is a need to have reference librarians with expertise in the areas where questions are most often asked.

### **CONCLUSION AND RECOMMENDATION**

Since many years the concepts and practices of reference services have been expanded and evolved significantly. The study shows that in a digital age environments, future reference services must respond to information needs and utilize appropriate technology in offering many ways to communicate with their users. The use of digital facilities in reference services could lead to better reference services where librarians of today must be ICT adequacy for effective reference services which will reveal their inadequacy to use and operate in the digital environment (Abubakar, 2012).

Based on the findings study, several recommendations or guidelines are put forward:

- Librarians need to more fully explore the needs of their local target user populations to ensure they are effectively reaching users who are no longer coming into the library.
- Universities libraries should ensure adequate digital facilities for effective reference services. In addition, trainings, information sharing and hands-on session emphasize on reference and ICT skills should be given to enable them perform their duties effectively.

- As a continuous improvement, reference librarians need to enhance their digital competencies in providing reference desk assistance. Reference desk librarians should be trained to becoming more competent and knowledgeable.
- More research is needed on the preferences of both traditional and online library users, in order to find the most effective balance of on-site, outreach, especially on digital reference services. Future research could focus user feedback on the quality of answers provided in digital and traditional reference services.

As a conclusion, the reference librarian in a digital age is now faced with the challenging task of developing their ICT skills, social network use skills and other adaptive skills that will make them relevant in information services provision. In addition, communication between reference librarians and user in a courteous and encouraging manner in providing accurate and efficient reference assistance to all clients whether online or offline is still vital for the provision of enhancement and improving reference services.

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Paper 3:

**THE INFLUENCE OF ORGANIZATIONAL CREATIVE CLIMATE ON PROBLEM SOLVING BEHAVIOUR AMONG LIBRARY EMPLOYEES**

*Creativity is one of the dominant elements that significantly affect all type of human needs especially in organizational architecture which spans across working behaviour, technological change, innovative products and performance in service delivery. Problem solving as part of being creative also indirectly contributes crucial directions in solving the demands and issues from customers or the public. This cognitive skill has become essential for many organizations hiring demand and it has grown dramatically at all levels and across different types of job including in the library perspective. However acquiring such creative people into an organization will be a complete waste if the organization itself pauses to adapt the values of creative climate in their environment. On such background, this paper examines the relationship between the problem solving skill with creative climate values such as challenge/motivation, freedom, idea support, trust/openness, dynamism/liveliness, playfulness/humour, debates, conflicts, risk taking and idea time among the library employees. It is also important to understand the impact on employee's behaviour in delivering services. Using a quantitative and descriptive approach, the data was analysed using parametric method and tools which enabled confirmation on the significant correlation between such values with the creative problem solving process. It has also mustered the library employee's behaviour in decision making, communication, coordination, controlling, innovation, motivation and commitment enthusiasms. Simultaneously, it showed a critical point to the importance of building a climate that triggers or maintains an individual creative skill which affected library services in response to the accelerate rate of information evolution.*

**KEYWORDS:** Creativity, Problem Solving, Organizational Creative Climate, Cognitive Skill, Library Climate

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## **INTRODUCTION**

Fuelled by the demand for innovative products and the drive to hold or increase market share, the world of organization has always had a strong and vested interest in creativity. Research and development departments have constantly sought to replace the old and the slightly worn with the new and improved. Entrepreneurial endeavours, innovative strategies and the ever-present need for a competitive edge all speak of the long-standing relationship between organization and creative thinking. Given the accelerated rate of technological change and pressures, it has been emphasized that the need for creativity in organization is critical (Moukwa, 1995). The quickening pace of global change and the ever-increasing degree of international competition makes creativity essential (James, Clark & Cropanzano, 1999) and making the need for improving innovative skills also increases (Gundry & Kickull, 1996).

This phenomenon affected all form of organizational structure including library. The library like other organization as described by Walton (2008), have to deal with a diversity of users' behaviour, swift technology change, financial cut on expenditure and the impression of government policy on services. Having to survive and succeed in this conditions, library employees especially library managers or librarian need to depend on creativity to sustain their place in the future. Due to that it is important for the library to adapt their strategic management with creativity as it will help the employees to propose a creative solution within the library domain. Furthermore Walton (2016) also mentioned that for an easier collaboration, innovation and motivation of exploring new ideas, the library leadership needs to adapt creativity as critical attribute in changing their organisational culture and structure.

One of the ideas that emphasized these concerns is adopting creative skill within the scope of problem solving as it is proven to enhance the individual ability to handle issues and increase effectiveness. As mentioned by some scholars as an effective way to improve organizational wellness (Osborn, 1953; Gough, 1979; Mitchell & Kowalik, 1989; McCrae, 1989; Oldham and Cummings, 1996; Zhou, 2003; Isaksen & Aerts, 2011; Isaksen, Dorval & Treffinger, 2011), creative problem solving also changes the cognitive behavior among the employees to be more proactive and deliver creative solutions to a range of operational issues facing an organization. Nevertheless by looking at the importance of creativity in organizational performance and the efforts taken by the library to nurture creativity as one of the main factors to improve delivery service as mentioned, this study was formed to determine the importance of climates influencing creative problem solving ability among the library employees. Therefore, this paper will highlight the critical correlation that exists between organizational creative climate and the individual behaviour on which the facilitation of creative problem solving in the library environment is achieved.

## **A SYSTEM VIEW**

### ***Creativity and Problem Solving***

In general, creativity can be defined as a process of creating something unusual or out of ordinary and something radically different. It usually relate to the dimensions of art, literature, imagination, and the like. In other words it is often has a great deal of positive power and energy associated with it, within and across cultures. First defined by E. Paul Torrence more than 50 years ago as a process, he believes that all individuals are creative and can be enhanced or blocked in many ways in activities such as teaching methods, motivation and procedures. As the needs and structure of culture evolved rapidly, the definition of creativity also progressed in all aspects of life including organizational perspective.

Creativity, as expressed through organizations play a critical role in society. Whether the organization is a business that brings creativity to life through innovative products and services that fulfilled customer's needs, create jobs and contribute to the economy, or whether the organization is a public organization using ideas in a creative way to meet the needs of the community, creativity without doubt is a necessity. Many scholars believed (Welsch, 1975; Raudsepp, 1987; Woodman, Sawyer & Griffin, 1993; Isaksen, 1993; Gundry, 1994; Amabile, 1996) creativity is a cognitive process underlying

the individual's behaviour to generate creative outcomes or products, personality and motivational variables that facilitate the application of these cognitive processes and contextual variables, such as climate, evaluation, and culture. Accurately it is a production of novel and useful ideas in any domain.

Therefore, creativity in organization is the process of creation of valuable ideas such as products, services or procedures which can be seen as critical ability to the organization itself as mentioned by Amabile (1999). While Perry-Smith and Shalley (2003) define creativity at work as an individual-level approach to work that leads to the generation of novel and appropriate ideas, processes, or solutions; it can also be a source of efficiency (Woodman, Sawyer & Griffin, 1993) and competitive advantage (Leonard & Sensiper, 1998). Furthermore, it can be linked to organizational effectiveness and performance as it increases the quality of solutions to organizational problems, helps to stimulate innovation, revitalizes motivation, and promotes team performance (Raudsepp, 1987). By doing so it influences the quality of life, organizational creativity and innovation which play an integral role in serving all of society (McLean, 2005).

Meanwhile problem solving is the thinking and behaviour we engage in to obtain the desired outcome we seek. The outcome could be attaining a certain goal or finding a satisfactory answer to a question. Problem-solving involves affective, cognitive, and behavioural domains as mentioned by Park (2010). Furthermore, it consists of presenting the problem, developing a solution, making justifications for the proposed solution, and monitoring and evaluating the problem solving process and the solutions. Linking together the two cognitive behaviour or skills, creative problem solving is the mental process of creating a solution to a problem (Osborn, 1953; Newell, Shaw & Simon, 1962; Rothenberg, 1976; Guilford, 1977; Mitchell & Kowalik, 1989; Isaksen, Dorval, & Treffinger, 1994). It is a methodological framework to assist problem solvers with using creativity to achieve goals, overcome obstacles, and increase the likelihood of enhancing creative performance. Usually the solution is independently created rather than learned with assistance.

Therefore, individuals, who are more skilled in creative problem-solving, are able to cope with different types of stress and problems more efficiently, and the ones learning how to solve their problems may cope with such problems better. The higher behaviour of creative problem-solving reduces social and psychological problems and it is a vital skill for living in today's world as it covers all aspects of life including working environment such as the library.

### ***Organizational Creative Climate (OCC) and Problem Solving***

Organizational climate is about the patterns of behaviour, something that is readily observed and easier to change. It refers as a set of shared perceptions regarding the policies, practices, and procedures (Schneider & Reichers, 1983) which an organization rewards, supports, and expects. Dynamically to create a creative behaviour among the staffs, (Pritchard & Karasick, 1973; Lawler, Hall & Oldham, 1974; Schneider & Snyder, 1975; Castro & Martins, 2010; Purohit & Wadhwa 2012) understanding on how the climate should be mould and propagate is crucial in an organizational environment. VanGundy (1987) describes that the climate we need to be creative in are both external and internal because optimal use of our creative potential requires climate conducive to creative thinking and adequately lead to having a creative problem solving ability. Internal climate is the psychological and mental attributes we possess that help determine our ability to function creatively. While external climate refers to perceptions we have about things in our external environment that affect our ability to perform creatively. Ekvall (1983,1991,1996) realized the decisive role of creative climate in organization and he defined climate as the observed and recurring patterns of behaviour, attitudes, and feelings that characterize life in the organization. Due to that a positive creative climate can create an atmosphere in which creativity and innovation flourish, whereas a negative one can squash such efforts.

In terms of problem solving, Services & Boockholdt (1998) and Sarminah (2004) revealed that organizational creative climate has a major impact on psychological processes particularly in learning organization. Consequently, these components exert a direct influence on the performance and outcome in individuals, and working groups within organization. As a result, it affects organizational and psychological processes which include group problem solving, decision-making, communication and coordination. Meanwhile, psychological processes include learning in the organization, individual problem solving, creating, motivating and committing (Ekvall and Britz, 2001).

## METHODOLOGY

This study uses a quantitative method which focused on gaining an understanding from the academic library employee's point of view, experience and interpretation. The data collection was based on a structured questionnaire and focused on organizational creative climate dimensions which consist of ten dimensions: challenge, freedom, trust/openness, dynamism/liveliness, idea time, playfulness/humour, conflict, idea support, debate and risk taking. All measures of organizational creative climate are based on a 4-point Likert scale ranging from (1) "strongly disagree" to (4) "strongly agree". These independent variables were measured using 5 items adopted from Ekvall, Arvonen & Waldenstom (1983). The dependent variable is problem solving ability measured using eight items and a similar four-point response format was used. All instruments were reliable based on the Cronbach Alpha value. Thirteen hypotheses were tested using One-way variance (ANOVA), Independent T-test and Pearson Correlation analysis. Questionnaires were distributed to a total of 132 respondents in Sultanah Bahiyah Library, Universiti Utara Malaysia where 123 (93%) were returned and consequently analysed.

## RESULT AND ANALYSIS

### *The Correlation between OCC and Problem Solving*

**TABLE 1 : Mean, Standard Deviations (SD) & Pearson Correlation**

	<i>Mean</i>	<i>SD</i>	<i>Pearson</i>
<i>Challenge /Motivation</i>	2.9951	0.40	0.38**
<i>Freedom</i>	2.6976	0.56	0.47**
<i>Dynamism /Liveliness</i>	2.8293	0.44	0.55**
<i>Truth /Openness</i>	2.6163	0.59	0.46**
<i>Idea Time</i>	2.6976	0.55	0.70**
<i>Playfulness /Humour</i>	2.7317	0.43	0.58**
<i>Conflicts</i>	2.2081	0.48	0.11**
<i>Idea Support</i>	2.5512	0.61	0.49**
<i>Debates</i>	2.8000	0.40	0.56**
<i>Risk Taking</i>	2.8065	0.47	0.62**
<i>Problem Solving Ability</i>	3.0116	0.41	

Note: \*p < 0.05, \*\*p < 0.01

Based on Table 1 above, it is evident that problem solving ability among the library employees are high and significantly use in their daily working activities as it scored a mean of 3.011 with SD of 0.41. Meanwhile among the OCC dimensions, challenge/motivation factor scored the highest mean of 2.995 with standard deviation of 0.40, followed by dynamism/liveliness (2.829), risk taking (2.806), debates (2.800), playfulness/humour (2.731), freedom (2.697), idea time (2.697), truth/openness (2.616), idea support (2.551) and conflicts (2.208). It showed that the dimensions were fully adopted into the library climate and affected the employee's cognitive ability including problem solving. On the other hand, in view of the Pearson correlation between the dimensions of organizational creative climate and problem solving ability the statistical results revealed that relationship between both dimensions were significantly supported. Even though the dimensions of conflict and challenge/motivation scores a bit

weak (0.11, 0.38) which indicates a possibility of conflict circumstances in the organization and motivation which is not very well practiced, all of the dimensions showed a very significant correlation. A score above 0.40 indicate that the dimensions have a strong influence on problem solving ability with idea time (0.70) gets the highest correlation.

Overall these findings are consistent with past studies (Ekvall, 1996; Hunter, 2007; Oldham, 1996) where organizational creative climate is considered as a significant contributor in enhancing creativity in working environment. Furthermore, it is also revealed that people will be reactive to climate variables if they were stimulated to be creative and based on Basadur (1997), Schneider, Gunnarson, Niles-Jolly (1994) and Azzat (2014), organizational climate is a useful basis in motivating cognitive behaviour such as creativity, problem solving and innovation among workers. It is also consistent with the contextual theory (Ekvall, 1999; Oldham, 1996) that organizational climate mediates the processes and operations of organization such as creating, motivation, co-ordination, controlling, communication, decision making and problem solving between organizations' resources and the organizational outcomes such as service performance or product innovation.

### ***Creative Problem Solving in the Library: A Significant View***

This study has shown a very important result: the library employees like in any organizations depend on the organization climate to influence their cognitive skills and behaviour. This phenomenon is not new as many scholars without doubt confirmed that problem solving skill as part of being creative depends on the climate to succeed. This result however does not cater on how the employees mastered the problem solving skill in the first place or how the library administrators decide to adopt the creative climate into their environment. Based on that, this view intends to fill in the gap and connects the significant link between creative problem solving and the library structure in today's perspective.

As mentioned by Walton & Webb (2016), the pressure in creating a library that is able to cope with expandable technologies and organizational complexity has made the library leaders to start thinking differently. They have to ensure their library can adapt new technologies in order to display better services and using new tools to fulfil their objectives. This includes changing the culture and organisational structure to allow easier collaboration, provide staffs with motivation to explore, innovate and change and also to allow ideas and information to flow into the library and out again (Lewis, 2004). By doing so, it will also increase their durability in facing diverse issues such as ill-structured problems, time constraint, changing conditions brought about by dynamic events, multiple players, ill-defined goals or existence of competing goals, large amounts of information presented thus requiring processing, and the existence of institutional norms and goals (Klein, Calderwood, & MacGregor, 1989).

However, all of these ideal ideas and issues cannot be entertained by the library leaders if their library is still dragging the traditional and bureaucratic hierarchical structure. To be a creative library, the leaders have to invest time, effort and resources especially into maintaining and developing a culture or values which is appropriate. The library and their members have to be able to embrace new dimension, technology and attitude in order to meet their own necessity and customer satisfaction. Part of the solution is to embrace a comfortable and suitable climate that everyone can participate. Encourage employees to think independently, able to anticipate and adapt to change, express their opinions about problems facing the library, grow professionally, share ideas and experiences among themselves for example, (Castiglione, 2006) are fundamental values in creating this critical culture. Besides changing the style of leadership or identifying better training, creating a creative climate should be the main concern when effort to adopt creativity float in the minds of library leader. It is because creative climate engages and affect the employees value and behaviour which control their ability to do something right, meaningful and proper in sense of organizational structure. Tierney, Farmer & Graen (1999) mentioned that the ability and willingness of leaders to create positive

experiences and conducive climate to creativity can provide a powerful and effective means by which organizational creativity may be enhanced.

Undoubtedly it is unrealistic to expect the climate itself can change and affect the employees behaviour without any support from training. A comprehensive training and strategies to develop the right skill in order to face complex organizational and innovation problems is critical especially in library environment. Ongoing support will enable the employees to develop helpful skill in decision making, communication, coordination, controlling, innovation, motivation, problem solving and commitment enthusiasms. As such, problem solving skill needs to be taught continuously and accordingly to maintain the ability of the library employees in facing complex needs from the customers and the diversity of problems surrounding the organization itself. It is important to realise that library nowadays need a new way of thinking and do thing that align with the customers wish; significantly creativity will surely lead the way.

Again the importance of organizational creative climate as proven by the findings is undoubtedly critical to the progress and performance of the employee's positive behaviour in problem solving. As Isaksen (2011) clearly mentioned that all these dimensions which include freedom in deciding what to do or how to accomplish the task, dynamism in sufficient resources, management exhibiting enthusiasm for ideas-creating a generally nonthreatening and open environment, a collaborative atmosphere such as openness and low stress level across levels and divisions, a general sense that creative work will receive appropriate feedback, recognition, and reward, sufficient time, risk taking and challenge due to the intriguing nature of the problem are crucial and important to any organization even though, according to Majaro (1988) at some point noted that changing the climate to one which is creative, is one of the most difficult task to do for top management.

## **CONCLUSION**

It can be concluded that for this particular study, the organizational creative climate variable with its ten dimensions have significantly contributed to the creative ability of the employees as described by Ekvall, Arvonen, and Waldenstrom-Lindblad (1983). It also has the power to influence organizational process such as communications, problem solving, decision-making, co-ordination, motivation and commitment. It is important for the organization especially in the library to change their ways of thinking and working as to achieve great achievement, organizations should all be aware of these organizational factors and strategies that influence on how their employees can contribute. This contribution will eventually garner new innovation in service delivery and mark-up the library performance. As described by Robinson (2009), we need to be able to change according to the evolvement of human capacity because the important of nurturing human talent is important. That is why we need to create environments – in our schools, in our workplaces and in our public offices where everyone is inspired to grow creatively. By doing so, we can have a chance to do what we should be doing and discovering new things in our own way.

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Paper 4:

**ALMOST FORGOTTEN: REVISITING THE LIBRARY**

*The modern library is an almost forgotten species. With the Internet, new technologies and social media, the library has changed to being an information resource repository of the world. The World Wide Web has thus become the library. But what does that mean? How does that factor in universal versus local knowledge? How does that facilitate us in terms of domination and empowerment? This paper looks at the need for revisiting the library and a sense of reconciliation with the past by non-Western societies. If the whole world is the library, which world are we or should we be most concerned with.*

**KEYWORDS:** Digitization, Humanities, Research Libraries, Microforms

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## **INTRODUCTION**

A library, from the Latin *liber*, meaning “book.” Mention of it brings to mind that stoic, monastic image of the storehouse of shelves upon shelves books, earlier in the form of papyrus and parchment, and later paper. The library’s genesis is the stocking of clay tablets in Babylon to the Greek temples in Athens in the 4th century BC. The texts were written and housed in institutional libraries. The many schools of philosophy, among them of Plato and the Peripatetic schools, were possessors of these libraries and influential for many centuries on.

Ironically, the Stoics, did not have a library. They had no property to own any. And now it is digitization. The whole world is a library – in different gadgets and apps. And much interactive at that. Consumers are also producers. Facebook alone is an infinite archive with each of us contributing to civilization (and also to uncivility). In this century, knowledge is not only produced by the university and the clergy, but by every soul worth their salt. There is no centre but many centres. The library is now a network of databases. Digital natives are ubiquitous, and subversive to authority.

Library users are in their best situation as information can now be access from anywhere and anytime. The advent of internet, academic portals, full-text electronic resources from subscribed databases or in-house repository grant them with the possibility to access and utilize the resources at their own spare time. This feature was not possible until the recent years in 20th century. The phenomenon has resulted in the notion that users are able to complete their coursework or even their studies without utilizing the library physically and has resulted to a conception which challenges the existence of the library itself.

The encounters with librarian from public and university libraries sometimes resonates uniform sentiments as if to impress the world that less books and journals, and more digital is the better option. The idea is not to dispute libraries wanting to go digital. But making it inappropriately obtrusive may not be too wise.

## **LEAN VS. NICHE**

It is well known that most libraries will utilize libraries’ input/output measures in a selective and meaningful manner to support library and university administrators in their attempt to equalize print and electronic expenditures, accommodate human resources, and consider space demands. Future library boasts about being lean to be agile. While no one library can provide the wide variety of materials that many scholars require for their research, it is also vital to acknowledge the niche collection that a library owns, which could be in various or even not in popular format which supports the research needs. In other words, librarians must monitor the researchers’ use of specific formats of the library and this could be done through the compilation of statistical data on usage.

Besides books and manuscript as a primary source of information, there are many other formats in which relevant information may appear. Some examples are newspapers, microforms, maps, films, videos, sound recordings, pictorial material, photographs, slides, computerized data sets, statistical collections, government documents, and music scores. The importance of such formats will depend on the branch of learning and the exact research project.

In support to that, it is worth to cite East (2005) who mentioned about the DLF Study which was funded by the Digital Library Federation which used interviews and case studies to examine the “information environment” of 33 humanities scholars from universities in Illinois. The DLF Study reported that “our data also verify what previous research has asserted about the age of scholarly resources: older materials continue to be used and valued by humanities scholars.”

Nelson (2016) affirms that if the library spends most of their resources and time investing in a broader collection to appeal to larger group of users, they may deprive access to patrons with much more specific and targeted tastes. Henceforward, we can conclude that one of the significances that can be derived from the concept of lean libraries is not necessarily to minimize but to balance between

providing popular materials and more specialized one; to follow the trends and yet maintain some of the traditional aspects of the library in terms of collection, services or outlook which might still appeal to some users.

### RELEVANCE OF MICROFORM COLLECTION

Libraries have always served individuals seeking for information. The importance of older materials has considerable significance in the epistemology of knowledge. Microform has been one of the format demanded for research purposes. According to Ranganathan 5 Laws of Librarianship, Law no.2, states that 'every book has its reader'. Microform serves its own users and may attract other uses as well. Consequently, libraries should balance their resources and services to cater to all users' needs and demands.

One of the formats of library resources that has always been overlooked is microform. The conception of microform to be outdated, toxic assets, unpopular collections, minimally used and difficult to use usually cross the mind of library users. Yet, microform is a relevant format which contain valuable research material, sometimes not available electronically in a format that is ideal for long term preservation. (Caudle, 2013)

Generally categorized as microform, it is roll microfilm, microfiche, computer-output microfilm, and all other formats produced by any method of micro-photography and image miniaturization. Microforms are read by devices called microform readers. The USM Library collections start since its inception in 1969. Microform collection which was acquired few years after, resides primarily in the main building, Perpustakaan Hamzah Sendut 1. The collection is housed in the Microform Room at Level 2 of the Library. Users are able to locate the item in the online catalog and indexes as cataloging exists for most of the collection but would need assistance to retrieve the microform and read it using the readers. Until December 2016, the collection holds over 15, 000 units of titles in microfilm and microfiche.

The collection contains 119, 647 reels of microfiches, 11,435 reels of microfilm in the subject of humanities and social sciences. The topics range from education, ethnography, history, Malayan history, socio economic and political studies, folklore and literature, archaeology and linguistics to name a few. Major collection categories include theses, newspaper and magazines collection, ERIC microfiche, periodical articles and book chapters, archival records of the Straits Settlements, Colonial Office files and Indonesian monograph.

Subject	Microfilm	Microfiche	Title	Volume
ERIC Documents		/	847	141,109
Colonial Office Files (1844-1951)		/	40	
Local Magazines & Newspapers Indexes (1785-2003)	/		105	105
Straits Settlements Records	/		13	13
Indonesian Monographs		/	4,290	75,651

Initially libraries acquired microform for reasons of space, economy and preservation while it also allowed them to secure large collections of primary source materials. It has helped in reducing larger documents, such as newspapers, save space by having the content on film and provides storage of vast quantities of information on much smaller surface. Micro-technology provides a reliable and economical method for managing data and it has stood the test of time (Naidoo et al., 2009, p.64)

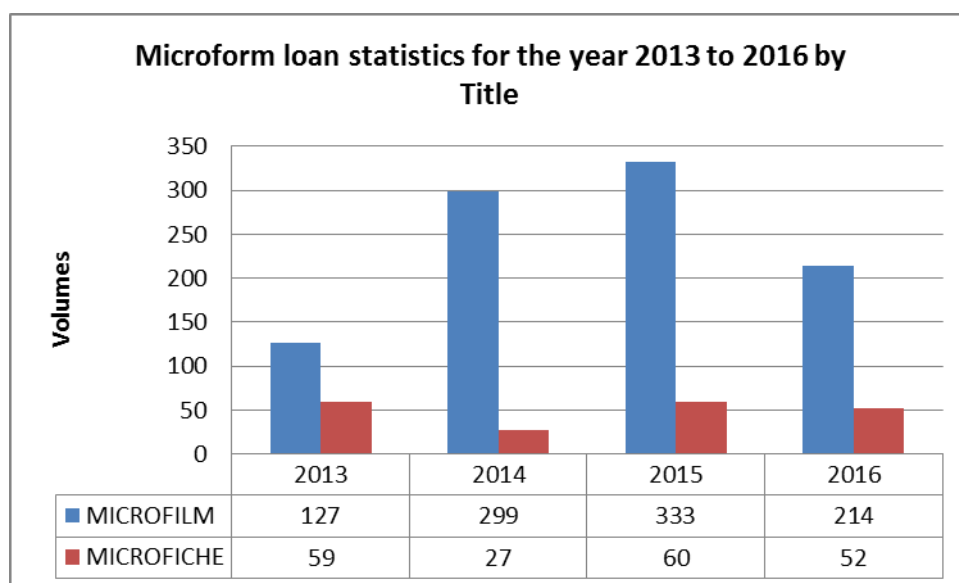
The availability of electronic resources may alter the growth and use of microform collections but this is not yet evident. Microform holdings in the ARL Libraries for example, was 4.7 million units

(Association of Research Libraries, 2008). However, statistics on the use of microforms were not found in the published literature. Meanwhile, in USM Library, the demand for microform is still very much prevalent for learning and teaching even research. Statistical data taken from Malaysia & Archives Division, USM Library shows a steady usage of the format has been recorded for the last past 4 years. A total of 1,171 microforms were borrowed by the users who are undergraduate and postgraduate students, lecturers and researchers.

Year	2013	2014	2015	2016
<b>Total usage</b>	186	326	393	266

\* Microform usage in Perpustakaan Hamzah Sendut, USM 2013-2016

ITEM	MICROFILM	MICROFICHE	TOTAL
YEAR			
2013	127	59	186
2014	299	27	326
2015	333	60	393
2016	214	52	266
TOTAL	970	198	1,171



This data shows that microform with their preserved content has its own value in fulfilling the researcher's needs and can complement other resources in enriching the content of a study. This statement was also supported by Cheney (2010) who mentioned that microforms collections can continue to play an important role in extending the breadth and depth of many academic library collections and in supporting the research and teaching needs of faculty and students.

Naidoo et al. (2009) surveyed a number of libraries finding that over half of the institutions studied partially or fully replaced microform in favor of electronic access, yet the others prefer to retain newspapers, periodicals, historic documents, and government documents in microform. On another note, Keogh (2012) and Manzo (1997) mentioned that some librarians prefer to retain microform because "too many materials will never be available online." It is also commonly observed issue that

sometimes microform is the only version available and cannot be discarded until there is an electronic version (Freeland & Bailey, 2008; Keogh, 2012; Sridhar, 2002)

#### **IMPROVED PRODUCT, IMPROVED SERVICES**

One of our initiative to enhance the visibility of microform collection is by indexing selected titles in Google Scholar through the metadata available in Universiti Sains Malaysia Institutional Repository (Repository@USM).

Repository@USM serves as a repository for storing a variety of electronic information materials such as articles from academic magazines, books, thesis, examination papers, research reports, photographs and others. It was being developed and launched in 2008. Perpustakaan Hamzah Sendut is the department which responsible to manage this repository as a whole. This repository provides free access to the world and can be used freely for research, teaching and learning at the University. It can be used as an online reference source that is easy, effective and accessible at any times via the Internet. Repository@USM can be accessed at <http://eprints.usm.my> or via library website [www.lib.usm.my](http://www.lib.usm.my) and USM portal [www.usm.my](http://www.usm.my).

Repository@USM is a platform that is compatible to be indexed by Google scholar. Google scholar will index the collections in repository, make them visible online and searchable through Google Scholar. The search results in google scholar will include the collections of this repository. Users will be brought to this repository from google scholar via the link given.

Google scholar is an academic search engine that has been used by people all over the world. By depositing microform titles in the repository, the collections will be indexed and promoted to all over the world. Users can retrieve information on microform collections available in Perpustakaan Hamzah Sendut through the platform. This will assist in increasing the visibility of the said collections; whereby the titles are presented to a larger audience, promoting the forgotten resources thus improved the use of the collection and the library generally.

#### **CONCLUSION**

Early libraries were icons of authority on what is worth writing and knowing. The book, in the form that we have known since the use of paper in eighth century by the Arabs has been the superstructure of libraries. In the Muslim world then hundreds of libraries were scattered throughout, usually attached to mosques or madrasas (colleges). Thousands of hand-copied manuscripts were housed there. One such library was the palace library of the Fatimids in tenth century Cairo with 40 rooms, each on different subjects. A far cry from the present image of war and destruction, Baghdad had 30 madrasas in the thirteenth century, each with its own library. Damascus in the 1500 had 150 madrasas and hence an equivalent number of libraries.

With some of the libraries then (including private ones) holding more than 100,000 volumes of books, and judging by the standards then, it makes many of our university and public libraries impoverish. Even the new Birmingham Library, with its 400,000 books (and hundreds of thousands more stored in the archives) is nothing to shout about by today's standard. But credit must go to its director when he echoed the sentiment that "We wanted to create a building that shouts out learning and culture." The modern library, according to the director, Brian Gambles, is a place where people can do some research and borrow a book, but also where a budding entrepreneur can get advice on setting up a business (its target is to create 500 new start-ups a year) or a family can attend a musical performance.

History tells us that old media does not replace the new. The digital is not the ultimate. We do not know what is to come over the horizon. Librarians have the option of the bias of the library (intellectually, culturally, politically or technologically) in what is repositied. But the semiotics of the

library, drawing from Eco's 1980 *The Name of the Rose (Il Nome della Rosa)*, must return to the aesthetics and function of the primordial rose.

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Paper 5:

**REPORTING THE VALIDITY OF EVIDENCE-BASED LIBRARIANSHIP INSTRUMENT IN ELECTRONIC RESOURCES ACQUISITION DECISION**

*In determining the acquisition decision of the electronic resources, librarians currently looking for a holistic approach in their decision making. Librarians believed that Evidence-based Librarianship (EBL) practice is a comprehensive and practical approach that utilizing the best available evidence in library acquisition making. This paper aims to reports the validity of the instrument developed through adopt and adapt methods. Basically, the instrument represents five dimensions of the framework. The instrument was designed to tab the types of evidence used by librarians in their decision. This instrument only focused on the acquisition of electronic resources. The validity analysis is reported using two methods: Content Validity Index (CVI) and Scale level Content Validity Index (S-CVI). The validity analysis also calculated the Scale level Content Validity Index Average (S-CVI/Ave) which score of 0.94 consider as achieved high-level agreement and acceptable. The validation procedures are also described in the report. Overall, this instrument has achieved a good content validity.*

**KEYWORDS:** Evidence-Based Librarianship, Instrument Validity, Library Acquisition, Library Innovation, University of Malaya

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## **INTRODUCTION**

Evidence-Based Library and Information Practice (EBLIP) or Evidence-Based Librarianship (EBL) is an adoption of Evidence-Based Medicine (EBM) and Evidence Based Practice (EBP). EBM has been used in developing Evidence-Based Practice (EBP) with some adoption and adaptation of new elements and context. While EBLIP and EBL are adopted by librarians from the medical fields to apply in their daily librarianship practice. The EBL models and the process outlined the elements of evidence, in the decision-making process as research evidence, local evidence and professional knowledge.

EBL is a technique applied by information professionals in the collection, interpreting and integrating of valid, important and applicable user reported, librarian-observed, and research driven evidence (Booth, 2011). EBL was widely accepted by the information professional in various fields of study, this was agreed by Booth (2003) when she described EBLIP is the best approach available with moderated by user need and preference that capable to improve the quality of professional judgement. Additionally, Eldredge (2016) concluded that the EBLIP process enables library and information professionals to enhance their professionalism with an emphasis on the transparent decision making roles. EBL has gained trust from librarians in many fields, not only medical librarian but have captured the attention of law librarians (Lerdal, 2006).

## **LITERATURE REVIEW**

### **DEFINITION OF EBL**

The EBL models and processes outlined the elements of evidence in the decision-making process as research evidence, local evidence and professional knowledge. Researchers faced some confusion in defining the evidence element, Koufogiannakis (2015) in his study of Academic librarians' conception and use of evidence source in practice categorized evidence into hard evidence and soft evidence. Hard evidence is more scientific in nature which derived from published literature, statistics, local research and evaluation, other non-scholarly publication and facts. While soft evidence is input from colleagues, tacit knowledge, feedback from users and anecdotal evidence.

Glasby, Walshe & Harvey (2007) divided evidence into two different categories which are theoretical via empirical research derived from ideas, concepts and models; and Experiential derived from experience with an intervention. In contrast Booth (2000) divided evidence into three which are: Research-derived evidence, Librarians observed evidence and user reported evidence. Similarly, Todd (2006) structured the evidence into three which are; Empirical evidence; Professional Standards and Guidelines and Campus and district data. The argument on the division of evidence by various researchers basically emerged from the nature and environment setting of the study. Different research context views the evidence differently (Bayley, 2001).

### **EBL implementation in Library and Information Science domains**

EBL is applicable in library decision-making process in six domains of librarianship. The domains were introduced by, Koufogiannakis & Crumley in 2002 includes, i) Reference/ Enquiries - determinants of providing service and access to information that meeting the user needs and requirements. ii) Education - determinants of ways in findings the most suitable teaching methods and strategies in user education. iii) Collection - determinants in building a high-quality library collection and collection development policy of print and electronic resources that useful, and cost effective. iv) Management-determinants in managing tangible and intangible resources within libraries. v) Information Searching and Retrieval - determinants in creating appropriate systems and retrieval methods for effective access and retrieval; and vi) Marketing/Promotion - determinants in two aspects of library promotions such as promoting the professions and promoting the services for both users and non-users.

Lerdal (2006) added the importance of librarians to practice EBL as it will facilitate to integrate research findings and experiences in solving their strategic and operational problems. The application of EBL

has helped in renewing the professional image and practice, creating credibility, adding the values of respect and accountability in a user-driven decision.

### **EBL in Collection Management / Acquisition**

Research in this domain focusing on print, online and hybrid collections management. Gessesse in 2000 defines collection management processes involved planning, goal setting, decision making, budgeting, acquiring materials and evaluating them. EBL has served in the acquisition process in libraries and information agencies since 1999 when it was first cited in academic journals (Huggett, 2013). Additionally, Eldredge (2015) added that EBL supports the user evidence based decision-making process in the acquisition of library resources. According to Booth & Brice (2000) published and unpublished literature would be the main source of evidence in acquiring electronic and conventional resources in the library.

### **RESEARCH AIMS**

This paper aims to report the face and content validity of the instrument developed to measure the librarians' adoption and implementation of EBL. The instrument measures five constructs in the overall research framework. Content validity is a critical early stage in construct development, thus it is crucial to this study to report the content validity.

### **INSTRUMENT**

The instrument is developed based on adapt and adopt techniques and new item development. Items of the instrument are adopted and adapted from models and theory. Innovation Diffusion Theory (IDT), Evidence Based Librarianship (EBL model), Technology-Organization-Environment (TOE model) and Concern-Based Adoption Model (CBAM model). As for the new develop items, it was extracted from EBL and librarianship literature. The pilot version of the instrument is divided into 6 parts, namely A: Technological and Organizational Characteristics, B: Concern of EBL, C: User Needs and Preferences, D: EBL Adoption, E: EBL Implementation and F: Demographic Information. All items in the instrument using 7 points Likert –Scale measurement methods. The demographic information consists of 7 items on the respondent's Gender, Number of Years' Service, Academic Qualification, Job responsibility, Types of Library, Size of Library, Source of Funding and one open-ended question to ask the respondent opinion on the EBL implementation. The instrument is complemented with a consent letter and a cover letter that described the background of the study and the researcher information.

### **VALIDATION PROCEDURE**

This study undertakes two validity procedures: Face validity testing and Content validity testing. Rahman et al. (2016) denote that validity is the extent which specific items on a tool accurately assess the concept being measured in the research. The instrument face and content validity were concurrently assessed by a panel of expert. The validation procedure took approximately 1 month to complete. The content validity test for the I-CVI and S-CVI are calculated based on the following formula:

*I-CVI are calculated as by dividing the number of experts that rated 3 (Relevant) and 4 (Very Relevant) on the relevancy scale by the total number of the number of experts.*

*S-CVI are calculated as I-CVI/Ave, which calculate the average of all I-CVI.*

*S-CVI= I-CVI/Ave*

### **FACE VALIDITY**

The instrument is sent to an identified panel of expert in the field of librarianship and EBL for the validity assessment. The expert eligibility is set according to their fields of expertise, experience in the field of library and information science, total numbers of working experience, professional certification and academic certification. Below table describes the expert panels.

<i>Panel</i>	<i>Fields of Expert</i>
Senior Medical Librarian	EBL and Librarianship
Deputy Chief Librarian	Librarianship (Acquisition)
Senior Management	Librarianship
Academician	Librarianship and Methodology
Academician	Librarianship and Methodology

**Table 1: Expert Panel**

An invitation letter is sent to the panels to seek their agreement to participate in the validation process. The instrument was sent upon receiving their agreement and consent. They are required to provide comments and suggestions on the following face validity criteria as suggested by Oluwatayo (2012) namely: i) Appropriateness of grammar, ii) The clarity and unambiguity of items, iii) The correct spelling of words, iv) The correct structuring of sentences, v) Appropriateness of font size, vi) Structure and format, vii) Appropriateness of difficulty level for respondents, and viii) Adequacy of instruction on the instrument.

### CONTENT VALIDITY

In the content validity assessment, panels are required to rate the item according to the scoring guide based on the relevancy and clarity of the items. The rating of the score are from 4 (Very relevant) to 1 (Not relevant) and 4 (Very clear) to 1 (Not clear). Below table represents the items and construct for content validation.

<i>Name of Construct</i>	<i>Total Items</i>	<i>Number of items</i>
Relative Advantage	8	1-8
Compatibility	3	9-11
Complexity	4	12-15
Organizational Readiness	3	16-18
Top Management Support	4	19-22
Training and Education	3	23-25
Concern	34	26-60
Level of Use	8	61-68
User Need and Preferences	5	69-73
Adoption	4	74-77
Research Evidence	6	78-83
Local Evidence	5	84-88
Professional Knowledge	5	89-94
Demographic	8	95-102
Total	102	

**Table 2: Total items**

### FINDINGS AND DISCUSSION

This section will further discuss the analysis outcomes of the validation procedures. The face validity assessment analysis is represented in Table 3, which described the 8 elements of the assessment.

<i>Criteria</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>	<i>P5</i>	<i>Interpretation</i>
1. Appropriateness of grammar	Yes	No	No	No	Yes	Need for revision
2.The clarity and unambiguity of items	Yes	Yes	Yes	Yes	Yes	Appropriate
3.The correct spelling of words	Yes	Yes	Yes	Yes	Yes	Appropriate
4.The correct structuring of sentences	Yes	Yes	No	Yes	Yes	Need for revision
5.Appropriateness of font size	Yes	Yes	Yes	Yes	Yes	Appropriate
6.Structure and format	Yes	No	Yes	No	No	Need for revision
7.Appropriateness of difficulty level for respondents	Yes	Yes	Yes	Yes	Yes	Appropriate
8.Adequacy of instruction on the instrument	Yes	No	Yes	Yes	No	Need for revision

**Table 3: Analysis of face validity**

Based on the comments there are four (4) elements of the instrument need to be reviewed and improved. The appropriateness of grammar received three disagreements (with “No” remark), Correct structure of sentence with one disagreement, Structure and format with three disagreements and Adequacy of instruction on the instrument with two disagreements. The instrument then undergone a revision exercise, accordingly to the recommendations.

The content validity assessment is analyzed using two methods: I-CVI, and S-CVI.

<i>Item</i>	<i>Relevant (Rating 3 or 4)</i>	<i>Not relevant (Rating 1 or 2)</i>	<i>I-CVIs'</i>	<i>Interpretation</i>
1	2	3	0.40	Eliminated
2	4	1	0.80	Need for revision
3	4	0	1	Appropriate
4	4	0	1	Appropriate

**Table 4: Calculation of I-CVI of items of Top management support dimension based on relevancy**

<i>Item</i>	<i>Clarity (Rating 3 or 4)</i>	<i>Unclear (Rating 1 or 2)</i>	<i>I-CVIs'</i>	<i>Interpretation</i>
1	3	2	0.6	Need for refinement
2	3	2	0.6	Need for refinement
3	4	0	1	Appropriate
4	4	0	1	Appropriate

**Table 5: Calculation of I-CVI of items of Top management support dimension based on clarity**

The calculation of I-CVI (Content Validity Index) according to Larsson et al. (2015) and Polit, Beck & Owen (2007) the I-CVI was calculated for both “relevancy” and “clarity”. Schilling, Dixon and Knafi, et al (2007) define I-CVI as the proportion of expert that provided a rating of 3 (very relevant) or 4 (extremely relevant) on the relevance scale and rating 3 (fairly clear) or 4 (very clear) on the clarify scale. The I-CVI cutoff as suggested by Lynn (1986) and Polit, Beck & Owen (2007) is a below than 0.78. As for this assessment, a conservative value of  $\geq 0.80$  for both relevancy and clarify are used as suggested by Paul, et al (2016). Items rated below 0.80 are eliminated. Based on the I-CVI, 15 are remarked as need some revision, 9 items rated relevant, but need minor revision, 8 Items are rated not relevant and not clear and the rest 70 items rated very relevant and very clear. The analysis of the overall items originates 3 items are rated below 0.80 for relevancy and 9 items are rated below 0.80 for clarity. A

total of 10 items are eliminated based on the relevancy and clarity rates, 8 items are reworded or revised for clarity.

Below table described the analysis of the S-CVI for inter-ratter agreement and calculation of S-CVI /Ave.

Item	Expert Agreement	in Item CVI	Item	Expert Agreement	in Item CVI	Item	Expert Agreement	in Item CVI
1.	5	1	36	4	.80	71	5	1
2.	5	1	37	4	.80	72	5	1
3.	4	.80	38	5	1	73	5	1
4.	5	1	39	4	.80	74	5	1
5.	5	1	40	5	1	75	5	1
6.	5	1	41	4	.80	76	5	1
7.	4	.80	42	5	1	78	5	1
8.	5	1	43	4	.80	78	5	1
9.	5	1	44	5	1	79	5	1
10.	5	1	45	5	1	80	5	1
11.	4	.80	46	5	1	81	5	1
12.	5	1	47	5	1	82	5	1
13.	5	1	48	5	1	83	5	1
14.	5	1	49	4	.80	84	5	1
15.	5	1	50	4	.80	85	5	1
16.	4	.80	51	5	1	86	5	1
17.	5	1	52	5	1	87	5	1
18.	4	.80	53	5	1	88	5	1
19.	2	.40	54	4	.80	89	5	1
20.	4	.80	55	5	1	90	5	1
21.	5	1	56	5	1	91	5	1
22.	5	1	57	4	.80	92	5	1
23.	5	1	58	4	.80	93	5	1
24.	5	1	59	4	.80	94	5	1
25.	5	1	60	4	.80	95	5	1
26.	4	.80	61	5	1	96	5	1
27.	5	1	62	5	1	97	5	1
28.	5	1	63	5	1	98	5	1
29.	2	.40	64	5	1	99	5	1
30.	5	1	65	5	1	100	5	1
31.	5	1	66	5	1	101	5	1
32.	4	.80	67	5	1	102	5	1
33.	4	.80	68	5	1			
34.	4	.80	69	5	1			
35.	4	.80	70	5	1			

S-CVI = .94

**Table 6: Scale-level content validity index (S-CVI)**

The S-CVI (Scale-level Content Index) of this study are calculated based on Polit, Beck & Owen (2007) and Davis (1992). Where they suggested the value of S-CVI should be greater than 0.8 or 80% or better agreement among reviewers. The S-CVI for this study instrument is .94 and considered achieve "high-level agreement" which is acceptable and consistence.

## CONCLUSION

EBL practice is seen as a comprehensive and reliable in decision making, thus a valid instrument is vital in assessing the practice among librarians. This instrument was developed with a comprehensive reading in the literature of librarianship, EBL, Evidence-based practice (EBP), theories and models. This validity report is important to the development of EBL practice, especially in Malaysia, where the implementation is still at the initial stage. This report only covers two validity assessment of the instrument and the outcomes is considered having a good content validity for both the I-CVI and S-CVI. Therefore, the instrument is ready for the second stage of reliability assessment.

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Paper 6:

### **USER CENTERED ACCEPTANCE OF OPEN SOURCE LIBRARY INFORMATION SYSTEM**

*Research on technology acceptance is rapidly developing in multidisciplinary fields. Technology acceptance is focused either on users' beliefs or for the betterment of system development. This study aims to measure librarians' acceptance of an open source library information system using an extended unified theory of acceptance (UTAUT) model, incorporating user acceptance test (UAT). The proposed model tests the influence of system quality (SQ), information quality (IQ), Information technology skill (ITS) and cost (C) in addition to the constructs from UTAUT model, namely performance expectancy (PE), effort expectancy (EE), social influence (SI), self-efficacy (SE) and attitude towards using technology (ATUT). The survey instrument consists of 61 items representing all ten constructs. The respondents are librarians from selected academic libraries of public and private universities in Malaysia using KOHA. A total of 215 responses were subjected to Partial Least Square (PLS) analysis. The R<sup>2</sup> value indicates a strong relationship between the variables and data used to build the proposed model. Path analysis supported five of the proposed relationships, namely ATUT, PE, SQ, SI and IQ. Four other relationship, C, EE, ITS and SE were not supported for this dataset. This study contributes to the measure of user acceptance of open source library information system from both user behavioral aspect and system success aspect.*

**KEYWORDS:** Academic Library, Public Universities, Private Universities, UAT, Information System, UTAUT Model, Open Source, KOHA ILS

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Paper 7:

### **UNION CATALOGUE OF MALAY MANUSCRIPTS IN MALAYSIA**

*In this paper, we elucidate the importance of developing a union catalogue of Malay Manuscripts in Malaysia. Currently, all Malay manuscripts are stored in various locations around Malaysia. To form a unified collection of Malay manuscripts in Malaysia an Information System was developed to store the relevant information of the manuscripts. The information system is called a Union Catalogue of Malay Manuscripts in Malaysia. The objectives of the Union Catalogue are to provide an access to information pertaining to Malay manuscripts in Malaysia, an assistance for researchers to conduct research in manuscripts, and a new dimension to the field of big data in Islamic and Malay studies. The methodology used in the study is archival record analysis of the case study. As a result, an information system prototype was developed and enhanced for initial data storage. The completed prototype will be able to perform terminological analyses of Malay words, which are derived from Arabic words in the future.*

**KEYWORDS:** Malay Manuscripts, Union Catalogue, Digital Libraries and Archives, Information System

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## **INTRODUCTION**

Malay manuscripts in Malaysia are kept by various institutions and individuals. Several institutions that have Malay manuscripts such as National Library of Malaysia, National Archive and Malaysian Institute for Language and Literature (Dewan Bahasa dan Pustaka) have published series of catalogues of Malay manuscripts as reference documents for users. Nevertheless, these documents are scattered and kept by the respective institutions. Realizing the importance to have a database that store relevant information for manuscript accessibility, an Information System of Union Catalogue of Malay Manuscripts was developed in early 2012 by the Kulliyah of ICT of International Islamic University Malaysia (IIUM). This database can be regarded as a searching mechanism for Malay manuscripts in Malaysia that can be accessed through the Internet. Initially, this database will function as informer of who keeps what and where. In near future after resolving the issue of copyrights and permissibility, this database will enable users to view the contents of respective manuscripts.

## **OBJECTIVE**

The development of this information system has manifold objectives. The first objective is to provide an access mechanism to Malay manuscripts in Malaysia. Researchers and users who are interested with Malay manuscripts can easily search the available manuscripts based on the authors, titles, and locations of the manuscripts. The second objective is to provide academic assistance for researches in manuscripts. Researchers can easily identify the specialization of each manuscript in various fields of Malay and Islamic studies. The third objective is to provide a new dimension in the field of big data especially in relation to Islamic and Malay studies. This new dimension is a novelty contribution to the field by expanding its horizon not only from computer data but also from other sources.

## **METHODOLOGY OF TERMINOLOGICAL ANALYSES**

The continuation from the development of this database is to conduct terminological analyses of Malay words that are derived from Arabic words from four main subjects. Those subjects include *Fiqh*, *Tawhid/Usuluddin*, *Qur'an/Tafsir*, *Tasawwuf*, *Hadith*, *Falaq/Astronomy*, medical, *Nahu*, Islamic dates and *Usul Fiqh*. For initial analyses, ten manuscripts will be selected that represent those ten subjects. The selection is done according to its availability and accessibility. From research method point of view, the data collection technique of this study is synonym with archival record analysis of the case study. The source of archival records can be either from the computer files or printed materials (Yin, 2009). Under the flagship of purposive sampling, the materials that are studied under the case study will generate information-rich sources (Pickard, 1993). Twelve manuscripts that represent four different subjects from Malay manuscripts will be analysed to identify the Arabic words and Arabic root words of the Malay terms/words used in Malay manuscripts. The selection of those words will be based on these two criteria:

***i. Malay words that are derived from Arabic root words***

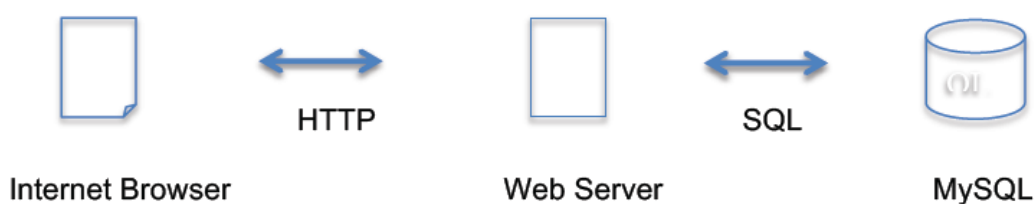
***ii. Arabic words that are used in Malay manuscripts***

The outcome from this study will provide a blueprint in the field of big data in relation to Malay manuscripts and Islam. Nowadays, big data always connotes with extraction of computer data to benefit organisations. This new dimension of big data is a novelty that provides a new direction on how to conduct research on Islamic manuscripts.

## **PILOT PROJECT**

The idea of having a union catalogue for Malay manuscripts was conceived in 2012 as class activity in the Manuscript Laboratory, IIUM. The idea was discussed with other institutions for project collaboration. However, outcomes of the discussion were varied because of the nature of the project. In 2013 the project started with a prototype development initiated by two master students majoring in Library and Information Science (MLIS). One student developed the prototype for the catalogue system and another was assigned to insert the titles of Malay manuscripts into the system from

published catalogues. The prototype was developed using an agile software development approach, which involves continuous improvement (Larman, 2004). The catalogue system should be able to provide an accurate number of Malay manuscripts available in Malaysia (Wan Ali Wan Mamat, 2014). The completed prototype was developed using XAMPP, which is an open source web publishing tool. It contains a web server, PHP scripting and MySQL database. Open source web publishing tool (XAMPP) is used for the prototype development because of its availability and cost effective in producing a web application (Hertel, Niedner & Herrmann, 2003). According to Dvorski (2007), XAMPP has been used for development and testing as it supports cross-platform and is small in size and portable. In addition, it uses a simple client-server architecture as depicted in Figure 1 for hosting the union catalogue of Malay manuscript. The web server is responsible to host HTML and PHP files that can be viewed by users. The MySQL database is used to store the titles, locations, countries, call numbers, and subjects of Malay manuscripts.



**FIGURE 1: The Client-Server Architecture for Union Catalogue of Malay Manuscript**

Moreover, the web server is hosted on a server which uses a linux distributed operating system, CentOS version 7. CentOS is an open source operating system that is also cost effective and best suited to be used by a server because of its stability. Both software are constantly updated and maintained due to its popularity, which makes it suitable to host the web based catalogue (“The Red Hat Enterprise Linux Advantage”, 2010; Hu, Nanda & Yang, 2012). The initial prototype for catalogue database consists of five (5) columns for title, location of manuscripts, country, subject and call number (Figure 2) and user can filter their search according to title or call number. The prototype remains in a private domain for user access as class activity in Manuscript Laboratory, IIUM.

No.	Title	Location	Country	Subject	Call Number	Action
1	Hikayat Raja Jumjumah	PNM	Malaysia	-	Cod.Or:1739	<a href="#">View</a>
2	Kitab tasawuf	PNM	Malaysia	-	MSS2236 (E)	<a href="#">View</a>
3	'Aqidah Al-Awwam	PNM	Malaysia	-	MSS3787	<a href="#">View</a>
4	(Al-Hikam Al-Ataiyya) A work about tasuf	UM	Malaysia	-	Manuskrip 15	<a href="#">View</a>
5	(Hikayat Muhammad Hanafiah) Hikayat Ali Hanafiah	UM	Malaysia	-	Manuskrip 9	<a href="#">View</a>
6	(Masail al-muhtadi li ikhwan al-mubtadi) Manuscript concerning various aspects of Islamic theology	UM	Malaysia	-	Manuskrip 14	<a href="#">View</a>
7	(Sharh) Matn al-Ajruniyyah	MI	Malaysia	Nahu	MI 166	<a href="#">View</a>
8	(Sharh) Matn Awamil al-Jurjani	MI	Malaysia	Nahu	MI 343	<a href="#">View</a>
9	(Syair anak dagang) Dua buah shair Melayu	UM	Malaysia	-	Manuskrip 10	<a href="#">View</a>
10	(Syarat wudu) Kitab Islam	UM	Malaysia	-	Manuskrip 11	<a href="#">View</a>
11	-	PNM	Malaysia	-	MSS1621	<a href="#">View</a>
12	-	MI	Malaysia	Tidak diketahui	MI 273	<a href="#">View</a>
13	-	MI	Malaysia	Nahu	MI 274	<a href="#">View</a>

**FIGURE 2: The initial prototype of Union Catalogue of Malay Manuscript database**  
CURRENT PROJECT

In 2015, an application was made to IIUM for a research grant. In the end of 2015 the grant was approved. Three main players were involved: a computer expert, Islamic theologian and a librarian specializing in Malay manuscript. The prototype of the catalogue was improved with a few enhancements. The enhancements include migration from XAMPP to dedicated Apache Web Server, latest PHP scripting and MySQL database. The migration was done to improve the stability and availability of the catalogue for growing number of records. According to Koffer (2005), benefits of separate installation include flexibility of versions, better comprehension of programs and simplified component's management. In other words, it enables complete control over the programs. Some functions also were added to the prototype to allow *modification* and *deletion* of the existing titles. A dedicated server was purchased to host the prototype for local area network accessibility and currently under configuration. The layout and design of the prototype is undergoing incremental changes for better user experience (Garrett, 2010). Figure 3 depicted the latest design which has taken examples of few other manuscript sites, with the combination of modern look. The design also maintained the searching feature from the previous prototype, but has improved in terms of its filtering, which user can choose to filter based on the 5 different fields. However, as the number of titles increases in collection, a search function will need an optimization for faster search results. Thus, a better algorithm will be implemented to the existing PHP scripting.

#	Title	Location	Country	Subject	Call Number
1	Sayr al-salikin ila ibadah rabb al-alam	PNM	Malaysia	Ibadat	MSS4557
2	Sirat al-mustaqim	PNM	Malaysia	Fiqh ibadat	MSS4556
3	Bustan al-salikin	PNM	Malaysia	Tasawuf	MSS4555
4	Ruba' al-nikah	PNM	Malaysia	Nikah	MSS4554
5	Catatan doa	PNM	Malaysia	Doa	MSS4553 (D)
6	Catatan ringkas martabat tujuh	PNM	Malaysia	Martabat tujuh	MSS4553 (C)
7	Perihal menyatakan perintah sembahyang	PNM	Malaysia	Sembahyang	MSS4553 (B)
8	Mirat al-mubladin fi targhibun al-muthalbin wa tanbih al-salikin	PNM	Malaysia	Tasawuf	MSS4553 (A)
9	Makrifat al-Islam	PNM	Malaysia	Pengenalan agama Islam	MSS4552 (B)
10	Kitab makrifatullah	PNM	Malaysia	Ilmu tauhid	MSS4552 (A)
11	Mirat al-tullab fi makrifat al-ahkam al-syariah	PNM	Malaysia	Syariat Islam	MSS4551
12	Umdat al-muhtajin ila suluk mastak al-mufridin	PNM	Malaysia	Zikir kesufian	MSS4550
13	Pelbagai catatan hadia, firman Allah dan tasawuf	PNM	Malaysia	-	MSS4549 (C)
14	Jauhar al-tauhid	PNM	Malaysia	Sifat-sifat Allah	MSS4549 (B)
15	Hadis arbain	PNM	Malaysia	-	MSS4549 (A)

FIGURE 3: The latest design of Union Catalog of Malay Manuscript catalogue page.

### CATALOGUE SUSTAINABILITY IN TECHNOLOGICAL PERSPECTIVES

Efficiency contributes to technology sustainability (Schmidt, Ereik & Kolbe, 2009). Since the physical manuscripts have private access and scattered, the centralized union catalogue system provides efficiency to researchers in accessing the information remotely. Researchers are also able to retrieve information more efficiently through the search feature and filter according to fields. In the future, the system also will implement more functionalities such as advanced search like keyword search.

Moreover, it is crucial to be maintainable, available and accessible for a collection to be considered as a library (Mohd Hilmi Md. Rifin & A.N.Zainab, 2007). In being sustainable or maintainable, union catalogue of Malay manuscript enables user to add new records through admin access. At the moment, the information is added manually by acquiring data from hard copy records like books. In the future,

the system would be able to gather more information of the manuscript from related websites and other online sources through crawler.

Besides, dedicated Apache web server has been used in order to cater the growing number of manuscript records in the future. By utilizing separated components of web server and database server, the system is more stable to cater more records. Besides, both of the open source software are frequently updated and maintained due its popularity, hence ensures the stability of the online database.

## RESULT

The database has gathered 7398 titles of Malay manuscripts that are kept by various institutions. The compilation emphasizes on the manuscripts' call numbers (based on the institutions), titles, authors, locations, and subject classifications. However, due to some constraints those manuscripts cannot be viewed digitally from this database. The hindrances to view those manuscripts include the issue of copyrights and also their availability. This database will enable researchers to find relevant Malay manuscripts in various subject matters.

During the process of data migration from printed materials into this database, the group members had discovered a few inconsistencies especially things that are related to titles and call numbers. The inconsistencies can be interpreted as indicators to show the limitation of undigitised catalogues, which triggers the needs to have central database for Malay manuscripts. As of May 2017, 8267 titles of manuscripts were inserted into the prototype (catalogue system) (Akademi Pengajian Melayu University Malaya, 1992; Perpustakaan Negara Malaysia, 1993, 2000, 2001, 2002, 2003, 2006, 2011; Dewan Bahasa dan Pustaka, 2006). The classification of the inserted manuscripts is shown in Table 1.

No.	Location	Total	Call Number	Book
1.	National Library of Malaysia (NLM) <i>Perpustakaan Negara Malaysia (PNM)</i>	6554	MS 3 - MS 571	NLM- Short Catalogue 0
			MS 572 - MS 930	NLM- Short Catalogue 1
			MS 1042 - MS 1539	NLM- Short Catalogue 2
			MSS 1540 - MSS 1900	NLM- Short Catalogue 3
			MSS 1901 - MSS 2245	NLM- Short Catalogue 4
			MSS 2247 - MSS 2400	NLM 0
			MSS 2401 - MSS 2600	NLM Additional No.1
			MSS 2601 - MSS 2862	NLM Additional No.2

			MSS 2864 - MSS 3000	NLM Additional No.3
			MSS 3001 - MSS 3500	NLM Additional No.4
			MSS 3501 - MSS 3881	NLM Additional No.5
			MSS 3882 - MSS 4200	NLM Additional No.6
2	Islamic Museum (IM) <i>Muzium Islam (MI)</i>	737	MI 1 - MI 739	Book of Islamic Museum
3	Islamic Academy, University of Malaya (IA UM)	4	MSS 4 -MSS 11	Main Catalogue of Malay Manuscript
4	Institute of Language and Literature Malaysia (ILLM) <i>Dewan Bahasa dan Pustaka (DBP)</i>	240	MS 1 - MS 219	Book of Manuscript ILLM
5	Sultan Zainal Abidin University (UniSZa)	10	MSP 2 - MSP 12	Main Catalogue of Malay Manuscript
6	Malacca Cultural Museum (MCM) <i>Muzium Budaya Melaka (MBM)</i>	7	MBM, No. 8 & No. 10	Main Catalogue of Malay Manuscript
7	Raja Abu Bakar Museum (RABM) <i>Muzium Di Raja Abu Bakar</i>	9	No.2 - No.16	Main Catalogue of Malay Manuscript
8	Kelantan Museum (KM) <i>Muzium Negara Kelantan (MNK)</i>	18	MZ (KN). 83:86 - MZ (KN). 7:90	Main Catalogue of Malay Manuscript
9	Terengganu Museum (TM) <i>Muzium Negara Terengganu (MNT)</i>	197	82.239 - 89.149 D14 - D105	Main Catalogue of Malay Manuscript



10	Sarawak Museum (SM) <i>Muzium Sarawak (MS)</i>	29	Manuscript 1 - Manuscript 29	Main Catalogue of Malay Manuscript
11	Kelantan Public Library (KPL) <i>Perbadanan Perpustakaan Awam Kelantan (PPAK)</i>	3	No call number.	Main Catalogue of Malay Manuscript
12	Penang Public Library (PPL) <i>Perbadanan Perpustakaan Awam Pulau Pinang (PPAPP)</i>	3	No call number.	Main Catalogue of Malay Manuscript
13	National University of Malaysia <i>Universiti Kebangsaan Malaysia (UKM)</i>	39	No. 1 - No. 37	Main Catalogue of Malay Manuscript
14	University of Malaya <i>Universiti Malaya (UM)</i>	165	Manuscript 1 - Manuscript 253	Main Catalogue of Malay Manuscript
15	Individual Collection	13	No call number.	Main Catalogue of Malay Manuscript
16	International Islamic University Malaysia (IIUM)	185	MAL001 - MAL010 M001 - M115	Main Catalogue of Malay Manuscript
17	National Museum of Singapore (NMS)	1	FMR899.2302 HIK RBS 899.2302 SHA	-
18	National Library of Singapore (NLS)	28		-
19	Library of Congress, USA (LC)	18	JAWI 1 - JAWI 15	-

20	École française d'Extrême-Orient, France (EFEO)	3	CAM 19, CAM 154, CAM 157	-
21	Islam Public Library <i>Perpustakaan Awam Islam (PI)</i>	3	MI694, MI490, MI499	-
22	Societe Asiatique De Paris, France	1	Manuskrip No. CM2	-
	<b>Overall Total</b>	<b>8267</b>		

**TABLE 1: Malay Manuscript Collection As of May 2017**

### CONCLUSION

Malay manuscripts are found in many institutions in Malaysia. Most of the manuscripts have been catalogued. Unfortunately, the catalogues are difficult to be used as library tools by researchers because they are in different books and they are not available in all libraries. The availability of a Union Catalogue for Malay Manuscripts in Malaysia would enable all manuscripts in the country to be listed together and the information could be available at the touch of a button. This facility would greatly enhance the tracing of titles of Malay manuscripts in Malaysia and identification of their location, which would make selection of relevant manuscripts for research very much easier. Although the work is still in progress but most of the manuscripts in Malaysia had been listed in the Union Catalog. In the future the Union Catalogue for Malay Manuscripts will be enhanced for access optimization and faster search results to overcome high traffic (access) on manuscripts retrieval.

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Paper 8:

### **THE STATE OF A CUSTOMER-FOCUSED LIBRARY SERVICE FOR RAJABHAT UNIVERSITY**

*Library service for Customer-focused has become a keyword in this era because the customers have choices in seeking information or service that responds to a variety of needs. Therefore, the library has to revise its service by focusing on the customers in order to build the relationship between the library and the customers studying their behavior and needs as well as good relationships between librarians and the customers. Then readjust the information gained and seek, the opportunity for excellent service provision. Rajabhat Universities are a local university which provided on education, Supported academic and advanced careers, research, society service, transfers knowledge and technology, preserves the arts and culture and community services, also The library plays an important role to supporting such as mission for the success in objectives and goals the Rajabhat University. The objective of this dissertation was to study the state of customer-focused library service for Rajabhat Universities, using qualitative and Quantitative Research method. The samples were directors of the library, head of department library service who was the librarians from 8 Rajabhat Universities. The research results had found: Mission Vision Strategy and Policy of customer-focused library service for Rajabhat Universities and factors that support the development of customer-focused library service. The results of this study development model of a customer-focused library service appreciate a new paradigm of library in 21<sup>st</sup> Century.*

**KEYWORDS:** Customer-focused, Library Service, Rajabhat University

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## **INTRODUCTION**

The library is the heart of creating a learning society and the support of teaching, learning and research in higher education institutions. Nowadays, the state-of-the-art information technologies have resulted in managerial changes and innovative library services in order to attract more library users. The library has to revise its service by focusing on the customers in order to build the relationship between the library and the customers via studying their behavior and needs as well as good relationships between librarians and the customers. Then, the library should readjust the acquired information and seek the opportunity for excellent service provision.

The customer-focused library service has become a keyword in this era because the customers have choices in information seeking or service that responds to a variety of needs. Hence, the library needs to revise and emphasize its user-focused library services in order to build and maintain the customer engagement. Moreover, in the marketing view, the customer-focused library service relates to the customer relationship management (John, 2003). The customer-focused service is a key to provide service to customers. The critical importance is the customer-focused service should add value to the user. These incidents reflect the service-driven process focusing on the needs of customers (Bryson, 1999). According to Piyawan Siriprasoetsin, Kulathida Tuamsukand, Cholapat Vongprasert (2010) their research indicates that the customer-focused in the university library applying the customer relationship management in the library will generate the value of library services ensuring the confidence and customer satisfaction as well as increasing the number of customers because the customer relationship management is a customer-focused business strategy to improve performance and customer satisfaction.

The Rajabhat University is a higher education institution for local development with the purpose to educate and promote the academic and professional in higher education, teach, research and provide the academic services to society, improve, provide and develop technology and maintain the arts and culture as well as produce teacher and promote teacher's education originally developed from the Teachers College. With these mission, the library is an important part, especially in promoting the missions to achieve its objectives and goals. Therefore, the researcher is interested in studying the customer-focused in library service state of Rajabhat University Library that leads to the concrete customer-focused library service and clear practice for Rajabhat University library as well as a guideline for the development and improvement of library services of Rajabhat University.

## **RESEARCH OBJECTIVES**

To study the state of customer-focused library services of Rajabhat University libraries

## **LITERATURE REVIEW**

The key element of information services is to know the users and their needs and behaviors that help to be more effective information service management, more user's satisfaction and confidence. Therefore, the service providers or agencies who are responsible for information services require user data file process to build relationships with consumers (Pruttikul, S, 2014), customer-focused library services become a marketing keyword in this era because the users has a various option of information seeking or services to meet their needs or customer responsiveness as Stock-Kupperman (2012) argues that the customer-focused library service meeting their needs offers new services to attract more users and maintain the existing users to access the service continuously by studying their attitudes towards library services, observing their behavior as well as the satisfaction of users towards library services.

*Therefore, the customer-focused library service means focusing on users by studying the user's behavior and needs and applying such information in improving and seeking opportunities for library service management as well as making relationships and connection with users for long-term library service success.*

According to the information use situation, the users can use the technology and integrate the information technology into part of their daily life. In the past, the library services focused on resource storage by keeping resources and waited for the users to visit the library. Nowadays, the library services have to change its services in terms of information resources to become a mixed media focusing on the service all the time without visiting the library (Stueart & Moran, 2007).

The other researches show that users search information via a search engine rather than a library website (Online Computer Library Center, 2011), for example, Cribb (2012) indicates that the information source of Turkish university students used in doing homework and research is a website, 80.3% followed by 50.9% of books; the information sources used in doing a report and research is internet of 93.6% while the library is only 3.8%. Deakin University's library has changed its format customer-focused service due to the information technology change.

The customers currently are using electronic information resources rather than borrowing a book (Deakin University Library, 2013). Future library services have to manage services to meet the users' real needs. Its services have to be changed by paying attention to the users as well as creating a service value and applying the information and communication technology in the library services (Bryson, 1999).

## **METHODOLOGY**

In this research, the researcher using qualitative research methodology to study the agencies' personnel including administrators and librarians on the customer-focused library service management by studying vision, mission and strategic plan of library service as well as factors supporting library services and customer-focused library service by the In-depth interviews.

The sample was selected by using the Proportional Stratified Random Sampling. Regions of the Rajabhat University library groups were divided into 5 groups as follows: Southern group of Rajabhat University, Northern group of Rajabhat University, Central group of Rajabhat University, Northeastern group of Rajabhat University, Bangkok group of Rajabhat University.

Then, the samples from Rajabhat Universities' libraries were selected with the simple random sampling method by drawing a name of libraries representing 20% of each region group and acquired 8 Rajabhat Universities' libraries.

## **RESEARCH RESULT**

### **1. The State of customer-focused library services of Rajabhat University in the context of administrators**

#### **1.1 Vision, Policy, Strategic Direction or Strategic Plan on the written library service for the users**

According to the study, it was found that all 8 libraries of Rajabhat Universities set its vision, policy, strategic direction or strategic plan on providing the library services to the users in the libraries' vision as a guideline for the management of Office of Academic Resources and Information Technology as follows:

*"Office of Academic Resources and Information Technology is the excellent center of learning and service of the region" (5)*

*"The office is an excellent source of learning in providing services with modern technology to meet the requirement of universities and communities"(6)*

*"The office is an excellent source of learning in providing services with modern technology to meet the requirement of local and international community "(7)*

Subsequently, 2 libraries have set its philosophy accounted for 25% as follows:

*"Modern learning resources, Advanced Technology, Excellent Quality Service and Educating Community (4)*

*"To be the center of local and regional modern learning resources. Technologies providing accessible and various information resources. Focused on the efficient and complete services and standard Office of Academic Resources and Information Technology under the motto „Modern Information Technology, Service Mind, Quality Development"(8)*

Consequently, all 8 libraries of Rajabhat Universities have defined its philosophy, vision, policy, strategic direction or strategic plan in accordance with university. Most sources of the plans were constituted by the involvement of staffs and participants in library services.

### **1.2 How to drive the practice of customer-focused library services**

According to the study, it was found that Rajabhat Universities' libraries has implemented the policy allowing the staffs to participate in library planning to develop the library plan.

In terms of the customer relationship management, Rajabhat University library has policies including sending news, notifying a book schedule, publishing service and agency information regularly, setting up an agency providing accessible information to the users, notifying news and events of the library via Facebook, Line, Twitter, promoting the borrowing book promotion extending the borrowing time on the users' birthday and discounting a book fine on university foundation day.

The library had an event to build the relationships with the users, for example, a librarian is enthusiastic to provide services to users and the users ask librarians for new services or activities of the library frequently. However, on the customer engagement, there was no library defining this policy clearly because the performance indicators did not contain this point.

Regarding the service culture, the Rajabhat Universities library realize the users' opinions by surveying the satisfaction of users to respond the service promptly and attentively. Sometimes, some suggestions could not perform in a short term due to the lack of budget and personnel.

Concerning the technology supporting library services, Rajabhat University library applied the information technology in the library services connecting to users through social networks including Facebook, Line, YouTube, Twitter, Instagram, online databases and so on.

On the subject of study of users' behavior and requirement, the library surveyed the users at every semester but Chiang Rai Rajabhat University did survey every month to obtain the information to develop the library services.

### **Problem of practice of customer-focused library services**

According to the study, it was found that 75% of Rajabhat University libraries found that the problem of practice policy of customer-focused library services was the lack of personnel in providing services thoroughly and budget to develop the service according to the users' suggestion.

### **1.3 Library Management Experience on customer-focused library services in the context of administrators**

According to the library's established missions, the SWOT analysis was performed to develop a library plan. As currently the users have more options, the libraries have to attract them to the library as much as possible. Most library service on customer-focused library services is as follows:

1.3.1 All libraries investigate the user's satisfaction and requirement once a semester to have the result applied in the development of library services. However, Chiang Rai Rajabhat University surveys the users' satisfaction every month by distributing the questionnaire to various service points of the library to get feedback from all parties and present the satisfaction analysis on the library website. The users can access the data. Additionally, the user satisfaction result (disclosed) was presented in a library staff meeting to improve some solvable library issues e.g. modifying service providers as the user suggested and meeting with the staff to ensure that this suggestion could be put forward to technical work, buying a sofa that the users wanted most as well as increasing the speed of the Internet.

1.3.2. The library should organize projects and events so that the users could notify the service provider the news and information via e-mail and Facebook of the library.

1.3.3 The library should Organize a Book fair so that the users participate in the information resources selection process.

In addition to above mentioned universities, the libraries use the customer-focused library services management experience are as follows:

Kamphaeng Phet Rajabhat University Library establishes the database of academic customers. The library has a network with outsiders. In case of meeting or academic seminar, the participants attend the meeting as expected and organize activities with external networks such as temples, hospital, reading promotion and arts in garden.

Nakhon Ratchasima Rajabhat University assigns the librarians to oversee the provision of information resources and instructor services by one student from each faculty. In addition, the librarian coordinates with instructors who recommend books lists after receipt of the books via e-mail, telephone or other means to notify the instructors.

Suratthani Rajabhat University Library organizes a program inviting celebrities and famous singers. Students are interested in joining the program enthusiastically. Other interesting services and projects based on the user's suggestion include the electronic index of journals by which every index contains the attached file of full article to facilitate the users.

Rajanagarindra Rajabhat University Library collaborates with external agencies to share resources as well as listening to the suggestions from university instructors. However, some suggestions could not be done due to the limitation of location and budget.

#### **1.4 Success Library Study Experience on customer-focused library services**

According to a study of university libraries with customer-focused services, it was found that 62.5% was considered the ideal example and the best practice i.e. the Library of KhonKaen University followed by Information and Librarian Office, National Institute of Development Administration; the Library Office, Chiang Mai University and TK Park share the same 12.50% with following impressive items:

1. Library service access the users and provides new services promoting the service resulting in more users
2. Clear systematic management since this library has enough manpower so it can achieve each department's goal set at KhonKaen University
3. Library service access the users and provide new services promoting the service resulting in more users
4. Apply technology in order to make faster service



TK Park is a successful library a sits service which understands the users fully. To achieve this goal, it relies on various elements and factors including enough personnel and budget resources as well as the independent management reasonably.

After visiting some oversea universities, it was found that California State University is open 24 hours and provides a self-service library separated clearly and the library of Edith Cowan University, Australia provides a wide hall with computers at corners and comfortable sofas with coffee and snacks attracting users. The library is filled with attentive and orderly students who study. No one causes annoyance and disorder. This is an impressive image and wonder how the library succeeds in the service.

## **2. The state of customer-focused library services of Rajabhat University in the context of Librarian**

### **2.1 Librarian participating in customer-focused library services policy**

The librarians participate in setting up a library service policy focusing on users i.e.analyzing that different users need different requirement and how to attract these users to use the library. The current process is facilitating the users and providing more flexible service. The librarians have to improve themselves and review their roles to provide service, meet the users' requirement and satisfaction. Furthermore, the library of Baan Somdej Chaopraya, Rajabhat University has set the slogan "WE CARE FOR YOUR NEEDS" as the motto the librarians need to impress more users and organize activities to promote the use of library services and the user engagement with the library.

The librarians gather the users' satisfaction by informal interview and questionnaire to assess the satisfaction level. After that, the data is presented to improve the project and propose to the director with emphasis on excellent service, user's opinion according to the users' satisfaction evaluation as follows:

1. Service meets the users' requirement to attract more customers
2. All library users are important.
3. Up-to-date and swift information resource services
4. Study the customer's satisfaction
5. Study the statistics on the use of services with increasing number of users
6. Provide proactive services to users who are instructors such as finding books for academic work

### **2.2 Librarians applying the customer-focused library services policy**

According to customer-focused library services policy, the librarians have adopted the policy as follows:

**2.2.1 Personnel** needs to understand the customer-focused library services and is able to rotate its position. The librarian needs to realize the customer's satisfaction and continually develop its academic knowledge.

**2.2.2 Customer Relationship Management** It required to publish service and organization information regularly through Facebook, Line and Twitter according to the popular channel. The library arrange seventh building relationship with the users such as distributing a promotion for book borrowing, extending borrowing time on birthday, discounting a book fines on university foundation date. The library organizes a meeting for users at each faculty and departments.

**2.2.3 Customer Engagement** All librarians do realize that all users are an important customer.

**2.2.4 Service Culture** The users' needs are the major criteria in the service management focusing on the proactive service to reach users quickly and equally; providing services to meet the needs of users in attracting more users.

**2.2.5 Technology supporting library services** The VPN is distributed to students to search the library's information anywhere and anytime. The media for providing information resources should focus on

online media to match the users' behavior. The information technology is affecting information services currently. Therefore, the library has to adapt and keep with the advancement of information technology and changing the users' behavior.

**2.2.6 Study of users' behavior and needs** The customer satisfaction is investigated by allowing the librarians in each department develop their plans to develop their work to make the users most satisfied. Providing services to meet the needs of users will attract more users to use library and allowing students and library users to engage in library and services.

Regarding the obstacles caused by the customer-focused library services policy, it was found that all libraries had problems of insufficient manpower accounted for 100%.

### **2.3 Factors supporting the customer-focused library services concept**

- 2.3.1. Various service of library
- 2.3.2 The user, receive the service that meet their requirements
- 2.3.3 Clear working process
- 2.3.4. Proactive public relations reaches all area, faculty or activities of University
- 2.3.5 Technologies that the users interested in
- 2.3.6 Building relationships to impress the users
- 2.3.7 Advanced technologies that facilitate the information services
- 2.3.8 Unity of library personnel that leads to successful work
- 2.3.9 Enough and up-to-date information resources
- 2.3.10 budget
- 2.3.11 Administrator providing support
- 2.3.12 Personnel must have service mind

### **2.4 Success Library Study Experience on customer-focused library services**

According to a study of university libraries with customer-focused services, it found that 50 % was considered the ideal example and the best practice i.e. the Library of KhonKaen University followed by Information and Librarian Office, National Institute of Development Administration; the Library Office, Chiang Mai University; Library of Kasetsart University; Office of Academic Resource and Information Technology, Nakhon Ratchasima Rajabhat University and Information and Librarian Office, Mae Fah Luang University share the same 12.50% with following impressive items:

- 2.4.1 Library services that access the users and provides new services, promoting the service that result in more users
- 2.4.2 Clear systematic management since this library has enough manpower so it can achieve each department's goal set at KhonKaen University
- 2.4.3 Apply the technology in order to make faster service
- 2.4.4 Well-decorated place and new activities
- 2.4.5 Answering a question and helping via various channel are impressive such as answering a question at front counter, replying via Facebook and answering via Virtual Reference Services
- 2.4.6 Each personal works as all-inclusive in its department and has created thinking such as sending with online databases for research

### **2.5 Librarians' Opinions towards customer-focused library services**

According to the study, it was found that librarians of Rajabhat University library had opinions towards the customer-focused library as follows:

- 2.5.1 Library with various services meet the users' requirement and impress them when they use the service
- 2.5.2 Service must be fast and quick
- 2.5.3 Behavior of library users has changed according to the progress of information technology. The library must have flexibility in its rules and regulations of the service.

2.5.4 The user network is essential to the development of the library work, academic service and public relations because the library is known by both insiders and outsiders.

2.5.5 Providing services meets the needs of users and attracts more users to the library services.

2.5.6 Up-to-date Information resource services

2.5.7 Enough information resources for providing service both book in shelf and other forms

2.5.8 Create a service strategy to impress the users as both an activity and a librarian service.

## **2.6 Problematic Experience of Librarians on customer-focused library services**

According to the study, it was found that the librarians of Rajabhat University library who had worked under the customer-focused library services had the same problems and obstacles i.e. they failed to understand the library users completely as the users had different requirement, they managed to provide the best services. With another problem, students didn't realize the importance of the library so the service providers couldn't reach them. The secondary problem was the human resource management for putting the right people on the right job in order to provide the best service; and the staff couldn't handle an emergency problem as well as the discretion as a service provider and budget. Finally, the crucial part of the customer-focused library services was the library administrators had to realize the importance and understanding of the library.

## **CONCLUSION**

According to the study of the customer-focused library services of Rajabhat University Library, it was found that the conclusion divided into 2 two levels as follows:

1. Level of service provider set the policy on performance It was found that all 8 Rajabhat University libraries have stipulated their vision, policy, strategic direction or strategic policy on the library services for users in the library's vision as a managerial guideline of the Office of Academic Resources And Information Technology in accordance with the university development strategy and the philosophy of Rajabhat University as "Higher Education Institutes for Local Development". In this mission, the library is a key element to drive such mission to achieve its objectives and goals.

2. Level of staffs, key persons lead the customer-focused library services to success. They are part of determination of the customer-focused library services policy by analyzing methods to attract a different user with different requirement to the library. The current solution is providing the users with convenience as they are visiting the library and becoming more flexible with the users. So the librarians have to manage the library services to attract the users. In addition, the librarians are required to improve themselves and review their roles in provide the most user-friendly service because they are close to the user, and are able to handle the emergency issues, as well as creat, an innovation for the users.

The library is able to operate for now and future among a variety of social influencers such as Google, Search engine, theater, YouTube and Social Media which have increasing usage statistics. This research result provide new knowledge on customer-focused library services.

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## **Session C: Right tool at the right time**

Cost structure; budget reviews; cost rationalization; value propositions; customer segments; customer relationships; cross-collaborations; rebranding; restructuring; digital marketing; digital scholarship; digital curation; digitization; performance measurement and competitiveness; library assessment

Paper 1:

### **OPEN ACCESS PUBLICATION OF UNIVERSITI SAINS MALAYSIA: A BIBLIOMETRIC ANALYSIS**

*Open Access (OA) is the new publishing model that allows unrestricted access and reuse of research outputs. OA accelerates discovery in the sense that researchers can freely read and build on new findings based on other research. While public seems to welcome more involvement in OA among academics, many researchers are still discussing about the challenges that they face to publish with OA journals including the issue of article processing charge (APC) and the quality of OA journals. This paper examines several aspects relate to OA publication such as publication productivity, citation impact, subject coverage, and publishing cost of Universiti Sains Malaysia (USM) based on SCOPUS data from 2013 to 2015. The findings show that School of Medical Sciences, Physics and Pharmacy dominated the OA publications. Thus, it also indicates that science-based researchers are highly inclined towards publishing in OA as compared to non-science researchers. Top three OA journals in the list are Plos One (Multidisciplinary), Acta Crystallographica Section E (Chemistry) and Electronic Journal of Geotechnical Engineering (Engineering, Geology). Most of the authors tend to publish in Quartile 3 journals (43%), followed by Q2 (28%), Q1 (16%) and Q4 (13%). However, with regard to citation impact per paper (average), every paper in Q1 journal received 6.25 citations, followed by Q2 (2.8 citations), Q3 (1.33 citations) and Q4 (0.87 citation). The APC range of OA publication found to be from RM0 to RM15, 000 per paper. The study provides useful insights about OA publication among USM researchers which can guide other researchers who wish to engage with OA in the future. Further study can be done by interviewing authors, to further explore on the OA research funding, strategy in choosing OA journals to publish in and also the motivation in publishing with OA.*

**KEYWORDS:** *Bibliometric, Open Access, Research Productivity, Research Impact, Academic Publishing*

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## **INTRODUCTION**

Open access (OA) journals began in the 1990s (Mashroofa & Senewiratne, 2016), has changed the landscape of scholarly publishing and has been vastly developed since 2002. Different authors have defined OA differently. According to OA philosopher, 'open access is digital, online, and free of most copyright and licensing restrictions' (Suber, 2012). Thus, the basic idea of OA publications is to remove access barriers and enable readers to access it free of cost. It gives authors and their works more visibility, readership and citations, and thereby increase impact of their research (Mashroofa & Senewiratne, 2016). Besides that, there are two routes to OA; the Gold and Green; the Gold route to OA deals with publications in OA journals which are peer reviewed and are accessible through internet without charges, and Green route to OA is self-archiving and delivered by repositories (Suber, 2012). In general, approximately 15% of articles in OA are being self-archived. To achieve 100% OA comprehensively, researchers' institutions and funders need to mandate self-archiving, as done presently (Gargouri, 2010).

OA scenario in Malaysia has been practiced immensely particularly in higher educational institutions through self-archiving using institutional repositories. Currently, many institutional repositories exist in Public and Private Universities and some has maintained good ranking in webometrics (Zainab, 2010). In Universiti Sains Malaysia (USM), the repository, known as Repository@USM serves as the main repository for storing a variety of electronic information materials such as articles from academic journals, books, theses, examination papers, research reports, photographs and others. It provides free access to the users and can be used freely for research and learning at the University. It also plays an important role to ensure continuity of intellectual property in the USM community. Instead of just a repository, the new paradigm of OA is publishing and sharing the information and knowledge without barriers.

## **RESEARCH OBJECTIVES**

1. To identify the research productivity of USM authors with regard to publishing in OA journals.
2. To explore the scientific impact of USM's OA publications.
3. To identify the cost involved in publishing with OA journals.

## **RESEARCH QUESTIONS**

1. What is the characteristics of OA publication productivity among USM authors?
2. What is the scientific impact of USM's OA publications?
3. How much does it cost for USM authors spend to publish in OA journals?

## **RESEARCH METHODOLOGY**

### **Publication Data**

SCOPUS is one of the largest citation databases of peer-reviewed academic materials especially journal article. Therefore, all publications were selected and derived from this database. The affiliation “university sains malaysia” is for searching publications in SCOPUS. The list of publications was then being filtered by year 2013 until 2015. The selection of document type from the database was “Article” for the purpose of this study. The “Article” in SCOPUS means publication in academic journal. The number of publications can be changed according to the frequency of indexing of the database by time to time. Hence, the publication data from this study were derived in November 2016.

SCImago Journal & Country Rank (SJR) is the platform to measure of scientific evaluation and influence of scholarly journal around the world. SJR also offers the indicator to any journal in the category of OA. Therefore, the list of publications from SCOPUS were merged to SJR to identify publications, which are OA that matches the journal title. However, one more step is required to identify the precise OA publication by inspecting the data in list one at a time because some of the OA journals in SJR are Gold OA based on the payment of specific fee by the author for OA publication. Consequently, some publications in the list were not OA even though listed in Gold OA journal.

Microsoft Excel was the main tool of analysis in this study. Moreover, after identifying all the publication data to be analysed, two methods were used; using manual counting and pivot table & chart. These methods were applied to study of distribution of authors, schools, and journal titles.

### **Citation Data**

For each publication, the citation data was extracted from SCOPUS, Web of Science and Google Scholar. All the citations were counted one at a time from each platform and were determined by total citation in the period of collection of the publication data.

### **Subject Coverage**

SJR is a platform to determine the subject for each publication. The subject is based on the journal title. There are two types of subject in SJR; subject areas and subject categories. The study selected subject categories as it is more specific rather than subject areas.



### **Publishing Cost**

The Article Processing Charges (APC) for each publication were gathered from these platforms; Directory of Open Access Journals (DOAJ) and publisher's website. Some of OA journal were not indexed in DOAJ. Therefore, the information of APC were obtained from publisher's website. The method of this part was manual searching and counting.

## **LITERATURE REVIEW**

### **Citations Impacts**

Literature review on the issues of OA in recent years has gained pervasive use of the scientific evolutions due to the major changes in the way of publishing research results. Lawrence (2001) investigated that the citation impact of articles have been reported to receive higher citation rates compared to non-OA. Another related literature from Bernius and Hanauske (2009) stated on their simulation of the citation network found methods for an author to increase the citations when switching to OA. It suggests that the results of the simulation support empirical data regarding the increase in citations of articles published under an OA paradigm.

However, another related literature encountered a different view regarding OA that has no impact on the quantity of citations in the principal year after publication. These findings were based on a randomized controlled trial of 11 journals published by the American Physiological Society (Davis, 2008). Therefore, new measures of research utilization and impact is needed for OA Publication, including citation and download counts, growth curves, and latencies; co-citation numbers; authority ranks, semantic indices and numerous other online performance indicators. These will be usable for navigation and evaluation as well as for analysing and predicting research headings and impacts (Hajjem, 2006).

A comparison study was conducted in utilizing the article usage data, citation and altmetric data for Nature Communications publication between OA and non-OA articles. From the point of view of static comparison, OA articles are highly considered than non-OA papers. OA articles could pull in support and consistent consideration, even after a long period of distribution. Interestingly, for the non-OA articles, most consideration occurs in the initial 30-day time span (1 month). The OA advantage exists for citation, as well as for article utilization. Compared with shorter time frame consideration for non-OA papers, OA is preferred as article utilization for lengthy era (Wang, 2015).

### **Publishing Cost**

Publishing cost issues are among the main concern when dealing with OA. Van Noorden (2013) highlights in his papers that most open-access publishers charge fees that are much lower than the industry's average revenue, although there is a wide between journals. The largest

open-access publishers - BioMed Central and PLoS - charge USD1,350-2,250 to publish peer-reviewed articles in many of their journals. In a survey published last year, economist Bo-Christer Björk of the Hanken School of Economics in Helsinki and psychologist David Solomon of Michigan State University in East Lansing looked at 100,697 articles published in 1,370 fee-charging open-access journals active in 2010, and found that charges ranged from USD8 to USD3,900. Higher charges tend to be found in 'hybrid' journals, in which publishers offer to make individual articles free in a publication that is otherwise paywalled. Outsell estimates that the average per-article charge for open-access publishers in 2011 was USD660. In addition, the reason that OA publishers have lower costs is simply that they are newer, and publish entirely online, so they do not have to conduct print runs or set up subscription paywalls.

Therefore, the following related literature regarding adoption of OA related costs is highlighted in this case study. DeGroff (2016) reported that recently, The Open Access Good Practice (OAGP) in a community-led support programme aims to produce a wide range outputs to develop and share best practice when implementing OA workflows, systems and procedures across UK higher education institutions (HEIs). The OAGP has adopted the new process to manage OA related cost as stated by Sonja Haerkoenen, Scholarly Publications Manager at Cardiff University in (DeGroff, 2016), encouraged institutions to share best practice for reporting and managing APCs. As a result, staff at Cardiff is planning to implement a different way of reporting and accounting for the APC payments, which positive will save time and therefore reduce administration costs. Open Access Librarian Liz Holliday from the University of Bath confirms Haerkoenen's mentions that the functional cost analysis of the APC payment process undertaken by the project partners 'allowed the four GW4 institutions to understand the costs and effort in each functional area of the payment processes'. Teplitzky (2016) states that researchers support the utilization of numerous subsidizing sources to pay APCs, although they feel that the university ought to offer more contributions that are prominent. The finding shows there were two variants that researchers perceived that the university ought to help with less financing. Researchers also felt that the university ought to offer monetary support for its OA policy to acknowledge the university's commitment in supporting the publications become more visible.

### **Subject Coverage**

Lawrence (2001) mentions that the citation impact of conference articles in computer science reported higher citation rates for OA texts compared to non-OA articles. Similar findings were reported by Odlyzko (2002) in mathematics and Kurtz (2005) in astrophysics. Harnad (2004) also measured the impact of OA articles across all discipline and across time by sampling 12 years of publication for 14 million papers in the Institute for Scientific Information (ISI). The findings reveal a citation advantage of OA across all fields.

Serrano-Vicente (2016) posited that the choice to distribute in OA journals is firmly identified for academic reward and professional acknowledgement. In science, technology and medicine, publishing in journals encourage academic professions and considerable many of

the journals are OA. Researchers in these areas are more inclined to publish their work in OA journals. In the humanities and sociologies, there are relatively few high-quality OA journals. Researchers in these regions either deposit their research in the repository for institutional reasons or to accomplish greater visibility and citations. Thus, the finding from this study can further investigate and elaborate either science-based researchers are more inclined towards publishing in OA as compared to non-science researchers.

## FINDING AND DISCUSSION

The data were analysed in the scientific method as a methodological basis in developing the analysis of results. The study applied some bibliometric indicators to describe the result considered as simple description. After the study of the journals, which were derived from SCOPUS from year 2013 until 2015, 1801 article titles found as OA publication and eventually were analysed to several scopes.

### Distribution of Authors

**FIGURE 1: Top 20 authors published in OA (2013-2015)**

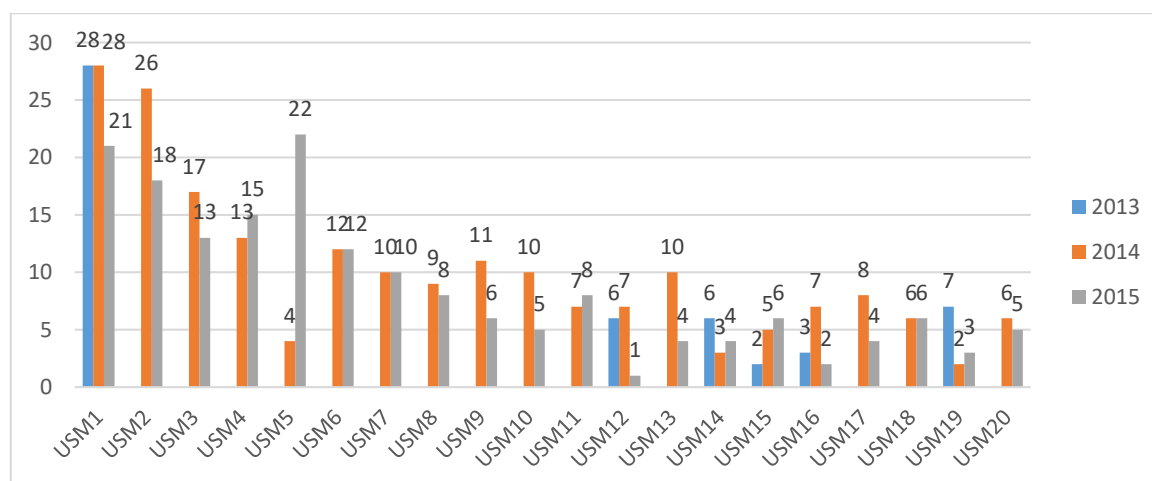


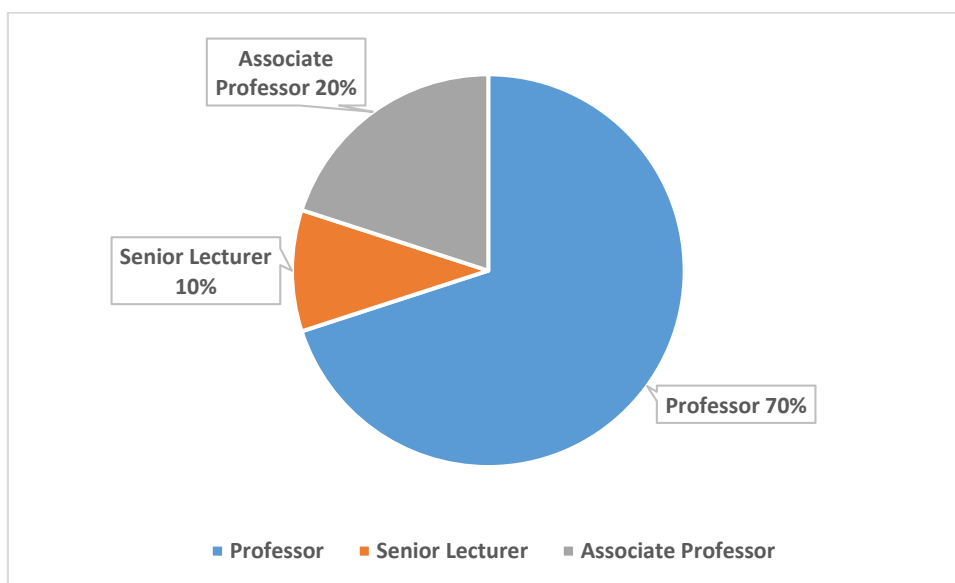
Figure 1 shows the top 20 authors known as academic staff in USM who had published their articles in OA journals. The data shows that most of the top 20 authors who published in OA journals are from the science field. However, USM17 is one of the top 20 authors from the field of non-science. He majors in Management. Thus, it indicates that science-based researchers are more inclined towards publishing in OA as compared to non-science researchers.

The total number of authors published their articles in OA journals increased drastically from 25 authors in 2013 to 1106 authors in 2014. In 2015, the total number of authors decreased to 989. (MacKenzie-Cummins, 2012) had mentioned that the survey found about 26% said the authors had published with an OA publisher for a journal article. Many researchers were unaware of the concept of OA or, if they have heard of it, they remain largely in ignorance of its implications.

In 2013, it shows that USM1 had the highest published articles with 28 articles published in OA, followed by USM19 with seven articles and USM12 and USM14 sharing the number of published articles at six articles each.

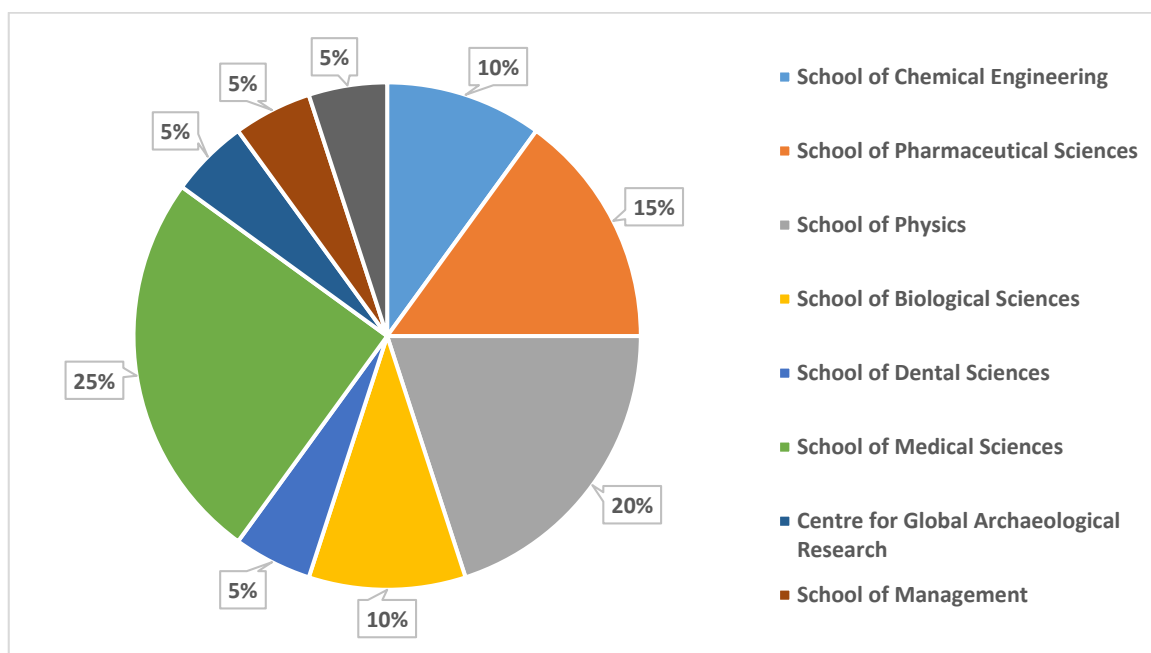
Meanwhile in 2014 and 2015, USM1 again was the author who the highest published articles in OA (28 articles in 2014, 21 articles in 2015), followed by USM2 (26 articles in 2014, 18 articles in 2015) and USM3 (17 articles in 2014, 13 articles in 2015). Based on the study, it shows that USM1 was the top author with published articles in OA journals from 2013-2015 with 77 articles.

**FIGURE 2: Categories of top 20 authors published in OA (2013-2015)**



From Figure 2, the study also classified the author by categories of academic staff. Professor, for instance, which is the largest percentage that published articles in OA journals (70%), followed by Associate Professor (20%) and senior lecturer (10%). In other words, the Professors dominated the OA publication among USM academic staffs and there is vast difference between the publications by Professors and Associate Professors.

**FIGURE 3: Schools of top 20 authors published in OA (2013-2015)**



The study further analysed to provide more details from top 20 authors published in OA based on school/center. As mentioned before, the study found that science-based researchers were highly inclined towards publishing in OA as compared to non-science researchers. Figure 3 shows that most authors published in OA are from the School of Medical Sciences (25%), followed by School of Physics (20%) and School of Pharmaceutical Sciences (15%).

## Distribution of Schools

**FIGURE 4: Top 20 schools/centers published in OA (2013-2015)**

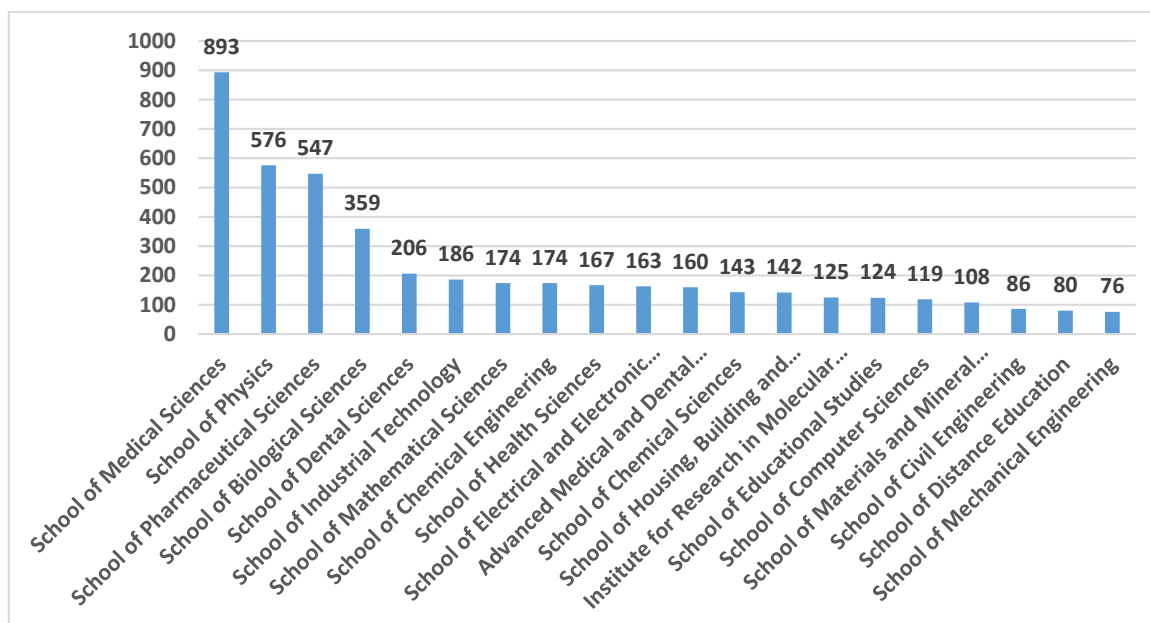


Figure 4 shows the top 20 schools/centers published in OA from 2013 to 2015. Overall, the graph shows that most of the Schools from science field either pure science or applied science. The study found that schools from the science field are moving towards OA publishing. As indicated in Figure 4, the data shows that the School of Medicine is ranked at number one among the 20 other Schools. It shows 893 the School of Medical Sciences has produced publications in OA journals. The difference between School of Medical Sciences and School of Physics is 317 publications. This difference is likely due to the need for dissemination of medical information to the public as mentioned by Grouse (2014). Medical research yields important and valuable information that benefits the people of the world. Furthermore, OA is particularly valuable for developing countries where limited financial resources have historically deprived health care professionals of the latest medical information.

**Distribution of Subjects & Journal Titles**

**FIGURE 5: Top 20 journal titles published in OA (2013-2015)**

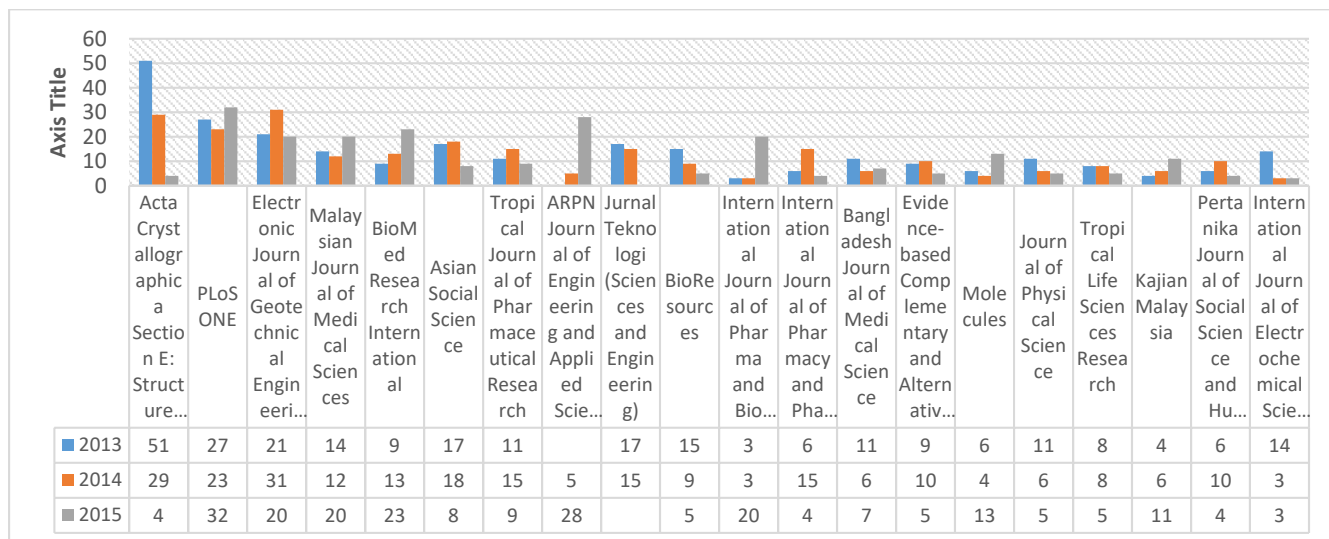
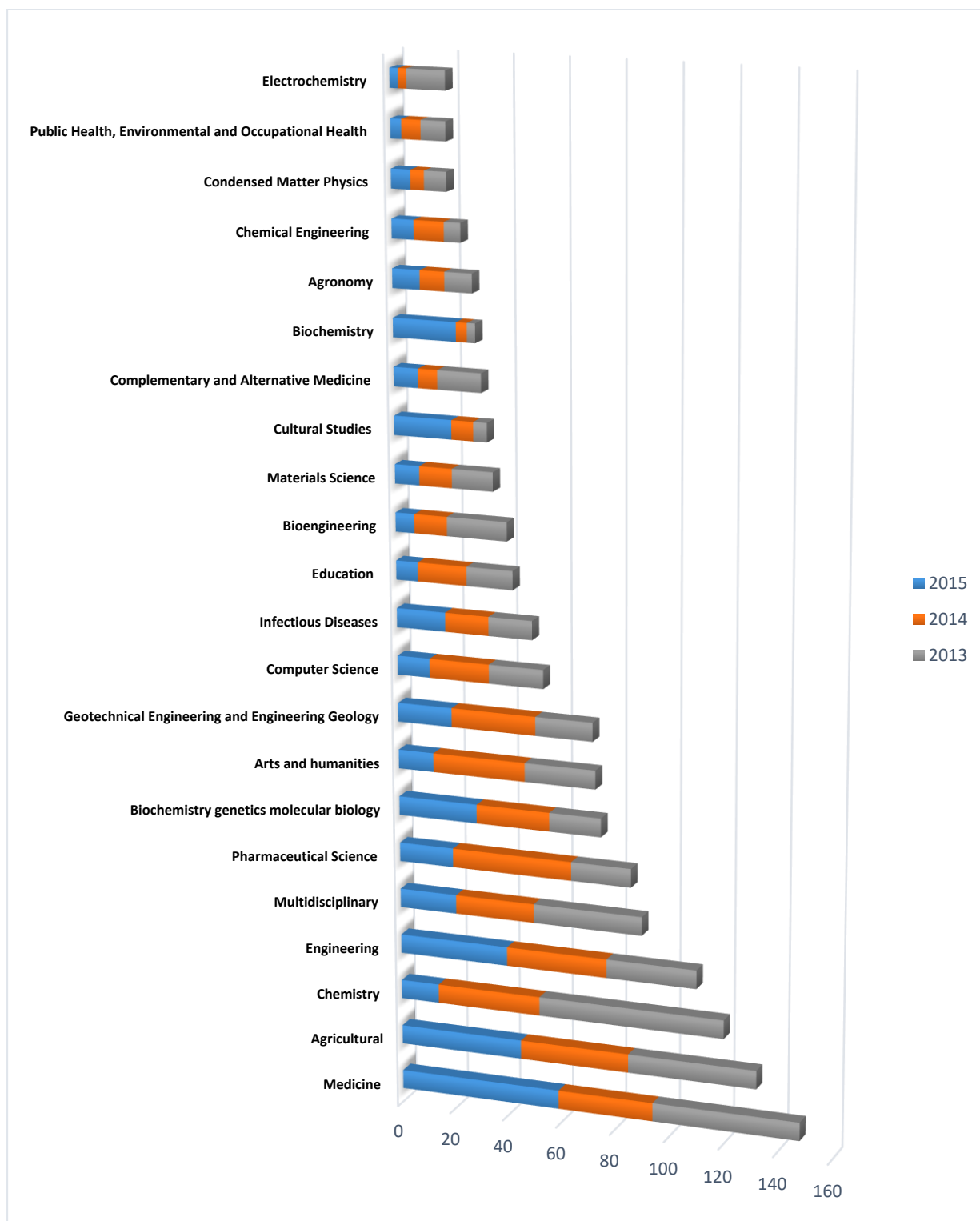


Figure 5 shows the top 20 journal titles published in OA from 2013 to 2015. The study found 454 journal titles from 1801 publications, whereby, the top three journal titles are Acta Crystallographica Section E: Structure Reports Online (84 publications), PloS One (82 publications) and Electronic Journal of Geotechnical Engineering (72 publications). On the other hand, the Malaysian Journal of Medical Sciences, which ranked at number four (46 publications), has shown disparity on numbers of publications with Electronic Journal of Geotechnical Engineering (72 publications), which is at the third rank, with 26 publications. Researchers illustrate that perceived journal's reputation; perceived visible advantage; perceived topical relevance; perceived career benefits; and awareness and familiarity have a relationship with intention to publish in OA journals stated by Masrek and Yaakub (2015).

Figure 5 depicts that majority of journal titles are science, technology, and engineering fields, respectively, except three titles, which are, inform the social sciences field. Those journals with impact factors has gradually risen (Poltronieri, Bravo, Curti, Ferri, & Mancini, 2016), either there are in Quartile 1, 2, 3 or 4. Moreover, the data illustrates the publication trend of USM researchers pertaining to their awareness and consistency for choosing OA as the publishing platform. In 2013, the total numbers of OA journals were 221 and increased to 228 in 2014. A slight decrease occurred in 2015 when 12 journal titles were not listed anymore, thus only 216 journal titles were available. In fact, APC, citations and quartiles may become researchers' consideration before choosing the right journal for publishing their articles.

**FIGURE 6: Top 20 subject categories published in OA (2013-2015)**



The study identified 81 subject categories in 2013 with 632 publications. The following year shows a growth in subject categories; 95 subject categories and 628 publications by USM researchers. However, in 2015, it decreased to 90 subject categories with 542 publications. Figure 6 illustrates the Top 20 subject categories published in OA from 2013 to 2015. As shown in the graph, the three highest numbers of publications according to subject categories are dominant to medicine, agriculture and



chemistry. In 2013, those three subject categories had good competition with 169 publications but then the number of publications decreased and reached at 113 publications. In 2015, the trend occurred where only 118 publications could be published in OA according to the top three subject categories.

Even though most of the subject categories of OA journals are from the sciences and engineering field, researchers from the arts and humanities categories had taken the opportunities to commence with OA by having 73 publications in their subject category. Another subject category with similar trend is from the cultural studies with 34 publications. According to (Ismail, Napiah, & Ismail, 2013), many articles in their study were published in the science field as there are more core subjects in USM rather than non-science subject. However, nowadays it may due to the new agenda driven by the USM Top Management where their aim is to have STEAM (science, technology, engineering, mathematic, art) rather than only STEM (science technology, engineering, mathematic) (USM TV, 2017).

### Distribution of Citations and Quartiles

**TABLE 1: USM OA publications, citations and average (2013-2015)**

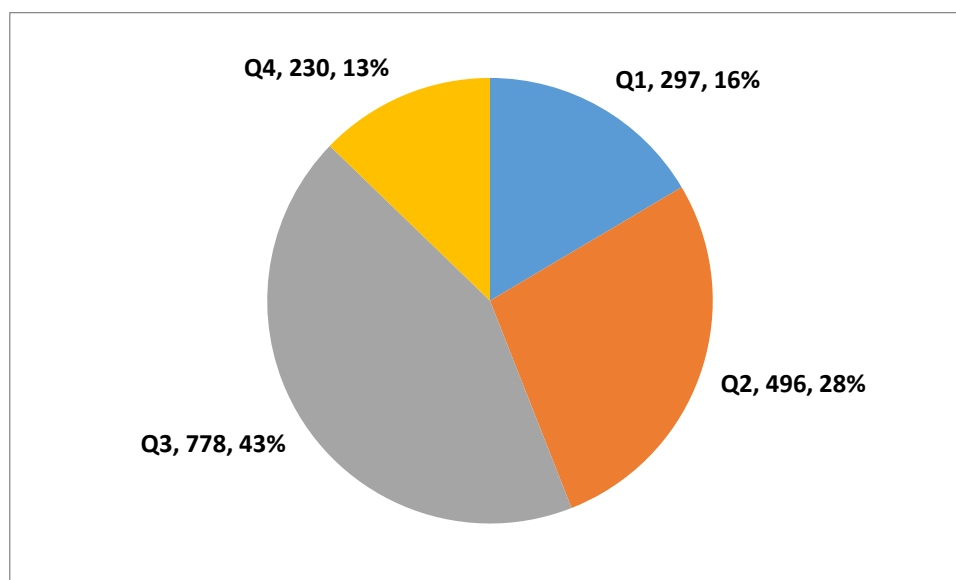
<b>QUARTILE 1</b>	297	1855	<b>6.25</b>
<b>QUARTILE 2</b>	496	1389	<b>2.80</b>
<b>QUARTILE 3</b>	778	1063	<b>1.37</b>
<b>QUARTILE 4</b>	230	200	<b>0.87</b>

Journals are categorized into four different tiers, namely Quartile 1 (Q1), Quartile 2 (Q2), Quartile 3 (Q3) and Quartile 4 (Q4), which apparently is supposed to indicate their quality or tier in ranking. This is done based on the number of citations and the Impact Factor (IF) of the journal concerned. Q1 denotes the top 25% of the IF distribution, Q2 for middle-high position (between top 50% and top 25%), Q3 middle-low position (top 75% to top 50%), and Q4 the lowest position (bottom 25% of the IF distribution)

From the Table 1, there is a positive relation between the quartiles and the number of citations received. Based on the case study at USM, the articles published in high quartile get more citations as compared to from the lower quartile. In terms of impact based on average citation per article, it is found that for every article published in Quartile 1, it obtains 6.25 citations. Next, it is followed by Quartile 2 with 2.8 citations, Quartile 3 (1.37 citations) and Quartile 4 (0.87 citation). Therefore, researchers are strongly advised to publish their articles in higher quartile in order to obtain more impact in the form of citations.

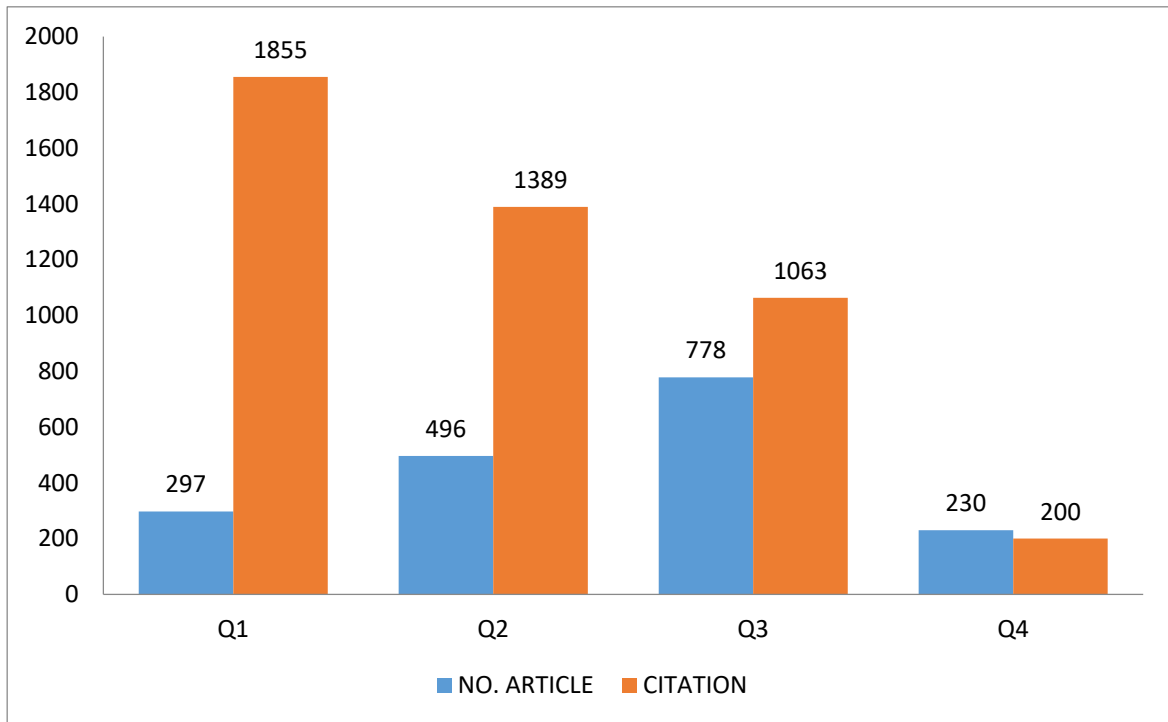
Another study by Napiah and Abrizah (2016) explored publication productivity and impact of 50 top Malaysian scientists in publishing with Quartile 1 journals. The study revealed that publication in Q1 correlates with quality and thus increases the scientific impact (citation); one may conclude that the amount of citations received would be mechanically inherited by the journal's importance or where it has been published.

**FIGURE 7: USM OA publications based on quartile (2013-2015)**



Based on Figure 7, this study found that most of the USM authors who published their papers as OA preferred to publish in Quartile 3 journals (43%), followed by Quartile 2 (28%), Quartile 1 (16%) and Quartile 4 (13%). However, there is no evidence on why it occurred, unless interview is done to explore the reasons.

**FIGURE 8: USM OA publications and citations (2013-2015)**



In the academic world, scientific impact of a scientific writing always refers to citations that it received. In the case of USM OA publication, it is found that the articles published in higher quartiles have more impact. From Figure 8, there were 297 articles published as OA in Quartile 1, and managed to obtain 1855 citations. Another 496 articles published in Quartile 2 with 1389 citations, followed by Quartile 3 with 778 articles and 1063 citations. Meanwhile, the number of citation for articles in Quartile 4 is much lower (200) compared to the number of articles (230). In other words, for every article published in Quartile 4 received less than one citation on average.

**TABLE 2: USM OA publications, citations and citation per article based on three citation databases (2013-2015)**

SCOPUS	1801	4507	2.50
WOS	816	2426	2.97
Google Scholar	1708	7449	4.36

Out of 1801 OA articles under study extracted from Scopus, 816 articles appeared in Web of Science and 1708 indexed by Google Scholar. In term of scientific impact, Google Scholar received the highest number of citations (7449) which equals to 4.36 citations per article on average. However, even though Web of Science has a smaller number of publications and citations, but it is found that it has slightly higher citation per article (2.97) as compared to Scopus (2.50).

#### **Article Processing Charges for Open Access Journals and its Expenses**

There were enigmatic studies that showed who were the researchers and which universities have the highest numbers of published papers in OA journals, as well as which universities have big spending on public fund for APC to OA journals. However, a study by Solomon and Björk (2012) showed that whenever researchers want to publish an article in any journals listed in DOAJ; they would need to spend an average of USD904/MYR 3,797 for APC per paper. Moreover, the researchers in Biomedicine field that intend to publish an article in OA journals would need to pay expensive APC compared to others. The APC could reach more than USD1,500 /MYR 6,300 although the cost of online publishing actually could be break down to USD 100/MYR 420. However, it depends on the extra costs invested by the publishers toward each papers which combine additional activities for the learned society that patronage the journal as well as system development and maintenance (Van Noorden, 2013).

Nevertheless, USM as a public-funded university persist to investigate the general APC cost of OA journals under the USM researchers' budget especially during the year 2013 until 2015. It is important to know that USM work efficiently in budget spending and put a good value for research activities in the aspect of OA publishing expenses in the future. Hence, the study has been executed by analysing the APC statement of 1,801 articles written by USM researchers in 427 OA journals throughout the journals' website (as shown in Table 3).

However, not all OA journals provided transparent APC statement on the journal's website (1,514 articles). There were still 287 articles written by USM researchers published in OA journals. However, USM researchers already spent about USD 1,153,107.14/MYR 4,843,049.98 for whole articles published in OA journals on those three (3) conservative years. It also showed that total average of each paper cost USM USD640.25 /MYR 2,689.09 and majority of USM researchers spent the lowest APC between zero cost to USD237.85 /MYR 999.

**TABLE 3: Total cost of APC for USM OA publications (2013-2015)**

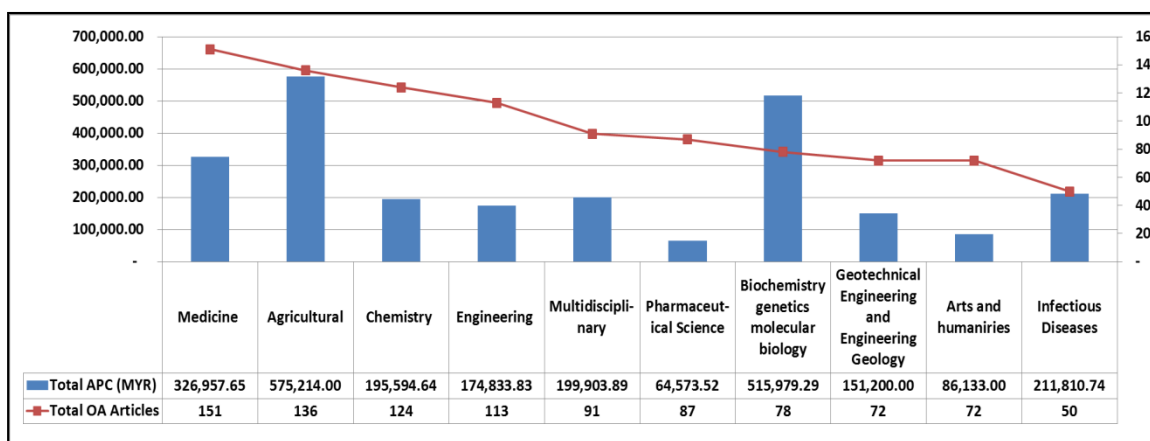
APC Model	APC Range (MYR)	Total Article Titles	Total APC (MYR)	Average APC For Each Article (MYR)
GOLD/HYBRID	9000 and above	143	1,368,371.32	9,569.03
	6,000 to 8,999	294	2,146,283.98	7,300.29
	3,000 to 5,999	132	574,353.69	4,351.16
	1,000 to 2,999	344	561,276.9	1,631.61
	1 to 999	352	192,764.09	547.63
GREEN	0	249	0.00	0.00
	unknown	287	-	-
	<b>TOTAL</b>	<b>1,801</b>	<b>4,843,049.98</b>	<b>2,689.09</b>

Meanwhile, there were more variant discoveries about USM's APC expenditure as specific details were studied. The study discovered the total cost of APC for number of OA articles written by USM researchers based on SCImago subject categories, OA journal title names, USM authors and USM schools.

First, majority of USM researchers published articles in OA journals were based on science subject categories (as shown on Figure 9). The most active USM researchers that highly published OA journal articles were from Medicine research field with total amount of 151 articles. The spending amount for APC has cost USM about USD 77,847.06/MYR 326,957.65. On the other hand, the most expensive APC expenses paid by USM was Agriculture’s researches with total amount USD 136,955.71/MYR 575,214.00. However, it was recorded as the second highest published OA articles (136 articles). Next, the second highest APC paid by USM were for the Biochemistry Genetics Molecular Biology’s researchers. It cost USM to pay APC in total amount USD 122,852.22/MYR 515,979.29.

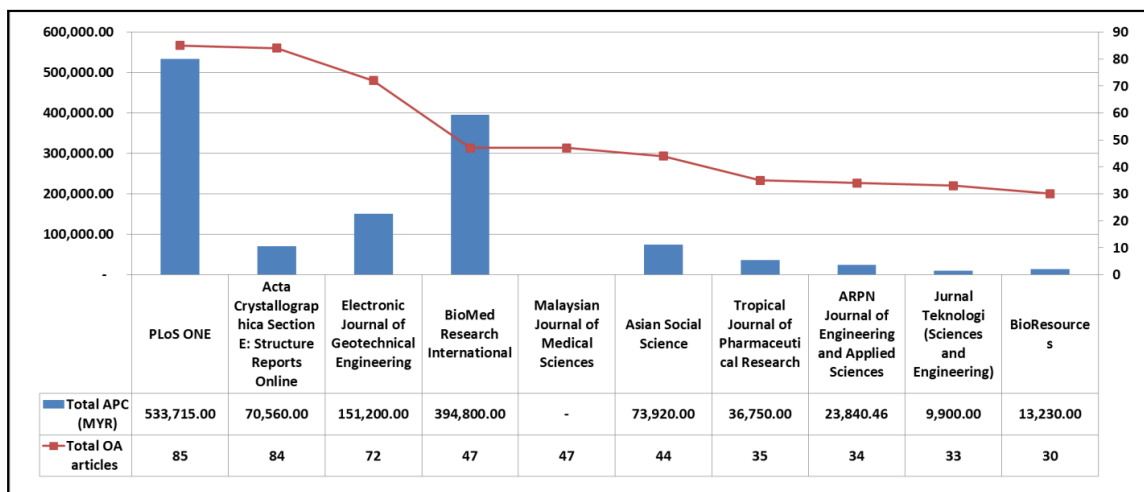
Surprisingly, there was a huge gap record in terms of publication outputs. The number of articles wrote by USM researchers in OA journals of Biochemistry Genetics Molecular Biology subject category showed 78 articles only. This shows that USM researchers need to pay high APC when publish an article in Biochemistry Genetics Molecular Biology OA Journals compared to others. It cost USM to pay an average of USD 1,575.03/MYR 6,615.12 to publish one article in the stated subject category of OA journals.

**FIGURE 9: Total cost of APC for USM OA publications according to top 10 subject categories in SCImago (2013-2015)**



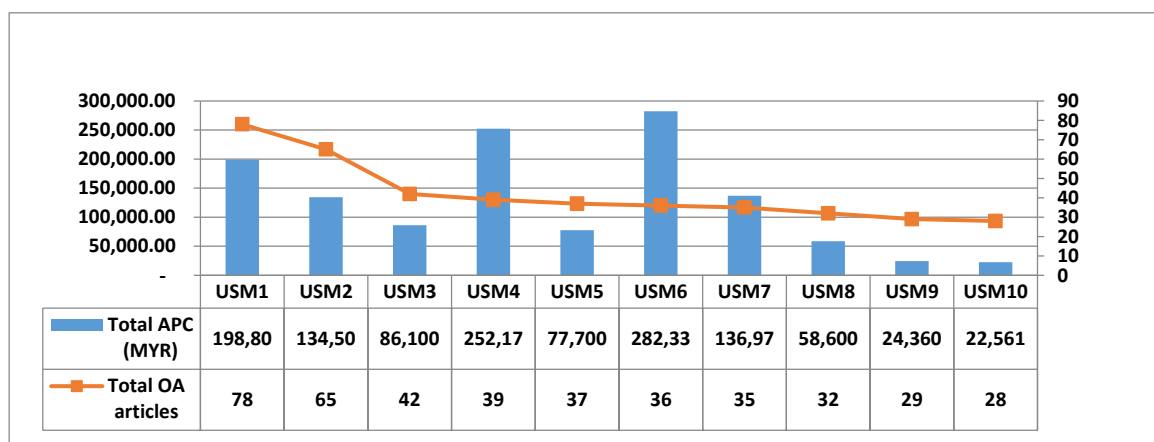
Next, from Figure 10, USM researchers highly favour to publish OA articles in PLoS One (85 articles) compared to other OA journal titles with total cost of USD 127,075/MYR 533,715. Moreover, the study also found that USM researchers paid highly for APC to BioMed Research International compared to the other journal title, which cost USD 94,000/MYR 394,800 during the year 2013 until 2015. However, among the top 10 highest number of articles published by USM researchers based on journal titles showed that one journal title has zero APC. There were known as Malaysian Journal of Medical Sciences.

**FIGURE 10: Total cost of APC for USM OA publications according to top 10 journal titles (2013-2015)**



As shown on Figure 11, these were the top 10 authors published articles in OA journals. USM6 was the top among USM authors that highly paid APC to publish OA articles (USD67,223.75/MYR 282,339.75). Meanwhile, USM1 successfully published the highest number of publications (78 articles) with an average cost of APC (USD606.85/MYR 2,548.78 per article) compared to other top 10 authors.

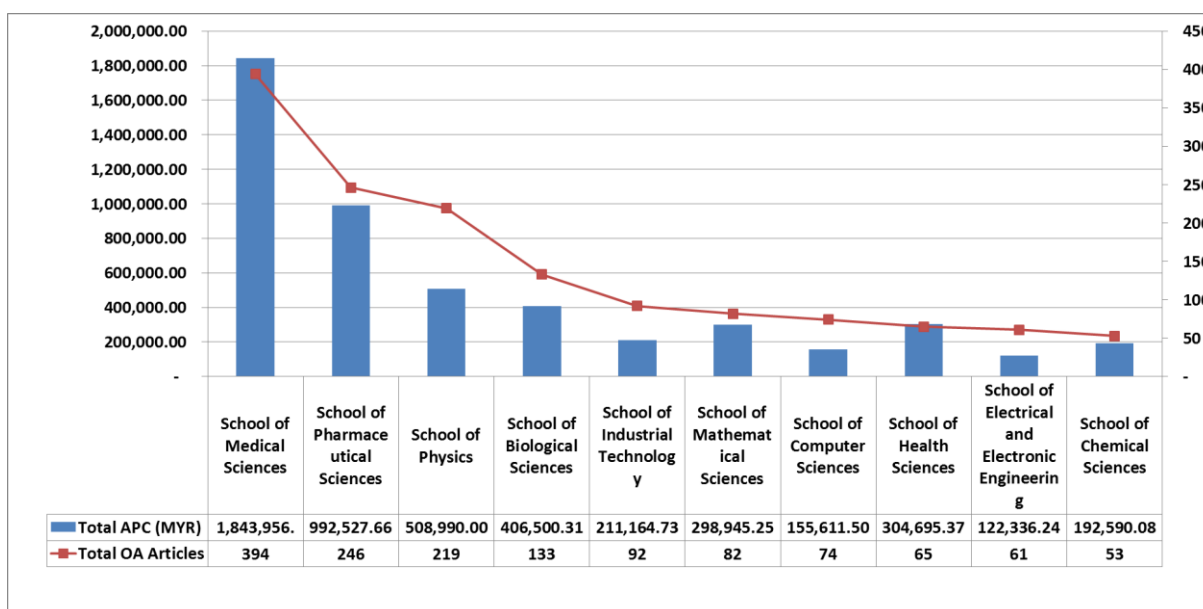
**FIGURE 11: Total cost of APC for USM OA publications according to top 10 authors (2013-2015)**



As shown in Figure 12, USM researchers from the School of Medical Sciences had the highest published articles in OA journals (394 articles) aligned with the highest paid for APC compared to other USM

schools with total amount USD 439,037.36/MYR 1,843,956.91. The School of Pharmaceutical Sciences (246 articles) had total cost of APC paid at USD 236,316.11/MYR 992,527.66.

**FIGURE 12: Total cost of APC for USM OA publications according to top 10 schools/centres (2013-2015)**





Based on the results, it showed that USM should now reconsider to provide the fund on OA publishing on more specific and critical based subject categories, journal title names, authors' background and school's name. The finding shows that budgeting can be more efficient by considering based on the stated allotment criteria. USM could map the funding on criteria that are more specific. For instant, USM researchers from Biochemistry Genetics Molecular Biology actually need huge funding to support APC at a time to publish OA articles in that subject journals. Despite the study is actually limited to rank Q1 and Q2 journals in this subject category, at least this study shows the costs incurred for them.

Furthermore, the United Kingdom (UK) Open Access Implementation Group (2012) (UK-OAIG) asserted that regardless of expensive or cheap the APC; the efficient process systems of APC is a crucial issue in OA publishing landscape so that it would provide wider values of OA publishing. The UK-OAIG is recommended to authors, research funders, universities and publishers for a greater standardization to facilitate more efficient process flows between themselves especially focusing on countering the issues on the development, implementation and adoption of good intermediary services for the better value of payment of APCs.

## RECOMMENDATIONS

From the analysis that has been done, a few recommendations are illustrated as follows:

1. Measure the social impact of USM publications to know how their research can benefit the public.
2. Further investigate the motivations of authors in publishing OA journals through interview.
3. University has to promote OA in a number of ways such as:
  - i. Mandates stipulating that USM researchers have to publish their works with sponsored by public funder in OA journals and focusing on Q1 and Q2.
  - ii. Mandates stipulating that USM researchers have to deposit their 'pre-print' and 'post-print' to Repository@USM.
  - iii. Providing dedicated funds for the payment of APCs in gold or hybrid journals.
  - iv. Introduce Sanggar Sanjung Award for researcher that publish their works in OA with high impacts.
  - v. Negotiate with more publishers to obtain 15% discount for APC as example the agreement with BioMed Central Supporter.

## CONCLUSION

OA practice is growing its popularity and necessity. This paper examines several aspects in relation to OA publication such as publication productivity, citation impact, subject coverage, and publishing cost of USM as well as offer some insights into the trend of OA publication in USM.

In conclusion, it can be said that the OA publication of USM is growing and it has made important contributions towards the growth of total publications. This practice will make USM researchers' productivity more visible and accessible, thus increasing the impact of all conducted research. Therefore, as an Apex University, USM has to embrace OA publishing to increase competitiveness in University rankings.

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Paper 2:

### **QUALITATIVE INQUIRY ON MARKETING STRATEGIES FOR PROMOTION OF LIBRARY SERVICES IN UNIVERSITY LIBRARIES IN NIGERIA**

*The paper aims to examine the situation of information service marketing in university libraries in Nigeria. It focuses on understanding how the university libraries adopt and implement the marketing strategies to promote their services to current and potential users. It also finds out the factors that motivate the libraries to market their services to user community. The 7P's of service marketing mix model was used by the researchers to examine the marketing strategies adopted and implemented by the university libraries to market their services to potential users. This study adopts qualitative research method using semi structured interview instrument for collecting data from six (6) librarians across the selected six federal university libraries in six geopolitical zones of Nigeria. The qualitative data was analysed thematically based on the research questions. The disproportionate stratified sampling technique was used to select the universities and the purposive sampling technique was employed to sample the librarians. The findings revealed that the university libraries adopted and implemented the marketing strategies for creating awareness of library services, improving services and building relationships with user segments of students, academics and administrative staff. The marketing strategies implemented by the libraries include product, promotion, place, people, process and physical evidence strategies excluding pricing strategy. This study is useful and helpful to academic libraries in marketing of their services by implementing the service marketing strategies. The findings are useful to improve the understanding of librarians on relevance and application of marketing mix model in marketing library services. This study contributes to the growing body of knowledge on the implementation of service marketing mix in university libraries as non-profit making and service organizations. The strategies enable the libraries to get users involved in the life of library activities.*

**KEYWORDS:** Marketing Strategies, Library Services, Service Marketing Mix, University Libraries, Nigeria

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## **INTRODUCTION**

Libraries have emerged from a tradition of acquiring and providing information resources and services to users according to their information needs (Kim & Park, 2006).

Marketing of library services is not a new technique to librarians for identifying the library users and their information needs as many researchers agreed upon in their theoretical and empirical studies but familiarity of librarians with marketing principles and strategies as applicable to profit making organizations is not comparable (Spalding & Wang, 2006; Gupta & Savard, 2010; Kennedy, 2011). The Greek academic libraries have adopted various strategies for marketing their services and products. Some of these strategies include the traditional methods of marketing such as brochures, user orientation, posters, e-mail lists, online newsletters, exhibitions and announcements in the local press and media (Garoufallou et al., 2013).

The use of promotional activities and tools as dominating strategies for the marketing practice in libraries has been revealed in the literature on marketing library products and services in developed and developing countries (e.g. Patil & Pradhan, 2014; Edewor et al, 2016). In Nigeria, university libraries serve the user community through the acquisition of information resources and subscription to online database resources, support teaching, learning and research needs of the society. The university libraries can enhance and promote these services through the implementation of marketing strategies to their respective customers (Ifijeh, 2011, Adekunmisi, 2013 and Okon & Umoh, 2014).

Baro & Ebhomeya's (2013) study revealed that university libraries in Nigeria were found using different strategies such as: library publications, university radio programmes, e-mail alerts, library week, orientation talks, library instruction, university bulletins and the library website in marketing the information resources and services. These strategies reported by these studies revolved around promotion strategy of 7P's of service marketing mix. The study on marketing strategies is important because the promotional activities of academic libraries in Nigeria examined in existing studies found low level of marketing practice and user education programme was not taken very serious as a means of stimulating the use of library information products and services (Popoola, 2008; Ifijeh, 2011; Okon & Umoh, 2014). Hence, the promotion strategy had been empirically explored in the literature but other strategies such as product, price, place, people, process and physical evidence for marketing library services were not empirically explored by the past researchers in Nigerian context.

This study attempts to fill this gap by examining these components of service marketing mix as strategies that are applicable and relevant in libraries. The significance of this study is to establish a balance in the application of 7p's service marketing strategies in the library. Without this study, user awareness and use of library services may be undermined. The empirical findings of this study will contribute to the knowledge of implementing marketing strategies to promote library services in developing countries especially Nigeria. The study is structured as follows: marketing strategies in university libraries in Nigeria, relevance and applicability of 7p's of service marketing mix in libraries, methodology of the study including data collection, findings and discussion, conclusion and implication of the study.

## **MARKETING STRATEGIES FOR PROMOTION OF LIBRARY SERVICES IN NIGERIA**

Implementation of marketing strategies is fundamental to creation and enhancement of customers' awareness and use of library services. All organizations need a marketing strategy. This need applies to libraries just as it does to other service organizations with customers, clients or users (Jestin and Paramesuari, 2002). In the library context, the products are mainly print and electronic information resources which cannot be treated or marketed like other physical products in the manufacturing

sector. Although physical buying and selling of products do not take place in library resources and services, it is indisputable that quantitative and qualitative services are being offered to numerous users as customers for attaining satisfaction (Adeyoyin, 2005). Adekunmisi (2013) agreed that four main factors are responsible for encouraging library professionals to develop marketing strategies to enhance its operations and services. The factors are information explosion, technology revolution, escalating library costs and increasing competition by information providers and web-based commercial services providers.

In addition, Edewor's et al, (2016) study examines the strategies used by university libraries in Africa to market their resources and services to users through the use of survey research design. The findings revealed that university libraries in Africa creatively engage in marketing library and information services through various strategies. It was also found that the most frequently used strategies for marketing library and information services in African libraries are library publications (memos, bulletins, and newsletters), orientation exercises, website and flyers.

Ukwoma's (2014) study also examines strategies for marketing library services by library and information science (LIS) professionals in Nigeria. The study identifies using bulletin boards, seminars and workshops, newsletters, publicity through advertisements and announcements and through website as the major strategies for effective marketing of library and information services. It is clearly understood from these studies that academic libraries surveyed in Nigeria engaged in marketing their services. However, the previous studies on marketing activities in university libraries in Nigeria focused more on promotional activities and tools. Other marketing strategies such as product, place, price, people, process and physical evidence were not fully explored as the libraries adopted promotion strategy to market their resources and services.

## **RELEVANCE AND APPLICABILITY OF 7P'S OF SERVICE MARKETING MIX IN LIBRARIES**

The 7p's service marketing mix model constitutes what is termed as marketing mix which is a set of tools and techniques that service organizations use to achieve the marketing objectives (Akroush, 2011).

Marketing strategy literature indicates that service marketing mix model forms the major segment of a successful marketing strategy. It is a general agreement among marketing researchers that service marketing mix model has strategic elements which are useful and suitable for services and products organizations as a generic marketing framework (Rafiq & Ahmed, 1995; Akroush, 2011).

De Aze (2002) pointed out that marketing mix is the planned package of strategies which support the organization in reaching its target markets and specific objectives. It helps to position the library services very firmly in the perceptions of the community they serve. Koontz and Rockwood (2001) suggested that marketing strategy is a comprehensive, integrated and coordinated plan that combines four marketing elements, commonly called the '4Ps' they are: Product, Price, Place, and Promotion and 3Ps of the marketing mix are: Participants, Physical evidence, and Process.

The 7ps marketing strategies adopted by profit making organizations for profitability are also applicable to non-profit organizations like libraries for gaining user satisfaction. In supporting this idea, Kendadamath (2011) noted that the marketing strategies as applied to other industrial sectors are equally applicable in the area of information products and services.

Kim and Park (2006) conducted a study on marketing analysis of reference and information services in Korean public, academic, special and school libraries. The study measured the extent of 7Ps marketing mix adopted by Korean libraries and compared its performance among the four groups of libraries. A questionnaire survey was conducted in 197 libraries. The findings revealed that the 7Ps marketing mix

performed relatively well except price, special libraries performed best among four groups in the 7Ps marketing mix followed by academic libraries. It is clear from the above literature that few empirical studies on library marketing strategies have used quantitative research method. The qualitative method, such as interview to examine the marketing strategies in the library sector in Nigeria and even in the world is not adequately addressed. This methodological gap will be filled by this study to investigate marketing strategies implemented to promote library services in Nigeria.

## **METHODOLOGY**

This study adopted qualitative research method to investigate and explain the marketing strategies implemented by the librarians to promote the library services in Nigerian universities.

Out of forty (40) federal universities in Nigeria, six (6) were selected using disproportionate sampling technique. In other words, one university was selected from each of the six zones in the country. The selected universities are: Ahmadu Bello University, Zaria (ABU, North West), University of Maiduguri (UM, North East), University of Ilorin (UI, North Central), Obafemi Awolowo University (OAU, South West) and University of Nigeria Nsukka (UNN, South-South) and University of Port-Harcourt (UP, South East) (National Universities Commission (NUC, 2015). Guest *et al.* (2006) and Malterud *et al.* (2015) recommended that a purposive sample of 6 to 10 interviewees with diverse experiences may provide sufficient information in an interview based study. The purposive sampling technique was used to select six librarians across the sampled universities based on their participation in marketing library services and library working experience.

The study adopted semi structured interview instrument for data collection. The interview guide was developed after reviewing numerous literatures with respect to marketing strategies for promotion of library services (e.g. Kendadamath, 2011; Kim & Park, 2006). The instrument was corrected by experts in marketing and librarians and emailed to the respondents prior to the interview period. The interview was conducted with six (6) librarians across the university libraries using telephone as recommended by (Bryman, 2012; Creswell, 2014). It was conducted between February and March 2017 and there was no network problem and call interruption experienced by the researcher and interviewees. Each interviewing session was conducted averagely between 35-40 minutes and was recorded using call recorder of the mobile phone directly.

The interview instrument contained three guided themes based the interview questions. These headings are as follows:

1. Background information includes institution affiliation, gender, highest educational qualification, rank, library working experience and marketing experience.
2. Adoption and implementation marketing strategies in relation to 7P's of service marketing mix
3. Impediments hindering implementation of marketing strategies

On the anonymity, all the participants were rest assured that their information will remain strictly confidential. After the interviews, the audio-recorded materials were listened to and transcribed into texts based the themes. Content analysis was used to analyse the data obtained. This was done by comparing the responses, and summarized with each interviewee's comments.

## FINDINGS

### 5.1 Respondents' Demographic Profiles

The demographic profiles of six librarians interviewed about marketing strategies for promotion of library services in Nigerian universities are presented in Table 5.1 below.

University	Coding	Gender	Qualification	Rank	Working experience	Marketing experience
ABU	Informant1	Male	MLIS	Librarian1	10 years	6 years
OAU	Informant 2	Male	MLIS	Librarian 1	6 years	3 years
UI	Informant 3	Female	MLIS	Senior Librarian	34 years	10 years
UM	Informant 4	Male	MLIS	Librarian 1	24 years	8 years
UNN	Informant 5	Female	MLIS	Senior Librarian	9 years	4 years
UP	informant 6	Female	MLIS	Senior Librarian	21 years	5 years

Table 5.1: Respondents' Demographic Profiles

Regarding interviewees' gender, there is equal gender distribution as 3 respondents (50%) are females and the other 3 respondents (50%) are males with the same educational qualification, Masters in Library and Information Science. By the respondents' rank, 3 of them (50%) are Librarian 1, while the remaining 3 respondents (50%) are senior librarian. In this study, it can be said that all the respondents have academic status in library.

None of the respondents has less than 6 years of working experience as librarians and the highest is 34 years indicated by informant 3. Concerning the year of marketing experience in the library, the interviewees' responses revealed that none of them has less than 3 years and the highest is 10 years. Some of the comments made by the participants are:

*We interact with our users through user education programmes for creating awareness of information resources and services. Outreaching our user community with information resources and services has been our marketing experience from time to time. (Informant 6)*

*Our outreaching users is very-very encouraging when we approach students and it is also challenging when we interact with teaching staff with response of no time and tight schedule. It is interesting that awareness and use of library services has improved. (Informant 3)*

Making sense of the above data, it can infer that all participants have more than enough experience and knowledge to know how the marketing of library services is performed and managed to attain library objective.

### 5.2 Marketing of Library Services

The respondents were asked whether they engage in marketing library services or not, all the six participants responded that they engage in marketing the services. The participants were further asked about the motivating factors that encourage them to market the library services. All the respondents



indicated that the current trends in globalization of information resources and services through World Wide Web (www) and the university's subscription to online databases has motivated them to market their services to users. While four respondents (67%) added that increasing in users' information needs and expectations as motivating factor to keep library services relevant to the user community. The following is the typical quotations from the respondents.

*We feel that without marketing library services, no meaningful awareness and use of library services can be recorded by the library management. (Informant1)*

*We could not remain in-door and expect our users to voluntarily approach library services without user education programs and library instruction for promoting the services. (Informant 6)*

However, the responses and comments of the respondents on marketing library services showed that the librarians have a good level of awareness about application of marketing concept in the library. It is clearly understood that the present situation of marketing library services has changed from the past experience of positioning the marketing of library services as when the need arises only.

### **5.3 Marketing policy**

The participants were asked about the marketing policy whether they have it or not. All respondents stated that they don't have a separate policy designated as marketing policy but the libraries adopted extract from the acquisition policy to embark on marketing library. The respondents were further probed why there is no marketing policy; their responses revealed that it is due to the nature of marketing practice in the library sector as non-profit making organization. Some of the participants' comments are as follows:

*Our library acquisition and evaluation process policy reads as "we acquire information resources both print and electronic and make them visible and accessible to our users according to their learning, teaching and research needs". With regards to this extract, we market our information resources and services. (Informant 1)*

*The adequate marketing policy is not yet developed as it is expected to be but we have planned to develop such policy in the near future. (Informant 3)*

It is evident from the statements above that the libraries are yet to develop a marketing policy as it is expected to be in the era of information marketing. It is also inferred from the comments that the nature of academic library as non-profit making sector could be the reason for not having a separate marketing policy.

## **6.1 IMPLEMENTATION OF MARKETING STRATEGIES IN LIBRARIES**

The respondents were asked whether they implement 7p's of service marketing mix as marketing strategies in their libraries to promote the library services or not. All the participants stated that they implemented the 7 P's of service marketing mix to market their services excluding its one component, price strategy. They expressed that the marketing strategies include product, promotion, place, people, process and physical evidence. They further explained that the implementing the six components of 7p's of service marketing strategies in the library setup as service organization cannot be compared to other service profit making organizations. The following are the typical quotations from the respondents.

*We have a clear understanding of 7ps service marketing strategies. Our library implemented the marketing strategies to improve our services. We realize that the price strategy is not relevant in marketing library services to user community. We maintain the nature of our academic library services to be delivered freely to users. (Informant 6)*

*The library membership registration for students is charged along with other tuition fees during their first semester registration. This charge is not based on the information resources and services provided by the libraries. (Informant 5)*

From the above statements, it is clearly understood that the librarians implemented six (6) components of 7p's of service marketing as strategies to market their services. The price strategy was not implemented in marketing academic library resources and services. The respondents were further probed to explain how the six marketing strategies were implemented in their libraries. Their responses were presented below.

### **6.1.1 Product strategy**

The product strategy is the first component of service marketing mix which focuses on quality, relevance, organization and evaluation of print and electronic information resources. All the participants agreed that they adopted and implemented product strategy to market the library services by maintaining the quality, relevance and organization of print information resources acquired and online database resources subscribed by the university library. Some of their comments include: -

*Our library also maintains the quality of information resources by consulting the faculty members and considering the users' information requirements according to the budgetary capacity of the library. (Informant 1)*

*We acquire relevant print information resources and subscribe to current and relevant online database resources. (Informant 3)*

### **6.1.2 Promotion strategy**

The promotion strategy refers to promotional activities and tools used to communicate to customers about the information resources and services available in the library and educate users on how to use them. All the respondents agreed that they implemented promotion strategy to create awareness of the library services and resources among the user community. They also expressed that the promotion strategy implemented include: - user education programme and library orientation, and library bulletin, notice boards and library web page as tools to promote the library services. Their direct quotations are presented as follows:

*The library assigns the librarians as liaison officers to each faculty in order to promote its information resources and services to faculty members and students. (Informant 2)*

*Our library provides flyers to users. We use University library webpage to communicate the available information resources to users. (Informant 4)*

It is clearly understood from their statements above that the university libraries engaged in conducting user education programme. It can be deduced from their comments that there is human relations and communication among the librarians and library users.

### 6.1.3 Place strategy

The place strategy refers to both manual and electronic distribution channels employed to make the library resources and services available and accessible to library customers. All the respondents stated that they implemented place strategy as a means for making information resources accessible and usable by users. The place strategy reported by the respondents as distribution channels includes: - branch library, new arrival shelves and Online Public Access Catalogue usage. Some of their comments are as follows:

*Our library designs and maintains strategic places in the library for displaying the new arrivals to users (Informant 1)*

*Our main library uses branch libraries as a strategy to distribute services to users. Both electronic and manual strategies are maintained by our library to distribute services to users. (Informant 2)*

*We have OPAC for users to access the available resources. The library maintains branch libraries to enhance distribution of resources and services to users. Our library has automated its circulation system for effective distribution of information resources and services. (Informant 6)*

The above statements by the respondents further enhance our understanding into manual and electronic methods adopted by the librarians to distribute their services to users. The branch libraries were adopted as another distribution channel for facilitating information resources and services to users.

### 6.1.4 Price strategy

The price strategy refers to pricing methods adopted by the service organization to cost its services for profitability. All the respondents agreed that the price strategy was not implemented due to its irrelevance in academic library environment. They reported that the users were usually charged for library fees along with other charges during their central registration but this is not considered as price strategy for utilization of the information resources and services.

It is evident from their responses that the academic library is service organization and it is not a profit making sector. The charge for users' registration with the library during their new academic session is not considered as price strategy. This implies that academic library discharges its information resources and services free to users in order to satisfy their information needs.

### 6.1.5 People strategy

The people strategy refers to skills, knowledge, attitude and attributes that enable librarians and other library staff to participate in marketing library services. All the participants agreed that the library staff are capable and responsible for facilitating the information resources and services to users. The people strategy revolves around training library staff on how to manage library resources and services accessible and usable to users. Some of the participants expressed their comments in these words:-

*We maintain public relations and promotional tools to communicate to the faculty members and students about the library resources and services. We attended workshop and conferences organized by NGO on marketing library services. (Informant1)*

*Our e-library staff engages in training librarians and other library staff on how to assist users on use of library services. (Informant 3)*

It is understood from the participants' comments above that the staff were trained to serve the users. The responses of the participants revealed that the people strategy is adopted and implemented by providing the library staff with good orientation and training to serve users. The librarians were assigned with responsibility to train and orient the users on use of library resources and services.

#### **6.1.6 Process strategy**

The process strategy refers to the procedures and mechanisms followed to facilitate library operations in marketing resources and services. All the participants reported that the process strategy was adopted and implemented as procedures and methods put in place to perform their services. Some of the respondents commented that: -

*Our library operations are coordinated to make the library services visible and accessible to the users. The adoption of ICT facilities has enhanced the library procedures to meet up the users' information needs and requirements. (Informant 2)*

*Our library maintains the strategic procedures and methods to carry out library operations to enhance and facilitate the library services. The normal schedule of duties and responsibilities of the sections are coordinated to make the services utilized by the users. (Informant 1)*

*We maintain to keep our conventional procedures and methods to facilitate library services to users. Most library operations are automated and this development enhances our marketing activities. (Informant 3)*

It can be inferred from their statements that their process strategy for marketing revolved around both manual and electronic channels.

#### **6.1.7 Physical evidence strategy**

The physical evidence strategy refers to library environment and equipment put in place to make the librarians comfortable for delivering services to customers. All the respondents agreed that the library environment is conducive and the library equipment are comfortable for enhancing the services to users. Some of the respondents' comments include: -

*Our library environment is conducive and comfortable for facilitating the services to users. The reading areas are equipped with modern facilities to enable the users utilize the resources and services within the library. (Informant 1)*

*There are some strategic places designed to promote library services to users, for example, new arrival section for conventional display of newly acquired materials and multimedia section for audio materials and digitized resources. (Informant 2)*

The above comments made by the respondents indicate that the physical environment contributes to marketing of library services. The adoption of ICT facilities has made library resources and services accessible by users at their convenient locations. Some of the respondents commented on implementation of marketing strategies as follows.

*We combine the 6p's of service marketing strategies as tools to satisfy the customers' information needs, meet library objectives, enhance market position, and improve competitive advantages in marketing information resources and services. (Informant 6)*

*We manipulate the 6 marketing strategies to optimize our services for two reasons: first, to stay in information business and, second, to make library resources and services to be accessible and usable at the right time and the right place by the right users. (Informant 4)*

Basically, it is clearly understood from the responses and comments of respondents that the 7ps of service marketing mix were adopted and implemented by the librarians to facilitate their conventional operations and market the services to user community.

## **6.2 IMPEDIMENTS HINDERING IMPLEMENTATION OF MARKETING STRATEGIES**

The participants were asked to highlight the impediments hindering the implementation of marketing strategies in relation to the 6P's of service marketing mix. All the respondents reported financial constraint as the main barrier that hinders their efforts to implement the strategies. All the participants further expressed that inadequate training of librarians on marketing profession; inadequate internet bandwidth and absence of marketing policy for proper coordination of marketing activities were impediments hindering the implementation of marketing strategies.

The recommendations made by the participants concerning the impediments hindering implementation of marketing strategies include: -

*The sufficient budget allocation for marketing activities from the university management is required. (Informant 2)*

*We need professional training in marketing to improve on implementation of marketing strategies. The library management needs to look into the segment of collection development policy indicating acquisition and provision of information resources and services to users as an extract to be developed for marketing policy. (Informant 1)*

It is evident from the participants' responses that the impediments hindering implementation of marketing strategies revolve around technological, economic and administrative factors. Their recommendations indicate their positive attitudes and perceptions towards implementation of marketing strategies.

## **DISCUSSION OF FINDINGS**

Marketing of library services has been considered as a good strategy to improve awareness, access and use of information resources and services among segments of users (Kaur & Rani, 2008). Implementation of 7p's of service marketing has also been recognized by both profit making and non-profit making organizations as proper tools to enhance their marketing practice and attain customers' satisfaction (Akroush, 2011; Bamigbola, 2013).

This study establishes that the interviewees have a good qualification in librarianship and enough working experience and considerable experience in marketing library services in Nigerian universities. This reflects the interviewees' positive attitude and good perception about implementation of marketing strategies to promote library services. This finding is in line with Chegwe & Anaehobi's (2015) who reported that librarians in academic libraries have a positive perception and attitude toward marketing services.

The study revealed that motivating factors for marketing library services include the current trend of globalization of information resources and services through internet facilities, the users' information needs and demands and university's subscription to online databases. This finding confirms the opinion of Adekunmisi (2013). who stated that information explosion, technology revolution and increasing competition by information providers are the factors that encourage the libraries to market their services.

The finding revealed that there is no marketing policy and this confirms the finding of Baro & Ebhomeya (2013) who found that the university libraries in Nigeria don't have marketing policy. Bishop & Rowley's (2013) study revealed that only five out of the eighteen libraries sampled in United Kingdom had a marketing policy. This reflects that majority of the libraries did not have a marketing policy. It is the belief of the researchers that the absence of marketing policy poses a challenge on implementing the marketing strategies. On the other hand, the librarians realized this challenge of no marketing policy and they hopefully commented that they have a plan to develop their marketing policy in the near future.

The study also revealed that the university libraries implemented six components of 7P's of service marketing mix to facilitate their services. The six relative components implemented are product, promotion, place, people, process and physical evidence with exclusion of price strategy. This finding is line with that of Kim and Park (2006) who found that Korean academic libraries among other libraries relatively implemented six components of marketing mix except price strategy. The finding also confirms the relevance and applicability of three components of traditional 4P's of product marketing mix and expanded 3P's of service marketing mix in the academic libraries as suggested by Rafiq & Ahmed (1995) and Bamigbola (2013).

On impediments that hinder the implementation of marketing strategies, the study reported financial constraint, inadequate training of librarians on marketing profession; inadequate internet bandwidth and absence of marketing policy. Similarly, Baro & Ebhomeya (2013) and Chegwe & Anaehobi's (2015) in their studies on marketing library services in Nigeria reported such impediments and the only difference is the improvement on power supply reported in this study.

However, the implementation of marketing strategies cannot be the sole responsibility of an individual, the commitment and involvement of all library staff is needed to attain success. Therefore, good experience and commitment as demonstrated by the librarians in the cause of this study is noted as basic to understanding the marketing of library services in Nigerian universities.

## **CONCLUSION**

This study examined the implementation of marketing strategies in relation to 7P's of service marketing mix for enhancement of library services in Nigerian universities. It can be concluded that the six components of the service marketing mix are relatively implemented to promote the library services and the librarians have demonstrated their positive commitment toward marketing strategies.

This implies that the implementation of marketing strategies is essential for the university libraries if the librarians wish to remain active and relevant in the information services market. However, it is

erroneous to hold on to the point that libraries don't need to adopt marketing strategies to promote their information resources and services.

The implications of the findings of this study on implementation of marketing strategies are as follows: First, it will prepare hit and run librarians to be more committed to marketing library services and improve their skills on how to manage the strategies. Second, it offers the librarians the knowledge that 7p's of service marketing mix is relevant and sufficient to excel in the information market. Third, librarians are reminded that it is important to improve the technological settings of the library in order to facilitate the implementation of marketing strategies.

Finally, librarians are able to understand that the implementation of marketing strategies requires managerial and financial commitment for genuine successes in information market. The study recommends that there is a need for university libraries to train their staff on how to maximize the use of the marketing mix to the library and users' advantage.

Future studies should use large samples with mixed methods (qualitative and quantitative) for generalization purpose because this study used a small sample and therefore, generalization of its findings will be limited. There is a need for any further research on assessing the impact of implementation of marketing strategies on use of library services from users' perspective.

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Paper 3:

### **DANCING TO THE TUNE OF FOURTH PARADIGM**

*The world has entered a “fourth paradigm” which is more collaborative, more computational, and more data intensive than the previous experimental, theoretical, and computational paradigms. This emerging scientific paradigm is often referred to as e-science or e-research. The current study focuses on the academic librarian’s roles in coordinating “fourth paradigm” roles that have been powered by advanced computing capabilities in libraries to assist the researchers. It highlights the fact that by leveraging on technology in all parts of scientific endeavor, cyber infrastructure, and the establishment of data management and data sharing dictates by many research funding bodies, academic libraries have offered support with regard to the shifting needs of their community. The act of embedding the fourth paradigm’s role need to be explored by Malaysian librarians. This could be a role on how best to engage in e-science through the development of library-based research data services (RDS). The paradigm offers, an important far-reaching look at the rapidly developing field of data-intensive science. Librarians should engage the “fourth paradigm” roles in ensuring the profession stays relevant. The “Fourth Paradigm” taxonomy will be developed to measure characteristics of the paradigm. The categorization would be offered as part of librarian’s competency dimensions which hopefully increases the publicizing of the profession.*

**KEYWORDS:** Fourth Paradigm, Embedded Librarianship, Academic Librarians, Malaysia

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## INTRODUCTION

In this world of big Data and information explosion, the niche knowledge of classifying the knowledge production is really in need. Knowledge classification and library classification are librarian's forte. It is a segmentation of branch, specific to a subject. It can be loosely packaged into three primary sections, general knowledge, domain specific knowledge and site-specific knowledge (Gao, 2001). However, library classification deals with the organization and categorization of knowledge for a specific purpose (based on the scope of literature). It is based on the certain principles and schemes, internationally well accepted. The process of library classification follows the three basic; idea, verbal and notation plane. The main purpose of library classification is to provide access to each particular book in the Library. This article is a proposal to package information literacy skills into research lifecycle and rank it using Cynefin Framework.

The research problem for this study focuses is about managing the frenzied activities involve in teaching the ILS. The module of ILS is a strategic tool to handle scholarship roles, and knowledge production activities among academic librarians in Malaysian universities. It is a known fact that it is important for the researcher to establish the study based on a well-articulated problem statement (Creswell, 2005). In many academic libraries the ILS is a very demanding services. Such as that the librarians involved in ILS has to be dynamic and competent and positive in attitude towards research (Khasiah, 2015)

The ILS as activities beyond information searching and techniques are not traditionally perceived as the domain of library management and services. Much of the literature examining new roles for libraries, increase in visibility and in particular the library liaisons' role, described as an area in which library has newly established (Haglund & Olsson, 2008; Healy, 2010). In some libraries, they have included activities such as data curation and management, open access and scholarly communication, and outreach via office hours or web conferencing. The question of how to effectively raise the library's visibility was addressed by integrating ILS with new services (Healy 2010; Haglund & Olsson (2008). Responsibility for these new services was provided by librarians specifically focused on research services, metadata, and digital materials and preservation. All activities mentioned are integrated in the module of ILS. Being visible, and is being strategically embedded. Researchers spend a lot of time intensifying hard work searching efficiently, taking notes, and organizing their data. The visibility of librarians' is by making them approachable by the user and create relationship that would improve the importance of the library services.

By connecting the need to become visible and embedded, this article connects the concepts of sense making (Snowden, 2006) in the era of computing capabilities (Big Data) with the skill of academic librarians. Eventually, librarians have to cultivate ideas on how these concepts and offers support to their community. The team has explored and embraced Web 2.0 technologies extensively to showcase the richness of library services and service delivery in the era of Fourth Paradigm. The team agrees that information literacy service could be of value to all researchers, hence, the team wants to determine whether niche activities of information literacy activities could be developed into a suite of standard services available to all researchers at all levels of competencies across the university and throughout the research lifecycle and relate it with the tools available in the Internet which are most important to them. The team tackles these questions with a multifaceted approach that ultimately leads to the development of a new integrated information literacy activities model based on the research lifecycle.

#### FOURTH PARADIGM

The Fourth Paradigm is envisioned as a new method of nudging forward the frontiers of knowledge, enabled by new technologies for gathering, manipulating, analyzing and displaying data (Hey, Tansley & Tolle, 2010). Efforts to define “Fourth Paradigm” have included focus on everything from central characteristics and computing power to figures and numbers (Ward & Barker, 2013). For this paper, the authors are accepting the definition by Knapp (2013, p. 215). According to him, Big Data refers to “tools, processes and procedures that allow an organisation to create, manipulate, and manage very large data sets and storage facilities”.

ERA	SCIENTIFIC REVOLUTION	COMPONENTS OF ACTIVITIES
Thousand years ago	Experimental Science	Description of natural phenomena
Last few hundred years	Theoretical Science	Newton’s Laws, Maxwell’s Equations
Last few decades	Computational Science	Simulation of complex phenomena
Today	Data-Intensive Science	Scientists overwhelmed with data sets from many different sources <ul style="list-style-type: none"> <li>• Data captured by instruments</li> <li>• Data generated by simulations</li> <li>• Data generated by sensor networks</li> </ul>

**Table 1: The Emergence of a Fourth Research Paradigm** -Adapted from: Hey, Tansley & Tolle (2010)

#### METHODS

The study has approached the question of which library services should become part of a standard suite offered to researchers in five levels of research lifecycles (Unsworth, 2000; Vaughan, Hayes, Lerner, McElfresh, Pavlech, L., Romito & Morris (2013) namely, FUND, DISCOVER, GATHER, CREATE, SHARE. Later, the study mapped the behaviour of the librarians using Cynefin Framework to make sense of the ILS activities.

#### ILS MODULE MAPPED INTO RESEARCH LIFECYCLES

Agreeing to Vaughan, et al (2013) the model demonstrates that the library provides services that fit along a continuum of research lifecycle. The continuum of research lifecycle as it is understood by all researchers. Therefore, the ILS is presented as user centred: they are offered in a package that users can relate to and understand. Furthermore, as found out by Vaughan, et al (2013) all services listed in the research lifecycle model can be performed as modular, phase by phase. This enables a small team of librarian to provide a package according to a lifecycle chosen by a group of researcher in a scalable approach, given a limited number of librarians. In this way, Vaughan et al showed that librarians can provide support in a complete research lifecycle. The model allows the library follow through the entire the research lifecycle. Based on this model alone the library is ready to be a partner through the entire process, not just doing the literature review of a research project.

## CYNEFIN FRAMEWORK

The Cynefin Framework (CF) was chosen to select the best projects in support of UiTM needs to increase in the quality of managing the organization with a very tight budget. The project is considered quality if it is very lean and strategic if it can prosper without allocated budget. CF is a tool for sense making to understanding the chaotic world of information. By riding on the current facilities and resources, the information literacy skill (ILS) as a training module for library user, was chosen as a strategic project to be handle by any libraries. The idea of the Cynefin Framework is that it offers decision-makers a "sense of place" from which to view their perceptions (Browning & Latoza, 2005). Or in his own words Snowden (2006) said that "sense making is how we make sense of the world so we can act in it". In the context of library management, the framework is helping the librarians to make sense of the information explosion and data deluge which is challenging the profession. Thus, in the study, there are five quadrants to frame the problems; obvious, complicate, complex, chaotic and disorder.

**Table 2: Cynefin Framework**

<b>Obvious/Simple/Known is the domain of best practices.</b>	Simple or Known, in which the relationship between cause and effect is obvious to all. The approach suited to this context is to Sense - categorize - Respond (SCR) then apply best practice. This suits a centralized bureaucratic way of working with weak horizontal links in organizations
<b>Complicated/good practice/ Knowable are the domain of good practices.</b>	Complicated or Knowable, in which the relationship between cause and effect requires analysis or some other form of investigation and/or the application of expert knowledge. The approach suited to this context is to Sense - Analyze - Respond (SAR) then apply good practice. This domain <ul style="list-style-type: none"> <li>• is the realm of most scientific research and of matrix organizational structures.</li> </ul>
<b>Complex/emergent practice is the domain of emergent solutions.</b>	Complex, in which the relationship between cause and effect can only be perceived in retrospect, but not in advance. The approach suited to this context to Probe - Sense – Respond (PSR) and then allow emergent practice.
<b>Chaotic/novel practice / Incoherent is the domain of novel solutions.</b>	Chaotic, in which there is no relationship between cause and effect at systems level. The approach suited to this context is to Act - Sense - Respond (ASR) to discover novel practice. Aspects of Chaos Theory developed in mathematical disciplines are relevant to this domain. The connections between individuals and organizations working in this domain are weak.
<b>Disorder/ Causality Unknown is the space in the middle.</b>	If an organization does not have an idea and know where it is, it is in "Disorder." Priority one is to move you to a known domain. This is the middle domain, which is the state of not knowing what type of causality exists, in which state people will have a tendency to revert to their own comfort zone (domain) in making a decision.

**Table 3: Adapted from Snowden (2006)**

## THE MODULE OF INFORMATION LITERACY SKILLS

Information Literacy Skills (ILS) module has many facets and each library has their own modules. The module is basically for training reference within one library. This paper would use UiTM library ILS module (E-LiTs) as basis for discussion. The Information Literacy Skills Module plotted with the research lifecycle. By using research processes, adapted from Unsworth (2000) and enhanced by Vaughan, et al (2013) the E-LiTs module is developed into four quadrants of behaviour [activities] for

librarians to support the scholars. It includes: a) Funding opportunities, b) Discovering contents or resources, c) Gathering resources, and d) Creating knowledge.

#### **FUND: Funding opportunities: Seeking grants**

Funding opportunities is the act of seeking grants available to fund a research project. According to Western Sydney University (2016) research comprises of creative work undertaken on a systematic basis in order to increase the stock of knowledge. In academia, researchers are particularly committed in order to propagate knowledge. The components of a successful propagation of research include among other, a long-term funding of field research and monitoring. In general, to do research there must be fund, however grants and funders are becoming scares and limited. In Malaysia, the fund from government is dwindling and one need to compete to justify the importance and significant contribution to the society before one can acquire it. Thus, Malaysian scientists need to find other sources to fund their researches. Although researches could search on their own, some activities get better done by someone who is more knowledgeable and expert; who could concentrate and know how to search funding opportunities.

#### **DISCOVER: Discovering contents or resources**

According to Spezi & Creaser (2013) data deluge is becoming a major element of the academic library landscape. Over the past five to ten years, libraries have begun to provide data-related services to researchers. Examples include assisting researchers in complying with the data management and sharing requirements of USA funded grants (e.g., National Institutes of Health, National Science Foundation) providing guidance for developing workflows and standard data collection procedures (Gold, 2007); and training researchers on how to better organize, store, and preserve their data (Creamer, Morales, Crespo, Kafel & Martin, 2011). All of the above activities have created new opportunities for librarians, to expand their roles in data services.

#### **GATHER: Gathering resources**

Although libraries are normally associated with books, they have numerous other research resources, many of which are beyond the scope of what is easily accessible at home or on the Internet. Librarians are knowledgeable about what information is accessible from each resource and can make your research efforts easier and more efficient. Libraries house a number of resources that you can locate, handle, and use immediately. These physical resources include periodicals, magazines, newspapers, maps, and manuscripts, though some may be used only at the library. Academic librarians are assumed to know where to get source of information by following and tagging the citation? Since knowledge develop and increase exponentially there is no assurance that everybody who knows some tools and technologies could discover and gather all the information. If so, it still will be time consuming.

#### **CREATE: Creating knowledge**

Academic publishing is a system that is necessary in order for academic scholars to create, to do peer review of the work and make it available for a wider audience. Knowledge creation comprises of generating and discovering new knowledge of any types, and covers the conversion of tacit knowledge into explicit knowledge and vice versa (Nonaka, 1994). Knowledge creation relates to the creation of new knowledge through practice, collaboration, interaction, and education. It has been generally encouraged among the organizations that have the ability to create knowledge on an ongoing basis have the benefit of being dynamic and competitive (Nonaka & Takeuchi, 1995). It means the competencies to create new knowledge is one of the main sources of the competitive advantage (Nonaka, 1994) which librarian could embark on. Sometimes this issue is not treated as part of knowledge management since it overlaps with *innovation management* (Wellman, 2009). Publishing academic materials are not limited to publishing articles based on researches at the faculties. Librarians do have attentiveness to support knowledge creation.

RESEARCH LIFECYCLE	BEHAVIOUR	ACTIVITIES (EXAMPLE)	Example of TOOLS
<b>FUND searching</b>	Seeking grants	Finding funding opportunities, writing grant proposals	
<b>DISCOVER</b>	1. Finding serendipitous 2. Finding structured 3. Keeping current	1. Browsing, literature, web 2. Identifying, tagging 3. Known item searching for books, journals, following citations 4. Push/pull awareness: SDI, RSS feeds, e text mining, web browsing	1. JSTOR, Google Scholar, Amazon 2. Nature Network, SciSpace, Research gate 3. Library Catalogs & Indexes, Web of Knowledge 4. JSTOR, Google Books,
<b>GATHER</b>	1. Collecting 2. Acquiring 3. Organizing	1. Physical resources, lab bookings, digital documents, web resources, datasets, surveys, images 2. Borrowing, purchasing, licensing, accessing, requesting 3. Citation management curating datasets	1. CiteULike, BioLoit, JISC, 2. Amazon, Government Archives 3. EndNote, Procite, BibTex, Connote, CiteULike
<b>CREATE</b>	1. Annotating 2. Analysing 3. Describing 4. Reviewing & rating 5. Writing 6. Archiving	1. Active reading 2. Scripts, code, algorithms, 3. Annotating tagging, 4. Social networking 5. Document management, collaborative authoring 6. Storing or self-archiving	1. Zotero, EndNote, Mendeley 2. Source Depot, SAS, 3. Publons 4. LaTeX, Microsoft Word, Procite, 5. Google Doc
<b>SHARE</b>	1. Publishing 2. Teaching 3. Data Sharing 4. Rights	1. Communicating a message 2. instruction, guideline, or training 3. access, meetings, lectureship, 4. copyrights, legal, social, or ethical principles	1. Adobe, ID 2. ClickClass, CourseLab 3. Kobo, DRAFT2 DIGITAL

**Table 4: Model of information literacy skill (ILS)****ILS MODULE INTO CYNEFIN FRAMEWORK**

Agreeing to Association of College and Research Libraries (2015), the information literacy is a set of abilities which requires individuals to 'recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.' Information literacy is the foundation for lifelong learning. Sense making out of chaotic collection of information is meant to improve activities in knowledge creation. In a nutshell, being librarian, they need to communicate their tacit knowledge otherwise it remains personal.

Thus, in the ILS module the idea of handling all sorts of information and knowledge is quite chaotic. This needs an examination in order to establish the suitability of the Cynefin framework, developed for knowledge management, as a tool for sense making in library services. According to Snowden and Boone (2007), eventually the knowledge that grows, increases competence for sense-making and adaptation of information to suit various contexts of need. Cynefin Framework is neither a complete solution to all library services problems. However, in this study the team present suggestion and argument to demonstrate how it provides a new lens through which to make sense of the kaleidoscope of ILS activities and tools to manage research lifecycle. Cynefin Framework show how it affords a plotting of changing perspectives of ILS activities over time

RESEARCH LIFECYCLE	BEHAVIOUR OF LIBRARIAN	ACTIVITIES (EXAMPLE)	CYNEFIN FRAMEWORK
<b>FUND</b>	Seeking grants	Finding funding opportunities, writing grant proposals	<b>SIMPLE</b> is the domain of <b>best practices.</b> / disorder
<b>DISCOVER</b>	1.Finding serendipitous - 2.Finding structured - 3.Keeping current information	1. Browsing , literature , web 2. Identifying ,tagging 3. Known item searching for books, journals, following citations 4. Push/pull awareness: SDI, RSS feeds, e text mining, web browsing	<b>COMPLICATED</b> is the domain of <b>good practices.</b> / disorder
<b>GATHER</b>	1.Collecting 2.Acquiring 3.Organizing/classification	1. Physical resources, lab bookings, digital documents, web resources, datasets, surveys, images 2. Borrowing, purchasing, licensing, accessing, requesting 3. Citation management curating datasets	<b>COMPLEX</b> is the domain of <b>emergent solutions.</b> / disorder
<b>CREATE</b>	1.Annotating 2.Analyzing 3.Describing 4.Reviewing & rating 5.Writing 6.Archiving	1. Active reading 2. Scripts, code, algorithms, 3. Annotating tagging, 4. Social networking 5. Document management, collaborative authoring 6. Storing or self-archiving	<b>CHAOTIC</b> is the domain of <b>novel solutions.</b> / disorder
<b>SHARE</b>	1.Publishing 2.Teaching 3.Data Sharing 4.Rights	1. Communicating A Message 2. Instruction, Guideline, Or Training 3. Access, Meetings, Lectureship, 4. Copyrights, Legal, Social, Or Ethical Principles	<b>DISORDERED</b>

**Table 5: ILS module into Cynefin Framework**



Agreeing to Association of College & Research Libraries (2015) the information literacy is a set of abilities which requires individuals to 'recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.' Information literacy is the foundation for lifelong learning. People use information in sense making, as a representation (such as selecting raw data in small pieces to help people make sense of the data), selection (acting with interpretation that worked before), and retention (enacted interpretation retained for future use). Beliefs play a major role in this activity. Sense making out of chaotic and deluge of information to improve activities in knowledge creation is about using tacit knowledge (personal - which is gained through apprentices or on the job training); explicit knowledge (object or rule based); cultural (shared assumptions and beliefs that shape an organisations identity. In a nutshell, doing the job as librarian, they need to communicate their tacit knowledge otherwise it remains personal. Thus, in the teaching of ILS the sense making decisions are done during the interaction; otherwise the idea of handling all sorts of information and knowledge is not acknowledged.

Identifying a need for information and understanding its context is an ILS attribute. ILS underpins information behaviour in providing awareness of information sources; activities such as, how to search and use information appropriately for solving information needs and leveraging will generate new knowledge. The generation of new knowledge results from using information, in a process that combines with sense-making and adjustment.

#### **Simple Contexts: The Domain of Best Practice**

Seeking fund and grants is in the obvious quadrant or Simple quadrant. The act of searching agencies or companies that could fund a research can be done by Reference librarian using her knowledge and skill in searching strategies and techniques. In Simple systems, cause and effect are known and linked through direct, predictable causality. If librarian apply Simple systems to a chaotic context, it may result in dysfunction.

Most of the systems that we as library managers use are Simple (such as handling procurement processes or audit the user requirements for articles). Simple contexts are characterized by stability and clear cause-and-effect relationships that are easily discernible by everyone. In this area of "known knows," decisions are unquestioned because all parties share an understanding. Areas that are little subject to change, such as problems with getting a funder, processing documents and fulfilment of a project funded, usually belong here. Simple contexts, properly assessed, require straightforward management and monitoring. Here, library managers sense, categorize, and respond. That is, they assess the facts of the situation, categorize them, and then base their response on established practice.

#### **Complex - Discover: Complicated**

The process of gathering library resources and collection in all formats (collecting and acquiring) later organizing and classification of resources belongs to Complex quadrant. Complex contexts, unlike simple ones, may contain numerous right answers. Though there is a clear relationship between cause and effect, not everyone can see it. This is the territory of "known unknowns" While library managers in a Simple context must sense, categorize, and respond to a situation, those in a complicated context must sense, analyze, and respond. This approach is not easy and often requires expertise: An acquisition department may know that something is wrong with the library collection, such as certain topics or titles not acquired, listing from vendors not check or responded to, budgets not enough-because the customers are complaining, but the acquisition librarian knows the policy and procedures of the library and they have to follow through.

### **Complicated Contexts: The Domain of Experts**

Complicated contexts, may contain multiple right answers, and though there is a clear relationship between cause and effect, not everyone can see it. This is the realm of “known unknowns.” While library managers in a simple context must sense, categorize, and respond to a situation, those in a complicated context must sense, analyse, and respond. This approach is not easy and often requires expertise: A reference librarian who was asked to find literature will need to consistently update in the searching techniques and strategies. Only she may execute the styles which certain search engines or database in which she planned to search, she is the master of the landscape of knowledge. Repeatedly she will evaluate her strategies and techniques – further down the road, she will know that different subjects and search engines will need different approaches.

In a Complicated context calls for investigating several options- many of which may be “excellent”, “good practice” as opposed to “best practice” is more appropriate. For example, the routine method to text mining for an SDI (Selective Dissemination of Information) portfolio; certain subject field may unknown by the librarian; new hot science, new findings, new innovation – to develop the portfolio for a customer will need a lot of analysing and understanding of the field; emphasizing certain area of discoveries over another discoveries, might be equally valuable. The effort usually requires a discussion with the user. Entrained thinking is a danger in Complicated contexts, too, but it is the experts (rather than the library managers) who are prone to it, and they tend to dominate the domain. When this problem occurs, innovative suggestions by non-experts may be overlooked or dismissed, resulting in lost opportunities. Working in unaccustomed surroundings can help librarians approach teaching library user more creatively.

### **Chaotic Contexts: Novel Practice the Domain of Rapid Response**

As Snowden (2006) described it, “In a Chaotic context, searching for right answers would be pointless: The relationships between cause and effect are impossible to determine because they shift constantly and no manageable patterns exist—only turbulence”. This is the jurisdiction of unknowable. Library managers must first act to establish order, then sense where stability is present and from where it is absent, and then respond by working to change the condition from chaos to complexity, where the identification of emerging patterns can both help prevent future crises and distinguish new chances. Top-down communication is vital; there is very small chance for reaction. Still, the chaotic domain is always the best place for library managers to drive innovation, especially in Social networking and publishing activities.

In the quadrant of Disordered, the library activities taught in the information literacy modules involve the act of sharing (data, information, knowledge) the librarians usually become the integrator the activities of publishing, teaching information skills, managing data sharing, and consultation about the legal, copyrights and publishing rights. Even though this component of service still very new to librarians, however being an emphatic staff, librarians usually will try to fulfil these roles. Many of them can be found in the Research Support Division (e.g. Library University Kebangsaan Malaysia; and the Academic Services Division (Library University of Malaya). Many are collaborating with research, teaching and publishing activities (Zakaria, 2016)

### **CONCLUSION**

Academic librarians daily have to approach the “Fourth Paradigm” as an embedded role. The study is about how the academic librarian can manage the problem of big data. As big data is about data deluge, thus this paper is proposing to ease the task by introducing the development of a paradigm in an information literacy skill module called E- LiTS using the Cynefin Framework. The chores such as

coordinating resources and facilities that have been bonded by the research process to assist in managing the multiple levels and services appeared in the ILS Modules. The E- LiTS is an encapsulated model of managing several activities introduced in an ILS Modules. This is in accordance to the needs for an increase of productivity in scholarly publications.

The key vision for any forward looking organizations was embedded in the concept of an organization dedicated to ongoing innovation across disciplinary boundaries (Dewey, 2004). An organization designed for open use in experimentation, creation, and research in dozens of disciplines across the university. Through physical spaces and technology infrastructure designed to be adaptable, reconfigurable, and interchangeable, the building itself is designed to be an object of research. In order for a university to provide essential support to its researchers and remain competitive with peer institutions, the university library should initiate a distinctive Fourth Paradigm's function that provides empathy to the publishing activities. This paper has examined the LIS discipline being stack with, an information literacy

The study considers that Cynefin Framework provides a means of making sense of change in LIS to be indispensable when LIS is trying to create permits as a discipline. Cynefin Framework also provides a mechanism to match problems to solutions, and match issues to methodologies in the context of time and place. While recognizing the value of order in scientific methods of research and best practice guidelines in practice, Cynefin Framework also allows us to place emphasis on the incorporation of Complexity and Chaos Theories into the more ordered set of tools we have for understanding the world. This is particularly relevant when the changing economic, social and environmental issues in that world drive ongoing change and diversity in IS and ICT artefacts. The team recommends the use of Cynefin Framework as a sense-making tool for LIS research as we move into a future where complex human enterprises will trust on a miscellaneous, changing set of social ICT tools for communication and synchronization of their collective interacted activities.

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## **Session D: Improve while reduce**

Inter-library loan; smart partnership; makerspace; creation space; niche collections; open source solutions; technology startups

Paper 1:

**SMART PUBLISHERS AND SMART LIBRARIES: THE ROLE OF ARTIFICIAL INTELLIGENCE**

*Artificial intelligence is already making waves in various industries, and it is now the turn of publishers and libraries to harness this technology. Publishers and librarians can proactively prepare for the change by better understanding the role of artificial intelligence and its potential use in the future. Artificial intelligence technologies can enable publishers and librarians to focus on parts of their role that add the most value, such as editing, and customer engagement. The presentation will discuss how to use artificial intelligence technologies to build competitive advantage, drive operational efficiency, and deliver relevant engaging user experience.*

Yanru Guo  
Consultant, iGroup

\*Note: Please contact author to request the full paper



Paper 2:

**EMBEDDING LIBRARY SERVICES INTO RESEARCHERS' WORKFLOW: RIGHT TOOLS, RIGHT TIME**

*Today research is becoming more strategic for better visibility, higher citations and ultimately more funding support. Library services essentially have to evolve from passive resource providing to strategic insight advising. Although many tools and services were developed in helping researchers to achieve research excellence, increasing academic work is making almost impossible for every researcher to acquire the right competency of leveraging those tools. By curating a series of different modules of library services: smart research planning (Individual Research Roadmap), and, research storytelling, more library resources will be consumed and better the ROI. Examples will be shared to illustrate how some librarians in the region had deliberately repurposed their roles through acquiring a new set of competencies with library services that embedding into researchers' workflow.*

**KEYWORDS:** Strategic Planning; Research Outreach; Research Analytics; Librarianship

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Paper 3:

**ONLINE TEACHING AND LEARNING AIDS: IN THE LENS OF COURSE CONTENT DEVELOPMENT IN FACULTY OF INFORMATION MANAGEMENT UNIVERSITI TEKNOLOGI MARA**

*The use of technology gives big impact towards the transformation of education itself. Learning Management System (LMS) are needed to direct the resource allocation and investment decisions concerning the development and adoption of new and emerging information technologies to support the students learning the process in the university. Universiti Teknologi MARA (UiTM) itself have their own LMS, however, there are some obstacles faced by the user in accessing it. This study proposes an online teaching and learning aids as a tool for publishing course content development. The ADDIE model were used as a basis model for content management system in this study. A set of questionnaire were used as an instrument to investigate the level of creativity, innovation and skills of student through the learning outcome and to propose a new model in fulfilling a learning outcome requirements. Stratified Random Sampling were used as the sampling design, whereby 213 respondents were chosen among students from four different branches that offers IMD214 course under the Faculty of Information Management, which are located in Johor, Kelantan, Kedah and Sarawak. The findings of this study revealed that new mechanism need to be apply in teaching and learning environment in order to support the 11th Malaysia Development Plan that consists of three areas which consists of Dynamic Graduate, High Quality Education and Accessibility. The model, therefore, can be viewed as a map which would guide another university with appropriate in enhancing their LMS for the education purpose.*

**KEYWORDS:** ADDIE Model, Course Content Development, E-Learning, Electronic Publication, Learning Management System (LMS).

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## **INTRODUCTION**

The revolution of technology in this era affords a great prospect for lectures to utilise it successfully. Awkwardly, the issue that should be considered is how students, particularly those who are in Y Generation adapt and practice it. In recent years, there have been major advances in the field of education and educational technology as many new tools and terms have been introduced. Technology based education (TBL), Computer based training (CBT), Distance learning (DL), and Web based learning (WBL) are some of the keywords that are commonly used by researchers in the academic trail.

In the perspective of Malaysia, conferring to Farahiza (2010), the implementation of technology in teaching and learning activity has attracted a great deal of interest from the practitioners in the Higher Education Institution (HEI). Many higher education institutions have started to adopt and implement information and communication technology (ICT) solutions for example electronic learning as a source for flexible teaching and learning process either in the classroom or outside the classroom. This technology is referred as technology-enhanced learning (TEL).

In Raja Maznah's studies (2004), she mentioned that most public universities in Malaysia have some form of strategic plan for implementing pure electronic university. This plan includes conducting the teaching and learning program via online or web based mode to replace the traditional classroom learning. According to her, it is shown that universities in Malaysia are ready for the online delivery learning which supports distance education. Based on the analysis of SWOT project conducted by her in 2004, it was found that most HEIs have sufficient e-learning infrastructure unfortunately, they lack of a strategic plan for implementing online learning. Furthermore, most HEIs are focusing more to provide an ICT infrastructure to support online learning compared to firm plan for using ICT as a tool for teaching and learning, course development, course structure and assessment.

In this context, UiTM itself is not left behind in the drafting stage of UiTM Malaysia Plan for the strategic direction in line with the government and the Ministry of Education Malaysia, (Eleventh Malaysia plan 2016-2020: Anchoring Growth On People, 2015). Besides, UiTM is also playing the role of strategic planning and execution to enable UiTM in generating greater strides to put UiTM on the world map. Thus, some transformation needs to be do here by UiTM in order to make sure that those plans are achieved successfully. Thus, the aim of this research is to propose an online platform for students to publish their course content electronically.

## **PROBLEM STATEMENT**

In recent times, the government of Malaysia has developed the Malaysia Plan that comprises the government scheme for a period of 5 years as a drive towards a high-income country by 2020. One of the pillars that consists in the 11th Malaysia Development Plan is focusing on the education areas; Dynamic Graduate, High Quality Education and Accessibility. The country's vision is to produce comprehensive, entrepreneurial and balanced graduates that have knowledge and skills (science), ethics and morality (moral) which will meet the needs Malaysia's economic growth and competitive at the international level. One of the ongoing components in the operation of the higher education system is technology allows innovation to deliver hence, adjusting education to all students, (Eleventh Malaysia plan 2016-2020: Anchoring Growth on People, 2015).

In line with the Higher Order Thinking Skills (HOT) idea by Datuk Ahmad Senin, this concept aims to produce knowledgeable students who are critical and creative in their thinking and can compete at the international level. HOT skills refer to more than just the ability to read, write and count, but also to think and analyse a situation critically. Besides, in today's competitive world, students need to do more than just memorise or retell the facts. By executing the HOT skills, students will be taught on how to learn and reason, and apply what they think as solutions to problems in their work environment in the future.

Nevertheless, this Electronic Publishing course discusses the electronic publishing theory and skills in the print communication industry. Students are required to employ design principles using electronic publishing software to produce various publications for information dissemination. One of the outcomes for students is expected to organize the production of electronic publications. Those plans will be magnificently achieved if there is an integrated platform developed and utilized to store all these assessments. Unfortunately, based on the observation and experience, there is no platform or podium offered for them to upload all of their electronic publications as stated in the course work therefore, this will be the issue and the reason why this study is conducted.

### **OBJECTIVES**

1. To enhance the creativity, critical thinking, communication and collaboration of students in Electronic Publishing (IMD 214) course content.
2. To propose an integrated platform for students to publish their electronic publications as stated in the course work.

### **LITERATURE REVIEW**

#### **Information Communication and Technology (ICT)**

The exponential growth of information has made it imperative for learning to happen quickly. Meeting this challenge requires new thinking on how we acquire knowledge and skills as well as how we develop learning resources that can keep up with the knowledge economy. The traditional context of learning is experiencing a radical change. People change careers and relocate several times throughout their lives. The concept of traditional education does not fit well with the new world of lifelong learning, in which the roles of instructor, students, and curriculum are changing. Teaching and learning are no longer restricted within traditional classrooms (McAllister and McAllister, 1996; Marold, Larsen, and Moreno, 2000).

The advent of Information Communication and Technology (ICT) and the Internet has greatly influenced the way knowledge is transmitted. Thus, the development of e-learning embarks here. Furthermore, parallel with the increasing use of networked computers and the achievement of telecommunication technology, the Internet has been widely recognised as a medium for network-enabled transfer of skills, information, and knowledge in various areas (Carswell, 1997). The evolution of information and communication technologies and the rising of computer knowledge of the students make possible appearance of these new educational forms.

#### **E-Learning**

In Malaysia's view, the utilization of ICT resources is essential, as well as the involvement of providing regulatory institutions in optimizing the potential of e-learning within a knowledge-based economy. The most significant aspect to learners' involvement in e-learning is the notion of e-readiness, that is, their ability to make use of e-learning resources and multimedia technologies to improve the quality of learning. Kuldip Kaur and Zoraini Wati Abas (2009) found that regulatory bodies and policy makers have a role to play in the development of e-learning in Malaysia as they are the principals in the staging of e-learning initiatives in a country. Malaysia has implemented the e-learning system since the year of 1997. The e-learning system has been used among the public libraries, the government agencies and also by the higher learning institutions (Abtar Kaur, 2006). The IT agenda was initially driven by technological and scientific forces and innovations as well as the supply and demand of marketing forces and entrepreneurship (Bajunid, 2002). Currently, there are about 11 public universities, 4 university colleges, 18 private universities, and over 600 private colleges in this country. With the increasing demand from higher education, many institutions in Malaysia have planned and utilised e-learning. One of the higher institutions in Malaysia that has used the e-learning system widely started from the year 2001 is Open University Malaysia (OUM) and it responds with a good feedback. The

concept of e-learning as seen by the Ministry of Education (MOE), includes systems that enable information gathering, management, access and communication in various forms (Hassan, 2002).

As the fundamental, the first stage for e-learning project for Higher Education Institution (HEI) is the acquisition of sufficient ICT infrastructure to enable them to offer excellent e-learning platforms to students. The government of Malaysia has realised and seen it as crucial since the past four years, and as a solution to it, Millions of Ringgit has been allocated to enhance the ICT infrastructure delivery and management systems. In fact, lecturers are provided with at least Pentium 4 Desktop if not a laptop with mobile computing capability. Followed by the second phase is about the integration of ICT in teaching and learning, Raja Maznah (2000b). It is found that there is some common elements observed to be the critical successful factors such as the institutions' strategic plans for ICT use in teaching and learning, the specialized centre that translates the plans into reality and coordinates the strategies for e-learning success, the right combination for human resources balancing the academic know how with technology savvy, sufficient infrastructure to enable e-learning platform and staff development plans and strategy to encourage the adoption of ICT in teaching and learning process.

Zhang and Nunamaker (2003) study in the perspective of academics and found that e-learning has supported significant improvement in interactivity, collaboration, and delivery of online education. The educational opportunities have been carried to many remote corners of the earth via the Internet. The new focus of distance learning is to build a cost-effective learning infrastructure that enables anytime, anywhere, self-paced, and interactive learning. The integration of e-learning into medical education can catalyse the shift towards applying adult learning theory, where educators will no longer serve mainly as the distributors of content, but will become more involved as facilitators of learning and assessors of competency, Ruiz, et al (2006). Academic institutions should continue to explore on how to create more appealing and effective online learning environments. One way to do this is to integrate appropriate pedagogical methods, to enhance system interactivity and personalization, and to better engage learners. (Zhang, 2004).

### **Learning Management Systems / E-Learning Platform**

E-learning platforms (sometimes called learning management systems (LMS)) are applications used for the delivery of learning content and facilitation of learning process. They are developed for administration and teaching in tertiary education. This software enables the administrators and lecturers to treat enrolment data electronically, offer electronic access to course materials and carry out assessments. The activities managed by the LMS vary from instructor- led classroom training to educational seminars to Web-based online training. In addition to managing the administrative functions of online learning, some systems help create, reuse, locate, deliver, manage, and improve learning content. This system is called Learning Content Management System (LCMS) (Rengarajan, 2001). The LCMS provides tools for authoring content as well as virtual spaces for learner interaction (such as discussion forums and live chat rooms). Rengarajan (2001) emphasizes the importance of integrating both LMS and LCMS because they share different levels of administrative interests in the same entities. Lack of smooth integration between the products results in a broken solution with administrative conflicts.

E-learning scenario exploits ontologies in three ways: describing the semantic (content) of the learning materials, defining the learning context and for restructuring the learning materials in the learning courses. These three dimensions enable easier search and navigation through the learning materials. Ontology-based technologies and intelligent agents are expected to assist semantic information processing on the future Semantic Web. With more semantic-aware computing technologies, eLearning is expected to be more intelligent in the new era of Educational Semantic Web (Anderson & Whitelock, 2004). E-Learning supports intelligent semantic e-learning by bringing semantic context awareness into multimedia learning information processing and learning practices and also bringing awareness of learner personality in support of personalized learning (Weihong Huang, David Webster,

Dawn Wood & Tanko Ishaya, 2006). In the e-learning environment, educators provide the online resources for students and help them to save time. They can read books in electronic format such as *PDF* format.

Yet, in the education perspective, learning process will no longer be restricted to formal institutions such as school and university. By using this proposed aid, learners should take advantages of unlimited learning and sharing information successfully. In some years, lot of changes in teaching and learning process will occur as when it comes to technology oriented, it will go beyond the expectation. Normally, in the growth of technology applications in education, we are moving towards a Virtual Reality where the distance between the teacher and the taught is nil, (Saxena, 2011).

### **Creativity and Innovation**

According to Partnership for 21st Century Skills (2011), education in creativity and innovation focuses on creative thinking, creative collaboration, and implementing innovations. Thinking creatively is taught by having students who use a wide range of idea creation techniques, create new and worthwhile ideas, and elaborate, refine, analyse, and evaluate their own ideas in order to improve and maximize creative efforts.

However, from the teaching perspective, teaching students who work creatively with others involves teaching students that are able to develop, implement, and communicate new ideas with others effectively. Thus, it can be open and responsive to all perspectives, incorporating peer input and feedback into the work. To support this, Knoble and Wilber (2009) suggested that through the use of Web 2.0 tools such as blogs, photo sharing sites, and wikis, educators can provide opportunities for student users to complete complex tasks with virtual strangers. Additionally, site such as Fanfiction.com in which students share their creative endeavours with others and receive feedback and continue to revise based on authentic dialogue in the virtual environment (Knoble & Wilbur, 2009) is an excellent example of how technology can be used to promote and support 21st century skills among students.

### **Critical Thinking**

Mohammad and Mohammad (2012) recommended that research as far back as the mid-1990s shows that the use of programs such as Logo in early childhood classrooms promotes critical thinking and problem-solving skills. What is interesting about this, is that Rusk, Resnik, Berg, and Pezalla-Granlund (2008) highlighted the attribute of the dramatic increased in the use of robotics in the educational environment to be the result of the opportunities for authentic decision making (design and computational) afforded when working on a robotic project. More recently, the focus on how technology can promote critical thinking and problem-solving in K12 students examines the types of activities students are completing when using technology. For example, Lowther et al. (2012) made the connection between students using technology for meaningful activities (e.g., problem-based and requiring processing or manipulation of information) and 21st century skills and found that in a large scale 1:1 laptop program, students were engaged in meaningful learning for over one-fourth of the time observed. Gallavan and Kottler (2012) also suggested that by allowing for divergent thinking activities, teachers are able to promote critical thinking.

Partnership for 21st Century Skills (2011) suggested that students learn to make judgments and decisions by learning how to analyse and evaluate evidence, arguments, claims, and beliefs; analyse and evaluate major alternative points of view; synthesize and make connections between information and arguments; interpret information and draw conclusions based on the best analysis; and reflect critically on learning experiences and processes. Finally, problem solving is developed by teaching students how to solve different sorts of non-familiar problems in conventional and innovative ways.

## ADDIE MODEL

The ADDIE model is used as the basic model for content management system implementation in this study. ADDIE instructional model was first appeared in 1975 (Branson 1975). It was created by the Centre for Educational Technology at Florida State University. The ADDIE model developed by Dick and Cary in 1978 and Russell Watson revised in 1981, and was considered essential in the development of educational and training programs (Hannum, 2005). The E-content package is used for individual learning purpose. The development of E-content package consists of five phases based on Research Design Analysis, Design, Development, Implementation, and Evaluation of learning materials and activities. This model procedure is given below:

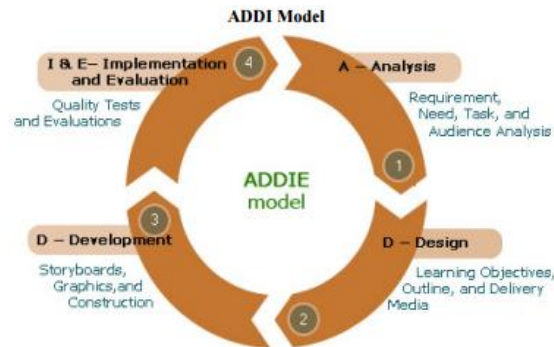


Figure 1: ADDIE Model

The E-content package stimulates each student individually or self-paced learning process. The E-content package gives enjoyable learning experiences for the students. They can clarify any doubt during the learning process through E-content package. Through the development of E-content, students will be able to exchange their knowledge with each other. Therefore, at the end of the learning process, the students will get the complete information about the lessons or the units. Students are active participants in the learning process. E-content package encourages cooperation and active learning thus promoting students' own-pace of learning.

## METHODOLOGY

Quantitative method was selected as the methodology of this study. According to Sibanda Nokuthaba (2009), quantitative research focuses on gathering numerical data and generalizing it across groups of people. Stratified Random Sampling was chosen as the sampling design. This technique is suitable as the population is made up from four different branches of Faculty of Information Management located in UiTM Johor (85 students), UiTM Kedah (33 students), UiTM Kelantan (58 students), and UiTM Sarawak (37 students) that offer Diploma in Information Management. All the 213 students from Semester Three (3) Diploma in Information Management Year 2017 that took Electronic Publishing (IMD214) were selected as the respondents in this study.

## RESULTS

### Reliability of instruments

Cronbach Alpha statistic is found to be 0.812, therefore the reliability of the questionnaire is acceptable.

### Descriptive Statistics

		FREQUENCY	PERCENTAGE (%)
GENDERS	Male	42	21.6
	Female	152	78.4
AGE	20	168	86.6
	21	16	8.2
	22	7	3.6
	23	3	1.5
CGPA	3.50 - 4.00	20	10.3
	3.00 – 3.49	73	37.6
	2.50 – 2.99	83	42.8
	2.00 – 2.49	18	9.3
	< 2.00	2	1
CAMPUS	Johor	90	46.4
	Kelantan	22	11.3
	Kedah	44	22.7
	Sarawak	38	19.6

Table 1: Summary of Respondents' Characteristics

Table 1 summarises the respondents' characteristics. There are 42 male (21.6%) and 152 female (78.4%) Information Management students from the four surveyed UiTM branches. The respondents' age is around 20 to 23 years old, and 20 (10.3%) with 3.50 – 4.00 CGPA, 73 students (37.6%) 3.00 – 3.49, 83 students (42.8%) 2.50 – 2.99, 18 students (9.3%) 2.00 – 2.49 and 2 student (1%) with less than 2.00 CGPA.



**Inferential statistics**

	<b>Correlation test between</b>	<b>r</b>	<b>p value</b>	<b>N</b>
1.	My lecturers always encourage students to utilise e-learning and my publication quality improved.	0.656	< 0.001	194
2.	E-learning helps students to be responsible for their own learning.	0.774	<0.001	194
3.	Technology helps me in my learning environment.	0.683	0.001	194
4.	Learning Management System (LMS) is a tool that helps me in my learning process.	0.785	<0.001	194
5.	The Learning Management System (LMS) allows me to access materials at any time.	0.649	<0.001	194

Note:  $\alpha = 0.01$ ; r = corrélation coefficient; N= Total respondents

Table 2: Results of Pearson correlation tests

Tables 2-1 above indicates that there is a strong relationship between the lecturer encouragement to students to fully utilise the e-learning platform and their academic performance from the four surveyed UiTM branches. The encouragement from lecturer to utilise e-learning platform in their project publication has shown a positive impact to the students' performance as well as the quality of their work has also improved as the students need to publish it online and make it available for others. Overall, the students' academic achievement as well as the quality of LMS contents uploaded into the learning portal have reached the required standard to teach the students at under- graduate level of study.

Table 2-2 above shows there is a strong and positive relationship with e-learning helping students to be responsible for their own learning to facilitate the learning process of students. Normally, the students need to complete their publication based on the subject requirement and all the data and information need to be precise and checked with the supervisor first before they publish it into the LMS. Even though almost all of the course contents are the same but their quality need to scrutinised and standardised from all the branch campuses.

Table 2-3 above shows the appliance of technology helps in learning environment as the accessibility of the information is easier compared to conventional method of publication. Since the academic staff gain their skill in the technology usage and application from their school days, as well as the extensiveness of ICT technology application either through the practice in the school or home throughout Malaysia. The Malaysian government has to be praise in this perspective because since the inception of ICT technology to the country in the late 1980s, the government's priority is to bridge the technological divide among Malaysians from all walks of life with the wide Wi-Fi coverage and the electricity supply, as well as installation and commissioning of digital technology to all level of education system.

Table 2-4 above shows that the students acknowledge that the LMS is a set of tools that helps them in learning. Most of the students use internet to access their content and learn from online materials. They also surf the internet by using the World Wide Web (WWW) or Local Area Network not only to

excess the references or information but also using the intranet and net-working to study collaboratively among themselves. LMS platform suits them the most because the course contents have been uploaded earlier to facilitate the teaching and learning process.

Table 2-5 shows that all the four surveyed branches of the public university agreed that LMS allows them to access learning materials at anytime and anywhere. These four branches also committed in providing the e- learning facilities effectively to cater the need of expanding learners' population in various disciplines of studies as to heed the country's vision and mission of achieving developed country status by year 2020 and prosper advanced human capital.

## DISCUSSION

The five contributing factors to the quality of online learning contents to support a regional, open and distance teaching and learning LMS in the Malaysian public university are academic staffs' demographic continuum, academic staffs' teaching and learners' learning culture, university's teaching and learning strategies, university's Learning Management System and technology appliance factor. Each of the above mentioned factors is equally important.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1443.214	56	25.772	8.739	.000
Within Groups	5574.523	194	28.735		
Total	7017.737	250			

Note: Value of F Prob. = 0.000 which is smaller than  $\alpha$  Level of 0.05

Table 3: Summary of one-way ANOVA. Significant different between students' demographic continuum from branches of the university and quality assured LMS contents

Table 3 above shows there is significant difference between the respondents' demographic continuum and the surveyed branches of the university. Normally, in a public university, most of the management of distance and e-learning programs is empower basis but LMS main frame server is centralised in the main campus. Usage is based on the discretions of the academic staff from the branch campuses of the university. The appointment of the academic staff is based on their academic qualifications and work experiences. Therefore, it showed significant different base on their demographic perspectives.

As the demographic continuum of the academic staff from all the branches of the university will not lead to a more significant background of its academic staff because overall, the university is a teaching university, all courses are based on the prepared lecture notes for the diploma and the degree students. Many young academic staff will try their level best to upload qualified courses contents for their own use of the digital LMS platform to facilitate their lecturing session in disseminating the knowledge, but the older academic staff preferred using chalk and talk classroom lecturing session of face to face rather than the digital technology platform which they may not well verse.

	Sum of Squares	df	Mean Square	F	Sig.

Between Groups	2194.665	56	39.190	6.689	.001
Within Groups	7696.172	194	39.671		
Total	9890.837	250			

Note: Value of F Prob. = 0.001 which is smaller than  $\alpha$  Level of 0.05

Table 4: Summary of one-way ANOVA. Significant different between academic staffs 'digital LMS teaching and learning culture of the university branches and quality assured LMS contents

Table 4 above shows there is a significant difference between the students' digital LMS learning culture and practices of the four surveyed branch campuses. The significant different of digital lecturing culture is due to perception, knowledge, attitudes and changes among the academic staff. The background of students from the four surveyed branches of the university are different. Therefore, their main agenda of writing and uploading best quality publications for the LMS platform does make differences. Sometimes, universities should have practiced 'people focused organization' because Kaur and Jujneja (2013) argue that when an organization extends its focus to encompass society and the environment, members of the organization can be inspired to share the dream of the organization. Learners will be proud of graduating from the various universities.

Changes of university culture are inevitable especially the sharing of LMS learning platform and the digital technology. One has to ask the willingness of organization to invest in a paradigm shift from knowledge hoarding to knowledge sharing. Organizations that succeed in knowledge management are likely to view knowledge as an asset and to develop organizational norms and values to support the creation and sharing of knowledge (Devenport et.al, 1998). But are the academic staff willing to change their mind-set towards a more significant approach in lecturing and dissemination of best quality contents and enrich the students' mind? That is part and parcel of the duty as an academician.

## CONCLUSION

The outcome of this study shows that students have acknowledged the LMS as a set of tools that helps them in learning. Besides, LMS is a part of tools that has been used in delivering information to people actively. Some enhancement is already done with the support from technology so that the process of delivering the information and knowledge goes smoothly. This study proposed a new online-based platform for students to publish and share their assessment in a suitable storage, without any limitations. Hence, it tenures students to have a good record management skills and aware about the importance of record keeping, especially their assessment. Moreover, it also offers an opportunity for them to publish their assessment creatively and innovatively through online platform. Not only that, the utilisation of this online teaching and learning aid would be exclusively significant to the academicians to encourage more interaction among students in the class. In this context, the responsibility should not rely on one side, it requires all commitment and participation of a teamwork including organization and user themselves. If this situation is successfully implemented in Malaysia, there is no doubt that more international student will be interested to further their study here. Thus, it is recommended that the government of Malaysia should contribute to make sure that this implementation is achieved as targeted and as highlighted in the latest 11<sup>th</sup> Malaysian Development Plan (RMKe11) which focussing on the education and technology infrastructure.

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Paper 4:

**IMPLEMENTATION OF OPEN SOURCE INTEGRATED LIBRARY SYSTEM IN ACADEMIC LIBRARIES OF PAKISTAN: A PROPOSED FRAMEWORK**

*“An interrelated group of computer programmes that automates multiple library operations called integrated library system”. In Pakistan, the condition concerning library software cannot be associated with that in advanced countries, it’s not satisfactory due to absence of standard library software, multilingual nature of library’s collection, less budget, software privacy and absence of provision from local vendors are the main barriers in the effective implementations of integrated library system. The Objective of this paper is to proposed an open source integrated library system implementation framework to enhance the academic library standard, provide capability to resource sharing and library users can able to access the information material at any time regardless of their geographical location. The study is based on review of literature including the journal articles, conference proceedings, thesis, dissertation, books and libraries websites by the help of literature review the suggestion and the recommendation will give to the library professionals about criteria of selecting the open source-ILS and how to overcome problems and challenges faced by implementation of open source-ILS. Meanwhile this study will also focus on prevailing standards in developed world for Management of libraries and providing specific directions for upbringing of academic libraries in Pakistan.*

**KEYWORD:** Framework, Integrated Library Management System (ILS), Academic libraries, Pakistan.

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## INTRODUCTION

The open source Integrated Library Management Software (ILMS) provides a planning system and offers a various attraction for the libraries. The open source ILMS used Public license GPL, the source code is free of cost available for the users. They can free download and modify according to their needs. This is one of the effective source for developing countries to save money and make balance the library budgets conversely, proprietary library management software needs too much amount for buying with yearly maintenance furthermore, in house developed software also used for library management; these are specially made for library management like, maintaining OPAC, acquisition, circulation and other library operations. Now a day open source ILMS are very common particularly in developing countries and generally academic libraries willing to adopt them. In Pakistan, most libraries are still managed manually and there is no implementation of ILMS, though automation is primarily done only for few library operations, the reasons behind unavailability of library management system in Pakistani libraries are according to:(Ramzan,2004) due to less library budget, absence of standard library management software in native market, un skilled personal resources and the management arrogances are the major problems deterring quick acceptance of technology in Pakistani libraries. Some example of open source ILMS are: Greenstone, SLiMS Senayan, Evergreen and KOHA, in this paper KOHA will be discussed briefly. Mentioned open source ILMS provides almost all the essential and advance functionality like searching and browsing of library material as well as modules for cataloging, acquisition and circulation.

According to: (Tramboo *et al.*, 2012). Greenstone Digital Library (GSDL) is a collection of software established by the New Zealand Digital Library Project at the University of Waikato in 1995. The Greenstone library management software support Dublin core metadata scheme to organise the library collection greenstone is open source ILMS. Furthermore, SLiMS Senayan Library Management Software is another example of open source ILMS.

Whereas, KOHA was firstly established in New Zealand by Ktipo communications ltd and initial installed in January 2000 for Horowhenua Library Trust. Some of KOHA's beneficial features comprise a simple interface, web 2.0 competences and customizable search (Ayelude, 2016). Similarly, Evergreen ILMS was started by the Georgia Public Library system in 2006 thus that a library catalog could be shared by a association of more than 270 libraries (the Public Information Network for electronic services or PINES) in the whole state. It was built to provide scalability for large systems and has been approved by libraries across the USA, Canada and the rest of the world. Some of Evergreen's key features include acquisitions, circulation, cataloging, and online public access catalogs (OPACs).

Above are the little introduction about few of open source ILMS, nowadays the implementation of all of these software's has been going on in developed and developing countries successfully. In this paper, the features of the KOHA has been discuss and proposed framework for the implementation of KOHA in academic libraries of Pakistan will be given.

## LITERATURE REVIEW

The idea of library computerisation is associated to the progress of work completed by the machines. Through the definition, automation in its perfect form suggests the removal of all physical labour the practise of automatic controls that assurance correctness and excellence (Encyclopaedia Britannica, 2008) so for the automation of entire library system the ILMS has been using either proprietary or open source. Currently in library environment the requirement of users are increasing while the library budget is decreasing due to global economic situations therefore, the libraries are progressively seeing for the methods to fulfil users demands through providing less costly systems and resources. Ribeiro

(2007) stated that Asian governments are focusing “open source as a boost for their economies and a way to increase technological innovation in the region.” It shows that developing world had given significant attention to adopt open sources systems.

In Pakistan, a landmark initiative was the formation of the Open Source Resource Center (OSRC), “a project of Pakistan Software Export Board, Ministry of Information Technology in 200” (Rafiq & Amin, 2009) though KOHA is one of the suitable choice for the libraries of Pakistan it has all essential features that are necessary for library automation the reasons and the advantages for adopting KOHA will be discussed in this paper in next sections.

Historically, the greenstone software was first open source ILMS implemented in Pakistan by the United Nations digital library in 2000-2001 (Rehman et.al, 2011). according to: (Parichi & Nisha, 2011) Greenstone is a digital library management software it is available for all operating systems: Windows, Unix/Linux and Mac OS-X. Windows installation is the default, and the configuration steps and time taken is much less compared to KOHA and it is very convenient and suitable for installation, uploading of documents and usage for small and medium size organizations. Greenstone provides three modes for acquisitions: command line, web interface and GIL. Greenstone accepts almost all kinds of document formats like technical document, newspaper, articles, educational journals, videos, MIDI pop music collections, ethnic folksongs etc. Greenstone is available in 59 international languages (Wikipedia, 2015). In addition, the library of Beaconhouse university and library of the university of management technology uses Evergreen open source ILMS it provides a facility of searching by keyword, author, title, subject and series and provide advance searching as well, the registered users can login and can apply filters for actual search (evergreen at Beaconhouse national library university, 2011).

## **BACKGROUND OF ACADEMIC LIBRARIES IN PAKISTAN**

The implementation of open source integrated LMS is at an initial stage in Pakistan while open source software offers many economical replacements to costly commercialized library management system and make easy library tasks but due to less IT awareness in library professionals hindrance to adopting open source library management software according to (Mirza & Mehmood, 2014) in Pakistan library automation was introduced in 1980 and very few libraries computerized their services till 1990. Although library automation remained in policies but less in practical. though some private higher education institutes have updated their libraries and had implemented ILMS, however, most of the public libraries. College, school and university libraries, were lacking computerised systems. Few software’s like CDS/ISIS, INMAGIC and ORACLE were being used in Pakistani libraries at some extent (Haider, 2003) according to: (Shafiq & mehmood, 2008) explain the features of four integrated software ((LIMS, WINISIS, LAMP and INMAGIC) that were used in Libraries of Lahore Pakistan. some popular ILS were used for automation of library processes in Pakistan comprises INMAGIC, CDS/ISIS, MINISIS, KITABDAR, dBase, FoxPro, Pakistan library software and library automation and management program (LAMP) (mehmood. 2014). Kitabdar support both urdu and English language based on PASCAL language considered as first urdu language supporting software this software developed by Pak book cooperation for medium sized libraries but now Kitabdar is no more exist in the libraries (Malik. 1996). Furthermore, PASCIMATE is result of in house development by VP-info. this software was developed by the librarian trained in USA, it has offered services such as OPAC, printing of catalogue card, article indexing, serial control, acquisition, preparation bibliographies and managing administrative functions, this software was implemented in National Institute of Public Administration, Lahore; the Command and Staff College, Quetta; and the Allama Iqbal Medical College, Lahore. (Mehmood, 2014). Sahibzada Yaqub Khan Library of National Defence University has adopted Libmax library software, developed by Max Intelligence (Sahibzada Yaqub Khan Library, 2011). Libmax is a comprehensive software that provides systematic management of print and electronic materials. It contains acquisitions, cataloguing, circulation, serials and OPAC modules (Max Intelligence, 2011). on the other side provincial assembly libraries of Pakistan started to adopt open source ILMS for the libraries automation (Rafiq and Amin, 2009).the existing literature does not provide a complete current status of libraries software but



according to available literature some academic libraries are using in house developed software for library automation while rest of academic libraries are still manual; using card catalogs except OPAC and the further activities like acquisition and preparation of bibliographies done manually the reason is less budget , low level of computer literacy in library professional. As stated in (Malik, 1996). Pakistan being the developing country, allocates little budget to education hence, very small portion of that is reserved for libraries Thus, libraries in Pakistan face many challenges and excessive cost of modern systems and automation process create hindrance in implementing automation in libraries. Therefore, adoption of open source ILMS is the solution to tackle the budget concerned issue.

### **KOHA OPEN SOURCE ILMS SOFTWARE**

**KOHA version 3.0.1is the Full-featured ILS.** It is convenient for all types of libraries regardless of their size and material. It is most common open source system used all over the world.

Following are the basic features that are necessary to run a library

- Online public access catalog (OPAC).
- Circulation interface. handle many routine operations like generate overdues fines, damages charges bills and tackle many issues and send the users through email automatically.
- Acquisitions. This comprises electronically orders from vendors, budgets, and pricing information
- User record management. Keep all the information about the registered library users.
- Branches. It allows the users to borrow and return books at different branches.
- Online renewals and reservations of item by Library patrons.
- Borrower history, comments and tags.
- Customisable search. A library can choose the search fields as they want. For example, a search by author, title, subject, and keywords. The advanced search option is also available
- Serials. It allows the cataloguing of journals and user can sight holdings information through the OPAC.
- Book bag and virtual shelves. Users can have a virtual library where they keep their desired books.
- Multi-lingual OPAC support. The user can view the OPAC in different languages depending on the language preferred by the library.
- Barcode printing and reader. KOHA completely cares of barcodes. This reduces the chances of error by human.
- security. KOHA offers strong security measures to protect unauthorized access in the system.

- Reports and statistics. KOHA provides detailed statistical reports.

There are so many other features KOHA version 3.0.1 have like news, label/user card creator, upload patron's images, task scheduler, overdue notices, log viewer, SQL builders, comments, export Biblio, and etc

#### **REASONS FOR ADOPTING KOHA**

##### **a) Free Download and install.**

The KOHA is free to download and install, no licence or upgradation fees, provides a source code for configuration and modification. KOHA provides an unrestricted and transparent use of their clients

##### **b) User friendly**

KOHA is easy to install, efficient in updating, and provides upgrades frequently.

##### **c) Security**

KOHA support a multi users and multiple security levels, by describing various categories for access to users at site. This helps admin to keep control over editing and publishing material on site.

##### **d) Flexible**

The KOHA is flexible in that manner the library is not requires any special hardware or hard disk to maintaining it, its only required a Linux platform for consultations it can be expand, adjust and change as per clients requirements.

##### **e) Web 2.0 features**

KOHA has more Web 2.0 features such as RSS feeds, shared book lists, news, comments and information mash up which can be integrated with tools like zoreto, delicious etc

##### **f) Modules**

KOHA has all basic modules that are required for an automated library,

#### **PROPOSED FRAMEWORK**

This research proposes that to overcome the several existing challenges in developing countries concerned with budget, culture and employee's readiness to accept modern library systems. The implementation of open source systems will be the great option to start with. It will give tow fold benefits, by creating motivation in employs towards technological facilities and benefits by Integrated library management systems, secondly it will create the culture of working with technology as well as being free available by default overcome budget constraints. Based on this following framework is proposed in order to implement KOHA in academic libraries of Pakistan.

Implementing with KOHA unanimously will provide efficient management process by covering all academic libraries with one software at same time.

So following framework is proposed in order to bring academic libraries of Pakistan up to modern practices with easy and open access system KOHA. Figure 1. demonstrates the framework.

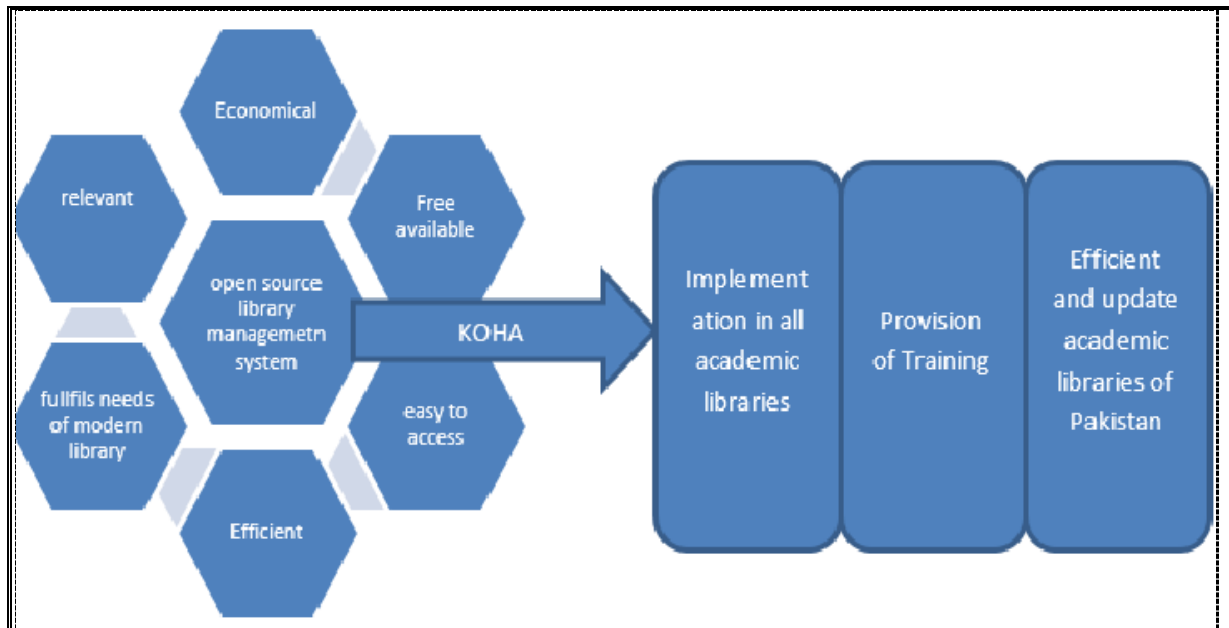


Figure 1 Proposed Framework for KOHA implementation

## CONCLUSION AND RECOMMENDATION

Overall the usage of technology in the libraries of Pakistan is not satisfactory the main reason is the less budget and unawareness of technology use, so for dealing with budgeting constraints needs to adopt the open source ILMS software and able to provide the effective services to their users because the academic libraries are the valuable source of the knowledge. Suitable library software can integrate all library modules like acquisition, cataloging, serial, circulation and manage OPAC therefore the library function will be easy for both users and librarians in order for academic libraries in Pakistan. adoption of KOHA will be best choice to enhance the library performance and provide the effective and moderate services to the users. In this paper few number of open source ILMS has been discussed for the awareness of library professional and the adoption of these software based on the collection of library for example SLiMS Senayan is appropriate for the small libraries while greenstone support big collection but do not having complete modules that require whole library integration thus, KOHA having all module that involves for entire library integration and now a days KOHA is dominant and prominent for adoption in academic libraries especially of developing countries.

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