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Abstract

Purpose: Our society is undergoing a process of rapid change, moving toward what is called the information society, the knowledge society, the network society or the informational mode of development. The evolution of scholarly communication in the digital era presents new challenges for libraries but also creates new opportunities for them to make grand contributions to research and scholarship. Against this backdrop, this study will examine the role of libraries in research and scholarly communication and the emerging issues in the digital era.

Design/Methodology/Approach: The method that will be adopted is a contextual analysis that will involve reviewing of materials from publications, texts and the internet.

Implication: Any limitation of access, whether deliberate or accidental, will reduce the ability of the libraries to fully achieve their primary role of meeting the library and information needs of the community they are serving. Scholarly communication has always been a priority for libraries, as the core mission of libraries have historically focused on purchasing collections of published works and leasing database. In order to meet this demand, libraries and librarians have to be equipped with the necessary professional skills to enhance their ability to create quality and reliable library resources and services for the users.

Originality/value: In sum, libraries need internally generated revenue for funding and provision of library resources and services, provision and maintenance of infrastructure, eradication of corruption and management support, training of staff will be recommended as the way forward for combating the challenges that will hinder libraries to render services, conduct research and scholarly communication to its patrons

Keywords: Scholarly Communication, Libraries, Research Outputs, Information Dissemination, Librarians.

Paper type: Conceptual Research

Introduction

Our society is undergoing a process of rapid change, moving toward what is called the information society, the knowledge society, the network society or the informational mode of development. The evolution of scholarly communication in the digital era presents new challenges for libraries but also creates new opportunities for them to make grand contributions to research and scholarship. Scholarly communication has always been a priority for libraries, as the core mission of libraries have historically focused on purchasing collections of published works and leasing databases (Griffin, 2013). The most common

way that libraries support scholarly communications initiatives on their campuses is by maintaining digital repositories that capture, preserve, and disseminate the research and scholarship of their institution. Along the way, libraries have worked to reinvent themselves, providing new roles for library staff: liaison librarians have become open access ambassadors, catalogers have become metadata providers, and reference librarians have become policy makers and content recruiters for new digital repositories.

As with any new venture, libraries and librarians have faced and are overcoming many challenges related to their new roles.

Librarians must learn new skills and aptitudes to carry out their new roles especially in this era of information explosion. Emerging issue is a possible new technology, a potential public policy issue, or a new concept or idea that, perhaps fringe thinking today, could mature and develop into a critical mainstream issue in the future or become a major trend in its own. Some of the emerging issues and technologies in library and information services are Library Automation, Digitalization, Institutional Repository, Digital Library Services, Consortia based Services, QR Code, EM and RFID implementation, Open Access, Outreach programs, Reference Management, Open Science, Virtual/Digital Reference Services, Ask the Librarian, Content Management, CAS/SDI services, Profiling System, Discovery Services, Web 2.0 and 3.0 based Services, Use of Social Media, Green Library Concept, to help in Ranking/Accreditation, Remote Login, Cloud computing, Mobile based Library Services, Use of Expert Systems and Robotics, Internet of Things, Augmented Reality Tools and Virtual Reality Tools, Semantics, Artificial Intelligence, Machine learning and How to be a Smart Librarian by Smart Involvements etc. Thinking that the role and future prospects of library professionals are decreasing rather we can say that they are becoming more important provided they are keeping pace with emerging trends & technologies in LIS and willing to go out of box.

Libraries

Library is unequivocally declared as not being a building as such, but also a space, any more than a hospital is a building. A quantity of books is not a library any more than a quantity of drugs is a hospital. This proclamation has profound significance in more than just one regard. On the other hand, it represents an authentic declaration as to what the library is not; given the two explicit allusions, which are self-explanatory in themselves. This is important because they are good ways of taking our minds away from what the library is not; having, in the process, enriched our understanding. However, they serve as the corollary by pointing, quite fundamentally, at a good start to exploring a sound understanding of what truly a library is or

should be Snunith, (2018). As an integral part of the campus, the library will be profoundly affected by changes in the academy itself. Thus it is important that the library, while implementing and managing internal change, continues to look outward at the university as a whole. As (Norman, 2014) rightly pointed out that changes in higher education, the new student-centered paradigm, new learning and teaching approaches have also created a need for a reconceptualisation of the roles and responsibilities of libraries and librarians.

It is acknowledged that universities all over the world face an imperative to adapt and adjust to a whole series of profound changes that fall into six major categories:

- increased demand for higher education in a lifelong learning context.
- internationalization of education and research
- the need to develop co-operation between universities and industry
- proliferation of places where knowledge is produced
- the reorganization of knowledge
- the emergence of new expectations.

Libraries have for centuries played critically important roles in supporting research in all subjects and disciplines within their host universities and colleges Nazim, (2011). Libraries have made significant efforts to optimize the visibility and usage of their archival or special collection material through digitization programmes. Feedback from researchers is very positive, but many information resources that could be useful to researchers remain under-used currently, mainly because they exist only in hardcopy or are inadequately catalogued Tiwari, (2013). Researchers' awareness of new developments in scholarly communications, particularly issues to do with open access to research outputs, is low.

Further progress in realizing the potential of open access to optimize access to research outputs will require effective interaction between researchers, libraries and senior

anagement at institutional and national level. There is a danger that the role of libraries may be diluted as researchers, particularly younger ones, turn to the social networking space to share research-based information Farida, (2013). This potential divergence of paths is not inevitable; but libraries need to proclaim their value so that researchers properly understand and acknowledge what the library is bringing to their working lives, and most particularly to their desktops. Libraries face new challenges as researchers' behavior changes in response to new technological developments. In the work of Odzlyko, (2013) he opined that libraries will need to plan for and build services that fit new researcher work habits, with an emphasis on the flexibility and remixing of their content and services. The library offering will be through a network environment which is already bringing change in user behavior. Indeed, that is one area where researchers are moving a little faster than the library at present. Modern libraries are therefore being redefined as space to get wider access to information in many formats and from many sources. The technological development in libraries has affected both information space and information practice Bankier, (2014). Today we talk about libraries without walls being logical extensions to libraries.

An important development in the second half of the 20th century was the introduction of integrated library systems and online catalogues giving access to information on library collections from anywhere with an internet connection. The idea of the library room changed when much of the visibility of the library environment was on the screen. The distance between author and reader has been shortened while it gives a more direct involvement in the dissemination of information. Libraries provide access to an endless variety of information resources and opportunities for interactive communication Klain-Gabbay, (2018). However, the fundamental mission has remained, to facilitate and give access to information and knowledge, but the processes, tools, and techniques have undergone big development. Libraries irrespective of type provide access to knowledge, information and works of the

imagination through a range of resources and services and are equally available to all members of the community regardless of race, nationality, age, gender, religion, language, disability, economic and employment status and educational attainment Alvite, (2011). Learning does not end with the completion of formal education but is, for most people, a lifelong activity. In an increasingly complex society people will need to acquire new skills at various stages of their life.

In the case of public library is providing a focus for cultural and artistic development in the community and helping to shape and support the cultural identity of the community. This can be achieved by working in partnership with appropriate local and regional organizations, by providing space for cultural activity, organizing cultural programmes and by ensuring that cultural interests are represented in the library's materials Alemayehu, (2010). The library's contribution should reflect the variety of cultures represented in the community. It should provide materials in the languages spoken and read in the local community, and support cultural traditions. Hence librarian is an organization of one or more trained people who use carefully selected and organized books, periodicals and other familiar materials as a means of giving to those who may appropriately use it, to the fullest extent of their needs or desires, the information, enrichment and delight which is to be had from the written words. Abrizah, (2010) defined a library as collection of records of human culture in diverse formats and languages, preserved, organized and interpreted to meet broad and varying needs of individuals for information, knowledge, recreation and aesthetic enjoyment. Librarianship in its entirety is service oriented; not just service, but service delivery based on precision and timeliness, all of which must be geared towards the user's satisfaction. Precondition for such prompt service delivery will take its roots from effective communication between the perceived beneficiary of the services, the librarian and the material content of the library.

Research

Research is simply the process of finding solutions to a problem after a thorough study and analysis of the situational factors Tiwari, (2013). Managers in organizations constantly engage themselves in studying and analyzing issues and hence are involved in some form of research activity as they make decisions at the workplace. As is well known, sometimes managers make good decisions and the problem gets solved, sometimes they make poor decisions and the problem persists, and on occasions they make such colossal blunders that the organization gets stuck in the mire. The difference between making good decision and committing blunders lies in how managers go about the decision-making process. Scientific publications play a central role in systematically documenting research findings and facilitating the exchange of information between researchers.

In academia, articles that receive more attention from other scholars, in terms of citations, are generally considered more important and prestigious. We all encounter research in our daily lives. The results of research on many topics are presented to us in the form of newspaper articles, books, reports, and television programmes. For example, crime level figures are presented to us by television news reports and some topics, such as diet and health, are very popular with magazines as well as television programmes. Thus, through various media we have become accustomed to seeing, reading and hearing about research and although we may not be aware of it, we are used to making our own judgments about research findings. If we take the example of diet and health, many of us have taken into consideration information that has been presented on 'healthy eating' and have made our own choices about diet within the context of our own lives.

According to Mossoff, (2015) the specific steps to follow when conducting research depend, in part, on the topic of investigation, where the researchers are in their overall program of research, and other factors. Nonetheless, it is accurate to say that much research in the social sciences follows a systematic course of action

that begins with the statement of a research question and ends with the researcher drawing conclusions about a null hypothesis as follows:

- Developing a statement of the research question
- Developing a statement of the research hypothesis
- Defining the instrument (questionnaire, unobtrusive measures)
- Gathering the data
- Analyzing the data
- Drawing conclusions regarding the hypothesis.

Massive technological changes in the area of research, knowledge production, publishing and communication are influencing the way research is done and the functions of the research library in supporting and facilitating research and learning. New forms of research emerge and new ways of learning too, and consequently not only new ways of serving old functions but also new functions serving new needs.

More and more emphasis is put on research groups providing information and communication as part of their task. Public and private organizations are becoming more intensive users of information and this is a challenge to the research library system. The research library has to become a global knowledge gateway. New research forms appear – one example being the increase in interdisciplinary research. Research now tends to be done as cooperative projects that work in groups or teams, and new differentiated demands for information appear (Brook, 2014). The research system is changing. It is growing and becoming more central to the most advanced economies. It is becoming more and more international and based on cooperative research projects. It is under a more and more explicit obligation to not only publish for other researchers but be available, relevant and creating value for society at large. To do all this researchers are using digital technology more and more to provide communication in the research groups and to larger audiences.

Scholarly Communication

Librarianship in its entirety is service oriented; not just service, but service delivery based on precision and timeliness, all of which must be geared towards the user's satisfaction. Precondition for such prompt service delivery will take its roots from effective communication between the perceived beneficiary of the services, the librarian and the material content of the library (Carter, 2013). Suffice to state therefore, that there must be an effective interplay between these factors in order to achieve success in the service delivery. Communication enables interpersonal transfer of messages and ideas and is a basic component of human interactions. Of all manifestations of human communication—e.g., facial expressions, body gestures, signs, or drawings—language appears to be the most complex, as it enables people to express complex ideas using a very wide range of words, subjects, and expressions, constructed into elaborate sentences.

Scholarly communication is a unique type of communication, mostly between academics, that is used to establish connections between individual scholars and international research groups with shared fields of interest and research. Such communication yields research publications in journals and conference proceedings, and it enables the exchange of opinions, positions, and information regarding conferences (Snunith, 2018). Scholarly communication can be seen as the connection among scholars, which increases the awareness of one scholar to the work and ideas of another; indeed, scholarly communication has always been considered a fundamental aspect of scholarly and scientific research. The scholarly communication system is the primary driver of the culture that shapes research practice within the academic sphere.

Scholarly communication can be thought of as the system through which research and scholarship is created, evaluated, distributed, and preserved. This system includes traditional or formal publications, such as scholarly journal articles, scholarly chapters or monographs (single-volume books offering research into a specialized area of knowledge), and conference proceedings (Farida, 2013). It also includes

continually emerging publications, such as data sets, data visualizations, working papers, and blogs. Scholarly communication is the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use. The system includes both formal means of communication, such as publication in peer-reviewed journals, and informal channels, such as electronic mailing lists.

It is created as a public good to facilitate inquiry and knowledge. A substantial portion of such research is publicly supported, either directly through federally-funded research projects or indirectly through state support of researchers at state higher-education institutions. In addition, the vast majorities of scholars develop and disseminate their research with no expectation of direct financial reward. Scholarly communication refers to all the ways that scholarly work gets created, shared, disseminated, evaluated, and preserved. Thus, it encompasses: scholarly writing, publication, copyright, peer review, promotion and tenure, scholarly communities, managing research data, using digital repositories, and other aspects of what we call the scholarly communication ecosystem (Bhaskar, 2011). Whether you are a professional scholar, a student, or a user of this kind of information, it is important to have an understanding of how that system works, and its implications for how we share knowledge more broadly.

In recent years, traditional forms of scholarly communication have become less economically sustainable as access restrictions and the high price of journals present barriers to maintaining an open and cost-effective system. Today, with common acceptance of digital publishing, scholarly communication concerns have broadened beyond journal costs to include issues affecting content creation and dissemination. According to Brook, 2014 scholarly communication has seven different roles in research:

- Providing answers to specific questions
- Keeping scientists up to date regarding the recent developments in their fields

- Helping scientists understand new fields
- Verifying the reliability of information sources by additional testimony
- Helping scientists understand the major trends in their fields
- Providing scientists with feedback on their own work and its relative importance within the research field
- Redirecting or broadening the span of interest and attention of scientists. Importantly, in the digital era, research articles can be considered not only as representations or manifestations of knowledge but also as social objects that scholars share, cite, and discuss and which enable them to cross the boundaries of time, place, and discipline, interact and establish social connections with other scholars (e.g., through social and research networks), share information, and evaluate their own reputations.

Electronic journals have been applauded as a solution to the serials pricing crisis, a step toward environmentally responsible behavior and a means for scholars to expedite and expand their modes of communication Klain-Gabbay, (2018). On the other hand, until fairly recently some scholars regarded electronic journals as ephemeral and inaccessible to all but the technologically proficient. As rising prices force libraries to cancel subscriptions each year and publication delays slow scholarly communication and academic careers, electronic journals seem to offer some promise. They also require opportunities to articulate their own needs so that communication is driven by demand rather than from the top down.

Role of Libraries in Facilitating Research and Scholarly Communications

Information is considered as a vital resource for communication or dissemination of knowledge of one individual to another from the very early stage of human civilization. It is the basis of education and is an essential ingredient for new ideas. For effective use of information, it is necessary that it should be shared. The tremendous information revolution and

proliferation have brought about drastic changes to the function and services in all type of libraries. The mode of cooperation has gone under a transformation with infusion of new information technology from print based environment to digital environment. Libraries are recognized as the intellectual hub of any institutions they are serving. Their roles are complementary to every department in the institution as they are the central point for housing all materials produced by or on the university for both repackaging and channeling to users or for preservation for future use by scholars (Barrionuevo, (2011). In twenty first century, there exists the ability for libraries to develop convergence specific content. This is facilitated by libraries' wholehearted embrace of information communication technologies which allows librarians to offer services heretofore not even envisaged. Academic librarians' job descriptions now include teaching functions as users are taught how to use the new services available. This new paradigm places the librarian at the center of service and not on the periphery as would be the case in the much heralded disintermediation model, where users seek information without the librarians' overt intervention.

A study by Abrizah, (2010) found that without proper guidance students were unable to make full use of online resources provided. The new technology has forced librarians to be au fait with copyright and other legal matters such as licensing of databases. They must also become familiar with all forms of plagiarism and be able to guide users in the responsible use of information. Scholarly communication can be verbal, concrete, virtual, formal, or informal and includes the traditional elements of interpersonal communication and communication through media. Today, scholarly communication is more complex and sophisticated than in the past and employs diverse online means. Scholarly communication can be understood as the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use, and it promotes a shared system of research and scholarship.

Today's scientific communication workflows are based on the availability of internet connection and devices, which make drafting, publishing, and accessing scientific publications in digital form the norm for the average scientists (Neuman, 2011). Thus, publishing in the digital era includes, in principle, any product (publications, datasets, experiments, software, websites, blogs, etc.) In an academic research environment, scholarly communications become central part of the process of deliberations. Scholarly communications are carried out using certain channels of communications by librarians, researchers, scholars and academics. Most important ones are scholarly journals, conference proceedings, research monographs, dissertations, research reports and personal memoirs. Internet now provides much easier and instant means of connection, also social media is a boon for any type of communication. Information communication technology enabled environment helps in global outreach of scholarly literature, more rapidly than earlier print only era.

Scholarly communication got enormous impetus when scholarly literature becomes globally and instantly accessible through online mode in the globalised societies. The continuous advancement in information technologies has considerably expanded scholarly communication, not only by facilitating the preservation, organization, and distribution of information but also by supplementing the traditional means of formal and informal scholarly communications with newer means of communication. Indeed, modern information technologies libraries enable scholars to readily use e-mails and electronic databases, distribute information regarding new conferences, journals, and publications through the Internet, and participate, either as individuals or as scholarly groups, in professional virtual communities that employ internet-based chats, forum discussions, blogs, and other online communication tools that expand their professional networks (Kamraninia, 2010).

As a result, one of the new assignments of librarians is adding resources to the library catalog. As more universities incorporate new

technologies into the teaching and learning processes, the demand is increasing for technological and instructional support for faculty and students to extend beyond being facilitators, brokers, and guardians and to promote changes that would benefit the whole research community. This demand creates new and attractive opportunities for academic librarians.

Libraries and librarians contribute to scholarly communication in several fields as identified by Ogbomo, (2015):

- to enhance professional competence and skills
- to engage in collaborative team work
- in taking library and information services beyond the four-walls of the libraries
- to use ICT tools for effective user services
- to produce need-based instructional materials for the users
- to discover new areas of research and enquiry in the field of library and information science
- to explore application of Machine Learning, Artificial Intelligence and other technologies to serve the library community
- To identify New Roles for LIS Professionals to Survive in the Changed LIS Environment.

Emerging Issues in the Library that is Recommended for Outstanding Library Service Delivery

Based on the literatures reviewed and analyzed the following recommendations were made:

- Library automation is the conversion of a library's procedures from manual to computerized, such as from a card catalog to an OPAC, or from manual circulation cards to an integrated library system. Automation is a process of using machinery for easily working and saving human power and time.
- Establishment of institutional repository, an archive for collecting, preserving, and disseminating digital copies of the intellectual output of an institution, particularly a research institution.

- A digital library, digital repository, or digital collection, an online database of digital objects that can include text, still images, audio, video, digital documents to serve users better.
- SDI (Selective Dissemination of Information) is a form of CAS (Current Awareness Services). The objectives of both services are to keep the users well-informed and up-to-date in their field of research. ... SDI is a personalized service and is directed towards the individuals or homogeneous group, whereas CAS is awareness service which is directed towards all the users who need it.
- Library Consortium is to share physical resources including books and periodicals, among members of particular organization or institution. However, increasing number of publishers is using the internet as a global way to offer their publications to the international community of users.
- Digital reference is a service by which a library reference service is conducted online, and the reference transaction is a computer-mediated communication etc.
- *The Internet of things (IoT)* describes the network of physical *objects* “things” that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet
- *Artificial intelligence (AI)* refers to the simulation of human *intelligence* in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving.

Conclusion

To be able to effectively contribute to scholarly communication, the librarians should possess broad general knowledge, understand the scholarly communication process, and recognize the importance of their involvement in this process. Establishing a team of designated research librarians could contribute to these efforts and help improve the image of the library in the eyes of the university communities

they are serving, thus positioning the library as an important factor contributing to campus life and activities. To fulfill the vision, the library as a learning space centered on the educational mission and integrated into learning and scholarship activities, librarians should learn more about how scholars and students work and improve their collaborative relationships with the entire university community. Any limitation of access, whether deliberate or accidental, will reduce the ability of the libraries to fully achieve their primary role of meeting the library and information needs of the community they are serving.

References

- Alemayehu, M. W. (2010). *Researchers' attitude to using institutional repositories: a case study of the Oslo University Institutional Repository (DUO)*. Master Thesis. Oslo University
- Alvite, L. & Barrionuevo, L. (2011). *Libraries for users' services in academic libraries*. Oxford: Available at <http://hdl.handle.net/10642/426>.
- Bankier, J. G. & Gleason, K. (2014). *Institutional repository software comparison*. Paris: Longman.
- Brook, M. (2014). *The Sheer Scale of Hybrid Journal Publishing*. Accessed May 30. <http://access.okfn.org/2014/03/24/scale-hybrid-journals-publishing/> Cambridge University Library. 2014. “Head of Scholarly Communication.” Accessed May 18. <http://www.jobs.cam.ac.uk/job/3574/>
- Carter, I. M. (2013). *Changing Institutional Research Strategies: In The Future of Scholarly Chandos Publishing. Communication*. 145. London: Facet.
- Farida, I. (2013). *Knowledge Management Initiative in Indonesian Higher Education: Open Access Institutional Repository in Academic Library*. Bali: International. From <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.685.1608&rep=rep1&type=pdf> [http://9icsts2014.um.edu.my/filebank/articles/2777/no.8.pdfConference,\[2013\]](http://9icsts2014.um.edu.my/filebank/articles/2777/no.8.pdfConference,[2013]).
- Kamraninia, K. & Abrizah, A. (2010). Librarians' role as change agents for institutional repositories: A case of Malaysian academic libraries. *Malaysian Journal of Library & Information Science*, 15(3), 121-133.

- Klain-Gabbay, L & Snunith, S (2018). *Scholarly Communication and the Academic Library: Perceptions and Recent Developments, A Complex Systems Perspective of Communication from Cells to Societies*, Anamaria Berea, IntechOpen, DOI: 10.5772/intechopen.82075. Available from: <https://www.intechopen.com/books/a-complex-systems-perspective-of-communication-from-cells-to-societies/scholarlycommunication-and-the-academic-library-perceptions-and-recent-developments>.
- Mossoff, A. (2015). How Copyright Drives Innovation: A Case Study of Scholarly Publishing in the Digital World. *Michigan State Law Review*, 13-25. Available at SSRN: <https://ssrn.com/abstract=2243264> or <http://dx.doi.org/10.2139/ssrn.2243264>
- Nazim, M. & Mukherjee, B. (2011). *Status of Institutional Repositories in faculty libraries*. Boston, Inc international
- Neuman, W. L. (2011). *Social research methods: Qualitative and quantitative approaches*. Boston: Allyn & Bacon.
- Norman, J. (2014). *Open Access: What Does the Librarian/Customer Community Need?* London, Mc millianian
- Odzlyko, A. (2013). *Open Access, Library and Publisher Competition, and the Evolution of General Commerce*. Accessed May 18. <http://papers.ssrn.com/sol3/papers.cfm?abstract>
- Ogbomo, E. F. & Muokebe, B. O. (2015). Institutional Repositories, as Emerging Initiative in Paper 652. Available <http://digitalcommons.unl.edu/libphilprac/652>Presentation, ALPSP Seminar: *The Mechanics and Reality of Open Access*. Accessed June 12. Rajasthan (India). *Library Philosophy and Practices*.
- Tiwari, B. K. & Sahoo, K. C. (2013). *Infrastructure and use of ICT in university libraries of Digital Era*. UNESCO.