

INFORMATION MANAGEMENT AND MARKETING STRATEGIES FOR EDUCATIONAL AND RESEARCH INSTITUTIONS IN THE EMERGING ECONOMIES

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Key Words (information management, information marketing, libraries and information centers, knowledge centers, learning resource centers, content sourcing, digital libraries, content integration, information marketing, emerging economies, emerging markets, social media, social networks)

ABSTRACT

Libraries and Information Centers (LICs) or the Learning Resource Centers (LRCs) set up by educational and research organizations around the world, especially those in the emerging economies, are facing a plethora of challenges in times of the kind of revolutions that are taking place in the domains such as digital, mobile, cloud, social media, machine learning and Artificial Intelligence, big data analytics, Internet of Things (IoT) etc. There is of course no denial of the fact there are a host of opportunities too, awaiting these centers to leverage on, from the new technology trends. The biggest challenge the LICs face today is not only to dispel the stakeholder prejudices, but also to remain meaningful, efficient and relevant before the stakeholders. It is so because a large majority believe that their information and knowledge needs are well addressed by the new-gen services like open access scholarly resources/services/networks, google, facebook, twitter and so on. A close analysis of the impacts of technology and also the markets reveal that there are basically two new trends sweeping the world - more to do with respect to the consumer behavior - the 'disruptive technologies' and the 'disintermediation effects' as its aftermath. Their impact could be seen in almost all domains and in all walks of life, and the LICs are not an exemption. 'Innovation' only seems to be the primary key with which the unprecedented waves caused by the above turbulences could be contained. LICs invariably need to address a broad spectrum of users and their characteristics and take them along, on board. Looking at the 21st century scenario, it is high time that these service institutions chart out a clear landscaping of their agenda and demonstrate that a LIC is truly a place and at the same time, a space. The mission therefore is to reclaim the metaphor of these LRCs as a place, which is still relevant for users for meeting their information/knowledge needs, and also to redefine the purpose of these new age Knowledge Centers as a digital space which fosters the seamless discovery and delivery of pertinent content, a scholarly space for connecting the learners, and a convincingly reliable space for hassle-free consumption as well as the construction of new knowledge. The current practice of information management comprises an interesting mix of information and knowledge resources, services, technologies, content aggregation and integration techniques,

access authentication models, remote access solutions etc. Looking at the emerging next-gen complex information landscape, the advocacy of this paper is that while performing the above cited distributed information management services, the libraries and information centers should strive towards a single system architecture by unifying the differently running distributed and disparate solutions and unifying the differently operating workflows, coupled with state-of-art information marketing strategies.

INTRODUCTION

Libraries and Information Centers (LICs) are at the forefront of technology adaptation as well as adoption, and it is revolutionizing the way information is being accessed and consumed. Information or knowledge has become ubiquitous, universal and is available at awesome convenience, on so many devices, and in multiple formats, providing a myriad of learning experiences. Consequently, the world of scholarly and research information too is expanding exponentially, and the manner in which the social information is growing, is even astounding - thanks to the advancements in computing, communications, content creation/management technologies, and the social media/networks. Information and Communication Technology (ICT) is the game changer and it has propelled the growth of a large number of electronic resources (E-Resources). Technology now facilitates instantaneous creation, storage, publishing as well as dissemination of content at a phenomenal amount of ease, speed and convenience of the author/creator. Educational and Research organizations spend vast amounts for arranging subscriptions and licensing access to E-Resources and e-content such as e-journals, e-books, scholarly full-text databases, business cases, simulations, online services, web portals, datasets etc. These services, after due licensing processes, could be parked on institutional intranet servers or on service provider's cloud, as needed. The user behaviour and expectations from the Information Center are always high, and it is mostly an uphill and a Herculean task for the information manager to live up to it. Users normally draw their expectations and experiences from similar services such as google, facebook, youtube or amazon and the performance of the Information Center may not be always matching up with these new genres. This has put the information management almost at an out of control situation and it poses numerous challenges to the information manager as well as the top management. Hence, it is high time that LICs and the information professionals in particular, strive hard in realizing the endless possibilities that today's technologies offer for information access and service delivery¹.

Seamless aggregation and meticulous integration of diverse data streams, value added by systematically configuring, customizing and channeling them, and presenting them with user-friendly interfaces which are device independent, is the most appropriate strategy to be adopted and applied. It is an accepted fact that the monolithic systems in vogue are incapable of addressing the complexity of the Center's needs and therefore proactive information managers should explore all-in-one new-gen systems capable of unifying the differently running distributed services and unifying the multiple workflows. Timely migrations and technology transformations are crucial such that the E-Resource base shall register exponential growth and facilitate wider outreach. Catching up with the emerging social trends in digital marketing, these

Centers should adapt and adopt such innovative marketing strategies to match the users' information requirements and expectations.

BUZZ-WORDS OF THE DAY : INNOVATION, DISRUPTIVE TECHNOLOGIES AND DISINTERMEDIATION

With the advent and impact of 'disruptive technologies' that is sweeping the world now, it is evident that the Schumpeterian theories on economic growth which postulated "entrepreneurial innovation and experimentation constantly destroy the old and introduce new equilibria, making possible higher standards of living", has indisputably and convincingly demonstrated a visible shift in the information paradigm². This has also resulted in the gradual disintermediation or removal of intermediary steps/middlemen in the value chain between the products/services and the customers/users. The value chain disintermediation that has appeared in the publishing industry is illustrated in Fig. 1. The current/upcoming situation is that the users or consumers of information do not anymore require the assistance or intervention of the information intermediary or the information manager for information access. With the help of these new gen technologies and in an age of the ever-at-hand smart devices, there is seamless inter-gadget information portability too, enjoyed by the end users. Today's information managers will therefore have to strive hard to tide over these new, but inevitable challenges.

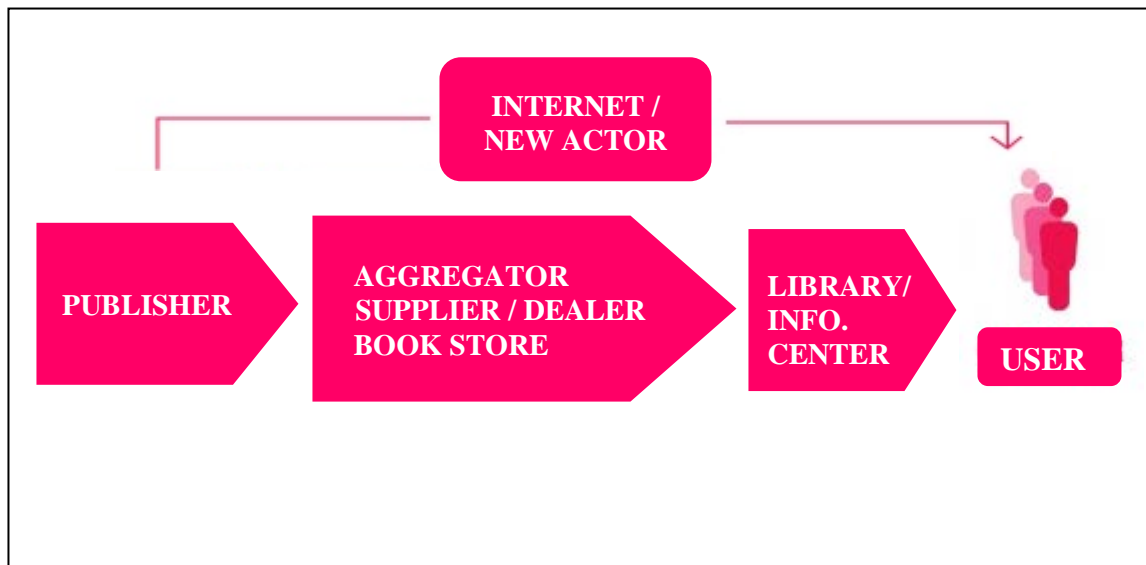


FIG. 1. Value Chain Disintermediation in Publishing Industry

THE NEW INFORMATION LANDSCAPE

LICs today have to deal with numerous publication types or categories of information/content in multiplicity of formats and interfaces. Way back in 2003 OCLC came out with the position paper on emerging information landscape. Studies conducted on content categories forthcoming for 5 to 7 years forecasted four distinct categories³. The report underlined that the information managers should transform themselves and acquire the necessary skills suiting to the market dynamics and the changing user needs, from time to time. They should also familiarize with devices such as e-readers, tablets, cell phones, gadgets for motion sensing, voice activation, touch screens etc. Another major challenge these information centers face is in achieving a healthy balance between the legacy publications and their digital counterparts.

The information manager who is the intermediary between the information that is manifesting in many different formats/media and the users, must have a thorough knowledge of the new information landscape (Fig. 2). Popular information, scholarly information, digitization projects and Web resources are the four categories of information mentioned by the report. Generally the trade and commercial literature fall under 'popular information'. Examples include print and electronic books, POD (print-on-demand), journals of general interest as well as newspapers (hard/soft version), and audio material as well as videos (hard/soft version). The academic and scientific literature emanating out of original, empirical as well as applied research are known as 'scholarly information'. They include scholarly journals and scholarly articles, books/monographs, theses/dissertations, courseware, and open access archives. Worldwide initiatives and projects pertaining to digitization of different types of document collections at the national, regional and local levels as well as the commercial ones are categorized as 'digitization projects'. A significant stakeholder in the new gen information category are the 'Web resources'. They indeed pose numerous challenges to the information manager too. Web resources comprise of the surface Web (visible Web) and the deep Web (invisible Web). The Web has been able to bring about a paradigm shift in information publishing (E-publishing), access, storage, retrieval and dissemination which is global, ubiquitous, borderless, timeless and asynchronous. The latest and also quite significant in the resources category is the advent of the Web 2.0 and its variant avatars, applications and technologies, which have literally democratized the Web process by facilitating the active participation of the common masses, and as manifested by the social media, social networks and open big data etc., and it is growing phenomenally and exponentially. Interestingly and importantly too, the social nature of information – production and consumption - enables the unprecedented stronger ties between people, communities, information sources, information providers, governments, as well as intermediaries.

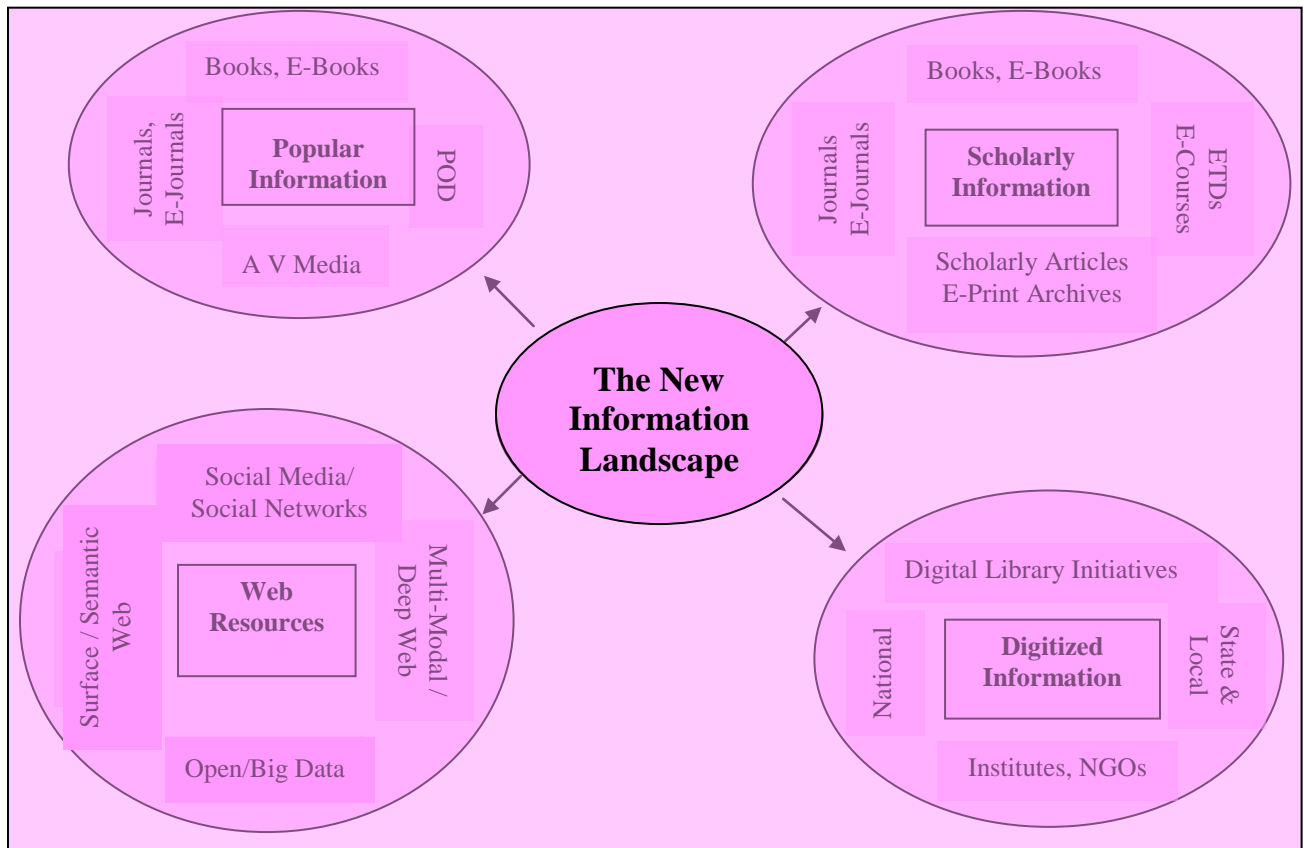


Fig. 2. The New Information Landscape

INFORMATION AND KNOWLEDGE RESOURCES

With the advent of E-publishing, the publication domain and the world of publishing got reversed its business process engineering resulting in a new dynamism, renewed energy and subsequently attained equilibrium. This has paved way for a sudden rise in the digital information resources in academic/research libraries and information centers. Among these digital resources, scholarly electronic information takes the lead. With a view to provide nascent and state-of-art literature to their stakeholders, the academic and research organizations spend huge budgets towards the subscriptions of the E-resources. Academic and research organizations also resort to library consortia based subscriptions in pursuit of broadening of their E-resource base as well as efficient scholarly information access.



Fig. 3. E-Resources Service Model

E-resources comprise of a broad spectrum of online content that manifest as journals, books, databases such as abstract, index and full-text databases, reference works, E-book collections, information portals, datasets, institutional repositories etc. [Fig.3]. Robust collection development and efficient management of these E-resources pose a range of challenges to the information manager. Arrangement of electronic subscriptions, managing license agreements for a wide variety of electronic resources, assurance of hassle free and uninterrupted content access – current as well as perpetual – are just to mention a few. As these complex and tech savvy E-resources/E-services keep increasing in geometric proportions, LICs today face a daunting and an unsurmountable sort of scenario in the right, smart and efficient provision of their services. The euphoria at this juncture is, there exists unlimited potential and endless opportunities to be unleashed and realized.

STRATEGIES FOR CONTENT AGGREGATION AND CONTENT INTEGRATION

There is a paradigm shift registered in the nature of collections, collection development processes as well as the information delivery models, over the years. Published academic and research content are penetrating in vast multiple ways in both hardcopy as well as softcopy formats. Of late, soft copy formats are dominating the collections more than ever before. Apart from the legacy forms such as books, journals, databases, cases etc., newer formats like portals, vortals, web based training systems (WBTs) etc. have gained popularity and acceptance by LICs and the users alike⁴.

The challenge associated with these new-gen information sources is that they manifest in an array of latest or even unseen formats, standards and platforms. Some of these may demand proprietary interfaces for service delivery, which adds up to the gravity of the situation. Open access archives, also known as OA archives, eprint archives or institutional repositories (IR) is another prominent category of information source to be reckoned with. These are digital archives made available in the open access domain which are built conforming to, and complying with an open communication protocol viz., OAI-PMH (Open Archives Initiative – Protocol for Metadata Harvesting). OA archives contain digital copies of research papers that are either self-archived by authors themselves or their host institutions, or by subject enthusiasts/gateways, for their free and unrestricted consumption⁵. Obviously the LIC's content is now resting in many different containers and at many different locations, both in-house/onsite and online.

Until recently the understanding was that knowledge/information management strategy should be based on componentized and multi-system architectures. But the recent advancements in information management technologies, especially with the convergence of the new-gen systems, the new hypothesis that it is feasible to count on single monolithic (all-in-one-solution) information management solutions by unifying the differently running distributed and disparate solutions and unifying the differently operating workflows.

However, the user expectations are ever increasing and the LIC's responsibilities are growing manifold. Any attempt or situation to compromise on the service quality will be nothing short of losing the battle. The recommended strategy therefore should be to prepare the workforce and the collection so as to seamlessly disseminate the information/knowledge by meticulously aggregating and integrating the content⁶.

First and foremost there should be a well automated library management system in place integrating the legacy as well as the new-gen collections. The library management system should automate the entire workflow of operations of the LIC conforming to international standards/technologies, and should be amenable for forward compatibility and interoperability. A Web based information portal powered by latest technologies, integrating the traditional as well as digital content, to facilitate seamless access to the wealth of information possessed or accessed by it is to be the front-end of the LIC. The information portal should act as the one-stop-shop to access the entire e-resources and services of the Center, and should be able to

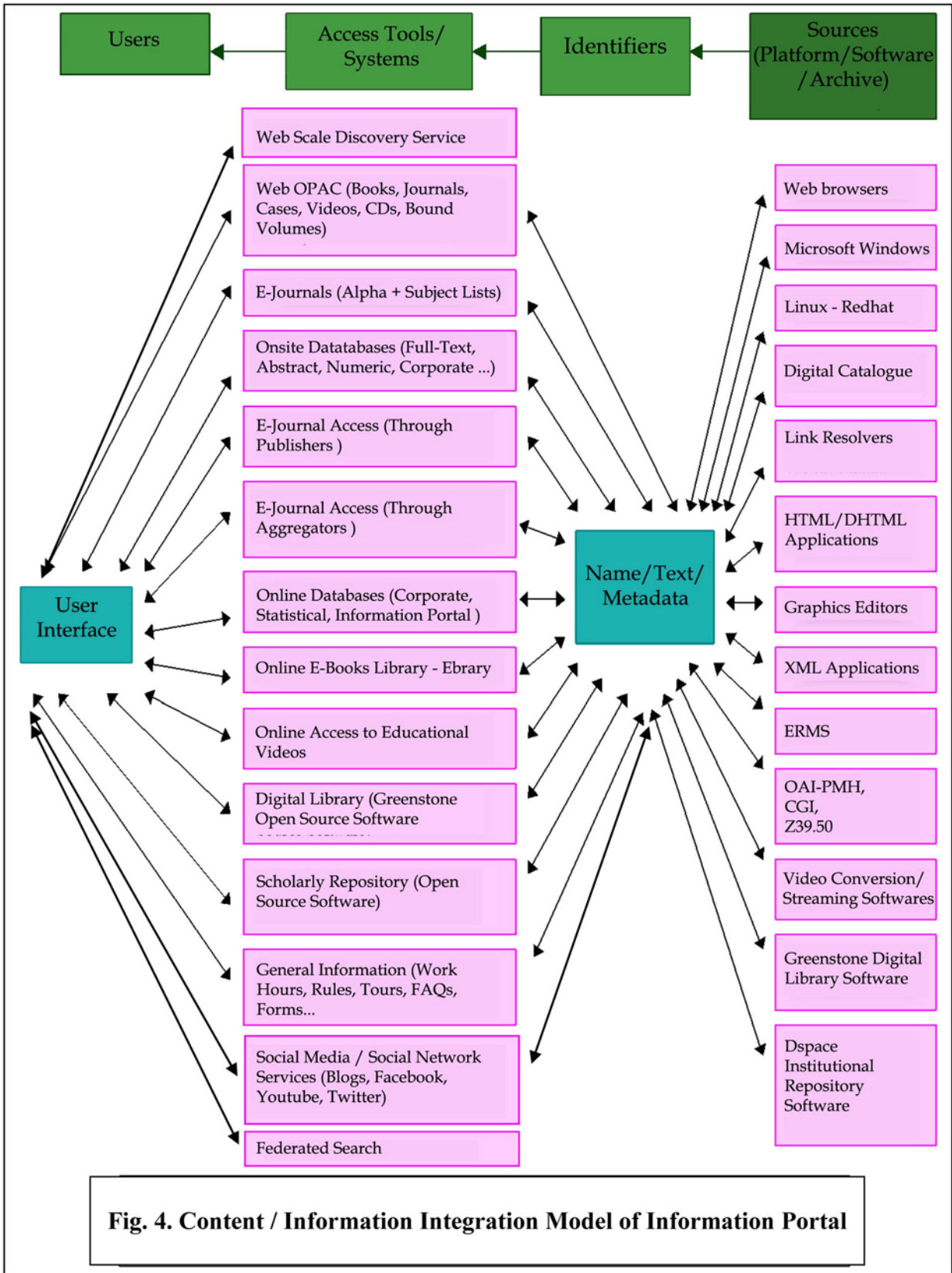
embrace all the formats in which the information is manifested [Sreekumar and Sunitha, 2005]. The content integration model is illustrated in Fig.4.

In order to strengthen the arms of the information systems and in the efficient use of its vast wealth of digital collections for effectively browsing, searching, retrieving, and for long term archiving there should be a state-of-art Digital Asset Management System (DAMS) - a digital library – systematically installed, configured and fully customized. DAMSs facilitate in creating useful local content, and they help in increasing the portability, accessibility, flexibility, availability and the preservation of content. The digital information allows in storing, retrieving, sharing, copying and transmitting the content across distances. The DAMS should be basing on bleeding edge robust software architecture, and should embrace all popular and standards and formats viz., HTML, XML, Word, Post Script, PDF, RTF, TIFF, JPG, GIF, JPEG, MPEG etc. and also audio as well as video.

There should be a well-built open access archive (IR) complying with interoperability standard OAI-PMH, and backed up by world renowned open source software like dspace, eprint, fedora, greenstone etc., for world wide access to the university/institution's scholarly publications output⁷. The archive comprise of hardware, software and procedures in capturing, organizing, archiving, disseminating and managing the scholarly output of the institution. IR is a Web-based application facilitating the academic and research fraternity to publish ('self-archive') their research output.

The LIC should be actively participating in library consortia, both at the institutional level as well as national level, with a view to substantially increase its information resource base.

As already discussed earlier, the LICs host a variety of electronic services, leading to hundreds of thousands of E-resources and digital objects. Arranging subscriptions and license agreements for a large number of information products and services and assurance of their hassle free access management are herculean and mammoth tasks. There is a large departure from the traditional practices as far as the new gen service subscriptions and license agreements are concerned. And these require razor sharp shrewdness and meticulous professionalism coupled with thorough knowledge of the technology issues, including the limitations, as well as legal provisions related to electronic subscriptions. Other innovative services include Web-scale discovery services (WSDS), Single sign-on (SSO), Remote login service etc.



Users obviously feel deeply burdened to switch between a multitude of interfaces belonging to different information systems and services, while grappling with their queries. Federated searches have been the strategy adopted by most of the search systems until recently to circumvent this problem, but their effectiveness as well as retrieval efficiency were not up to the user expectations. LICs are now looking for newer and efficient platforms that can penetrate and bring out relevant hits, from the multitude electronic resources, with single search. These are called Web-scale discovery services (WSDS) and they provide quick and provide seamless retrieval from multiple E-resources, and they are now an integral component of the information portal. Discovery services also serve as an effective and efficient E-resources management system (ERMS).

Content licensing to a vast number of E-resources and their efficient access management are extremely important for the information manager and it could be a round the year job always keeping her/him on the toes. Fool proof license agreement negotiation, management of copyright issues, devising access management strategies and liaising with the patrons in finalizing the E-resources etc. are just to mention a few⁸. Also, at times the library has less voice in the provision of or the mode of access to the E-resources to its clientele, and it could be decided by the service provider, publisher, aggregator or the vendor.

Campus wide E-resources access services are administered through IP based authentications, though there could be exceptions such as user-id/password methods⁹. For accessing E-resources for the patrons during off-campus, remote login solutions are in place now. In order to relieve the users from the burden of having to login many a databases and services, single sign-on systems (SSO) allow them to get access to the entire set of E-resources possessed by the LIC, at one go. SSO offers fast and at the same time secured access to the E-resources, ensuring better response time and user satisfaction¹⁰.

As a service motto, the information manager has to relentlessly experiment with newer tools and technologies, with a view to offer innovative, value added and efficient access to the E-resources. The following table shows some of the prominent such services that could be provided to the user community.

Information Services and Solutions		
Sl. No.	Name of Service	Nature of Solution
1.	Integrated Library Management System (ILMS)	Automation of workflow operations of the library by integrating the traditional as well as the modern services.
2.	Library Web Portal	One-stop-shop access to all the E-resources, information services and indexes.
3.	Digital Library (DAMS)	Digital asset/object storage, access, retrieval and archiving.
4.	ERMS	E-Resources Management System.
5.	Institutional Repository (IR)	Managing/disseminating the scholarly output of the institution.

6.	Open Access (OA) Repositories Harvester	Providing subject oriented OA Harvesters for access to latest OA literature
7.	Subject Guides/Subject Mapping/Path Finders	Guides for easy navigation, search and retrieval of data/information.
8.	Digital Scholarship/ Research Support/ Research Assistance Workshops	Assistance to patrons in their information needs and research requirements.
9.	Data Repositories Support	Assistance to patrons in archiving their research data and help in data visualization, analysis etc.
10.	Course/Curriculum Support	Support to faculty for their courses on coursepacks, core & allied literature, databases, software applications, cases, simulations etc.
11.	Web-Scale Discovery Service (WSDS)	Single window search/retrieval from multitude of E-resources.
12.	Library Consortia	Increasing the information resource substantially by saving significant cost.
13.	Single-Sign-On (SSO) and Remote Login	One-time access authentication service, and Remote access authentication service.
14.	Mobile Apps	Providing seamless access to the library's collections through Mobile Gadgets.

CRITICALITIES OF MARKETING THE LIC

As outlined in this paper above, though the LIC has made enough of initiatives in terms of content sourcing, content aggregation as well as content integration, most of the times the information manager may feel that they are not sufficient enough in outreaching to the user community as desired or as it should have been.

It may also be noted and borne in mind that the users' behavior and approach with regard to seeking and searching for information has been entirely changed. First, they are impatient to listen to long procedures and passing through many interfaces/screens for want of information, and then they are not inclined too, to read through many pages of a book or journal for just a piece of information or a tip they are looking for. They are interested in short-cuts and pretty much prefer touch-get-go sort of systems for pertinent information which they are looking for. They have a reason for this too. Users tend to draw their expectations and experiences from open services such as google (and its suite of services), facebook, twitter, youtube, amazon etc. and having thoroughly influenced by their semantic search algorithms, their smart and unparallel ways of retaining and winning the customers with the host of remarkable and contextually relevant search tools/techniques, the post-search probability offerings, the plethora of links, connectors, pointers etc. In this process, these new giants immensely influence, attract and retain the users with them. Unfortunately, the LIC loses in these new-gen power games, and only through appropriate tactics and strategies the Center can survive. The best strategy would be to make the enemies as potential friends in addressing the challenges proactively.

LICs therefore need to catch up with the emerging social trends in digital technologies, adapt and adopt such innovative marketing strategies to match the users' perceptions, information requirements and expectations. Marketing of information resources and services are vital and crucial for Information Centers, as it is their mandate to see that the huge amounts spent on expensive resources and services are properly used and utilized. An Information Center's value is gauged in terms of its usage – by monitoring the footfall, reference/consultations, and the rate of hits and downloads of the E-resources – which are deemed to result in innovation and in the creation of new knowledge. In this, there is an institutional dimension too, as it closely aligns with and boosts the organization's goal and mission.

INNOVATIVE INFORMATION MARKETING STRATEGIES

It is imperative on the part of the information manager to understand the clear meaning of 'information marketing' or 'marketing of information services'. In simple terms, information marketing is not just a poster being flashed in the Center's foyer or anywhere in the organization towards promoting a particular product or a database, nor is it a write up about the LIC which is publicity, or the information manager's message to a patron or patrons, which is part of the Center's PR activity. Information marketing therefore is an ongoing conversation with the target audience aptly responding to their day-to-day pulse - which combines branding, social media, promotion, publicity, PR, advertising and related activities/services in an organized, strategic way¹¹. Information marketing is all about 'outreach', making people aware of what the Center can do for them, in simple and straight forward language. In other words, it is informing the patrons how the Center can be of help in meeting their information/knowledge needs, and persuading them or inviting them to the Center, physical or virtual¹¹. It is always a good idea to try and embed information marketing, aligned with the wider culture and ethos of the organization so that it ensures better results.

In order to successfully market its resources and services, the LIC needs to do relentless work towards building its own brand too, which shall help boost its reputation. Traditional approaches like the periodic user awareness/education sessions, product/service orientations, and quizzes could be the basics and starters on this front. Book launches and book discussions are opportunities that could bring readers to the LIC and engage in constructive discussions. Orientations/workshops on anti-plagiarism tools, reference management software, article authoring software, theses/dissertation writing, citation management tools, sessions on research impact assessment etc. shall boost up the users' confidence as well as the LIC's reputation. Extensive research support by means of digital scholarship services, assistance in research data services such as data analysis, data visualization, data archiving, data analytics etc. are highly appreciated and impactful services that could be offered by the LICs. With a plethora of no-cost or low cost new technologies around, the LICs can now explore, experiment with, and market most of its resources and services online, especially with the suite of tools and technologies that are available with the social media and the social networks (Fig. 5).



Fig. 5. Marketing Strategy Service Components and Activities

KEY INFORMATION MARKETING CONCEPTS

It is important and essential to understand the users’ information requirements, their mindset and perceptions about information access, while embarking on information marketing. The information manager has to keep in mind that the users are already overloaded with information – academic, research, social, messages, images, audio, video etc. – and the information marketing could try and encash this opportunity by targeted advertising or (hyper-) personalized product promotions. In order that the information marketing get going smoothly and successfully, it is good to make it explicit to the users that how the LIC will help them get the information that they are looking for quickly, efficiently and more successfully. While marketing a product, conscious effort should be taken to focus on the service what the product gives, not the product itself. While promoting the service, the focus should be on its benefits, and not just the features. While the information manager earnestly and continuously attempts creating the public perception of information marketing as what the users value, it should be the personal and private interest that he/she continues to do what he/she values as an information professional. This is surely to safeguard the professional interest from a long range point of view. Another key aspect is that never ever market, attempt to promise or market something what the information manager cannot deliver. Most importantly, the information manager should understand the ‘cost curve’ and its relevance in information marketing. Cost curve refers to the value the users get out of using a service that the information center offers versus the cost of the effort the Center must put into doing so. In this the value must exceed the cost.

EVALUATION

It is also essential to evaluate the effects and outcomes of the information marketing that the LIC has rolled out, including the failures. It is an attempt to measure the impact of the whole bunch of information resources and services that the LIC offers to the community. This shall enable the LIC to make good of the shortfalls and market better the next time around. Evaluation also gives an opportunity to see the return on investment (ROI) from the marketing process, and especially the LIC's value proposition in terms of its overall use by the community.

CONCLUSION

This paper has attempted to portray the changing dynamics of the information paradigm, the new information landscape that has been surfacing with the advent and spreading of the new and emerging technologies, in the context of libraries and information centers of educational and research institutions. As disruptive technologies continue penetrating the society unprecedented, online sources multiply out of proportion, and the advancements in information access/consumption tools keep emerging in the information domain and in the Internet, LICs too need to keep innovating and continuously evolve for their survival. The paper advocates an aggregated and integrated approach to the complex yet challenging information management strategies to be adopted and practiced by the information centers. The new paradigm has also brought in unprecedented host of features and opportunities. Seamless dissemination of scholarly information by means of content aggregation and content integration through robust automated information systems, info-rich scholarship information portals, componentized open digital asset management systems and through the fast catching up scholarly electronic publishing mode of institutional repositories, are the latest information management strategies and techniques to be adopted and practiced. Information managers should also be versatile with the new genres of electronic and digital information that is fast proliferating and ever penetrating into the LICs, in their efficient sourcing, smart licensing strategies and their seamless and uninterrupted content access by deploying suitable ERMS.

Though the recommended approach to information management and knowledge technologies hitherto have been basing on multi-system approaches, with the recent advancements in technologies and the convergence of the new-gen systems, the euphoria prompts one to count on single monolithic (all-in-one-solution) information management solutions by unifying the differently running distributed and disparate solutions and unifying the differently operating workflows. At a time when everyone is busy, the users are challenged with unprecedented information glut on one side and they are as well confronted with information clutter on the other side. Appropriate strategies for result oriented information outreach programmes coupled with field proven and techno-enabled information marketing initiatives shall entail remarkable results with the user community, fetching meaning and relevance to LICs in the new digital era.

Acknowledgement

The author would like to acknowledge his sincere thanks to the Director, Indian Institute of Management Kozhikode (IIMK) for the encouragement and support.

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