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Introduction

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1.1 INTRODUCTION

Society has reached an unprecedented level of complexity. The emergence of global economy, technology that changes at an exponential rate, and information overload has never been experienced to such an extent. Consequently, the number of challenges and the urgency with which they need to be resolved in a timely fashion are taxing both individuals and organizations. The contextual field within organizations operate has become extremely chaotic and turbulent. To make matters worse, previous solutions are no longer effective. These radically varying conditions in communities, governments, markets and technologies are also forcing organizations towards unprecedented information gathering, problem solving and planning.

As organizations recognize the fact that former frameworks and decision-making strategies are inadequate, they search for new models and processes, new structures and relationships, as they reel from shrinking resources. In such an environment, organizations can no longer act independently.

Within this chaotic and complex environment, organizations of all types scramble for information. Information is a natural resource and the lifeblood of national development. Access to information is seen to be the key to personal and national economic success. Students need to read in order to gain qualifications and obtain better jobs. Countries need to keep abreast of scientific, technological and medical research if they are to move up the league from poor to wealthy nation. Both individuals and countries find barriers in the road to access: high prices, exchange rate disparities, restrictive licenses, and “take-it or-leave-it” services.
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It is as crucial for organizations, corporations, and nations to gain competitive advantage, as it is important to get access to current, up-to-the minute information to survive in the global market. As information becomes an indispensable resource and commodity in the “Knowledge Era”, providing information is of paramount importance to all types of organizations.

The library has always been in the key position to serve the user in his or her search for the needed information and this has been so from the beginning of the recording of knowledge. Libraries have supported the transfer of knowledge from one generation to the next but we should also remember that it was not only the libraries, -- it was the librarians -- who made it all possible. Libraries were created when the amount of information was too much to be stored in the head of a person. Libraries became the storehouses of organized knowledge where the users could come and look for the information they needed and get help to find the desired item. The knowledge production has increased rapidly from the advent of printing, and consequently libraries have became larger and larger and their collections more and more complex. This in turn has called for advances in library organization and management. Larger and more diversified collections had to be organized, systematized and made available to more users with more diverse needs.

Since the 1960s, many changes have taken place in libraries of all types throughout the world. The most significant forces accelerating the pace of change in libraries have been the revolutions in computer, information, and telecommunications technologies. In the 1960s, the development of several major applications of computer technology in libraries provided the foundation for subsequent development, including the MARC (Machine-Readable Cataloging) format by the Library of Congress, the Ohio College Library Center (OCLC—now renamed the Online Computer Library Center) for online shared cataloging and resource sharing, and large computerized databases by major indexing and abstracting publishers. Building on these, the following technological advances have stimulated drastic changes every five to ten years (Lee, 1998):
Changes create new service opportunities and User needs drive development of services. Many developments in library administration over the past century have enabled librarians to offer many user-friendly services. Electronic-based information, however, is not simply another new form, but perhaps the most important source of information developed during the 20th century. The historical significance of electronic publishing is akin to that of the printed book and has profound effects on every facet of the future for librarians, vendors of information, and information gatherers everywhere. There have been many technological advances that had altered the very basic function of a library—meeting information needs of the user. The ways in which information is produced, delivered and accessed have changed dramatically. All these changes are for an improved access to the information in a least possible time. The first major wave of change came with the advent of digital storage technology and networks to move information from one area to another. In the early 1990’s, Public access terminals and new online public access catalogs became ubiquitous in libraries to share information regarding library holdings and for the management of library acquisitions. These first generation library systems were hard wired LANs running PC based software. Access to holdings to the outside world was not widely shared. Dial-in access was limited to large institutions. Modem speeds at this time were no faster than 28.8kps. CD-ROMs were introduced for the most part as a storage and research tool in libraries during the mid-1990. These CDs held large amounts of data which were inserted into single use PCs; or were kept in CD towers for small LANs of up to six PCs to access information simultaneously. In the late 1990’s, the Internet became the lifeblood of information
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sharing not just for libraries, but also for commerce, education, government and the
general public. High-speed networking available created an efficient and fast way to
move both text and graphics from one server to another in a matter of nanoseconds.

The profession of librarianship has for the most part always welcomed Information
Technology as an enabling technology, freeing many from time-consuming manual
procedures (Watson, 1996):

- software now handles tasks such as book acquisition and processing, loans and
  reservations in libraries of all sizes - tasks previously carried out manually
- bibliographic and cataloguing details to international standards can be easily
  obtained in electronic format - reducing the need for in-house cataloguing
- databases offer the opportunity for librarians and for library users to carry out
  literature searches in a fraction of the time than was possible previously - time
  that was previously employed in trawling through printed abstracts and indexes
to identify literature can now be spent on reading that literature
- on-line and CD-ROM databases offer access to a wealth of information not
  available locally - libraries can offer access to a collection far greater than that
  which is contained within its four walls, material which can be obtained either
  through Inter-Library loan or material which is increasingly accessible on CD-
  ROM or via the Internet.

The 1990s brought a revolution that made possible the extension of the automated library
to a more enhance electronic library or digital library.

The beginning of the 21st century has been marked as the information and technology age
throughout the world and has presented all nations with major challenges. It is commonly
recognized that information and its associated technologies are playing more and more
important roles in socio-economic development, and that a nation that does not keep pace
with the latest advances in information and communications technologies will be left
behind in the mainstream of world development. Information continues to grow at
exponential rates, and information has become a valuable commodity throughout the
globe. It is easy to forget how rapid the transition from a paper-based to a web-based world has been. In less than a decade a critical mass of teaching and learning material has been moved online, while the great majority of new material is created electronically and only published on paper as a secondary consideration (Law, 2004).

Today more published material than ever is available for libraries to purchase, but costs have risen steadily, while library budgets have declined. Consequently, the spending power of libraries has been eroded.

As the methods, technology, and economics of delivering information have changed due to a growth in online services, libraries have increasing turned to consortia as a way of brokering better prices and services. Libraries have always worked co-operatively to help overcome the problem of insufficient funds and escalating prices to achieve cost efficiencies and effective utilization of resources. So, the relatively recent proliferation of consortia is a natural progression along the co-operative continuum.

Indeed there is a direct relationship between the increasing use of library consortia and the emergence of online resources. The internet, with its common protocols, has made it even easier to share resources and has also made it easier for libraries that are looking to form a consortium to gather information on what works for other libraries. The increase in the number and costs of online services, the development of the Internet, the increase in patron expectations and libraries desire to meet these expectations on time and within budget have acted as the driving force in creating a new generation of cooperative ventures (Lowe and Feighan, 1999).

The consortium acting as an agent on behalf of all member libraries to negotiate a purchase price that is lower than that available to an individual institution achieves the reduction of cost. In addition to reduction of the immediate purchasing price, the consortia also aim at lobbying information providers as a group, to reduce the rate at which the cost of information is rising as well as reduce the unit cost of information. The
greater the concentrated purchasing power of the consortia, the greater the window of opportunity to influence pricing models for electronic information.

Then there is the issue of supporting technology. It is necessary to develop enhancements to shared online systems that can make full use of consortia purchases. The establishing of a technological infrastructure that can support wide area information access despite the crazy patchwork of differently developed computer networks, is best served by a high level of cooperation and intense exchange of shared experience and information. The consortia form holds promise for such a venue. Library consortia provide an organizational form for libraries to share their resources.

Libraries have long been searching for methods of providing a "one stop" single point of access for local electronic resources. Presently, there is a different search interface for every electronic resource. With the coming of the Internet and the expectations surrounding instant and easy access, patrons are demanding "one stop" single point of access searching. As librarians, it is natural for us to want to bring order to disparate information sources and to simplify the search process. Payette and Reiger (1997) outlined this desire when they stated "There is great interest in library communities in designing and implementing digital library systems that conceal the complexities of an information landscape characterized by numerous, disparate information resources".

The presence of the Internet has unquestionably and permanently altered the library environment. It has dramatically altered how libraries interact with one another, how people who manage and use these institutions conduct their business, and how information of all types is managed. The Internet's dominance in electronic communication has arrived in full force and its influence on the operation of libraries has presented the field with an important question: what is next?

Intranets are internal versions of the Internet. They are a form of private, secure electronic networks that function almost exactly as their larger antecedent. Intranets can use the Internet to connect remote libraries within an organization, but they can also be strictly internal and run completely on a Local Area Network (Hinrichs, 1997).
Libraries are in the business of providing information in all its various formats. Intranets facilitate this function of location and retrieval by making it available electronically and if unavailable electronically, then speeding up the process of inter-library loan or document delivery (Griffith, 1996).

Intranets represent a new platform for remaking some of the core functions of libraries; including acquisitions and processing, cataloguing, inventory control, public relations communication, and public service. If an Intranet was fully exploited within a library a transformation would take place in the organizational structure of the library itself; the library's hierarchy would tend to be flatter; a constant dynamic structure would be evident; and the recognition of the library's intellect and knowledge base amongst its employees would be seen.

In order for organizations and nations to gain competitive advantage and to survive in the global market, it is important to get access to current, up-to-the-minute information. Therefore, production, acquisition, organization, retrieval and use of information should be seen as a national issue. It is equally important that the necessary and sufficient infrastructure to facilitate and enhance the information use is put in place. However, the development of such an information infrastructure is not without any serious challenges. The challenges are (Pandian, etal,2002):

- **Technological** – as the system (hardware, software and interfaces) needs to be maintained, updated and upgraded due to the rapid changes of technological tools required for digital libraries. The technology needs to be maintained by the professionals who understand the information needs and use.

- **Economical** - the cost of digitization is very high. The initial cost of setting up the hardware and software infrastructure is also high. These expenses will increase as we add new hardware, more licenses to software, increased infrastructure administration and training. And above all, costs of acquisition of digital materials and converting the paper to digital resources.
Organizational – Librarians organize knowledge resources through subject analysis and cataloguing. Standards for organizing digital information for effective retrieval (Metadata standards) are still in development.

Legal – Copyright is one of the major barriers for developing digital collections.

Technologies for storing, organizing, accessing and handling information are developing and changing rapidly. We are in a new enabled information environment. An enabled information infrastructure will optimize the efforts of information seekers to create, manage, discover, access and disseminate knowledge and access will not be constrained by distance, time and any other barriers. Information achieves significant value only when it contributes to the achievement of important human purposes.

1.2 NEED FOR THE STUDY

One of the most complex issues facing libraries today is change management. The decisions libraries make are becoming more complex, the risks are greater, and the resources, both human and fiscal, are becoming scarcer. There are many key issues facing libraries today that relate to the ability of the library to allocate and make maximum use of these scarce resources (Abell and Oxbrow, 2001).

The voluminous growth of published documents in the recent past, increasing cost of information resources, technological advancements that offer newer methods of information processing, retrieval and dissemination are some of the factors which have made partnership a necessity (Kaul, S, 2001). Building partnership is currently a way of business to leverage the resources in order to provide more effective services. Partnership allows gaining competitive advantage by pooling the resources. Because of mutual interests and complementary skills, partnership brings better solutions. Partnership goals and the plan must be shared by all participating organizations. The partnership must also be aligned with the missions and visions of all participating organizations. Resources must be identified to accomplish the plan, and the plan must be frequently reviewed and
updated as new information becomes available. The professional relationship among the partners must be based on mutual respect and an interest in participation in a win/win manner. A successful partnership may take years to develop to the point that all participants possess the trust needed to share.

On one hand funds crunch and on the other growing need for information to stay in the competition and knowledge- based economy placed the libraries at the cross roads of profession, feeling of being thrown out. Levels of technology deployment adequate for providing value added services and for efficient processing, retrieval and dissemination, are necessary for continuous quality improvement. Competition among the teachers to give out to the students the appropriate and at the right time information from various sources including the peer source, among students for up to date information etc. requires each library to have a large information collection but this is possible if large amount of funds are available which are not simply there. The demands for new information and sources are unending because the changes are happening thick and fast. No one library or more can ever think of becoming on their own sufficient. Hence it is necessary to enter into a collaborative arrangement where by while effecting savings, the resource base expands. The savings could be used for adding new resources.

Need of resource sharing was realized by IIM Libraries a long back. Besides entering into the interlibrary loan practice, IIM Libraries also thought seriously of resource sharing in many other areas such as cooperative acquisition, cooperative processing and decentralized utilization. As a step towards it the IIMs have formed a consortium.

IIM Library Consortia

The concept of IIM Library Consortium has been floated a few years back. The two areas were identified for partnership viz., a) developing the collection on shared basis and b) developing the services for exploiting such collection.

The Librarians of all the IIMs have been interacting extensively in the recent past on the possible resource sharing of the CD-ROM/Digital Databases being regularly subscribed to by them. The objective was towards the optimum utilization and enhancement of the
resources, and towards minimizing the expenditure, by consortia based subscriptions to the commonly subscribed databases.

A pilot study was conducted in this regard on the CD-ROM/Digital Databases being currently subscribed to by the various IIMs and it was found that (Jambhekar, Pandian and Gupta, 2002):

- ABI/Inform (Abstracts), ABI/Inform (Full-Text - Business Periodicals On disk - BPO) were being subscribed to by IIMA, IIMB, and IIMC respectively.
- Business Source Elite (BSE), the Full-Text journal service of EBSCO, was subscribed to by IIMA, IIMI, and IIMK, and
- Econlit (Silver Platter) at IIMA and IIMK, and Econlit (Ovid) at IIMI.

The Librarians of IIMs discussed and deliberated in one of their meeting and resolved the following:

- That, while doing this consortia exercise, the information resources of any of the Institute(s) should not be affected in any manner, and shall ensure quality improvement and revenue saving to each Institute.
- That, it is high time for all IIMs to jointly approach publishers for journals and databases of common interest for better services and prices.
- That, IIMs may approach publishers of CD-ROM Databases to begin with, as Consortia, for better pricing and services.
- Eventually, other digital databases and journals shall also be covered by the Consortia programme.
- That, the proposal of IIM Library Consortium seeks the authorization and guidance of the Heads of all the IIMs, to proceed further.

Based on the above, four of IIMs placed orders for databases such as BSE and Econlit and the rest two IIMs placed orders for ABI/Inform. Subsequently, the Directors of all IIMs in one of their meetings approved the formation of IIM Library Consortium and encouraged the librarians to actively participate for mutual benefit.
In pursuance of the decision taken in the IIM Directors’ meeting held at IIMK during August 2001 for further strengthening the consortium arrangement, the second meeting of IIM Librarians was held at IIMB during September 27-28, 2001. Accordingly, the Librarian, IIMB coordinated the meeting and invited the major publishers/vendors/agents of databases, journals, e-journals and other value added service providers. The vendors/publishers responded enthusiastically to the invitation. 15 vendors/publishers made their presentation along with their competitive offers for the consortia. The offers and benefits were examined and evaluated in detail. Based on evaluation of the offers, the following were the recommendations:

1) It was found that, it is of utmost importance that all IIMs reach a consensus on:
   a. Retaining the current journals subscription for the respective publishers
   b. Bearing equally the additional costs for taking the advantage
   c. Exploring the other possibilities of cooperative acquisition of journals.
      e.g., Subscription to multiple copies of same journals at a discounted price.

2. This meeting also gave scope for examining various repackaged information services on India. As such information are not readily available on foreign sources, it was recommended that, in addition to the present Indian information services, the following could also be subscribed to by all six IIMs at Consortia rates:
   a. CAPITALINE
   b. EQUITY RESEARCH STATION
   c. INDIA INFORMER
   d. CRISIL

3. It was also realized that during the initial stages of the consortia environment, it is possible to increase the information resource base by spending the same money or little more. This is because the high costs of the databases and very small number of participating members in the consortia.

4. Some of the databases, which are either currently being used by one or more IIMs will be of great relevance to the IIM community were offered at drastically
reduced price provided all 6 IIMs subscribe to the same resources. For example the discounts were offered as much as 40 to 45% in some cases. The following databases were the ones who offered the discounted price.

a. ABI/INFORM Global Full text
b. Business Sources Premier
c. Gale Products (business and company resource center) suite
d. Global Marketing Information Database (Euro monitor)

Though the meeting enabled the IIM Librarians to gain better packages for the databases, it actually turned out to be the e-journals subscription, which gave the consortium the real look. IIM Library consortium has in the last few years successfully executed a few shared acquisition services viz., Science Direct of Elsevier, John Wiley electronic journals and Kluwer electronic journals, Proquest and EBSCO services. More areas are identified for partnership.

IIM Unified Intranet Portal System (IIM-UIPS): A Consortia Model

In order to take the consortium further, and more importantly to make the investment of money, time and efforts wise and balanced, it is necessary to develop an enabling system that will enhance the information use and promotion among the libraries of IIMs. This will in turn enhance the knowledge base of the intellectual resources of these IIMs to contribute more and better in meeting objectives of IIMs for which they are setup.

IIM-UIPS will be a digital library network system based on intranet technology to provide the IIM community (faculty, students and staff) an online web enabled access to the information resources available in all the IIMs without any barriers of time and distance. It will be a simple, efficient and cost effective system. The basic operating principle of this system is centralized acquisition, decentralized processing and decentralized utilization.

The factors that influence the IIM-UIPS are:
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- Online access to the digital sources of information of all the IIMs.
- Bridging the gap between information resources rich and resources deficient libraries
- Users of all IIMs are provided equal access to all the information at all time
- Transaction costs and time of sharing information resources among IIMs

Factors that would facilitate the IIM-UIPS are:

- IIM Library Consortia approach
- Low cost technology for conversion, processing and organization of digital resources
- Improved and reliable bandwidth for information sharing on the net
- Synergy of library and computer services

1.3 STATEMENT OF THE PROBLEM

Libraries have been using information and communication technologies for many years. Right from invent of typewriters, photocopiers, microforms, computers, CD-ROMs, DVD-ROMs, local area network, wide area network, Internet and intranet. However, the environment changed dramatically as a result of the following recent developments:

1. The introduction of high-bandwidth wide area networks
2. The introduction of electronic journals
3. The introduction of digital resources
4. A change of economic model towards annual subscription which enabled unlimited access
5. The availability of a low cost networked workstations which enabled end-users to gain direct access to the data services provided both on the local intranet and internet
Alongside these developments, Libraries are facing increasing demands for services and declining level of fiscal and human resources. Libraries of today are operating in a rapidly changing environment. Environmental factors such as those discussed below are important to understanding the rise in consortia activities among libraries (Domer and Annear, 2000).

- **Information as a Commodity**

  The way that information is perceived has changed over the past years. Governments are talking about building knowledge economies based on the use of information and technology. Information is increasingly becoming a commodity, subject to market forces just like any other commodity. Information has commercial value and is increasingly viewed as something to be bought and sold. Libraries therefore no longer have a monopoly on information provision. Now, the provision of information is also being undertaken by businesses that are economically motivated. The motivation of a business is very different from that of a library, which aims to educate and inform, but not to make a profit.

- **Growth in Quantity and Change in Delivery of Information**

  Accompanying the libraries' loss of monopoly status as information providers are the combined factors of a rapid growth in the quantity of information and the changing way information is being delivered. The amount of information available today is vastly greater than the amount available previously. An individual library cannot hope to collect everything. Tennant (2000) points out, that “now, instead of being the premier information resource, libraries are increasingly the resource of last resort.” Libraries must therefore develop strategies to remain relevant to their users.
Traditionally, individual libraries purchased physical (i.e. tangible) information entities to build local collections of resources. These collections primarily served the purchasing library’s local users and at times individual entities were loaned to other libraries’ users within a cooperative framework embodied within an inter-library loan scheme. Now, however, the focus of libraries is shifting away from the acquisition of physical entities to build collections of resources for local users (and the subsequent loaning of some entities to other libraries’ users) to providing local users with access to distributed information resources in a variety of formats. That is, the paradigm is changing from a library owning specific physical information entities in a local collection to providing access to many information entities regardless of their format. Local collections are still important for heavily used paper-based resources, but access to distributed information resources is growing in importance. “Libraries are challenged more than ever before to continue offering traditional services while at the same time providing a range of new, often costly, services” (Shoaf, 1999).

**Changing User Expectations**

Technological change is influencing how information seekers find and receive information and expect to find and receive information. As library users are able to access a variety of resources through electronic means, the relevance of libraries becomes an issue. Dissatisfaction with a limited local collection may occur, as users require more than that collection can give them. Many commentators are stating that libraries have to look at new ways to provide the access to the information needed by library users or these libraries will lose their relevance and their users will go elsewhere. There is a need to link the user with the appropriate resource from global sources not just from the local collection, i.e. “local access to global collections” (Branin 1998) is very important. Charnes (1996) argues that a library’s quality will be measured not by what it owns but by how it provides access to the information.

**Tough Economic Circumstances**
Libraries are now finding themselves in very challenging economic and political circumstances. Over the years they have encountered serious reductions in funding coupled with burgeoning costs of resources. The number of journals being published and the average subscription rate for those journals both continue to rise.

Changes in Education

Today, life long learning is a requirement within of our society – technology is increasing our need for learning. Technology is also increasing our opportunities for learning. With the rise in distance education opportunities, distance is no longer a barrier to education for individuals living in rural areas. The coincidental rise in lifelong learning and distance education opportunities has meant that many libraries are encountering an increasing number of remote users. The demand for different types of library services by distant users is likely to continue to increase. As noted by McLean (1999), “All service industries are facing the prospect of offering help and advice to remote users, hence the emergence of call centers to meet this need.” In a sense, libraries have the opportunity to be the call centres for distance education suppliers.

Segregation of Libraries by Type

Libraries are often segregated by type: public, academic/research, corporate and government. The boundaries that demarcate each type of library restrict access to those libraries to particular groups of users, but to information seekers, these boundaries are artificial barriers to the information they require. Since information seekers will often use more than one type of library to meet their information needs, libraries should be organized in such a way as to recognize this aspect of the user population and provide them with seamless access.

Commercial Electronic Resources Issues
The shift to the provision of electronic information resources from commercial suppliers has raised new issues for libraries. McLean (1999) has identified the following areas of concern:

- Commercial information providers offer a confusing array of service and pricing models.
- Many of these pricing models are based on traditional print models.
- Licenses are seen to be restrictive.
- The price very often seemed excessive.

As information becomes an indispensable resource and commodity in the “Information Era,” providing information services is of paramount importance to all types of organizations. The cost of providing effective information services is on the rise in parallel with the increasing role that information plays in day-to-day activities of organizations. Yet, librarians are faced with the challenge of providing better services with shrinking budgets. Fortunately, the developments in information technology create new opportunities for librarians. For instance, librarians can now provide access to networked information sources that their libraries do not even own. They try to cater to ever-increasing information needs of their clientele through various networks such as the Internet. Interlibrary cooperation and coordination of resource sharing is also facilitated in the network environment, as it is easier for libraries to form consortia and share electronic information resources. The advances in information technology have had a profound effect on resource sharing activities. A collection is no longer bound by the structure of four walls. This creates the opportunity and an environment for new services unlike we had before. This doesn't mean that the traditional functions for libraries have changed. The library's primary task has always been - and will remain regardless of changes of technology - to select, stabilize, protect, and provide access to relevant and representative information resources. The collection function, however, is expanding to include a connection function (Rader, 2001).
Billy (1997) believes that the combination of continued high inflation in operating costs (especially for acquisitions), the explosion in the amount of published material, the emergence of numerous kinds of nonprint information (such as images, databases, and musical performances) in electronic format, and the decay of acidic paper on which the major part of most collections is printed make it impossible today for libraries to maintain or build comprehensive collections as they did in the past. To meet users' demands and to fulfill scholarly expectations, libraries have to depend on one another's' collections. Interdependence among libraries will grow in importance. Electronic publications are making access to knowledge much more convenient, regardless of location, time, and space (Riggs, 2001).

To survive in an environment of escalating expectations, libraries are looking for new avenues of answers to meet the challenges due to these technological advancements and increasing costs of information. Library cooperation, resource sharing, library networks and now, library consortia are some of the avenues that the libraries have been using to support and sustain the information access and use.

The accelerating change in the information technology and the development of the Internet as well as the World Wide Web caused the emergence of new trends in the world of library consortia.

**Library Consortia**

Collaboration is a strategy that is becoming increasingly popular in all sectors as a method of coping with the turbulent development of technology. Collaboration is a professional relationship between two (or more) organizations that work together to accomplish mutual goals. The outcome of the relationship provides a win/win benefit to all participating organizations. It involves more than just cooperation such as one finds in exchange of resources. Collaboration is more complex involving a commitment, which embodies mutually beneficial relationships. Such a relationship requires an
investment in time, since activities are planned and shared, not merely permitted or tolerated. The investment is greater, but so are the potential benefits.

The objective of Library Consortia is to control and reduce information costs, to improve resource sharing, to develop a network information environment and share licensing issues with each other (Hirshon, 1998).

Today, library consortia are one of the best ways to share the increasingly expensive information resources in the most cost effective manner. We are not saying something new. It is the same old concepts of library cooperation. The world of library consortia is expanding rapidly, and with it the range of combinations and permutations of services offered and activities undertaken. The underlying motivation however remains the same, the sharing of increasingly expensive library collections in the most cost-effective manner for mutual benefit and general cost savings. To quote Hirshon (1998), “Perhaps the most important development for academic libraries during the current decade has been the move from organizational self-sufficiency to a collaborative survival mode as epitomized by the growth of library consortia”.

Library consortia are a new expression of an old experience—that the quality of library service is improved when librarians cooperate. The traditional expression of library cooperation has been through interlibrary loan, which has provided a route to non-core content outside a library's collecting policy. This and other forms of library cooperation have rarely made an impact on a library's core services. The formation of consortia for the purchase of core content at the heart of a library's collecting policy has brought library cooperation into the mainstream of library services. The pressure to form consortia has come from a realization that even the wealthiest library cannot keep pace with the needs of its users in an era of expanding publication and inflationary price increases. How to meet user needs when even a growing library budget is inadequate is a question librarians across the world have had to address. Banding together to purchase collectively a broader range of content has proven to be a partially successful answer to the question. Consortia have also provided librarians with negotiating muscle in an era
when vendors have become increasingly aggressive in pricing and licensing. Consortia are also the librarians' response to the mergers in the publishing industry, which have given certain publishers control of a greater number of important journal titles (Friend, 2003).

Resource sharing in the sense of sharing printed documents is largely based on scarcity of financial resources, which resulted in reductions in the range and depth of information resources individual libraries can make available. Traditional co-operative projects do not offer a real solution to the problem of deteriorating collections. The changes being experienced in the transition to a digital environment offer new opportunities for cooperative action in making information available to users. Information in electronic formats is one of the major contributing factors that foster library consortia.

The proliferation of electronic information services and products, and increasing availability of information processing, storage and communication technologies in libraries facilitated the sharing of resources and engendered new cooperative schemes. Moreover, librarians increasingly feel that they must cooperate to reap the benefits of "economics of scale". In traditional resource sharing schemes, libraries possessing the physical materials tend to benefit more from the cooperative collection development efforts. However, the availability of networked information resources encouraged libraries to streamline their cooperative collection development efforts. Possessing electronic information resources does not prohibit other libraries' access to information. This has facilitated cooperative collection development efforts and further encouraged libraries to set up library consortia to provide more and varied electronic resources through the networks and to increase their bargaining power with publishers of electronic information resources (Tonta, 2001).

In a traditional resource sharing arrangements sometimes encouraged competition rather than cooperation in view of the benefits that relatively large libraries accrued by owning research materials. This is no longer the case, however. Small libraries can get access to information sources over the network with the same speed as the large ones can,
regardless of where the physical sources are held. Furthermore, introduction of new 
pricing models by publishers such as licensing (rather than subscription) and access fees 
for electronic information sources and relatively favorable offers for consortia 
agreements has made the economics of cooperation more visible.

One of the important characteristics of electronic information resources is that by its very 
nature of being electronic makes the information accessible and sharable regardless of 
time and space

The motivation for the formation of library consortia throughout the world has been the 
need to cope with the rise in prices of scholarly resources well above normal inflation. 
The rise in prices has been well documented, and for many years the library community 
has been developing strategies to counter or to cope with these price rises. One of those 
strategies has been to use the collective purchasing power of a group of libraries to secure 
a lower price and/or more favorable licensing terms. High expectations have been 
expressed about the savings in library budgets, which may result from such a strategy, 
expectations which have not always been realized. Its savings in expenditure has often 
judged the success of a library consortium. Because modern consortia are concerned with 
the purchase of electronic resources, we tend to measure their strength in terms of the 
financial benefits that they are able to achieve for their members. Financial benefits are 
important, but the strength of consortia brings different types of benefits and we should 
ot ignore advantages that consortia bring which are not financial in nature. The mere 
fact of forming a consortium can create an internal strength and give libraries a higher 
political profile. Bulk purchase of electronic content can bring financial savings but 
equally important is the strength a consortium has in negotiating license terms, in 
coordinating the supply and delivery of electronic content, and in resolving problems as 
they arise. Some potential benefits are not always realized, but enough benefit may be 
gained from the formation of consortia for users of libraries to receive a better level of 
service than if consortia did not exist (Friend, 2002).
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Enabling Technologies

Libraries have traditionally played a key role by facilitating access to relevant internal and external information sources. They have absorbed several enabling information technologies over the past several decades, in an attempt to improve the quality and timeliness of their information services. Digital information processing was however limited to bibliographic and catalogue data. Advent of the Internet significantly intensified the pace of change since the mid 1990's. Rapid maturing of Internet and intranet technologies have witnessed all round developments in publishing, communication, delivery and access to a multitude of digital information, both in commercial and academic domains. Web technology has emerged to be the converging point for all related processes, media, tools and techniques. This has in turn given impetus for the development of digital libraries and knowledge management solutions. Changes these developments have brought about pose interesting challenges for effective management of digital information in organizations. What information infrastructures are required in organizations that can take advantage of these developments? We argue that libraries, given their traditional strength in organising information and the lead they have exhibited in managing access to web-based information, are well placed to play a significant role in managing both internal and external digital information resources. This requires that the libraries enhance library websites to full-fledged intranet information portals by incorporating knowledge organization principles of traditional libraries, standards, tools and techniques of Digital Libraries; and exploit internal information assets, knowledge resources and promote learning and collaboration using appropriate Knowledge Management solutions (Rajashekar, 2001). New digital and telecommunication technologies offer possibilities for improving resource sharing and collaborative collection development.

Libraries and information providers are engaged in the design and development of custom portal and gateway software to provide improved access to distributed information resources. These portals are attempting to provide seamless access services within the hybrid distributed information environment in which we work. This distributed
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resources environment includes: discrete publisher and vendor full-text repositories; locally mounted and remote Abstracting and Indexing (A & I) services; Web search engines and vertical portals; local collections of digital metadata, digital objects, and finding aids; preprint and other hidden Web sites and services; and local, regional, and national online catalogs and shared resource bibliographic databases. The challenge is to provide effective search and discovery services within this environment of discrete distributed information resources.

The technologies being investigated to provide these services are (1) simultaneous searching of multiple information resources, and (2) dynamic reference linking of e-resources using standards such as the Digital Object Identifier (DOI), OpenURL, and the CrossRef publisher initiative.

There are a number of vendor, library, and information providers that are investigating systems for simultaneous search and retrieval over multiple resources. From the overarching design standpoint, there are several complementary approaches to simultaneous search implementation. One approach, centered on the Open Archive Initiative (OAI) provider and harvesting technologies, typically employs central federated search services operating over harvested metadata from a number of provider sites. The other approach utilizes broadcast or asynchronous searching that centrally collects search results from distributed search services. These two approaches are certainly not mutually exclusive. In fact, one could build a robust broadcast search service that operates over several federated OAI-based services and, in addition, A & I services and publisher sites.

We now have at our disposal a set of standards and best practices that allow us to create integrated digital libraries and address some of these classic problems of information retrieval. We have a standard retrieval environment (Web) and interface/client (Web Browser), standard transport mechanisms to connect heterogeneous content (HTTP, OAI, SOAP, WebHTTP), standard metalanguages and tools for describing and transforming content and metadata (XML, DTDs & Schemas, XSLT, DC/DCQ, RDF, METS),
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standardized search/retrieval mechanisms (HTTP Post/Get, SQL, Z39.50), and standard linking tools and infrastructure (DOI, OpenURL, CrossRef) (Mischo, 2002).

Intranet And Library Consortia

In short, Intranets are private, internal networks based on internet standards. They are based on the same underlying HTTP (HyperText Transfer Protocol) communication and HTML (HyperText Markup Language) document publishing protocols as the World Wide Web (WWW). In terms of access, intranets are restricted to organizational participants only. The firewalls – an interface prevent access from external Internet users and allow information to be securely managed inside the organization. It operates on a client/server model of computing where centralized servers handle information requests across a distributed network of client computers. Intranet allows organizational participants to utilize web browsers, such as Netscape or Internet Explorer to retrieve files scattered throughout the organization. These files may contain hyperlinks to other files stored locally or remotely. Intranet can be seen as a shared information workspace. It can act as content space to facilitate information access and retrieval, a communication space to negotiate collective interpretations and shared meanings and a collaboration space to support collaborative work action.

Intranet as an enabling tool for library consortia

Intranet refers not only to the underlying network but also to the information content, services, and applications built on top of that network infrastructure. To invoke an information request, a web browser sends an HTTP request command to the web server that contains the particular piece of information being sought. Intranet will be ideal platform for people to come together and share resources for mutual benefits. Due to their platform independent nature, intranets can provide the library consortia with increased access to a wide variety of information resources such as e-journals, full text databases, and other digital resources that reside both within and outside the participating libraries. The individual organizations continue to keep the information resources that
they possess in their very own servers in whatever platform they deemed fit. Intranet through the web browsers provides web-enabled access to those resources. In this way, the information users and information vendors see Intranet as a single entity without a need to know where the information is stored or coming from. Network, file and web servers of the individual libraries participating in the consortia can be interconnected and fire walled to provide the secured access to registered users through a web browser.

*Library Consortia activities in India*

The voluminous growth of published documents in the recent past, increasing cost of information sources, technological advancements that offer newer methods of information processing, retrieval and dissemination are some of the factors which have made resource sharing a necessity. The Library co-operation is a very old concept and a form of resource sharing. There are large instances of such cooperation among libraries in the library literature (Kaul, 1999).

The latest library trend is based on the need to form consortia to share the resources. Library consortia are not new to the library community in India as it is the latest phrase of the so-called library cooperation, library networks and so on. All these years, we have talked lot of all these phrases, but failed to realize one successful implementation. And we also talked lot about the issues that caused the lack of successful implementation of library networks in India. Of them, technology and economics are very important factors for realizing a successful cooperation. And then we talked about the solutions that are of global in nature but never suited Indian environments with its economic background. The result is that we developed library networks, but nothing to share. And then we realized that we need to develop information resources in the electronic form so that library networks become effective for the purposes they were setup. We have had number of conferences, meetings, publications etc on discussing the bibliographic formats, standards and the software to host these resources. There was lot of initiatives by networks such as INFLIBNET, DELNET and other library networks supported by NISSAT to formulate bibliographic standards and formats that is suitable for Indian
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environment (Kaul, 2001). And the database development activities started. Union catalogs of serials, theses and dissertations were developed followed by catalog of books. Web enabled search interfaces were also developed for searching. However, union catalog system will be effective only when they are supported by efficient and timely document delivery system. And that part is not yet become effective since the mode of delivery is predominantly based on the traditional snail mails or courier services. However, the development of union catalogs is a great achievement of the library networks, which facilitate what is available where (Pandian and Karisiddappa, 2003).

There are a few national and regional library consortia initiatives in the recent years. CSIR, TIFR, DAE, IITs, and IIMs, have already formed their sectoral consortia (some are formal and others are informal) and have been subscribing to electronic sources like Science Direct, MathSciNet, and Blackwell, John Wiley, ABI/INFORM and Business sources premier. Also, both IMSc and TIFR have been subscribing to MathSciNet databases under their own consortia consisting group of libraries in their region. While UGC through its one point programme is trying to provide one point e-subscription to all important journals for the entire university community, the Ministry of Human Resource Development (MHRD) through its INDEST (Indian National Digital Library in Science and Technology) is proposing to fund consortia-based subscription to electronic resources for technical education system in India. Recently there was a round table discussion on "Sharing of E-journals through Consortia in Indian Libraries" held at the Indian Institute of Astrophysics, Bangalore. Many such initiatives at corporate libraries are also being pursued. National licensing of electronic resources is also being considered at the government level (Pandian and Karisiddappa, 2003).

Library consortia in today’s digital age are quite different from that of library networks in yester years. The main reason is that the resources that are shared in today’s consortia environment are predominantly in electronic form such as electronic journals and databases. Hence the technology and associated tools to support sharing the electronic resources are also important components for the success of any library consortia. It is essential that each participating libraries of a consortium is equipped with necessary and
sufficient technology to support sharing the resources across. And ideally, these technology tools must be integrated into the library automation software that the libraries are already using (Pandian and Karisiddappa, 2003). In order to provide an effective operational and coherent approach to electronic resources in a distributed library consortia environment, following technical developments will have to be achieved (Akeroyd, 2000):

- Authorization and authentication, that is establishing that people are who they say so as to authorize access to licensed resources and to different material for different groups of users and so on.
- Authentication will need to get stronger if we want to move to more robust transactions in published material and we will need to understand far more about our users other than their basic status if we want to better tailor services to their needs;
- We need to provide simple coherent ways of searching out, and rendering resources, restating the point that the search model may well change given the changing context of delivery and the increasing use of linkages as a simplified approach to citation searching;
- We need to build tools and services which can allow users to navigate in collections which are both subject and institution specific and which can provide the jumping off points to support browsing.
- We need to develop better filtering tools and push type systems thus saving user effort by alerting them to requirements as and when they need them. Push can be used to create and sustain virtual and real research groups, to monitor the output of specific annual conferences, to monitor training and similar opportunities, and to identify citations, particularly to your own research.
1.4 OBJECTIVES OF THIS STUDY

The objectives of this study are:

- Study and examine how electronic resources facilitates effective sharing
- Study and examine library consortia as an organizational form bring libraries together for mutual benefits
- Study and examine how intranet as a concept facilitates effective access and sharing of electronic resources
- Study and evaluate the emerging technologies that support sharing of electronic resources in a distributed library consortia environment
- Review of existing unified models – commercial, academic and research and open sources
- To assess the available information resources, IT infrastructures and human resources in all the six IIM Libraries
- To take stock of the efforts of IIM libraries in consortia and digitization activities towards effective information resource management, and
- Design a framework that facilitates effective sharing of electronic resources among IIM Libraries and enhances information use and promotion.

Awareness among the prospective partners in the digital initiatives is becoming high. Government of India has been supporting various library networks at national, sectoral and metropolitan levels. These library networks have at least the online catalogue of publications available in their respective participating libraries. Digital initiatives are also being taken in the government sectors. Although, we do not have a single digital library to benchmark, efforts are on at various levels to undertake the digitization projects.

We know that one of the main advantages of library consortia is a resources enhancement and general cost savings. And these resources are predominantly in the electronic forms (journals, databases etc) mostly hosted on the Internet platform. There are also sources
available in CD-ROMs and other form of electronic media. Each member of a library consortium must be equipped with the necessary technology tools to support access and sharing these resources across. Information providers/publishers, information agents/vendors and member libraries are the important partners in any library consortia and the technology requirements for each partner would also vary. Most importantly, the requirements at the member libraries would depend on the way the information provider and the information agents provide access to their resources. In a general consortia model in practice, the information providers would host their resources at their site and provide access to the member libraries through Internet. The advantage here is that the consortia members need not worry about maintaining these resources (hardware, software and networks). In some other model, the information provider will mirror their database on one or more of the member libraries site. This requires huge investment on the infrastructure to mirror the site. Added to this is the maintenance of these mirror sites. The advantage here is that the member libraries will have faster access as the resources are sitting locally. And the mirror site will also serve as a backup server. In any case, the member libraries would have to have a dedicated Internet connectivity, at least for the time being. We do not know what will replace the Internet in the future. Each member campus will have to have a campus wide network for a simultaneous multiple user access. There are many technology issues with which the present day library consortia operate. The issues are both at the information providers and the member libraries end.

One of the important issues related to technology at the information providers end is the stability of the systems that they deploy to store, retrieve, and deliver the information resources. This is more so in the areas of both storage and access technology where there have been so much of changes taking place. The information provider will have to guarantee a system that is sustainable for years and an alternate system in case the present one fails.

Though the resources are accessible on the internet, the formats in which the resources available are different for different information providers. Each one has their own resource discovery system or search engines, the content display, the download options
etc. When a member library subscribes to various sources under consortia through many different information providers, the end user in the library will have to repeat the search for the information, which he is looking for in every resource discovery system of the various information providers so as to get a comprehensive list of search results. This will be time consuming and laborious.

The libraries in today’s modern consortia need to operate one, and yet remain separate; belong to union, but function autonomously. Each library uses their own library automation software with different formats and standards. Because, there is lot of investment already made and huge efforts have gone in developing their library holdings databases, the libraries are not prepared to change to a common platform, which the consortia may decide. Without a common platform, sharing resources becomes an issue. Integrating consortia capabilities in the existing library automation software will be a huge effort and it involves costs.

In an ideal library consortia environment, the entry point to the patrons of each member library is through a single web enabled window system that is user-oriented and provide access to the entire collection of the consortium member libraries. The system at the user end should offer services like patron identification and authentication, a comprehensive resource discovery system (encompassing the entire OPAC of member libraries and their holdings), access to the entire e-journals collection and databases. All these should be done through a single search and that should facilitate locating all the resources that are available across the member libraries. No matter where the search results comes from. The system should be capable of patron-initiated online requests of resources and Inter Library loan facilities. An ideal library consortia, which is technology, enabled is presented in fig.1.1 below (Pandian and Karisiddappa, 2003):
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Hence, the one of main objectives of this research is to design and develop a framework for a cost effective unified intranet model to share the electronic information resources available in the IIM libraries. This will be a single web window to provide users of the participating libraries an IP enabled access to all the electronic information resources viz., electronic journals, digital archives of back volumes of journals, databases, in house publications like annual reports, working papers, research reports, monographs, case studies, etc. Information achieves significant value only when it contributes to the achievement of important human purposes.
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1.5 METHODOLGY

1. Literature search
   - To trace the history, growth and development of electronic information resources
   - To identify issues and trends with respect to library consortia in an electronic environment
   - To identify the emerging technologies that support sharing electronic information resources
   - To identify existing unified intranet models for sharing electronic information resources

2. Questionnaire

   To collect the quantitative information about the participating institutions:
   - Information resources
   - Infrastructure resources
   - Human resources
   - Digital Initiatives
   - Consortia activities

3. Interviews

   - To discuss the problems with the people involved in designing the intranet model viz., the heads of library and computer departments, faculty, research staff and students

4. Based on the above

   - Design and development of framework for an intranet model
1.6 SCOPE AND LIMITATIONS OF THIS STUDY

Following is the scope of the study:

- Identification of information requirements of all IIMs
- Identification and evaluation of information resources available in all IIMs
- Identification and evaluation of information resources for digitization within IIM Libraries
- Identification and evaluation of infrastructure resources within IIMs (both at institutional and library levels)
  a. IT resources
  b. Communication resources
  c. Human resources
- Identification and evaluation of electronic journals and databases
- Identification and evaluation of hardware, software and other infrastructure available in IIMs

Design and develop a framework for a Unified Intranet Portal model to provide single web enabled window to both digitized and subscription based resources. This system will provide a cost effective access to all the information resources across IIMs in order to enhance the return on investments (ROI) in information resources and other infrastructure facilities so that more funds can be mobilized to offer more resources.

This is a one-man investigation based on the literature study of existing models and the gaps in achieving the objectives of providing a unified access to heterogeneous resources in a distributed library consortia environment. The study covers only the six IIMs in line with the objectives of this study. The study explores some of the emerging technologies that support unified access to heterogeneous resources in a distributed consortia environment.
1.7 SIGNIFICANCE AND CONTRIBUTION OF THIS STUDY

There are many benefits offered through the adoption and use of intranet for library consortia. One of the more significant is the ability of intranets to facilitate centralized acquisition, decentralized processing and decentralized utilization of knowledge resources independent of computing and network environment in which the participating library operate. Despite these benefits, certain challenges commonly arise in the introduction of intranet technology for library consortia. These include primarily the implementation issues, which calls for greater understanding and coordination and cooperation of both library professionals and information technologists.

Though there have been many cooperative efforts for resource sharing among the libraries of India in the last two decades, it is hard to find one successful program that could be used as a bench mark to replicate in other libraries. The main factors that affect these kinds of efforts are more of human and attitudinal than that of technological or economical. The information environment today is very much conducive enough to tackle the problems faced earlier. With the advent of Internet and World Wide Web, it is possible to provide instantaneous access to the sources available not only within the organization, but other institutions that participate in the consortia programmes. The Unified Intranet model proposed in this study will provide a single web enabled window to the information users of the participating institutions in the consortia program for information access and use not only to their own resources but sources in the other institutions as well. This will bridge the gap between information resource rich and poor libraries, besides economical advantages. The research findings of this research will be of great use in the libraries of the participating institutions and can be extended to include other sectors of library consortia.

1.8 CHAPTERISATION

The entire study is divided into nine chapters. The brief description of each chapter is
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Chapter 1: Provides an introduction to the research problem. The chapter introduces the concept of integrated access to diverse resources in a consortia environment. The chapter briefly discusses about the enabling technologies that support the sharing of resources in a consortia environment. The need for undertaking the study with objectives, methodology, scope and limitations and also significance of the study is emphasized.

Chapter 2: Provides the foundation for this study. Deals with digital and other electronic information resources, their characteristics, growth and developments, and their impact on information access and use. The chapter also deals with issues relevant to building digital library collections and systems.

Chapter 3: Introduces one of the components of the proposed study. Deals with library consortia, the history and development of library consortia, and reviews various working consortia models. It also discusses about the cost effectiveness in a library consortia environment.

Chapter 4: Introduces another component of the proposed study. Deals with Intranet, intranet characteristics, intranet as an enabling concept for bringing the resources together, and how intranet can be used in a library consortia environment. It also discusses about the cost effectiveness of intranet in a library consortia environment.

Chapter 5: This chapter looks at various emerging technologies that support sharing of electronic resources in a distributed consortia environment. It deals with issues related to interoperability in providing an integrated access and various standards and protocols that make the interoperability smoother. It discusses the emerging technologies in authentication, resource description and organization, and resource discovery and use.
Chapter 6: This chapter provides an overview of IIMs and their libraries. The chapter briefly describes the resources and other infrastructure facilities available in all six IIMs. The chapter also analyses the questionnaires that were circulated to the IIMs and presents the survey results.

Chapter 7: The chapter analyses the requirements for a unified intranet model for sharing electronic information resources in a distributed consortia environment. This chapter discusses the opportunities and challenges of providing a unified access to heterogeneous resources in a consortia environment. The chapter also reviews some of the working unified intranet models (commercial, academic and research and open sources) and discusses the strengths and weaknesses of these models.

Chapter 8: This chapter provides a study of model for unified intranet portal system for sharing electronic information resources among the IIMs. Discusses the requirement analysis of both users and library staff as well as systems requirements for IIM Unified Intranet Portal System (IIM-UIPS). It presents a flowchart based approach system design and analysis of various components of IIM-UIPS. The model framework integrates suitable emerging technologies for authentication, resource description and organization, and resource discover and use in the IIM consortia environment.

Chapter 9: This chapter deals with summary of the study with conclusions, limitations and further research followed by bibliography and appendices.

1.9 CONCLUSION

Changes in the marketplace of scholarly publishing, information services, and telecommunications provide opportunities for improved information access unimaginable just a decade ago. At the same time, however, the Libraries' ability to meet their commitments is challenged by rising prices, rapidly changing technology, and the continuing growth of scholarly information. Electronic resources are now commonly
being used and a number of successful library consortia have been formed to acquire more and more electronic resources. Librarians have become increasingly aware that the multiplication of electronic resources is a problem for end-users. Users find it difficult to find the most appropriate database or resource to search for information relevant to their need. Even if they locate the right resources, since each service tends to have its own unique interface, they may struggle to search it effectively. A further obstacle to access is the need to remember and enter many different passwords to access the different databases. These problems may lie behind a perceived lack of use of library subscribed to expensive electronic services.

We need a systems environment that would enable services for our own users and provide integrated access to (Pearce, 2000):

- Online with physical.
- Collection with item.
- Whole with part.
- Commercial with free.
- Significant with transient.
- Local with remote.

These days, virtually all consortia license electronic resources (e.g., citation and full-text databases, e-journals, reference tools) but many also offer a wide range of other services such as shared catalogs, union catalogs, patron-initiated borrowing systems, cooperative collection development, digitizing, instruction, preservation, courier systems, shared human resources, and more. However, sharing in true sense is not happening.

The Intranet as a web enabling technology tool provides a secured and cost effective means of shared access among the participating libraries. Given the benefits and capabilities of Intranet, the question then becomes how to implement one within the constraints of a meager budget.
It is to be noted here that there are many issues involved in establishing a successful library consortia (technology dependent or not) itself. However, these problems of library consortia were discussed in many forums and even some working solutions were arrived at. Only they are not implemented. The situation is still worse in India as we are yet to see even one successful library network. While we are concerned with various problems of library consortia, we cannot afford to ignore the technological advancements that are taking place alongside and pose both challenges and opportunities.

Although, it requires investments and time, it will be beneficial in the long run. The advantages of library consortia in an intranet environment will overcome the disadvantages that are discussed in various forums. A few of the challenges faced by library consortia are universal. To succeed as a collective activity, almost every group has had to overcome political hurdles, funding challenges, and the egos of individuals.

One of the main factors that affect the development of digital resources and access to electronic information is Costing. The cost of digitization is very high. The initial cost of setting up the hardware and software infrastructure is also high. These expenses will increase as we add new hardware, more licenses to software, increased infrastructure administration and training. Given that the institutions are already facing lot of financial constraints, coming together and share the expenses is only the solution left out.

Unified Intranet model is applicable to enhance the academic research and development by providing timely access to vast amount of resources available in the participating libraries by a click of mouse without any barrier of time and distance. Users will have access not only to the resources that are available in the respective library, but a host of other resources in the participating libraries and thus bridging the gap between the resources rich and resources deficient libraries. It provides simultaneous access to multiple numbers of users as against a single user access in print form. This will also act as a common platform for exchange of information among the academics in the participating institutions. The same intranet model may also include the necessary modules for conducting online courses.
1.10 REFERENCES


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