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REVIEW OF RELATED LITERATURE

Literature search is one of the major activities in research that gives not only a base for selection of the problem and understanding the relevance of the subject to study but also directs the researcher to the entire process of the research study. Reviewing the existing studies and correlating them with objectives, hypotheses and other aspects of the current study always enable the researcher to project and carry out the present study in right perspective to reveal the truth by both confirming and reflecting the hypothesis based on the present data analyzed. In this direction the researcher has consulted both print and electronic journals that are available in the universities and higher academic libraries situated in and around study area. The identified relevant research articles and the reports were matched to the objectives and variables of the present study have been thoroughly revised and presented below in a classified manner as a base for the research report:

1. Library Services
2. ICT and Libraries
3. Internet and Digital Libraries
4. Web based information services
5. Library user studies
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2.1 Library Services

Dugdale (1999) studied the library services at the Bolland library, University of the West of England, Bristol in the UK and investigated the ways, in which students might be encouraged to use electronic resources and to develop important lifelong learning skills through the Reside (Research, information, Delivery Electronic library.

Vicente et al. (2004) conducted a study on the use and awareness of electronic information services by academic staff at Glasgow Caledonian University and reported that the freely available internet was widely used source more than pass worded databases. Less than a third used the catalogue to find Electronic information Service (EIS). Non-use of ELS was rarely due to difficulty of access or use. Staff members were pessimistic about their student's skill levels in using ELS.

Hewitspn (2002) reported the results of an investigation, undertaken at Leeds Metropolitan university, to study the awareness and extent to which university academic staff use and assimilate electronic information services (EISs) into their work. The research was conducted using two methods: a quantitative study involving a questionnaire mailed stratified sample of 200 university staff (of which 101 were returned); and a qualitative study. The study also investigated a number of further areas, including: how academic staff at the university obtain information for their work; what they do with the information they obtain; how much aware are university staff of EISs; how confident are academic staff in using EISs and the barriers that exist to their
use; the extent to which academic staff are integrating the use of EISs into students' educational experience; and what the university can do to support staff better in their use of EISs. It is concluded from the results that the internet is the most popular information source but the factors affecting use at the expense of subscription-based services are complex. University staff, especially those with low level IT skills, frequently use the internet because it is easy to access and provides instant results.

Michael and Higgins (2002)\textsuperscript{4} opined that the academic libraries worldwide have been undergoing rapid changes to take advantage of new technology to meet the information needs of the users. The Nanyang technological university (NTU) Library in Singapore has been in the process of developing resources and services in order to serve the university community better since its inception in 1981. The managers had to take on new roles to empower their staff to do their best work. Such changes were necessary in order to actualize the goal of becoming a world class academic library.

Tin and Havamdeh’s (2002)\textsuperscript{5} study assessed the competencies of paraprofessionals in their new role of providing reference services and meeting the changing needs of the library users. The study showed paraprofessionals to be able to deliver quality reference service reference interview and search skills are needed, as well as a changed mindset to reinstall the customer service commitment among these paraprofessionals.
Library time-series, as described in the literature, have been based on monthly data that mask the highly variable nature of library circulation and other internal statistics. This article presents a model of an 8.4-year time-series of weekly academic library journal pickup data. Using MINITAB and SPSS procedures, various models, which included seasonality and intervention variables, were tested. Although periodicity was observed by spectral analysis, it was not a factor in providing a better model. Rather, the best fit was achieved with a model which included an intervention variable based on library hours (Maiken Naylor and Kathleen Walsh, 1994).

Harris (1940) presented a detailed classification and summary of the results (primarily correlations) of studies of the relationship between college grades and intelligence, high school grades, physical data, personality, interests, attitudes, high school factors other than grades, study habits, teaching methods and conditions, incentives and direct motivation, amount of course work taken, curricula and occupational choice, and extra-curricular factors. Methodological faults in such studies are still plentiful.

This is an evaluative summary of the literature on assessment of academic library collections for working collection development librarians. It reviews the general literature on collection evaluation and the principal methodological approaches, including application of standards, use of checklists, verification studies, citation analysis, and use studies. Strengths and weaknesses of each approach are identified. The critical role of the experience
and expertise of the evaluator and his/her objectives is stressed (Eugene Wiemers et al., 1984).8

Do expert systems have a place in the Library and Information Services (LIS) industry? Morris (1991)9 reviewed the progress made so far in the areas of online information retrieval, cataloguing, abstracting, reference work, and indexing and classification. Although largely of an experimental nature, the work undertaken so far will surely pay dividends in the future.

Narasimha Murty and Anil Jain (1995)10 proposed a knowledge-based clustering scheme for grouping books in a library. Such a grouping is achieved with the help of domain knowledge in the form of the ACM CR (Computing Reviews) category hierarchy. A new knowledge-based similarity measure is defined and used in clustering books. The proposed scheme is useful in overcoming several problems associated with the existing book collection management and document retrieval systems. More specifically, it can be used in: (1) helping the user select an appropriate collection of books in a library which contains the topics of interest; (2) assigning a classification number to a new book; (3) designing a more appropriate and uniform classification scheme for books; and (4) comparison of libraries based on their collections. Initial experiments on a collection of hundred books using the proposed clustering scheme have given us encouraging results.

Lewis Guodo Liu (2001)11 examined the relationship between library print collections and prestige of academic programs of universities in the United States. It is situated in the literature of access versus ownership and the
theoretical framework of the economic behavior of universities. It specifically looks at the relationship between the total number of volumes and the number of serials and rankings of academic programs as measured by the National Research Council. This study extends the economic theory of universities and nonprofit organizations to academic libraries and argues that academic research libraries seek to expand and maintain prestige of universities by expanding and maintaining their collections. Two hypotheses were tested using regression analysis. First, it is hypothesized that the size of the libraries' collections (total volumes) contributes to the prestige of academic programs. Second, it is hypothesized that the size of the serial collections of libraries contributes to the prestige of academic programs. Regression models were formulated and tested. Data on rankings of academic programs were drawn from the report by the National Research Council. Regression results for all the academic programs are statistically significant at 0.0001 level and R squares are between 0.29 and 0.47 for all the academic programs except philosophy. Findings strongly confirm the hypotheses and show that library volumes and serial subscriptions contribute significantly to prestige of all academic programs including the social sciences, physical sciences and mathematics, engineering, and humanities. This study has significant policy implications. This article argues that cutting back on volumes and serial subscriptions will hurt quality of academic programs in the long run. There still exists a gap between getting needed items housed in the library and getting needed items through ILL and document delivery services in terms of
speed and browsing capability. This article further argues that scholarly communication is a complicated process and that many factors, such as cultural and psychological factors, are involved in this process. Simply replacing ownership of print collections with electronic access services can abruptly that process, damage healthy scholarly communication, decrease the research productivity of scholars, and eventually erode the quality of academic programs.

The allocation of an academic library's acquisition funds should contribute to the achievement of the library's goals and objectives. The availability of diverse materials and the varying demands of user needs in a variety of subject disciplines may represent a set of conflicting, incommensurate goals. Lexicographic linear goal programming offers an appropriate allocation methodology for determining an optimal solution with conflicting goals. This article applies this methodology to 90 funds representing books and periodicals in 45 subject disciplines at the University of Tennessee, Knoxville (UT). The model's goals incorporate several categories of budget constraints and user needs. The application of this formula resulted in the successful distribution of $3.5 million while taking into consideration ten goals or variables ranging from circulation to number of faculty and students. It also builds in accommodations for political factors and pressures, a unique feature in allocation formulas (Kenneth Wise and Perushek, 1996).
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The problem of selecting which journals to acquire in order to best satisfy library objectives is modeled as a zero-one linear programming problem and examined in detail. The model incorporates an objective function based on expected usage as a measure of journal worth and cost constraints which account for the scarcity of capital. The model can be used to aid the librarian in making better selection decisions, since the objective function can be shown to reflect the evaluation of the library as an information retrieval system and as a service organization. Moreover, the model is seen to be related to inventory problems and scheduling models in industrial operations. Journal usage is discussed as a measure of journal worth and is contrasted to journal productivity. Constraints are considered for scarce resources other than capital and for journal interrelationships (Kraft and Hill, 1973).¹³

Opened in 1946, the Linda Hall Library in Kansas City, Missouri, is world renowned for its collections in science, engineering, and technology. Just as well known is the strong user orientation of its dedicated staff. While the library certainly collects all types of materials, including books, patent specifications, engineering standards, maps, and more, a particularly strong emphasis is placed on the collection of current journals. The library, a privately funded public library, is situated on fourteen acres surrounded by the University of Missouri-Kansas City, although there is no affiliation with that institution. Serials Review made a visit on a lovely spring day in June, as the day lilies and other flowers were in full riot (Katy Ginanni, 2005).¹⁴
Public services in university libraries are shifting to more proactive and collaborative models directly linked to the university research and teaching mission. This article reviews selected research studies with practical application to service models and offers suggestions for a research agenda supporting the advancement of strategic services (Barbara Dewey, 1997).\(^{15}\)

Libraries are successfully seeking, developing, and testing new ways to broaden their collections with materials that are neither cataloged nor stored for anticipated need. Instead, these acquisitions are purchased on demand, ordered and received online, by fax or overnight mail, and delivered to the requester. At the University of Illinois at Urbana-Champaign (UIUC) Chemistry Library, a document delivery project was established to study how this type of acquisition could be mainstreamed into everyday collection development as a traditional user service. A 6½ month pilot project was conducted that provided free document delivery for articles, patents, and conference proceedings, which were available through the Chemical Abstracts Document Delivery Service, a commercial vendor. This pilot study tested the feasibility of decentralized document delivery in a branch library; a follow-up questionnaire was used to gauge user response to the service. Data from the study were also used to evaluate the serial collection and previous serial cancellation decisions. Results showed the decentralized document delivery service (DDS) was a cost-effective way to extend the serial collection; the user survey results showed a high level of user satisfaction associated with the service (Tina Chrzastowski and Mary Anthes, 1995).\(^{16}\)
A number of investigations into misconduct related to proposing, performing, and reporting research have resulted in research and researchers being discredited. The research reported in this article links misconduct to librarian's perceptions of service quality and explores the implications of fraud for library collections and information services (Peter Hernon and Ellen Altman, 1995).\textsuperscript{17}

Brenda Battleson \textit{et al.} (2001)\textsuperscript{18} opined that the usability testing is an invaluable tool for evaluating the effectiveness and ease of use of academic library Web sites. This article reviews major usability principles and explores the application of formal usability testing to an existing site at the University at Buffalo libraries.

Librarians from the Sterling C. Evans Library at Texas A&M University conducted a serial review during which they asked each academic department to report its perception of the relevant current serials titles. In this article, the authors describe relationships among (1) departmental ratings and subscription costs, (2) the academic discipline and departmental ratings, and (3) the academic discipline and subscription costs. Of special interest was whether periodicals rated “essential” by the faculty tended to be more expensive than periodicals in other rating groups. Simple descriptive statistics are presented. Some of the findings indicate that science journals had the highest median prices while education journals had the lowest; the highest rated periodicals had the highest mean and median prices. Also, in an absolute sense, higher priced journals had larger absolute price increases, but the
relationship between cost and relative price increases was more complex (Marifran Bustion and John Eltinge, 1994).\textsuperscript{19}

Since the quality of a library is not in the number of materials that are available, but in the number of materials that are actually utilized, this is what a material acquisition operation should be concerned with. In support of this goal, the library management has been paying increased attention to the value of the usage data in support of a variety of managerial decisions. Although many approaches and research reports have been extensively used to help library material acquisitions, the knowledge contained in circulation databases has hardly ever been used to investigate in-depth how the acquired materials are being used. Thus, there may not be adequate indications on which the material acquisitions operation can rely when making decisions. This paper introduces a model based on knowledge discovery (KDBMLMA) that embeds a circulation statistics mechanism and an association rule discovery mechanism to help derive the utilization of library material categories. A practical application case is presented and managerial implications discussed in this research (Chien-Hsing Wu \textit{et al.}, 2004).\textsuperscript{20}

Donald Frank \textit{et al.} (2001)\textsuperscript{21} described that information consulting is essential to the success, lasting impact, and viability of academic libraries. Traditional liaison programs, while helpful, are too passive and lack impact. Topics such as the driving forces behind the need for information consulting, the implications of implementing a consulting program, and the elements of successful consulting are explored.
The early reports that appeared during and immediately after the 2003 war and subsequent civil disorder in Iraq provoked public and professional concern about the impact on libraries and archives services. However, many of the early reports were later proved to be unreliable, and subsequent reports correcting that information have been less well publicized. Moreover, the mass media have focused on a few well-known institutions, and paid little attention to the post-war reconstruction efforts. This paper aims to provide a more rounded and reliable picture, based on a critical reading of a wide range of official and unofficial media, and summarizes the scattered information in the public domain about the overall situation up to the end of 2004. A brief note of the main reconstruction programmes is followed by an outline of some of the contextual issues relating to the rehabilitation of Iraq's library and information services. An extended review of what has been reported about the impact on individual elements of the professional panorama in Iraq covers not only the National Library and Archives, but also the university libraries and significant special libraries, as well as noting the limited information available about college, school, and public libraries. The state of the main archival collections is outlined, and an appendix lists the minor collection and their reported condition. It concludes with an examination of the human resource issues. Finally, the paper discusses the problems that have arisen through the lack of quality information about events during the conflict and continuing civil disorder in Iraq, and some issues relating to current and future reconstruction efforts. The paper points to the need not only to repair damaged buildings,
replace looted equipment and make good the deficiencies in collections, but also to mobilize and modernize the indigenous professional workforce to implement the reconstruction (Ian Johnson, 2005).  

Library literature publishes hundreds of articles on information literacy, many emphasizing the importance of collaboration and faculty outreach. A systematic search of fifty-four non-library journals that publish pedagogical articles reveals that some librarians are reaching out to faculty in interdisciplinary publications. However, this method of information literacy outreach remains underutilized (Christy R. Stevens, 2007).

Survey works, carried out by 15 M.Sc. (Information Science) students of the School of Information Studies for Africa (SISA) in the course of their dissertation work, reveal some important facts related to information systems and services in the countries studied. This paper analyses the student dissertations in order to present an overview of the library and information systems and services available in seven eastern and southern African countries - Ethiopia, Kenya, Malawi, Sudan, Tanzania, Uganda and Zambia. It is noted that the state of library and information services needs to be improved in all respects; and there is a trend towards introduction of IT, albeit quite slow, in university, special and research, and national libraries and documentation centres. The condition of public, school and college libraries is very poor in all the countries concerned. Lack of a national policy on information systems and services in the countries concerned results in the inconsistent and insufficient growth of information services in different sectors. Major problems in the area
are: lack of resources, particularly foreign currencies, lack of awareness on the part of planners and policy makers, lack of trained manpower, lack of adequate servicing facilities for IT equipment, and the continuing political, social, and natural problems that prevail in most African countries (Chowdhury and Taye Tadesse, 1995).

In the winter of 1993/1994, the Pennsylvania State University (Penn State) Libraries began a project to test several of the emerging commercial document suppliers. The purpose was to evaluate their responses in terms of speed, efficiency, quality, and cost effectiveness. The testing was done in four science branch libraries at University Park. In each of the branches (Earth & Mineral Sciences, Engineering, Mathematics, and Physical Sciences) requests that were submitted for Interlibrary Loan (ILL) were reviewed. Those that qualified under the pilot project guidelines were sent to commercial suppliers of documents, instead of through the normal ILL work flow. Compiled data indicated that the cost of each item and the time taken to supply items were less than that required for ILL. The pilot project suggests that when integrated into ILL work flows, acquiring items through commercial document delivery suppliers would assist in making the process less costly and more efficient (Elaine Clement, 1996).

Many approaches to decision support for the academic library acquisition budget allocation have been proposed to diversely reflect the management requirements. Different from these methods that focus mainly on either statistical analysis or goal programming, this paper introduces a model
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(ABAMDM, acquisition budget allocation model via data mining) that addresses the use of descriptive knowledge discovered in the historical circulation data explicitly to support allocating library acquisition budget. The major concern in this study is that the budget allocation should be able to reflect a requirement that the more a department makes use of its acquired materials in the present academic year, the more it can get budget for the coming year. The primary output of the ABAMDM used to derive weights of acquisition budget allocation contains two parts. One is the descriptive knowledge via utilization concentration and the other is the suitability via utilization connection for departments concerned. An application to the library of Kun Shan University of Technology was described to demonstrate the introduced ABAMDM in practice (Kao et al, 2003).  

2.2 ICT and Libraries

The study found that general computer usage for information access was high because of the University's state-of-the art IT infrastructure. Usage of some internet resources was also very high, whilst the use of scholarly databases was quite low. The low patronage was attributed to inadequate information about the existence of these library resources. The study recommends, among others, the introduction of information competency across the curriculum and/or the introduction of a one-unit course to be taught at all levels and the provision of more PCs on campus.

Haneefa Mohamed (2007) studied the application of Information and Communication Technologies in special libraries in Kerala and found that
though the libraries had hardware, software, and communication facilities to some extent, ICT-based resources and services were not reaching the users to the expected extent. The ICT based resource used by the largest percentage of the users was the e-mail. Most of the libraries were hampered by the lack of funds, lack of infrastructure, and lack of skilled professionals to embark on automation of all library management activities and application of ICT.

Papin-Ramcharan et al. (2006)\textsuperscript{28} presented the open access publishing experience of researchers in a developing country and related issues of research and information communication technology [ICT]. They seemed to propose a method for selecting new items and what questions are going to be answered by an ICT.

Obioha Josephine's (2005)\textsuperscript{29} studies embarked upon to identify the roles ICT plays in information seeking and use amongst research officers in research institutes in Nigeria. The study examines awareness use, exposure to ICT, role of ICT And improvements on ICT tools among other things results shows that ICT plays an immense role in information sourcing, generation, processing storage/retrieval, also, it shows that for ICT to be used optimally and maximally

Fombad Madeline and Mohali Kgomotso (2005)\textsuperscript{30} reported the results of a study which aimed at establishing the perceptions by lawyers in law firms in Botswana of information and communication technology [ICT]. Interviews revealed that law firms are still at the early stages of adoption and use of ICT.
Other major factors were the lack of in-house expertise high cost of ICT consultants and the lack of interest and skills in ICT.

Kiskis Mindaugas and Petrauskas Rimantas (2004)\textsuperscript{31} discussed one of the practical problems of the information communication technology (ICT) use in the judiciary - classifying and categorization of legal information. This problem that plagues the judiciary in Lithuania is very important to solve in order to minimize the digital divider of the courts increase transparency of judicial decisions and increase infirmity judicial practice and interpretation of the law.

Kigongo \textit{et al.} (2004)\textsuperscript{32} examined the appropriateness of EASLIS curriculum to the professional practice in some fields of Uganda. It recommends that information and communication technology be enhanced in curriculum; library and ICT facilities be improved.

Sanayei and Jamshidian (2003)\textsuperscript{33} discussed the impact of IT on software export by using the experience of some developing countries such as India, that have expanded their investment on IT and information and communication technology (ICT).

De Aguiar (2001)\textsuperscript{34} analyzed the process of information technology transfer in the field of university and business interaction at the federal university of Faraiba Brazil, assesses the value given to internet and informal information communication channels between university staff and managers.

Cockburn Tom (2005)\textsuperscript{35} drew on community development literature around the potentials and use of ICT’s as a means of developing communities.
He highlighted those potentials but also investigated the obstructions that a children's online “community of interest” may confront.

Okiy (2005)\textsuperscript{36} reviewed the current state of information communication technologies (ICT) application for information provision in Nigerian university libraries and made suggestions to enable them take fuller advantage of ICT facilities to provide information more effectively to users. The growth of the internet, electronic mail, mobile phones and other modern information communication technologies are placing people under increasing stress in their lives. Presents five ways in which libraries can help to redress the balance and help the people to find respite from these stresses by providing a place of quiet and isolation from mobile phones by providing anxiety - free information by providing world wide web based public library information 24/7 and by providing a community meeting place (Long Saray, 2004).\textsuperscript{37}

Chandrshekara \textit{et al.} (2004)\textsuperscript{38} presented the current scenario in overcoming the digital divide. It emphasized the role of major institutions NGO's and some of the countries which were constantly working toward the solving the problem. This study benefited the students and faculty of IT information science.

Henderson \textit{et al.} (2004)\textsuperscript{39} compared the usage of a PN (People's Network) converted library to an original learning centre. It was found that a wide range of people from different age groups and backgrounds use the ICT facilities.
Lafond Deborah (2004)\textsuperscript{40} observed the marketing of technology in Africa and characterizes some of privileged dialogue on information communication technologies ICT as the exportation of ‘technology’ which the author contributes increased privatization and the sacrifice of support to public universities.

Kaddu Sarah (2003)\textsuperscript{41} observed that there was increasing recognition that ‘information is power’ and consequently it plays a vital role in development. The increasing use of information and communications Technologies (ICTs) has made possible new methods to deliver services through telecentres. He defined telecentres, reviews information communication technologies and gives an overview of selected telecentres in Uganda and their users. He concluded with discussing challenges of possible solutions.

Nassimbeni (1998)\textsuperscript{42} outlined the key features of the concept and using the application of information communication technologies as an important benchmark, explores the situation in developing countries including South Africa an important regional leader.

Stahl (1996)\textsuperscript{43} considered the relationship between librarians and library technology and concludes that librarians need to come in terms with information literacy all its forms adapt to new information architectures and embrace the new information communication technologies of the internet and worldwide web.
Broadbent Kieran (1990)\textsuperscript{44} suggested that modern information communication technologies are not different from any other new technology in the economic order. It is necessary to consider technical change in the social context; new technologies can then be more effective tools to access scientific knowledge.

There have been numerous changes in the way that libraries organize information and how users seek, gain access to, and obtain library materials. These changes have modified many traditional library services, introduced new jargon, and created new library uses. If students are to become self-sustaining and effective users of information sources and services, they need to understand various library uses. This article reports a case study designed to examine the extent to which college students agree in interpreting the term library use. The degree of variation in how these students interpret basic library activities is high. The findings suggest that the notion of the library as a space is better agreed upon than the notion of the library as a store or service. Since the study of library use is carried out in the context of rapidly changing information technology, this two-pronged article will first discuss five different shifts that characterize the transitional nature of today’s libraries; then the study of library use will be discussed, and possible conclusions will be drawn. The findings have wide implications for designing user-centered information access instructional programs (Zorana Ercegovac, 1997).\textsuperscript{45}

A survey of the faculty at the State University of New York (SUNY), College at Fredonia provided data for an investigation into the effect of faculty
work roles upon information gathering. Faculty roles of teaching, research, and service are the key components of academic work. The extent to which these roles influence the faculty member’s use of six categories of information sources forms the basis of this investigation. The findings indicate that there are discernible patterns in the faculty’s use of various sources of information and that one’s commitment to teaching, research, and service are factors that influence information gathering, although not always in the manner that had been predicted. Additional investigation of the research role reveals that the faculty member’s age, possession of a doctoral degree, and quality of the doctoral degree have a relationship with commitment to research, given the huge advances in computing expected in the next decade. Thus LIS professionals can look forward to the time when, assuming that the more mundane tasks are done by expert systems, they will be able to concentrate on the more interesting aspects of their work and spend more time with the public they serve (Richard Hart, 1998).46

Information literacy involves the location and access of information through retrieval systems, and many information retrieval systems are designed with specific capabilities to support these very skills. In some cases, system enhancements go beyond simple support and alleviate some of the searcher’s responsibilities by performing certain tasks for them. By comparing information retrieval functions to the Association of College and Research Libraries’ information literacy standards, this article investigates the extent of support that these enhanced systems can offer, and give librarians greater
insight into how these design enhancements could have an impact on information literacy instruction (Laura Saunders, 2008).47

Patterns of information use by doctoral students are studied for selected years in the pre-web (1990-1993) and post-web (2003-2006) time periods. Over 55,000 citations from dissertations in ten disciplines were analyzed. The results show that there was some increase in journal use in most of the disciplines in the post-web era, and that the use of monographs, dissertations, and technical reports declined over the period of the study (Thomas Conkling et al, 2010).48

Sam Ogunrombi (1991)49 summarized a survey conducted to discover the extent to which professional librarians in Nigerian university libraries have achieved academic/faculty status. The survey revealed that: (1) almost all professional librarians (16 or 80%) in Nigerian universities have full faculty status, coupled with mandatory research and publication for promotion, in 17 (85%) of the libraries; (2) publications in subject-fields and in library/information science carry equal ratings; and (3) academic librarians in Nigeria are entitled to the same rights, privileges and responsibilities as their teaching counterparts. This paper urges the Nigerian Library Association and the Committee of University Librarians to set standards for the attainment of faculty/academic status for professional librarians in Nigerian universities and colleges.

Mallinath Kumbar and Shiddayya Shirur (2003)50 in their study on the internet and its use at the S. J. College of Engineering (SJCE) covered the
demographic features of the study population, purpose of internet use, most used internet services, problems faced by the users while using the internet services, satisfaction level of the users, opinion about facilities available in SJCE and finally its highlights the suggestions made by the users for the farther improvements of internet services at SJCE.

A similar study related to the users in an engineering college was undertaken by Amritpal Kaur and Rajeev Manhas (2008). In their article they report a survey on the use of internet services and resources in the engineering colleges Punjab and Haryana states of India. Data were collected by using a questionnaire and follow-up interviews with internet users, i.e. teachers and students of engineering colleges. The response rate was 80.0 per cent. Results showed that all the respondents make frequent use of the internet because they have access either at college or at home. The survey revealed that the majority of the respondents, i.e. 65.6 per cent, access the internet form college or their workplace. More than 75 per cent of the respondents use the internet services mainly for educational and research purposes. Google and Yahoo search engines are found to be more widely used than other search engines. More than 70 per cent of the respondents feel that the internet is useful, informative, easy to use, inexpensive and time saving.

Earlier in 2005, Rajeev Kumar and Amritpal Kaukr carried out a study about the usage of internet and related issues among the teachers and students of engineering colleges of Punjab, alone while their later study in 2008 covers Punjab and Haryana. They found that the internet has become a
vital instrument for teaching, research and learning. In order to make the internet more beneficial, the library staff should organize and classify the information on website in such a way that the users are able to find easily the information they need for their studies and research purposes. The library services supplemented by internet services can prove a great boon to the users in getting the right information at the right time.

Maitrayee Ghosh (2009)\textsuperscript{53} included a brief profile of selected engineering libraries in Maharashtra state of India and discusses salient issues related to strategic cooperation and consortia, with particular focus on the current situation. It examines the structural, financial and technical factors that have compelled the academic libraries to think about the formation of statewide consortia. The author surveyed forty-nine libraries to get an idea about the current status and explored the possibilities of forming regional consortia with a mission to enhance access to information and knowledge through cooperation for benefit of the engineering communities. The focus is on librarians’ perceptions/opinion on the formation of state level consortia; ICT infrastructure; users’ needs; collection development policies and the services provided by engineering libraries to the community.

David Rine and Peter Lykos (1984)\textsuperscript{54} focused on four areas of pre-college computer education. The first area deals with goals, foundations and requirements for pre-college computer curriculum that can be taught to pre-service computer teachers in a college or university program, including issues and policies. The second area deals with curriculum content that covers
computer literacy and computer science. The third area deals with three levels of any pre-college computer curriculum: 1) policies, issues, requirements and instructional needs; 2) standards, models and instructional systems; 3) implementations, hardware, software, producers and users. And the fourth area deals with considerations of the various pre-college age groups, which can be divided in many ways: kindergarten, elementary grade levels, junior high, middle school, intermediate, senior high school and so forth.

Gabrieline Onyedikachi Amagada (2006)\textsuperscript{55} has discussed the need for training and methods involved in information technology in the government-owned oil industries. It also explains the makes modest recommendations that, if implemented, it could benefit the librarians in the Nigerian oil industry from improved training, which will in turn benefit not only their users, but also the industry as a whole.

Sandie King \textit{et al.} (2006)\textsuperscript{56} have explained staff perceptions of the UK-wide information and communications technology (ICT) training conducted under the People’s Network programme for public library staff. The paper suggests that ICT training for library staff should be built around problem solving and troubleshooting, rather than generic skills, in order to match the kinds of queries encountered in the front line of libraries.

Anwarul Islam and Anisur Rahman (2006)\textsuperscript{57} have discussed the present status of information and communication technology (ICT) in Bangladesh and represented the scenario of growth and development of ICT in relation to the evolution of the information explosion with the aim of providing better library
and information services in Bangladesh. There is also an immediate need to make a dedicated decision to ensure an appropriate electronic-communication environment in the country to facilitate the use of ICT to disseminate information, building communication, marketing products and publications, and earn revenue through e-Commerce.

Borgman et al. (2005)\textsuperscript{58} conducted a study on “Comparing faculty information seeking in teaching and research: implications for the design of digital libraries”. ADEPT is a 5-year project whose goals are to develop, deploy, and evaluate inquiry learning capabilities for the Alexandria Digital Library, an extant digital library of primary sources in geography. We interviewed nine geography faculty members who teach undergraduate courses about their information seeking for research and teaching and their use of information resources in teaching. These data were supplemented by interviews with four faculty members from another ADEPT study about the nature of knowledge in geography. Among our key findings are that geography faculty are more likely to encounter useful teaching resources while seeking research resources than vice versa, although the influence goes in both directions. Their greatest information needs are for research data, maps, and images. They desire better searching by concept or theme, in addition to searching by location and place name. They make extensive use of their own research resources in their teaching. Among the implications for functionality and architecture of geographic digital libraries for educational use are that personal digital libraries are essential, because individual faculty members
have personalized approaches to selecting, collecting, and organizing teaching resources. Digital library services for research and teaching should include the ability to import content from common office software and to store content in standard formats that can be exported to other applications. Digital library services can facilitate sharing among faculty but cannot overcome barriers such as intellectual property rights, access to proprietary research data, or the desire of individuals to maintain control over their own resources. Faculty use of primary and secondary resources needs to be better understood if we are to design successful digital libraries for research and teaching.

Herman (2001)\(^{59}\) in his second survey on End-users in academia: meeting the information needs of university researchers in an electronic age. Part 2: Innovative information-accessing opportunities and the researcher: user acceptance of IT-based information resources in academia. Which examines the transition to the electronic information era in academia? Seeks to establish from the published literature to what extent university researchers have accepted, and adapted to, the changes wrought in information activity by seemingly endless technological developments. Within the wider context of the impact of the changing information environment on each of the three clearly discernible components of academic research (the creation of knowledge and standards, the preservation of information, and the communication of knowledge and information to others), disciplinary-rooted differences in the conduct of research and their influence on information needs are identified, and the resulting inter- and intra-individual variations in
researchers’ information seeking behaviour are explored. Reviewing a large number of studies investigating the integration of electronic media into academic work, an attempt is made to paint the picture of academics’ progressively harnessing the new technologies to scholarly information gathering endeavors, with the expressed hope of affording some insight into the directions and basic trends characterizing the information activity of university faculty in an increasingly electronic environment.

Hallmark (1995)\textsuperscript{60} opined that during the late 1980’s and early 1990’s many new information technologies arose that would revolutionize the ways in which people searched for and gathered information. More and more publications began to profile the impact that new electronic resources (such as online database systems, CD-ROMs, etc.) had on different populations. Surprisingly, only a few articles were found in the review of literature that specifically considered the relationship between scientists and these electronic resources, especially Internet or Web based resources. In 1995, Julie Hallmark published an article on the information-seeking behaviors of scientists and the effects of technology on their behavior. In the article she explores the various applications of the Internet for scientists as well as the problems and issues associated with this innovation. She quotes one scientist as saying: “It’s (the Internet) the most fundamental shift since Gutenberg. The Internet is basically a space and time destroyer. It shrinks distance and time to zero. It’s as if all the world’s scientists were in one room, available at one computer. Needless to say this is having a profound impact on the way science is done” -
astrophysicist, Larry Starr. Despite that quote along with some other positive ones, a major problem she reveals is that many scientists were actually quite slow to adopt this new technology. As evidence of this she cites S.R. Heller’s 1994 book, Further Advances in Chemical Information, which indicated, “the routine use of computers in support of research and production in a chemistry laboratory or office, other than for word processing, spreadsheets, and literature searching, is less than 25% of the potential users”

Perry William (1990) reports results of a survey of 675 CD-ROM users, at state university of New York at Albany Libraries, obtaining data from both questionnaires and actual search strategies. The Primary aim was to investigate the effect of prior user training or assistance on CD-ROM search Strategy. A statistically significant but weak relationship was found between prior training and level of search skill. Other measures such as user status, department affiliation or major, age, sex, and number of previous CD-ROM uses were compared to search skill. Only user status and department affiliation or major were significantly correlated to search skill. The study concluded that additional research is needed on the effectiveness of various types of CD-ROM training.

2.3 Internet and Digital Libraries

Al-Ansari (2006) conducted a study of internet use by the faculty members of Kuwait University and found that, majority has been using the computer and internet for more than five years. They use the internet mostly for, and give importance to, e-mail search engines, and WWW resources
mainly for communication, research, and publication. It has helped them to save time and gather updated information. Slow speed, lack of time, and lack of access from home are the major problems. Most of them are interested in improving the internet use skills through formal training.

Anunobi (2006) conducted a survey in the Federal University of Technology Owerri (FUTO), Nigeria, with a view to identifying the rate and purpose of internet use by students in order to be well positioned to provide effective internet services to them. It was a questionnaire based sampling, covering 1200 students in their hostels out of which 67.66 per cent responded. The results revealed that a majority of the students in the University used the internet for academic purposes. Students in the management and agricultural sciences used the internet more than those of engineering and sciences. The distance of the Internet center to the students’ residence determines the time spent and the frequency of the visit to the center.

Witten et al. (2001) described in his article “Greenstone: A Comprehensive Open-Source Digital Library Software System”. The Greenstone digital library software is a comprehensive system for building and distributing digital library collections. It provides a new way of organizing information and publishing it on the Internet. This paper describes how digital library collections can be created and customized with the new Greenstone Librarian Interface. Its basic features allow users to add documents and metadata to collections, create new collections whose structure mirrors existing ones, and build collections and put’ them in place so for users to view.
More advanced users can design and customize new collection structures. At the most advanced level, the Librarian Interface gives expert users interactive access to the full power of Greenstone, which could formerly be tapped only by running Perl scripts manually.\textsuperscript{65}

Moreover, they are easily maintainable and can be augmented and rebuilt entirely automatically. The system is extensible: software ‘plugins’ accommodate different document and metadata types. Greenstone incorporates an interface that makes it easy for people to create their own library collections. Collections may be built and served locally from the user’s own Web server, or (given appropriate permissions) remotely on a shared digital library host. End users can easily build new collections styled after existing ones from material on the Web or from their local files (or both), and collections can be updated and new ones brought online at any time.

David Bainbridge \textit{et al.} (2006)\textsuperscript{66} described in his work ‘Visual collaging of Music in a Digital Library’ This article explores the role visual browsing can play within a digital music library. The context to the work is provided through a review of related techniques drawn from the fields of digital libraries and human computer interaction. Implemented within the open source digital library toolkit Greenstone, a prototype system is described that combines images located through textual metadata with a visualization technique known as collaging to provide a leisurely, undirected interaction with a music collection. Emphasis in the article is given to the augmentations of the basic technique to work in the musical domain.
Qian’s (2005) research on ‘The Development of Digital Libraries in China and the Shaping of Digital Librarians’ focused on the need for appropriately trained librarians of the next generation, the Digital Librarians, with particular emphasis on China. The paper first analyses the definition and features of the digital library, and is followed by an introduction to digital libraries developing in China. Work modes and quality composition of digital librarians are then analyzed and discussed.

Digital libraries emerging in the information age represent an inevitable trend for library development. A digital library contains a vast amount of digital information resources in multiple media. It may provide readers with diversified information services using digital and network technologies. In addition to certain hardware and software availabilities, the evolving digital library requires appropriately trained librarians of the next generation. It provides recommendations and measures on how China can develop further its digital librarians. This article expresses the importance of knowledge management in making the digital library.

Ram Kumar et al. (2005) expressed the experiences gained during the migration of library data from one library management system to another. The step by step approach taken to migrate the existing library data to the new software. The paper also discussed the peculiarities of the source software from which data were converted and the practical approach adopted in solving the problems faced during the conversion. During the process of the conversion of the library data form one software to another many lessons have
been learned. These lessons and experiences can be useful for us in the future to import/export the data from other software such as MNISIS, CDS/ISIS, TECHLIB, PLUS, etc., being used in Indian libraries. Moreover, the switch over from one software to another is also useful for the libraries as the existing data are refined during the conversion process.

David Bainbridge (2003) described in his article “Assembling and enriching digital library collections” that the people who create digital libraries need to gather together the raw material, add metadata as necessary, and design and build new collections. This paper sets out the requirements for these tasks and describes a new tool that supports them interactively, making it easy for users to create their own collections from electronic files of all types. The process involves selecting documents for inclusion, coming up with a suitable metadata set, assigning metadata to each document or group of documents, designing the form of the collection in terms of document formats, searchable indexes, and browsing facilities, building the necessary indexes and data structures, and putting the collection in place for others to use. Moreover, different situations require different workflows, and the system must be flexible enough to cope with these demands. Although the tool is specific to the Greenstone digital library software, the underlying ideas should prove useful in more general contexts.

William H. Mischo (2005) described in his article “Digital Libraries: Challenges and Influential Work” As information professionals, we live in very interesting times. Effective search and discovery over open and hidden
digital resources on the Internet remains a problematic and challenging task. The difficulties are exacerbated by today’s greatly distributed scholarly information landscape. This distributed information environment is populated by silos of: full-text repositories maintained by commercial and professional society publishers; preprint servers and Open Archive Initiative (OAI) provider sites; specialized Abstracting and Indexing (A & I) services; publisher and vendor vertical portals; local, regional, and national online catalogs; Web search and Meta search engines; local e-resource registries and digital content databases; campus institutional repository systems; and learning management systems. For years, information providers have focused on developing mechanisms to transform the myriad distributed digital collections into true “digital libraries” with the essential services that are required to make these digital libraries useful to and productive for users.

As Lynch had pointed out, there is a huge difference between providing access to discrete sets of digital collections and providing digital library services (Lynch, 2002). To address these concerns, information providers have designed enhanced gateway and navigation services on the interface side and also introduced federation mechanisms to assist users through the distributed, heterogeneous information environment. The mantra has been: aggregate, virtually collocate, and federate. The goal of seamless federation across distributed, heterogeneous resources remains the holy grail of digital library work.
Sree Kumar and Sunitha described in their article “Essential Strategies and skill sets towards creating digital libraries using open source software” that today’s libraries are faced with the challenges of integrating the traditional and the emerging information paradigm. The current information environment unequivocally prompts libraries to leverage on the latest digital technologies towards building practical digital libraries and in setting up dynamic electronic information systems. Digital libraries do enable the seamless integration of the scholarly electronic information, help in creating and maintaining local digital content, and strengthen the mechanisms and the capacity of the library’s information systems and services. They increase the portability, efficiency of access, flexibility, availability and preservation of digital objects. Libraries today face the unprecedented challenge of managing an array of content spread across a host of publication types and in a rapidly proliferating mix of formats. There are a host of problems the enthusiastic library fraternity face in their digital library development endeavors starting from the copyright issues, technology complexities, infrastructure threats, diverse publication types, multiplicity of digital object formats and above all the publishers’ stringent policies and monopoly. It is imperative on the part of the information professional to have a componentized and a multi-system approach to knowledge technologies and information management. Seamless aggregation and meticulous integration of diverse data streams is the most appropriate strategy to be adopted and applied. Digital Libraries of the day need strong foundations of the RDF vision supplemented with descriptive metadata.
standards such as Dublin Core or METS. They also need the strength of XML encoding schemas, related DTDs and XSL transformations between the diverse data streams and the HTML front-end. Leading edge digital object management systems and digital library technologies founded on field proven interoperability frameworks, complimented with OAI-PMH protocol backing, is a pre-requisite for today’s digital libraries. The study emphasized the need for deploying interoperable open source digital library software’s and opens digital library standards and technologies to be experimented, explored and exploited by the Indian libraries extensively. It illustrates the method of developing a Digital Library using the Greenstone Open Source DL software, which include digitization and other related workflow operations, content development and management, designing and creating standard metadata sets to describe digital objects and encoding it in standard markup formats. It also highlights the importance and the necessary strategies that the libraries should adopt in building up essential skill sets towards developing world class digital libraries.

Amritpal Kaur and Rajeev Manhas (2008) reported a survey on the use of Internet services and resources in the engineering colleges of Punjab and Haryana states of India. Data were collected by using a questionnaire and follow-up interviews with Internet users, i.e. teachers and students of engineering colleges. The response rate was 80.8%. Results showed that all the respondents make frequent use of the Internet because they have access either at college or at home. The survey revealed that the majority of the
respondents, i.e. 65.6%, access the Internet from college or their workplace. More than 75% of the respondents use the Internet services mainly for educational and research purposes. Google and Yahoo search engines are found to be more widely used than other search engines. More than 70% of the respondents feel that the Internet is useful, informative, easy to use, inexpensive and time saving.

The results of two surveys focusing on library instruction for biology classes in Ohio academic institutions are compared. The first survey was directed to instruction for librarians. The second survey was a follow-up sent to biology faculty to determine what information biology faculty presented to their classes when they provided their own library instruction. The surveys showed that both groups focused on the same bibliographic databases, the use of the World Wide Web (WWW), and the differences between magazines and journals. Biology faculty, however, did not usually present information to help students navigate in the library. Suggestions are made that can help librarians address this need (Robin Sinn, 2000).  

Regli and Cicirello (2000) described their initial efforts to deploy a digital library to support computer-aided collaborative design. At present, this experiment tested, The Engineering Design Knowledge Repository, is an effort to collect and archive public domain engineering data for use by researchers and engineering professionals. We envision this effort expanding to facilitate collaboration and process archival for distributed design and manufacturing teams. CAD knowledge-bases are vital to engineers, who
search through vast amounts of corporate legacy data and navigate on-line catalogs to retrieve precisely the right components for assembly into new products. This research attempts to begin addressing the critical need for improved computational methods for reasoning about complex geometric and engineering information. In particular, we focus on archival and reuse of design and manufacturing data for mechatronic systems. This study presents, a description of the research problems, an overview of the initial architecture of the tested and a description of some of our preliminary results on conceptual design and design retrieval.

Clare Davies (1997) reviewed the literature on. full-text electronic library (and digital library) research and development, to discuss the organizational factors which can impact on electronic library development. Such factors, it is argued, affect not only the overall success of an electronic library project within a higher education institution, but also and more specifically the usability of the final system for its staff and student end-users. Usability is taken to involve more than merely the surface user interface of a system. Relevant statements and findings in the literature are set within the context of an organizational framework, which emphasizes the influences of each stakeholder group on the end-users’ experience of the system. It is concluded that system design may be improved by further research into the real behaviour of students and academics, coupled with a broader view of the organizational context in which development takes place.
Karen Calhoun (2002) discussed the design, implementation and evolution of the Cornell University Library Gateway using the case analysis method. It diagnoses the Gateway within the conceptual framework of definitions and best practices associated with information gateways, portals, and emerging digital library management systems, in particular the product EN Compass.

Full realization of the digital library concept includes the potential of infinite, integrated growth in materials, genres, and formats. The universal parameters of space (geographical location) and time can be used to augment conventional item description and provide general means to integrate disparate materials, subject matter, and non-textual formats (Leta Hunt and Philip Ethington, 1997).

Guided tissue regeneration is gaining importance in the field of orthopaedic tissue engineering as need and technology permit the development of site-specific engineering approaches. Computer Aided Design (CAD) and Finite Element Analysis (FEA) hybridized with manufacturing techniques such as Solid Freeform Fabrication (SFF), is hypothesized to allow for virtual design, characterization, and production of scaffolds optimized for tissue replacement. However, a design scope this broad is not often realized due to limitations in preparing scaffolds both for biological functionality and mechanical longevity. To aid scientists in the fabrication of a successful scaffold, we propose characterization and documentation of a library of micro-architectures, capable of being seamlessly merged according to the mechanical
properties (stiffness, strength), flow perfusion characteristics, and porosity, determined by the scientist based on application and anatomic location. The methodology is discussed in the sphere of bone regeneration, and examples of catalogued shapes are presented. Similar principles may apply for other organs as well (Wettergreen et al, 2005).  

Bukky Olufemi Omotayo (2006) surveyed the use of Internet among undergraduate students at the Obafemi Awolowo University, Ile-Ife, Nigeria. A total of 1000 questionnaires were distributed using a stratified sampling method to select the respondents. Ten faculties were covered. A total of 664 questionnaires were returned and all were usable. The findings revealed a high percentage use of the Internet. The access point for them is cyber cafes. The university library though linked to the Internet is yet to provide access to students. Respondents pay for the access time through their pocket money for food, books and assistance from friends. Their use of the Internet has not affected their use of the library. Some problems they face in their use of the Internet include slowness of the server and payment for the access time. The study recommends that the university should provide access points for students. The university library also should continue to aim at ensuring that it gets enough funds from the government and sponsors to be able to provide access points in the library for use by students and include the use of Internet in its library instruction course.

A digital library that effectively supports scholarly users must address the behavior and activities of users engaged in research. Using focus groups,
semi-structured interviews, and questionnaires, this study concludes that scholars will benefit from adaptive, flexible user interfaces that enable easy navigation of a complex information landscape (Sandra Payette and Oya Rieger, 1998).81

Patricia Fravel Vander Meer (2000)82 explored creative ways libraries are using the web for instruction and to support faculty use of the web for teaching. A review of the literature, examination of web pages at 100 academic institutions, and correspondence with over 50 library user instruction coordinators were conducted as part of the author’s sabbatical project. A variety of web-based instruction tools are highlighted. Important issues related to web-based instruction including identifying user needs, planning, faculty/librarian collaboration, as well as marketing and evaluation of web-related instruction are included in the discussion.

Hungyune Chao (2002)83 developed and tested an instrument useful for evaluating the quality of academic libraries on the World Wide Web (Libweb). By consulting authoritative criteria used for traditional print resources and Internet/Web resources, a set of 68 essential indicators was generated and later reorganized and reduced to 16 criteria through factor analysis. After a survey of library experts, the instrument’s reliability was verified by analysis of variance. Furthermore, a regression model considering both the respondents’ demographics and the quality criteria was applied to identify 11 significant factors, which were later reduced to eight factors. These eight factors represent the most salient and non-redundant criteria. Two instrument forms are
suggested for prospective users to evaluate academic Libweb quality and to construct and maintain a good sit.

2.4 **Web-based Information Services**

Western Libraries provide the online information access both within and outside campus, while this facility is yet to be popularly introduced in India. The remote “usage of networked electronic services is for different purposes more than in-library use of networked electronic resources. The users are also demographically different. Library patrons using electronic resources for sponsored research are likely to be on campus, but not the library. Further, funded researchers in particular are heavy remote users of networked electronic resources. It is likely that the demographics of the in-person user of all library resources (not just networked electronic resources) and the remote user of all library resource differ. It is also likely that the purposes of the in-person user and the remote user differ for all services.

Joe Jaros (1990)\textsuperscript{84} recognized that remote use of the online catalogue was problematic. In particular, he realized that users lacked the search expertise necessary to find the information they were seeking, and were often unable to consult a librarian for assistance. In response to these concerns, print guides were developed to teach users the technical aspects of the system, as well as search techniques. Although the guides were designed specifically to meet the needs of remote users, the analysis of these needs was based largely on anecdotal evidence and the perceived characteristics of remote searchers rather than an objective study of user needs.
Crawford John (2004)\textsuperscript{85} conducted a study to estimate off campus use of EIS. Vicente et al. (2004)\textsuperscript{86} studied the use of electronic information services by staff at Glasgow Caledonian University, Glasgow, UK. They have reported that a majority of information searching is done through EIS is a time-saving strategy, and pass woided databases are valued above the internet. The EIS were mainly accessed from work (56\%), but also from home (34 per cent). From this review, it is clear that while libraries procure expensive resources, these may not be optimally used due to lack of awareness, poor search skills, inadequacy of user training and lack of time etc. but the usage differs depending upon the librarian’s active involvement and user’s computer literacy skills.

A searchable web-based directory of tool kits to support the evaluation of information communication technologies in the higher education briefly considers those tools and toolkits included in the database relating to performance measure and quality-assessment (Banwell Linda and Haswell Gayle, 2003).\textsuperscript{87}

Transaction logs of user activity on an academic library website were analyzed to determine general usage patterns on the website. This paper reports on insights gained from the analysis, and identifies and discusses issues relating to content access, interface design and general functionality of the website (Stephen Asunkaefal., 2009).\textsuperscript{88}

Li-Shan Chen (2008)\textsuperscript{89} combined swarm intelligence and Web Services to transform a conventional library system into an intelligent library system
with high integrity, usability, correctness, and reliability software for readers. We select 300 readers to test this intelligent system and software, and compare it with a conventional library system. It is revealed that 64 per cent of the readers are dissatisfied with the conventional library system, and 93 per cent of the readers are satisfied with the intelligent library system when using personal digital assistants. The software integrity satisfaction was 99.99 per cent; usability satisfaction 93 per cent; correctness 95 per cent; and reliability 95 per cent.

2.5 Library User Study

A widely publicized study of library use at the University of Pittsburgh by Professor Allen Kent et al. has generated considerable controversy at Pitt and nationally. The Kent Study (KS) reports that the libraries in particular and research libraries in general are spending too much money on books and periodicals which are little or never used. This assertion, if correct, has important policy implications.

Consequently, the Pitt faculty, administration and librarians have repeatedly urged the Senate Library Committee (SLC) to undertake an evaluation of KS. The SLC accepted this charge and is reporting here on the substance of its findings. The SLC criticizes KS on numerous matters, in particular, its structure in text and footnotes, which makes careful investigation and reporting on it a difficult matter, and its experimental design, execution, and manipulation of data, in terms of holdings, use and costs. The SLC reports that KS consistently overestimates the number of books,
monographs and journals available for use and consistently underestimates their usage. Accordingly, the SLC concludes that KS fails to support the validity of its root hypotheses that “much of the material purchased for research libraries” is “little or never used” and that when costs are assigned to uses, the costs of use are “unexpectedly high” (Casimir Borkowski and Murdo MacLeod, 1979).90

The electronic information environment facilitates enhancement of the speed of service, number of users served, and the quantity and exhaustiveness of information provided. The way in which the people search information to support research, teaching and creative activities is changing as new technologies and information delivery systems emerge. The present paper summarizes the results of 101 user studies conducted in the electronic environment (Rekha Rani Varghese, 2008).91

Wanda Dole and Sherry Chang (1996)92 described surveys and analyses conducted in 1991-1993 to determine the demand for journals by users of the libraries of the State University of New York at Stony Brook. It also describes the use of the information gathered by these surveys in a journal cancellation project.
Chapter II

Review of Related Literature

ENDNOTES


Chowdhury, G.G. and Tays T. Tadesse. Review of SISA student dissertations on library and information systems and services in eastern and Southern Africa. *The
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Review of Related Literature


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Chapter II

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Sree Kumar, M. G. and Sunitha, T. ‘Essential Strategies and skill sets towards creating digital libraries using open source software’. Center for Development of
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Review of Related Literature

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