CHAPTER - II

REVIEW OF LITERATURE
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2.0 Introduction

In this chapter an attempt has been made to provide a comprehensive review of related literature on the problem of research. For this purpose, a retrospective search of literature was made using Library and Information Science Abstracts, LISTA, Emerald Database, EBSCO online journals and relevant abstracts were identified. Attempts were made to trace and collect all the original research papers and relevant documents. The research literature pertaining to Effectiveness and its application in library and information centers has been organized on various facets such as: Concept of Library Effectiveness, its applications, models, determinants such as user satisfaction on resources and services, library’s performance, library collection, effectiveness of digital library and websites.

2.1 Concept of Effectiveness of Library

Fabunmi (2004) describes library effectiveness as including information customized to meet individual needs, stating that effective library systems are timely in delivery, meet their specific needs, are easy to understand/use, and are delivered by courteous and knowledgeable staff. Olson (1974) conducted a study on improving the effectiveness of library and information systems. He described the concept of effectiveness, demonstrating the characteristics of effective library systems. He outlined alternative methods of approaching the problem of transforming existing library services, proposing specific projects for diagnosis and improvement. Du and Rosemary (1980) found that the concept of library effectiveness funds its roots in systems theory. This profouach explicitly recognizes the existence of multiple criteria by which the effectiveness of a given library may be judged and the need for a new kind of model to conceptualize the components of the effective library better. One solution that minimizes many difficulties in viewing effectiveness criteria simultaneously is to view effectiveness as a process of converting input to output rather than some end result. Sell (1980) found that the research undertaken to broaden the theoretical base on which effectiveness of library services can be determined to translate findings into operational terms and to test operationally a system of assessing and monitoring effectiveness on the basis of the findings. The methodology on a
library user questionnaire in which the users were asked to rate the relative importance, level of user satisfaction, user benefit and effectiveness of each library service.

2.2 Effectiveness of Library Resources and Services in Different types of Libraries

2.2.1 Agricultural Research Institutes

Ezeala (2009) has carried out analysis of effectiveness of agricultural research institute libraries. 340 researchers from all the 14 agricultural research institutes in Nigeria. The response rate was 73.5%. The research objective was to assess the effectiveness of agricultural research institute libraries. The study revealed that library resources and services are inadequate, largely due to underfunding by parent institutions.

Majid, Anwar and Eisenschitz (2001) investigated those factors that contribute positively in shaping users’ perception of library effectiveness. A questionnaire based survey of five major agricultural libraries in Malaysia. It was found that the adequacy of collections, services and facilities were closely linked to the perceptions of library effectiveness. Certain other factors contribution positively to the perception of library effectiveness were the adequacy and effectiveness of library promotion, involvement of users in the selection of library materials, convenient library location, participation in users education programs and availability of assistance from using library resources and facilities and subject background of library professionals. The paper suggests that for any reliable library effectiveness study, all factors associated with users satisfaction should be investigated together.

Majid (1966) interaction between scientists and information professionals is essential for effectively meeting their information needs. Beside information handling skills, subject knowledge could be an asset for agricultural librarians to effectively communicate and meet the information needs of agricultural scientists.

2.2.2 Academic Libraries

Melo and Cesaltina (2008) conducted research on improve the quality of services in Portuguese academic libraries. The article describes on ongoing project to
assess the performance of library services. The study has three main steps: (1) selection of criteria to be evaluated and selection of their corresponding performance indicators (2) data collection and analysis (3) identification of best practices. The selection of the criteria to be evaluated is based on a mixed model combining the Common Assessment Framework and the Balanced Scorecard. The associated performance indicators are in accordance with International Standards ISO 1162:1998 and ISO 2789:2006

Charles (2009) has discussed the improvement of user experience in academic libraries. The implications of automation on the role of librarians and library staff are discussed. The success of libraries is measured in terms of their inputs, the activities they support and their outputs, such as circulation transactions and reference questions answered.

Revill (1988) reviewed the book availability as a performance measure and used Kantoor’s model in his library and made contributions of the practical experience at liverpool. He found high level of availability. User failures were largely due to incorrect classification numbers and failure to locate oversize and reference materials. He suggested four steps: (1) has the library acquired the desired title?, (2) if acquired, is it in circulation? (3) if not in circulation, is it available on the shelf? and (4) if available on the shelf, can the user retrieve it successfully?. He used branching technique; the proportions of searches that overcome each of these obstacles represent the probability of success for a category.

2.2.2.1 University Libraries

Shao and Scherlen (2011) has conducted three case studies and assessed the attitudes and perceptions of academic librarians at three university libraries in China regarding library services for international students and scholars. Their study directs particular focus on librarians at Shaanxi Normal University in Xi’an, Fudan University in Shanghai, and Wuhan University of Technology, China, and follows logically upon a study conducted in 2008 that explored the perceptions of international students at two Chinese universities regarding the effectiveness of library services and collections for their research needs. The results support the assumption that academic librarians in China are strongly interested in
improving services for international students and scholars while continuing to face challenges and trying to find ways to fulfill the information needs of international students and scholars.

Khan (2012) reported a relationship between the level of user perceptions of satisfaction with library collections, organization, and facilities as well as traditional and IT enabled services. A questionnaire was administered to the faculty members, research scholars and students of the Aligarh Muslim University (AMU), Banaras Hindu University (BHU), Allahabad University (ALU) and Baba Bhim Rao Ambedkar (BBRAU). Overall respondents indicated that library collections are adequate. In the case of newly centralized university libraries, users were dissatisfied with library collections, particularly at BBRAU, though they were satisfied with the existing infrastructure. Overall satisfaction levels of users at old centralized universities are good.

Willemse (1987) conducted a study to measure effectiveness for a university library-an empirical approach on University of South Africa. Library to realize its ideal of providing the best library service possible, it has been necessary to identify a measure against which its performance can be assessed. After reconsideration of the statement of aims and objectives, a number of objective measures have been developed, primarily to determine the efficiency of the library's document delivery service. The results are positive, namely, a more meaningful form of reporting and objective-oriented planning, both of which contribute to bringing the service in line with the users' needs. The system will be further developed and refined in future.

2.2.3 Public Libraries

Cullen and Calvert (1993) investigated what key constituencies in New Zealand public libraries thought an effective library should be. They gave a list of 95 possible indicators of library effectiveness to library users, librarians and local library body councilors. The most important indicators for an effective library were judged to be helpfulness of staff and competence of management. However two other items that ranked in the top 20 for all three groups were “Extent of community awareness of library services” and “Match of library services to community needs.” This shows that
the role of the public library in its local community was valued highly by the respondents in the New Zealand study.

Carlin and Pemberton (1979) conducted a study to measure of public library effectiveness which eliminates weaker elements of previous research and builds on stronger studies. The method, tentatively called 'Statewide Evaluation of Public Library Reference Service' (SEPLRS) is a means of testing and evaluating reference effectiveness. It is to be undertaken by state libraries with public library cooperation in each state, and its primary function is that of encouraging the achievement and maintenance of the highest level of quality in public library reference service. A pilot study is to be carried out using SEPLRS.

Childers and Van House (1989) has carried out an analysis of surveying of 7 national different public library constituent groups and their perceptions of what indicates the effectiveness of a public library. The constituent groups included library managers, library service staff, users, friends, trustees, local officials, and community leaders. On a list of 61 items they rated the degree to which each helped describe a library. Findings indicated that the several constituent groups were more similar than dissimilar in their preferences.

Seary (1996) conducted research on the measured the quality of public library services with a view to improve it by using questionnaire method by analyzing patron perceptions about library services. This model presents a method for quantifying and categorizing patrons’ comments from a standard questionnaire in such a way that the results are organized into seven principal service determinants. Theses service determinants are reliability, responsiveness, assurance, access, communications, security and tangibles. Twelve types of surveys were used to measure and evaluate users, services and materials and conducted during 1968/1969 at Columbia University Libraries and later evaluated (Mount and Fasana, 1972).

Lu (2010) conducted a study to assessing public library effectiveness conducted a questionnaire survey at Taipei municipal library in Taiwan to investigate the features used by librarians and users to evaluate public libraries. The results indicate that: there are significant differences between librarians and users views on the value attached to such criteria as statistics, access to materials and staff service,
from the viewpoint of librarians and users, the least preferred dimensions are public relations and traditional statistics, users library habits show a positive correlation with their preferences for some dimensions, among the 5 demographic variables, only age affects librarians preferences for some dimensions and the analysis of correlations among the 5 demographic variables shows sex, age and occupational groups have dissimilar preferences for some dimensions. He proposed ways to pinpoint possible improvements for library staff on the basis of the findings of this study.

Van House (1990) conducted study to investigate the public library effectiveness and to develop a methodology that could be transferred to other types of libraries and possibly other kinds of organizations. They reported on the dimensions of public library effectiveness revealed by libraries performance as assessed by the librarians working in each library. Librarians in a national sample of 84 US public libraries were surveyed and asked to rate their library's performance on each of 61 indicators of public library effectiveness. Respondents rated their libraries as performing best on services and least well on items related to community relations and staff size. The factors analysis identified 12 dimensions of performance.

2.2.4 Hospital Libraries

Beckman (1987) discusses the information need of the hospital library user. Identifies 7 variables which affect library services and examines the importance of measuring them. He considered the measurement of effectiveness in the context of planning and defining of standards. He also discussed the implications of information technologies and the changes that will need to be faced as these effectiveness measurements are implemented.

2.3 Models of Library Effectiveness

Du Mount and Du Mont (1979) who while assessing and reviewing the literature on library effectiveness suggested an integrated model of library effectiveness based on system theory. According to them there is no lack of material treating the criteria of library effectiveness. However, what is required is integration of viewpoints discussing effectiveness. Library effectiveness is a measure of a number of related factors; (1) goal achievement, (2) the optimization of performance, (3) The degree of user satisfaction (4) the use of human resources, (5) the ability to survive,
they identified that there is a connection between organizational structure and library effectiveness.

**Meanwhile and Kokkonen (1996)** developed an academic library performance measurement model that was different from previous models, since it consisted of first input, second input, output, and outcome. He categorized products and services, which had been previously regarded as outputs, as inputs and considered user satisfaction and rate of use as outputs.

**Kim and Hahn (2008)** developed a BSC-based (balanced scorecard-based) academic library performance indicator model and analyzed the differences among expert groups in determining the significance of each evaluation criteria of the indicator matrix and its relative weight on the model.

**Edgar (2006)** conducted a study to LibQUAL+TM's instrument, fundamental assumption, and research approach and proposes a technical model of academic library effectiveness. This expanded view of library effectiveness complements LibQUAL+TM, emphasizing it to be dependent upon users' experience of service delivery, as LibQUAL+TM recognizes. However this broader model reveals that effectiveness also depends upon an academic library's operations, the constituency groups it serves, the types of value provided to them, the models for funding libraries, academic libraries' obligations, and library users' need for professional information assistance. Supplementing LibQUAL+TM, this broader approach provides a basis for demonstrating both immediate and cumulative academic library effectiveness.

**Komov and Rayev (1983)** have carried out study on increasing effectiveness of a library service. A mathematical model is presented of a secondary acquisition method, such that it allows sufficiently differentiated exclusion of a rarely demanded literature from the essential collection, transfer of the less requested literature to non-prominent parts of the collection and increase of the number of copies on demand. Realized in practice, the model is claimed to increase efficiency of library service.

**2.4 Determinants of Library Effectiveness**

Looking for determinants of library effectiveness is the last of six steps that **Childers and Van House (1989)** considered necessary in library effectiveness research. Identifying factors associated with library effectiveness is a very valuable
input for library policy. In order to successfully implement benchmarking practices in library policy, it is indispensable to have a grounded knowledge of those factors which contribute to library effectiveness.

**Joffe (1971)** report his study to determine the effectiveness of the use made of industrial and management engineering library at the Technion-Israel institute of technology and is the first research of its kind to be conducted by this library. Functions of the library are outlined, problems presented and the pattern and purpose of library visits are investigated. An attempt is made to explore, analyze and describe key aspects in the provision and use of services rendered to faculty, staff, and students. Chapters deal with data collection by means of two surveys, explain the sample chosen and methodology of the study, results are analyzed by means of numerous tables and where necessary, discussions conclude the sections.

**Du Mont and Du Mont (1979)** developed criteria and measurement techniques for assessing library effectiveness based on models of goal attainment, efficiency, user satisfaction, and behavioral factors, they also delineate the gaps in the varying approaches taken to library effectiveness and design a taxonomy that attempts to integrate the approaches.

**Blagden (1980) and Allred (1979)** both presented compelling analyses of the problem of setting relevant criteria and the need to evaluate libraries based on performance, outcomes, and user satisfaction.

**Cohrssen, Moore and Wessel (1968)** has presented the a report which summarizes (1) data and information collected to facilitate the development of criteria for the evaluation of the efficiency and effectiveness of army technical libraries (2) the findings on the mission and objectives of army technical libraries (3) the areas in which adequate standards for performance are feasible and (4) presents the tentative (candidate) criteria and proposed management techniques useful in implementing them. The criteria apply to 4 general aspects of library performance: (1) philosophical - criteria which relate to the enunciation of the reasons for the existence of the library. (2) management- criteria which relate to the influence exerted on the efficiency and effectiveness of the library by management practices. (3) Services and products - criteria which relate to the outputs of the library and measures of service or product
effectiveness. (4) Operations - criteria which are potentially useful as a basis for developing adequate standards for performance evaluation of the staff's professional actions.

2.5 Users Satisfaction as a Criteria for Assessing Effectiveness

Nwalo (1997) advises that library effectiveness be measured in terms of the satisfaction expressed by library users. The effectiveness of library resources and services can be measured in various ways. Nwalo (1997) citing Ene (1978) states, “libraries are judged by set objectives… [And] application of set standards to measure the quantity of operations…”

Ifidon (1977) observes that library evaluation can use both qualitative and quantitative techniques. Irrespective of whether the evaluation is quantitative or qualitative, parameters are set to be judged by users, who are in the best position to evaluate the effectiveness of the library. Agricultural institute researchers should have the prerogative of evaluating the agricultural research institute libraries.

Kellahe (2005) gives six reasons why library evaluation from user's perspective is very important. They are: the place of initiative services; the quality of these services; the flexibility of these services; users ability to effect changes to services they receive; how initiative service can fit with mainstream services; [and] how the library might develop mechanisms for assuring quality in library resources and services. The scope of this study covers facilities available in the libraries, serials collection, library services, and special services such as selective dissemination of information (SDI), current contents search, and reprography. Library adequacy variables in this study are internal to the library.

Applications of information technologies in the library and the internet has also put lot of pressure on the library services and ultimately on higher levels of user satisfaction. When the user determines satisfaction with computer-based retrieval situations, he focuses on four distinct aspects; (a) users experience satisfaction with the output of the research, (b) Users will be satisfied or dissatisfied with a particular service because of their view of the library, (c) user satisfaction or the dissatisfaction may result from the way the service is provided and (d) user interaction with the staff will affect user satisfaction (Tesser et al., 1977).
2.5.1 User Satisfaction and Assistance from Library Staff

Mannan and Bose (1998) reported a relationship between the level of users' satisfaction and their library use and assistance sought from library staff. The study found that a majority of the “satisfied” library users frequently sought assistance from librarians for obtaining the needed materials. The other important variable for the user satisfaction is the resources and their management in the libraries. Therefore, we can say that library environment involves three interrelated element: user expectation, library performance and user satisfaction. What is central to all this is user? User’s degree of satisfaction with a service will evolve as the user develops a relationship with service provider (Millson and Menon, 1995).

Popoola (2008) who did a study in South-West Nigeria universities reported that faculty awareness of available library information products and services had positive relationship with the frequency of use, consultation with the librarians, faculty status and membership of library related committees. It shows the importance of communication links between librarians and the users.

Nicholas (1996) he argued that the yardstick had to be changed since the success or effectiveness of a library can be measured only through user satisfaction. Continuous interaction between scientists and information workers is essential for developing a better understanding of their information needs, acceptance and use of library collections, services and facilities, their opinion about the utility of various information sources, etc. Such feedback is necessary for conceptualization, planning, and implementation of information systems and services.

2.6 Evaluating/Measuring Efficiency and Effectiveness of Library Services

Cohrssen and Wessel (1967) conducted research on the evaluating the efficiency and effectiveness of library services and operations indicate that existing criteria and standards are unsatisfactory. Although it is possible to apply quantitative measurement to some aspects of libraries, such as the number of items ordered, acquisitioned, cataloged, and circulated with a period of time, the value of library services or products, such as literature searches, bibliographies or current awareness services, is more difficult to assess. Phase ii of this study will involve data gathering and evaluation and phase iii will establish criteria.
Orr (1973) offered six desiderata for measures. These are appropriateness, informativeness, validity, reproducibility and practicality. Thus, we can sum up the One’s model that the ultimate criterion for assessing the quality of a service is its capability for meeting the user needs it is intended to serve. All other things being equal in increase in resources will lead to an improved capability which in turn will improve utilization leading to greater beneficial effects which in turn will support more resources.

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Johari and Zainab (2007) conducted a study to services need to be improved by measuring the library's performance an ISO9000:2000 certified library at a private university in Malaysia where measuring performance would be an integral part to continuously improve quality of services. The services being measured are grouped as frontline, core and peripheral where staff and facilities interact with users directly and where user's opinions and expectations could be extracted. The clients are undergraduates and postgraduates who use these services and facilities. A total of 274 students comprising 250 undergraduates and 24 postgraduates form the sample. The respondents' ratings range on average between 3.13 and 4.36 on a 5-point scale, implying that the library is performing at an above average level. From 59 service attributes, 2 are perceived as excellent, 20 attributes are considered good, 31 are average and 4 services are rated as poor. A total of 16 services are rated below 50%, which form the priority list of services given priority in the library's proposed action plan. The good and excellent services would continue to be monitored to maintain their performance.

Kovenya (1986) has carried out analysis work of 150 libraries located at companies and organizations reporting to Ministry of Chemical Industry and Mineral
Production carried out by The Central Scientific and Technical Library of the Cherkas Department of the Scientific Research Institute for Technical and Economic Investigation in Chemistry. Reports on the results of the analysis which covered: volume, structure and acquisition of stock, its growth rate, loan dynamics and information and bibliographic services. The results were used to propose measures for improving the services of the libraries.

Shim (2001) has conducted the project began in April 2000 and was scheduled for completion in December 2001 in a three phased approach. The described the ARL (Association of Research Libraries) E-Metrics project, which provides one approach for describing and measuring some of the resources, uses, and expenditures for supporting networked services in a research library setting.

Judith and Alison (2011) have conducted research on measuring the quality, value and impact of academic libraries. Two UK Standards, Charter Mark and customer Service Excellence are evaluated via an exploratory case study, employing multiple data collection techniques. Methods and results of phases 1-2 of a three phase research project are outlined. Despite some limitations, standards may assist the manager in demonstrating the value, impact and quality of academic libraries in a recessional environment. Active engagement and partnership with customers is imperative if academic libraries are to be viewed as vital to their parent organizations and thus survive. This paper provides a systematic evaluation of the role of external accreditation standards in measuring academic library service value and impact.

Orr (2006) conducted research on a general framework for contemplating relative advantages and disadvantages of quantitative scales for measuring library services. The author uses quantitative scales as assistant tool for a manager of a supposed library. The importance of this article is in this point that a strong conceptual framework has been presented for the measurement of the quality of library services, for the first time.

One traditional method of evaluating library services is to examine the concepts of quality and value. Orr (1973) presented two basic questions to understand this division: “‘How good is the service?’ and ‘How much good does it do?’”. In order to perform this type of evaluation, librarians must take a different type of
measurement from users. Instead of focusing only on the performance of the system, librarians must also consider the user's viewpoint of their use experience.

Lancaster (1977) conducted a study to evaluate the library and information services. Evaluation may be carried out at 3 possible levels: effectiveness evaluation—the evaluation of user satisfaction; cost-effectiveness evaluation, which relates effectiveness measures to cost measures; cost-benefit evaluation which relates the costs of providing a service to the benefits of having that service available. Evaluation pre-supposes the existence of stated objectives, against which performance can be measured. Considers the problem of replacing vague long-term objectives with more tangible short-term objectives and suggests that all evaluation of library and information services be related to the basic objective of exposing users to bibliographic resources. The 2 major quantitative measures of an information service's success seem to be: Does the user get it or not-applicable to a search for 1 item; How completely and accurately does he get it—implying possible degrees of success.

Badurina (2010) discussed issues of evaluation of library services with an emphasis on academic and public libraries. Libraries today are facing the growing challenge of managing their services in order to fulfill user demands, but also to justify their mission and financial management. Systematic monitoring of users' needs and attitudes, as well as measuring efficiency against objectives and determined criteria, are prerequisites for successful library management. This paper presents a part of findings of the research project Evaluation of library services: academic and public libraries with a main hypothesis that libraries in Croatia do not give enough attention to the evaluation of quality of their services, and that library staff are not enough prepared for conducting these procedures. Results show that libraries are not satisfied enough with their services, but they do recognize the need for evaluation, which represents a starting point for further research. Biradar and Kumar (2000) conducted a study on the evaluation of information services and facilities offered by DVS Polytechnic college library to assess the existing library service and facilities through the questionnaire method. The study further examined the impact of professional attributes like nature of work and sex on the opinions about library services. The findings indicated that the present system of services offered by the library were inadequate. Baker and Lancaster (1991) have written a thorough and practical text on this topic. In The Measurement and Evaluation of Library Services,
the authors presented a number of different classifications of types of evaluation. They present both micro evaluation and formative evaluation as ways of thinking about types of evaluation.

2.6.1 Effectiveness of Internet

Arya and Talukdar (2010) conducted a study to evaluate the effectiveness of the internet as an educational tool and to explore what role it plays in the educational system. The study was purely conducted on a sample of 120 users of Delhi College of Engineering (DCE) Library. This case study provides awareness of various internet tools and services used by the library staff and library users. This is case study of Delhi College of Engineering (Central Library) and this study will also be useful and important to those users who are already studying in different institutions and colleges.

2.6.2 Effectiveness of Bibliographical Services and Automated Retrieval Systems

Avanesyan and Avanesyan (1979) have carried out an analysis of criteria for assessing the effectiveness of bibliographical library services and automated retrieval systems. The analysis of users' requests during a survey conducted at the Biblioteka Akademii nauk SSSR could influence the organization of the stock of scientific libraries and the publication policies of the Academy's library. While library service is assessed from the point of view of user satisfaction, retrieval systems criteria are speed, fullness of information and relevance. An important indicator of effectiveness of information retrieval is the quality of indexing.

2.6.3 Effectiveness of Reference Services

Koller and Koller (1988) conducted a study to effectiveness of reference services determine, to a large degree, how many patrons perceive the library, it is imperative that within budgetary, staffing, and collection constraints, libraries provide the best possible reference services. To accomplish this end, its effectiveness must be measured on an on-going basis. Some considerations for the planning, design, implementation, and analysis of various assessment methods are noted. Dunn (1981) conducted research on the business library's most effective tool is an efficient and speedy reference and information service. If the management are aware and make use of this, money invested in the library will be money well spent. The librarian is
employed to serve the needs of the organization, which is in business to make profits—
the librarian himself is not in business to make or save money. He illustrated this
viewpoint by describing the author's role as librarian in Lion Breweries. Rothstein
(1964), reports a large number of studied discussing the measurement and evaluation
of reference service. The measurement and evaluation of reference service has been
more often discussed than attempted. Much of the literature is repetitive, faltering and
inconclusive. The other difficulties faced in measuring various services are that they
are ill defined as compared to circulation, acquisition and cataloguing and with little
agreement on its components parts. It is further argued that problem of evaluating
reference service in all dimensions has not really been attempted at all. Dalton
(1988) has a paper presented a symposium on subject reference services, held at the
University of South Africa on 27 Apr 88. The theory as presented in the literature
concerned is briefly examined with attention focused on the 2 levels of evaluation
developed by F.W. Lancaster, namely macro and micro evaluation. The latter
measures exactly how a service operates and why it operates on a particular level.
This model is generally applied in the evaluation of academic reference services.
Aspects of practical reference service measurement are highlighted. 7 specific
elements of reference service are identified. Within each service element possible
performance measures are listed. The implementation of a performance measurement
programme in an academic library is outlined. Finally, the limitations and values of
such a programme are briefly considered. Elzy (1991) also evaluated reference
service with the following objectives: (a) to estimate the probability that a user, walking
into the library with a factual question, would receive or be led to a complete and
correct answer, (b) to identify conditions under which members of the reference staff
perform well and conditions under which they perform poorly, (c) to determine to
what extent student users of the library judge staff members to be responsive and
helpful and (d) to identify ways in which the service might be improved. Kwon
(2007) has carried out a study investigated the effectiveness of question answering by
question types in the inter-institutional collaborative chat reference service at a public
library system. Effectiveness was assessed in terms of answer completeness and user
satisfaction. The analysis was based on user surveys method. The study found little
difference in the effectiveness of question answering between subject-based research
and simple factual questions. These findings indicate problems and gaps in
coordinating the inter-institutional chat reference service among participating libraries. Implications to design seamless services in the collaborative service were discussed. Folster (1995) reported that in those institutions where staff with subject expertise perform reference duties, it was more likely that users’ needs would be effectively met. Hirshberg (1990) conducted a study to increasing the effectiveness of automated reference services in library settings: bridging the gap between reference and systems professionals. Using the experience of George Mason University Library, Virginia, in providing on-line and CD-ROM searching facilities, demonstrates how reference staff and systems staff can bridge the gap.

2.6.4 Effectiveness of Inter Library Loan Service

Shieh and Yu (2011) conducted a study focused the effectiveness of interlibrary loan services in university libraries. He used the records of library circulation and interlibrary loan, to analyze and thus compare the cost-effectiveness of usage of collections and interlibrary loan books. Considering the cost-effectiveness for book usage, we proposed an improved interlibrary loan process in this research. He also made use of SERVQUAL questionnaire to understand user satisfaction in order to put forward suggestions. This study is expected to contribute to the enhancement of decision-making quality on university library collection development and interlibrary loan.

2.7 Effectiveness and Evaluation of Library’s performance

Ifidon (1986) discussed that the effectiveness and evaluation of a library’s performance depend on the resources, the staff, user satisfaction and the cost. But his discussion of these four factors is theoretical and no empirical study was conducted to find out whether these factors actually influence the library effectiveness. The different approaches of authors for assessing library effectiveness can be identified into following broad categories: (a) Acquisition models, (b) Book availability approach, (c) Library use and service approach, (d) use satisfaction approach, (e) Library staff and performance appraisal, (f) System view approach and (g) latest trends of measuring effectiveness of library.

Moore (1994) argues for the importance for libraries of deciding the best ways of measuring their performance. Suggests and discusses 8 basic principles which could be followed in devising a system of performance measurement should be an integral
part of the management process the system should be related to the needs of the customer, measures should assess performance within the limits set by resources available, performance must be measured in the context of the library's objectives, the performance of each library service should be measured separately, the level of measurement should be determined by the amount of detail required, comparisons are essential and basic measures should be adapted to suit local circumstances.

White (1977) conducted a study to evaluate library service effectiveness in terms of providing objective information to library policy makers and program managers on the effectiveness and cost of alternatives, as well as existing programs and services. Library administrators are urged to make a strong commitment to support evaluation efforts within their own libraries in order to improve the availability of information for library decision making. A selective bibliography on evaluation is included. According to Griffen and Hall (1972) the library profession must begin to develop some meaningful and usable measures or indicators of how well libraries serve the taxpayers. It is the thesis of this article that we do not now have any parameters that will enable us to evaluate the effectiveness of library services. Evaluation of library services will determine the effectiveness and efficiency of the library and will further identify limitations and failures of services. Library use and book collection were taken as the factors of evaluating library as early as 1940s besides personnel, budget etc. (Carnovsky, 2001).

Davis (1971) conducted research on studying library use. Two major quantitative measures for evaluating the effectiveness of library services are quantity of use and success in attracting new users. The use by general audiences has usually been measured by circulation statistics or analysis of reference questions. Use by scientists has been measured by questionnaires, interviews, observation, diaries, and critical incident studies. It is suggested that a combination of several of these latter techniques should be applied in studies of general library audiences.

Robert (1977) conducted a study on evaluation of library service effectiveness is defined in terms of providing objective information to library policy makers and program managers on the effectiveness and cost of alternatives, as well as existing programs and services. The elements of policy and program evaluation are discussed and the need to view evaluation as a continuous process is emphasized. Library
administrators are urged to make a strong commitment to support evaluation efforts within their own libraries in order to improve the availability of information for library decision making.

**Cronin (1982)** systematically evaluates effectiveness according to rules or norms that have been defined in advance. In summary, library performance evaluation is an act of measuring the input, process, output, and outcome of a library based on evaluation standards or evaluation indicators, which determine the advantages, effectiveness, and value of the library resources, operational management, output, and outcome.

**Goodall (1988)** traced the historical performance of library measurement through 1970s and 1980s based on a total of 59 studies. Even though some studies are of importance, yet the research looks circular rather than collateral. There is often a case of old ideas being brought forward with modifications rather than improvements. She further, identified some fundamental difficulties in attempting to measure the performance of library services. These reviews were simple reviews and could not lead to general model of assessing library effectiveness.

**Yaacob and Bakar (1994)** has conducted a study on performance measures in library services, a paper presented on Joint PPM/LAS (Persatuan Perpustakaan Malaysia/Library Association of Singapore) Congress at 1994. According to him performance measurement is a process of determining the degree to which organizational goals and objectives are being accomplished, the effectiveness with which services are provided and resources made available and the relationships among various activities in the library operation aimed towards accomplishing the goals and library allocations. Evaluating the technical and public services offered by the library are 2 interrelated measures that are inseparable when evaluating performance of the library services. Attempts to show the importance of evaluation in the library services and presents the models from which libraries could follow in the evaluation process.

According to Fairfield and Rowland (1978) as inflation erodes the money supply, it becomes imperative to put less emphasis on library resources and more on services. Following a 1971 study of performance measures for public libraries, a do-
it-yourself manual produced by Ellen Altman was published to develop techniques which would provide a more precise evaluation of library services. In 1976 the Administrators of Medium Sized Public Libraries of Ontario appointed a standards committee which used the manual to evaluate performance in 3 public libraries. A 'User Ticket' was issued to each patron to complete before leaving the building, asking for details such as occupation, sex, satisfaction with materials and service; use of equipment and facilities was monitored; and records were kept of assistance given and enquiries answered by staff. They highlighted defects in the system and resultant changes to the User Ticket. Some results are given and the Altman manual is commended.

**Moore (1989)** conducted research on measuring the performance of public libraries services they operate in 1986 the IFLA Section of Public Libraries Acumen. What was required was a coordinated pattern of measurements which, when considered together, provided a more thorough picture of the way in which the library service was making use of the resources available to it and the extent to which it was meeting the community it serves. Surveys the principles on which the compilation of the manual was based.

**Niemitalo (1995)** conducted research on the performance measurement in libraries and information services organized by the British Library and Information North why is performance measurement important, exchange of information about experiences, the present state of research, future research activities, the Internet and performance measurement, transferability of quality information from business to libraries, benchmarking experiences, decision making and computers in libraries and the future.

**DuMont and DuMont (1981)** discussed about of goal, process and structure approaches for measuring library service effectiveness are reviewed and a scheme integrating these approaches is presented. Preferred ways of reviewing library effectiveness are identified for four major constituencies: staff, directors, users, and societal groups such as funding agencies. A discussion of goals as organizational intentions and as outcomes leads to a 2-part goal model: goal typology and systems model. **Zweizig (1987)** found that current issues in measuring library effectiveness. These include rapid technological changes and increasing obsolescence in librarians'
competencies, increased pressure for accountability, tools to help libraries become what they determine they should be rather than conforming to national standards and how to determine the validity and reliability of specific measures.

**Cossette (1978)** conducted a study to scientific evaluation of the effectiveness of a library demands the measurement of its documentary performances by the means of result indicators. He makes a critical analysis of the principal performance studies which aim at measuring the effectiveness of a library which must answer requests for materials, requested by author, title or by subject. The use of quantitative methods in library evaluation projects will lead to the betterment of the quality of documentary services and to a modified view of librarianship.

**Forrest and Williamson (2003)** has carried out a study ARL Statistics is a series of annual publications that describes the collections, expenditures, human resources and service activities for the member libraries of the Association of Research Libraries. The whole data series from 1908 to the present represents the oldest and most comprehensive continuing library statistical series in North America. In 1999, responding to an increasing emphasis on consumer focus and accountability in higher education, the ARL membership endorsed the "New Measures Initiative," aimed in part to develop tools for comprehensive collection, compilation and reporting of outcome measures, including measures of service effectiveness and surveys of user satisfaction. This paper will describe Emory University Library's experience administering ARL's user satisfaction survey instrument - LibQUAL+ - during the last two years, with a brief overview of survey results and concluding observations on future directions for the Library's user satisfaction assessment program.

**Nicholas (1996)** argued that the yardstick had to be changed since the success or effectiveness of a library can be measured only through user satisfaction. Continuous interaction between scientists and information workers is essential for developing a better understanding of their information needs, acceptance and use of library collections, services and facilities, their opinion about the utility of various information sources, etc. Such feedback is necessary for conceptualization, planning, and implementation of information systems and services.
Cullen and Calvert (1996) found that effectiveness that can be used for judging effectiveness and as a basis for performance measurement. Such as size relevance and currency of collection, appropriateness and efficiency of library services, adequacy of library facilities, staff attitude and performance etc. can also be used for measuring the effectiveness of a library.

2.8 Evaluation of Library Effectiveness Based on Library Collection

Burr (1979) described a method of evaluating library collections which will permit the librarian to assess the adequacy of both the quantity and the quality of library resources available to support specific instructional program offered by the university. He developed a technique based on following criteria (1) it must provide both a quantity and qualitative evaluation of the library resources (2) its conclusions must be meaningful and (3) methodology must be economical without disruption of normal activities of the library. Finally, he sums up “whatever the amount or resources of the financial support available to the library, materials expenditures should accurately reflect institutional need and priorities. User assessment can provide invaluable data to libraries in re-orienting their collections, services and activities for effectively meeting their information needs (Fidzani, 1998; Eager and Oppenheim, 1996). Womboh (1993) evaluated the library collections of the University of Agriculture, Madurdi, Nigeria and discovered that 95 percent of the surveyed faculty felt that the existing library resources were inadequate to effectively support new academic programs. One problem common among libraries in most developing countries is their inadequate, outdated and irrelevant collections. Khan and Zaidi (2011) conducted a study on users' opinion as regards the adequacy of library collection and analyzes the level of users' satisfaction about library collection, organization, facilities and services both traditional as well as, IT enabled services. A well structured questionnaire was administered to faculty members, research scholars and students of the AMU. AMU library users were also satisfied with the existing infrastructure of library and organization of their collections. The researcher observed that the overall satisfaction level of the users regarding the AMU library collection is good. Clapp and Jordan (1965), in their pioneering work identified the quantitative criteria for the adequacy of academic library collections. They attempted to establish the minimum core collection of library required for minimum adequacy by establishing a formula based on the size of the student body, size of the faculty,
number of department, methods of instructions, availability of suitable places for study and intellectual climate. The drawback of this formula is that it has not been empirically tested and verified. Singh (1999a) implemented a study to find the users’ opinions (IIT Kanpur) of the following user needs: (a) adequacy of the categories of documents; (b) awareness of the services provided by the library; (c) the reservation facility provided by the library; and (d) photocopying services provided by the library. The important findings of the study were that a majority of the users were satisfied with the library collection and services, but attitude of staff is average. However, most found photocopying services unsatisfactory. Lawrence and Sankar (2003) have carried a study to evaluate the book collection of PSN College of Engineering and Technology Library and PET Engineering College Library. They conduct users and non-users surveys through questionnaires and interviews. One of the first steps in collection evaluation and management is to understand what is already in the collection and what is currently being added. The absolute size of the collection, the holdings of the library in certain types of materials, the size of the collection in relation to the total number of users or potential users, the money spent on the collection as a whole and by categories and the growth rate of the collection as a whole and categories. Libraries with liaison program seem to be one of the best answers to solve communication problems between library and researchers. A study by Yang (2000) reported that researchers in Texas A&M University had a better view of the library since the implementation of the liaison program. This study also stated that updating the researchers on services available and ordering books or serials are considered the primary services that the liaison should perform for researchers. Adequacy of collections is one important factor that determines the effectiveness of any library in meeting the information needs of its users. In fact, a majority of the information services offered by libraries are collection-based. Periodical collection assessment is necessary to determine to what extent library collections are relevant, current and adequate in meeting the information needs of users (Osburn, 1992). Siddiqui (2002) conducted a similar study about the use of the library collection in the Jawaharlal Nehru University Library in New Delhi. A total of 303 users were picked at random and sent questionnaire through the mail. Out of 303 users, 177 people responded. Those surveyed indicated that the working hours of the library were adequate. Most users (80.4%) said that the reading space of the library was
adequate. Finally, 49.8 percent of users were satisfied with the library collection. Continuous interaction between scientists and information workers is essential for developing a better understanding of their information needs, acceptance and use of library collections, services and facilities, their opinion about the utility of various information sources, etc. Such feedback is necessary for conceptualization, planning, and implementation of information systems and services (Verhoeven et al., 1995). Several studies have pointed out the strengths and weaknesses of various collection assessment techniques. The use-centred studies concentrated on the use of collections and how well they met users' needs (Dobson et al., 1996; Carrigan, 1996). Mwila (1993) showed that over 75 percent of academicians from different faculties of the University of Zambia had been less frequently visiting their library due to the inadequacy of library materials. In the light of what has been said above, it becomes desirable for libraries to periodically assess their collections to determine their adequacy and relevance to the information needs of their clientele.

2.9 Effectiveness of Digital library

Finch (2010) conducted a study to measuring effectiveness in a virtual library to future success and is a necessary precursor to examining quality of service. This study of a small, virtual academic library, created to serve a non-traditional student population, faculty, and community, illustrates the use of measures such as the saturation rate of student population, the percentage of bibliographic sessions and orientations compared to number of courses offered, and Web site traffic patterns. As library services are affected by factors such as self-sufficient customers, declining physical collections, staff cuts, and increases in virtual traffic, all types of academic libraries may find it useful to implement the relatively uncomplicated data analysis explored in this article, in addition to established methodologies.

2.9.1 Set of Elements for Evaluation of Digital Libraries

Saracevic (2000) addressed this issue and found that researcher evaluation of digital libraries and presented a set of elements for evaluation. This list consisted of the different aspects of a digital library, including traditional library elements such as collections, access, preservation, and use, elements from computer systems such as networks and security and elements from the management of services such as integration, cooperation, staffing, and costs. He goes on to present the context of
evaluations as being user-centered or system-centered. This concept of user and system perspectives forms one of the basic dimensions of the measurement component of this framework.

Choi, Kwak and Kim (2007) sorted out indicators that measure the performance of digital library service from among the ISO/DIS 11620:2007 Library Performance Indicators, which is the ISO international standard of library performance indicators. To verify their efficiency and offer suggestions, the researchers classified the 44 performance indicators of ISO/DIS 11620:2007 into traditional, hybrid, and digital. As a result of their classification, ten indicators were categorized as digital library indicators.

2.10 Effectiveness of Library Websites

Cox (2006) reported that almost a third of respondents in the survey contacted nobody regarding inquiries for information related to their research. Despite easier access to online information which likely contributed to the increase of self service, this report suggested that there is also a need for libraries to ensure maximum visibility of, and easy access to, library staff support in person and online. This study also reported that there is a need for libraries to maximize the effectiveness of library websites as portals to well organize and easily navigable collection of online information resources.