CHAPTER-2

REVIEW OF LITERATURE

2.1 What is Review of Literature?

Review of literature is an early step for conducting research. It enables to avoid the duplication of research work and broadens the understanding of the research problem. It provides a framework for establishing the importance of the study as well as a benchmark for comparing the result with other findings. All or some of these reasons may be the foundation for writing the scholarly literature into a study.

2.2 Why Review of Literature?

The literature review accomplishes quite a lot of purposes. It shares with the reader the result of previous studies that are closely related to the one being undertaken. Literature review is carried out to understand the background of the chosen study. It plays a vital role in research investigation studies to gather information on the past studies on any topic or subject. A review of literature gives to investigator valuable opinions, experiences and theories of the peer. The review also indicates the data gathering approaches, methods and techniques of data analysis. To discover statistical knowledge which already exists related to the research topic, reviewing related literature is important. It helps to evolve probable applications of the findings of the research work.
This chapter reviews literature based on the issues related to Digital Information Resources and Services in Academic Libraries, rationale of digital-based information resources and finally the challenges encountered in the provision of digital information services in biotechnology colleges libraries.

For the sake of convenience, the literature has been discussed and reviewed under the followings subheadings:

2.2.1 Utilization of Digital Library

2.2.2 Utilization of Mobile Resources

2.2.3 Studies Based on LIS Professionals Skills

2.2.4 Uses of Web-Based Library Resources for Biotechnology Field

2.2.5 Web Based Library Services

2.2.1 Utilization of Digital Library

Aina (2014) studied the awareness, accessibility and use of electronic databases among academic staff of Babcock University, Nigeria and found that majority of respondents were aware of Academic Journal 59 (69.4%), followed by Journal Storage (JSTOR) 48 (56.5%) as well as Dissertation and Theses and EBSCOhost with 46 (54.1%) and 43(50.6%) respectively. The analysis also revealed that majority of respondents were not aware of Bookboon, World Bank Open Knowledge Repository and National Virtual Library with 22 (25.9%), 28 (32.9%) and 25 (29.4) respectively. He further concludes that nine out of thirteen databases under consideration were averagely aware by respondents.
This implies that there is need to increase awareness to cover all electronic resources the library subscribed.

Ajaegbu (2014) was investigated the case study for the level of information and communication Technology (ICT) library service awareness in a private institution. The study adopted the survey form of research where the use of copies of questionnaire as research tool was adopted. The result showed that there is a need for tertiary institutions to adopt the use of ICT in their library services and also to employ some awareness programs for their Post Graduate (PG) students at the every point of enrolment. The awareness program will not only be useful to the students but also to the library staff towards effective deployment and use of the technology.

Bashorun, Isah and Adisa (2011) reported use of electronic information services (EIS) among the users of Indian Institute of Technology (IIT) library in Delhi, India and revealed that 95 percent of users have awareness about EIS provided by the library.

Carlson and Reidy (2004) studied the effective usage of digital resources in teachers. The findings of the research recommended that they should create a bridge between teachers and the work of developers.

Clyde, Laurel and Klobas (2001) studied Internet usage in Iceland. “The findings indicated that the first Internet course can concentrate on developing knowledge of the Internet, its history and development and the underlying technology, advanced skills in Internet use, Skills in Internet resource
development, and the knowledge required to evaluate the potential of ongoing development in the Internet”.

**Das and Maharana (2013)** showed that 12 (52%) postgraduate students are aware about the e-facilities and e-resources whereas 11 (48%) are not aware about the facilities, similarly, 12 (52%) research scholars were aware about the e-resources and 11 (48%) research scholars are not aware about the e-facilities given by library.

**Delgado- Gomez and Alejandro (2002)** have undertaken a case study in Spain about young adults and virtual libraries. The finding of the answers showed that they can find a more comfortable and quicker way to obtain that information, they will use it, and they spend their free time mainly listening to music, playing on the Computer, watching TV, or walking with friends.

**Edem and Egbe (2016)** studied the extent of availability and utilization of electronic resources by postgraduate students in the University of Calabar (UNICAL) Library, Nigeria. Five research questions and a single hypothesis were formulated to guide the study. Descriptive survey was adopted and the population of the study was two thousand, seven hundred and twenty six, while a sample of four hundred postgraduate library users were selected through stratified sampling; two hundred postgraduate student each from Faculty of Education and Faculty of Science. Pearson Correlation Coefficient (r) was the statistical analysis technique adopted to test the hypothesis under study at 0.05 level of significance. Three hundred and eighty two duly filled questionnaires
were received, giving an overall response rate of 95.5 percent. The result of the analysis revealed that electronic resources were available in UNICAL Library and P.G. students utilized them. However, online databases were underutilized. The University Library had e-journals, e-books and access to databases and Internet resources. E-journals were the most often used electronic resources. Lack of computer skills, slow network, inconsistent internet connectivity, power outage and irrelevant electronic information resources were the problems postgraduate students encountered while accessing and using electronic resources in UNICAL Library.

Eggerongbe (2011) surveyed use and impact of electronic resources at the University of Lagos revealed that 80 (71.4%) postgraduate students and 55 (78.6%) research scholars were reported in the survey being aware of e-resources. Awareness of e-resources indicated user knowledge of the availability of the resources, their services and the extent they made use of them. Whereas 32 (28.6%) lecturers and 15 (21.4%) scholars were not aware of electronic information resources, there is no doubt that a larger percentage of the postgraduate students are aware of the availability of electronic information resources. From the observation, majority of the postgraduate students visit internet websites to gain access to electronic information resources.

Ekenna and Ukpebor (2012) asserted that electronic resources are highly accepted in the Netherlands especially by scientists and social scientists.

Harley (2007) a library resource or tool’s function is defined by its intended use and/or content. Digital resources collection could be subscription based or
developed and customized using local information resources or can be a combination of both. Materials and equipment in a library include both information resources and the tools used to access them. Some examples include visual materials, news or other media sources and archives, portals that provide links or Uniform Resource Locator (URLS) relevant to particular disciplinary topics, online reference digital readers, resources, digital film or video, maps, online or digitized documents, audio materials, data archives, digital facsimiles, curricular materials and web sites created by other faculty and/or other institutions, personal online diaries (blogs) etc. Other online information resources, including bibliographic databases, electronic reference books, search engines for full text collections, digital collections of data and data sets.

**Jacob and William (2006)** checked the promises and realities on Internet-based data collection. The results recommended that the data collection over the Internet has many problems. Internet based data collection to find solution for choosing problems, advantages of Internet based research have allowed us to dream a little bigger and pursue projects and research questions which would never be considered to conduct Internet based research.

**Kumar and Kumar (2008)** highlighted six reasons for using on-line electronic journals. Users in the study use on-line electronic journals in support of their study (70%) and teaching (59%). One third of respondents used the sources for project work. Eighty eight percentage medical science users accessed online
electronic journals (OEJ) sources for study, followed by engineering (67%) and management studies (55%).

Mary and Dhanavandan (2014) studied the usage and awareness of public library services to know the purpose for which women visit to the library, their feeling about services, facilities, purpose of reading, library collection, assistance from the library staff in the use of resources and services to meet necessary help to users for their information requirements and what are the factors motivate them to make best use of the library. So, the library resources and services it offers should mirror to the Public, and meet the information needs of these women.

Okore et al. (2009) defines electronic information resources are accessed via the internet. This definition is extended to include Compact Disc Read-only Memory (CD-ROMs) because CD-ROM resources can be accessed online. It is identified specific types of electronic information resources as consisting of electronic books (e-books), electronic journals (e-journal), and indexes, collections of journal articles, reference works, digital collections, databases such as Online Access to Research in the Environment (OARE), JSTOR, Access to Global Online Research in Agriculture (AGORA), Hinari Access to Research for Health programme (HINARI), EBSCOhost etc. and websites. These information resources do not fly into the library or find themselves in the library by accident and as such there should be coordinated efforts to select, acquire, organize and maintain them.
Sivathaasan and Kajananthan (2013) survey on demographic variables and usage of electronic information resources revealed that there are significant mean differences among age group, teaching language and experiences of teachers on the usage of electronic information resources, whereas mean usage of electronic information resources do not differ significantly among five different faculties.

Stella (1997) has analyzed about users and Internet skills. A total number of 100 questionnaires were distributed to first 100 people using the university cyber café on week day. The result indicates that 42-52 % of threshold users of the Internet helped to update their research from findings.

Tran (2000) was analyzed and studied implementation and use of electronic resources: a proposed curriculum for Vietnam. The findings of this studies resulted in ten proposed courses namely: Basic Electronic Resources, Basic IT Applications, Communication Networks, Library Automation Database Structure and Design Information Handling Information Storage and Retrieval Information Sources and Reference Services Searching CD- ROM and Online Internet Service with existing curriculum as much as possible.

Turan and Bayram (2013) studied a case study at Ankara University for Information Access and Digital Library use in University Students’ Education. Findings of this research, Ankara University Students’ internet use habit with digital library, is similar with the results of researches made in some other developing countries. Although students have positive views about the use of
internet for education purposes, they don’t have enough information about
digital library resources such as databases.

As a result, it was seen that Ankara University Students don’t use digital
library effectively. The most significant reason of this is that they don’t know
how to use internet and don’t know foreign language. Besides, findings of the
results show that the students uses the internet resources for school
assignments. Digital library is not yet placed as their first priority among their
choices. One of the main reasons of this is “not to know how to use digital
library”. The second reason is that students find their own resources
sufficient for their research. At the conclusion of the paper, orientation for
digital library in curriculums at Ankara University is suggested to enable
widespread use of the library services and networked resources among the
students.

Tyagi (2011) conducted a survey to measure the electronic information service
(EIS) among student under graduate, postgraduate students, research scholars
and faculty members of IIT Roorkee, India. To conduct survey a total of 300
questionnaires were distributed to the selected sample for the year 2010-11, 283
valid samples were collected and analyzed. The result showed a growing
interest in EIS among the users at IIT Roorkee. The survey showed that
majority of respondents marked that library possessed useful online journals
and databases. Awareness among the users about the availability of EIS was
found highly satisfactory. EIS were mostly used for research needs. The EIS is
better for accessing current Comprehensive information. User's perception of e-
resources as a replacement for print in meeting their information needs is 100% to a very high extent e-resources have become a substitute for printed materials.

**Vakkari (2006)** argued that the high patronage enjoyed by e-resources, because it is readily accessible and functional, not necessarily because of its rich contents.

**Viswanathan and Sasireka (2016)** surveyed on the topic of learning to use of Internet as a study tool: a review of learning to available resources and explanation of students’ priorities. The study found that there were good online guides available, but that perversely, the better guides tended to require the best searching skills to locate them. A few students were good, using online support, and the majority felt that if they had the skills, Students wanted assistance when they had problems or questions, rather than sites that offered structured learning experience. Personal support rather than virtual support was also considered to be most important to the students in this study.

### 2.2.2 Utilization of Mobile Resources

**Agarwal and Prasad (1998)** reported the acceptance of new information technologies by their intended users persists as an important issue for researchers and practitioners of information systems. Several models have been developed in the literature to facilitate understanding of the process by which new information technologies are adopted. They proposes a new construct that further illuminates the relationships explicit in the technology acceptance
models and describes an operational measure for this construct that possesses desirable psychometric properties. The construct, personal innovativeness in the domain of information technology, is hypothesized to exhibit moderating effects on the antecedents as well as the consequences of individual perceptions about a new information technology. The construct was developed and validated in the context of the innovation represented by the World-Wide Web. Implications for theory and practice are discussed.

Noa Aharonyin (2013) studied the librarians' attitudes towards mobile services. The purpose of this study is to explore whether librarians are familiar with technological innovations and are ready to accept them. The objectives are: to what extent does the Technology Acceptance Model (TAM) explain librarians' perceptions of mobile services (m-services); and to what extent do differences in gender, age, workplace, role, and smart phone use explain librarians' perceptions of m-services?. The research was conducted in Israel during the first semester of the 2012 academic year. It encompassed three groups of Israeli librarians: academic, public, and special. Researchers used two questionnaires to gather data: a personal details questionnaire, and a mobile technology questionnaire. This study supported the two core variables model (perceived ease of use and usefulness) of TAM that may predict librarians' behavioural intention to use m-services in the library. However, it added two more components to the model: personal innovativeness and smart phone usage. Library directors may try to implement more m-services on their web sites.
These services should be simple, attractive and efficient. They should also try to expose librarians to the benefits and ease of use of m-services.

Noa Aharony (2014) this study which is based on the Technological Acceptance Model (TAM), seeks to explore whether librarians and LIS students are familiar with the newest technological innovations and whether they are ready to accept them. The research was conducted in Israel during the first and second semesters of the 2012 academic year and considered two populations: librarians and LIS students. Researchers used two questionnaires to gather the data: a personal details questionnaire, and a mobile technology questionnaire. On the whole, the current study supported the two core variables of the TAM (perceived ease of use and usefulness), as well as personal innovativeness that may predict librarians’ and students’ behavioural intention to use mobile services in the library.

Zha et. al., (2015) defined that mobile Internet or ‘mobile libraries’ refers to digital libraries accessed by users through mobile phones and wireless networks. In order to explore users’ adoption of mobile libraries, a research model is developed focusing on two psychological factors (flow experience and innovativeness) and two factors oriented to the mobile context (ubiquitous connection and use context). Data collected from digital library users who are also users of the mobile Internet were used to test the model. The findings show that use context not only has a direct impact on users’ intention to adopt mobile libraries, but also partially mediates the effect of flow experience and ubiquitous connection on usage intention. Meanwhile, innovativeness both
significantly affects usage intention and negatively moderates the effect of use context on usage intention. Findings and implications for theory and practice are discussed.

2.2.3 Studies Based on LIS Professionals Skills

Arjun (2012) focused on knowledge arrangement is tuff work as identification of knowledge collection and its sharing to knowledge to another user is due to lack of skills techniques. Successful implementation of knowledge arrangement, there is a necessary to develop a systematic approach, management process and help through information technology person to achieve the institutional library goals. It also requires the planning the arrangement of information, data, knowledge with different formats as well as on understanding the new digital technology. All levels of library staff need training and the skills to manage the new techniques.

According to Bavakutty (2008) major problems faced by the librarians are lack of trained staff, lack of communication skills and security in digital libraries. Information professionals should be equipped with necessary skill sets and working knowledge of on digital management. Librarians also trained to information collect, organize, retrieve and disseminate information to satisfy the intellectual needs. Continuing education programmes under the professionals develop managerial skills, new skills, and also library and information science education curriculum, specialized training, seminar, workshop organized for the
professionals, marketing skills for the selling promotions, communicating new services and digital materials in a professional manner.

**Dhiman and Rani (2012)** studied that focus on librarian training is necessary for the digital environment. Knowledge of different types of digital media, IT tools, Softwares, Hardwares, meta data for the subject arrangement techniques skills, information organization, presentations, user orientation training, information retrieval are also required for the digital library setup.

According to **Goel (2012)** digital library will necessary for both the skills of librarians and well as those of computer experts to be viable. It is also knowledge of librarian to create cataloguing records that describe digital documents. Metadata is import in digital libraries because it is the key to resource search and use of any digital documents. More challenging problem of lack of Hardwares, Softwares working knowledge, Information technology awareness for the use and operation the technical tools.

In his study **Jain (2009)** stated that digital environment build-up for the librarians, carefully by information repackaging, electronic publishing identify relevant electronic sources, citation work, organize the collection in new environment will be really challenging for the librarian. It is required for different type of skills to manage the digital library.

**John (1972)** suggested that every librarian is a specialist of some sort and the whole of his professional’s preparation should be built around his proposed specialist. Demand for flexibility and mobility requires every librarian to have
an overall mastery of the essential elements of librarianship as they apply in any
library situation.

According to Kataria (2009) librarians can also create a forum where training
can be imported to develop some expertise on legal issue associated with
digitization, share its experiences, to other librarians, knowledge and skills with
other fellow members. Managing information about different types of
challenging job for librarian’s in digital environment. Some problems for the
digital environment such as lack of knowledge and skills of the information
professionals and user groups, lack of indigenous software packages, lack of
knowledge of copyright and intellectual property right.

Kotler (1994) suggested that new factor today’s in any sector is to accept
increasing responsibility for their recent environmental impacts. Marketing
services is a social and managerial process, by which individuals and group
obtain what they need and want through creating, offering and exchanging
products of value with others.

Kumar (2004) in his study emphasized the need for training librarians and
better service provides through the user education programme. He has
developed the short courses, workshops and conferences for the librarians to
help them in developing such skills. He has also developed a package for the
training as well as learning methods and more familiar to the new technology.

Kumar (2007) studied managerial skill ability of the knowledge process,
retrieval. Environmental changes are affecting libraries and how the librarians
are adapting themselves to the changing environment, so as to become effective
and efficient. A librarian has to produce value-added services and products to attract library users. New investments need to be made in developing newer skills, so that they are able to apply digital technology effectively and efficiently.

The requirement of the library users more accurately and precisely; cater to the needs of users rather exceeding his expectations, treating the library users as a king and remain cost-effective in every operations by doing things right the first time, every time all the time. It is essential that digital library administration must accept the responsibility for providing support to their continuing education and staff development, long way in training and development.

In the study of Mookerjee (1969) it was stated that the success of a library essentially depends on the librarian and his staff and well equipped staff with all the qualities necessary to increase the efficiency of the library. It is the prime requisite to render the best possible services. Most essential quality is the hallmark of the good librarian. The future of each and every library staff directly or indirectly depends very largely upon the enthusiasm that the principal can inspire them, the opportunities they are given to learn. Vocational training or retraining is one aspect of the educational changes. Every librarian should have utmost opportunity for individual development.

According to Pandey (1999) skills and attitude are required for the LIS working professional. It is a high turnover of staff this is especially important. Staff and often skilful and tactful probing needs to the organization. Providing valuable information for the improvement of training programme, working conditions
and solves staff problems which relate to the library present and future objectives of the management. Training as an essential element in the organization cycle in the changing environment to fulfil those needs by utilizing new skills and technology.

Prasad (2012) in his book digital cataloguing discussed the library and information science and his community development efforts by mechanisms for the documents storage, delivery and library services provided to potential and present users through digital era. Best practice of ICT and advanced computer systems use by librarian attempting to grow his professionals work. Such as development of librarians direction of growth to collaborations and partnership with another librarian and benefit to social equity, economic contexts of librarians skills development. LIS professionals need to create constant awareness that may be technology driven.

According to Rajagopalan (1986) management in all the libraries requires library and information professionals of various levels. Dr. Ranganathan as a pioneer in education and training of library and information professional’s.

The study conducted by Verma (2008) on fundamental development to LIS needs latest technology familiarity, for the better services to library users. Digital face out the most problem enable to legal challenges, copyright and licensing, knowledge administrative, creating meta data, selection of digital collection. There are challenges to manage the digital environment infrastructure that require help of IT professionals and legal person. Librarians
organize knowledge through the processes of subject analysis and cataloguing-creating thereby information.

2.2.4 Uses of Web-Based Library Resources for Biotechnology Field

Web Based Library Services are mainly provided through the library portal which is a particular type of gateway to web based library resources Jackson (2002). It provides integrate access to the metadata of a library’s several databases. It gathers a range of useful information resources into a particular webpage that allows users to customize their information resources by selecting and viewing information they find individually useful. Web based library service is a trend. Although, we actively transfer library services but our central purpose remain the same, to serve and teach users to find, evaluate and use information effectively.

Kanaujia (2004) discussed on Bioinformatics is the field of science in which biology, computer science, and information technology merge into a single discipline. There are three important sub-disciplines within Bioinformatics. Bioinformatics is a new and emerging branch of Biotechnology that has come up very recently. It mainly involves the use of software to utilize information from vast biological database that is developed by experienced Biotechnologists. It’s also covers aspects on sources of biological information and computers, pharmaceutical development, and related fields.

Lal (2012) studied that focus on setting up of a separate Department of Biotechnology (DBT), under the Ministry of Science and Technology in 1986
gave a new impetus to the development of the field of modern biology and biotechnology in India. The department has made significant achievements in the growth and application of biotechnology in the broad areas of agriculture, health care, animal sciences, environment, and industry. To meet the growing R&D information requirements of the DBT Institutes, the DBT’s Electronic Library Consortium (DeLCON), was launched in January 2009. It is a national initiative for providing access to scholarly electronic resources including full-text and bibliographic databases in all the life science subject disciplines to DBT institutions.

Prabhakar and Sonwane (2016) discusses the World Journal of microbiology and Biotechnology retains a European brand identity, a truly international journal, actively encouraging global contributions from scholars across the broad domain of marketing. Contributions from a wide range of research traditions within marketing, particularly encouraging innovative ideas in conceptual developments and research methodologies. Specific role to be played by content analysis in organizing for recall the world’s store of recorded knowledge.

2.2.5 Web Based Library Services

Biotechnology colleges and reputed Research Institution has web based library catalog and also has collection of chemistry, biochemistry, biotechnology, biological science research in digital form, including technical reports, working papers, conference papers, and etc. INFLIBNET provides services to its users: Reference Services, Document Delivery Service (DDC), Current Awareness
Service (CAS), Inter Library Loan Service (ILL), Electronic Information Service (EIS) and Photocopy. University of Delaware Newark, USA is also organized library workshop for emphasize new resources and services and provide opportunities for hands on training and practice.
Figure: 2.1 Web Based Library Services in INFLIBNET, Gandhinagar, INDIA.
Figure: 2.2 Web Based Library Services in University of Delaware, Newark, USA.
We at Ashok and Rita Patel Institute of Integrated Study and Research in Biotechnology and Allied Sciences (ARIBAS) also providing web based services to our users (Students and Staff). The web based library services includes Circulation, Reference and Information, Document Delivery, Book Reservation, Database Search Service, Old Question papers (External and Internal in Digital form). Our library also has variety of information collection from OPAS and N-List as well as our own digital repository, InTech, C2Class and Virtual Lab. (Figure 2.3).
Figure 2.3: Web Based Library Services in ARIBAS library, New Vidyanagar, Gujarat (India).
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