CHAPTER-1

INTRODUCTION

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Note: INFORMATION AND COMMUNICATION TECHNOLOGY=ICT
1.1: Background

India has a large system of higher education in terms of absolute numbers. In the years after independence, there has been rapid development in the establishment of universities/colleges in the country. Higher education was given due priority in National Planning.

Indian Universities like **Takshashila** and **Nalanda** was well-known in all over the world due to its value based education. **Takshashila**, was an early centre of learning. According to available references it is dated back to at least the 6th century BC (more than 2700 years back). As the oldest university in the world, **Takshashila** has a special place in the history of the world. It as the **TakshaShila** university of ancient India which wrongly spelled as **Taxila** today. During its times this university was the IIT and MIT of the world, where the students from all across the world.

**Nalanda** was one of the world's first residential universities, i.e., it had dormitories for students. It is also one of the most famous universities. In its glory days, it accommodated over 10,000 students and 2,000 teachers. **Nalanda** was an ancient center of higher learning in Bihar, India. The library of **Nalanda**, is also known as Dharma Gunj (Mountain of Truth) or Dharmaganja (Treasury of Truth), was the most renowned repository of Hindu and Buddhist knowledge in the world at the time. (http://en.wikipedia.org/wiki/Nalanda, accessed on 27-11-12)

There is a number of urban learning centers became increasingly visible from the period between 200 BCE to 400 CE in India. The important urban centers of learning were Taxila (in modern day Pakistan) and Nalanda, among others. These institutions systematically imparted knowledge and attracted a number of foreign students to study topics such as Buddhist literature, logic, grammar, etc.
India's higher education system is the third largest in the world, after China and the United States, with more than 547 universities/institutions, 27000 affiliated colleges, 125 lakhs students and 5-6 lakhs teachers. (University News 49 (33), Aug.2011). The universities and other technical development in India are consciously in progress. The universities are increased from 547 to 582 up to the year 2013 in which 142-Central University, 285-State University, 130-Deemed University and 125-Private Universities are there. (Source: http://recruitmentresult.com/universities/, accessed on 05-07-2013)

Recently, according to the year end review report by Ministry of Human Resource Development (MHRD), 16 Central Universities, seven new Indian Institute of Management (IIMs), eight new Indian Institute of Technology (IITs) and 10 new National Institute of Technology have been established by 2012. (Source: http://www.educationinsight.in/2012/education-news/top-story/mhrd-16-central-univs-7-iims-8-iits-and-10-nits-established-by-2012/).

With the advent of the ICT, conventional educations system is undergoing rapid changes. It has transformed from fact to face education to mind-to-mind education. The emergence of ICT is one of the wonderful gifts of modern science and technology, which has brought tremendous changes in Library and Information Science. Application of ICT to library and Information works has revolutionized the traditional concept of libraries from a storehouse to books to an intellectual information centre. Now a days University Library has also taken initiative to make their library as possible as modern from the traditional working method. The present study will be fulfill that how the contribution of ICT plays a vital role in the development of the University Libraries in the developing states like Gujarat.

The study of the usage or contribution of ICT in the development of Grant-in-aid University Libraries of Gujarat is shown that how the ICT can develop or change the entire atmosphere of library from old traditional method to new technological advanced ways. Earlier University Libraries, which were considered only as the storehouses of knowledge, have a new outlook in the modern Information
Communication Technology era. The activities, which were carried out manually in libraries with so much of pain and strain are being carried out smoothly with the help of ICT with greater effectiveness. Library organization, administration and other technical processing have become easier and more quantum of work can be done in relaxed mood. ICT, which is the basis for the MBO, generates more results at a given time.

University libraries are not the exemption from the impact of ICT. Such libraries are very much interest in incorporating the latest ICT in their administrative functions, technical works and user services. University Grants Commission liberally contributes the grants to the university and other affiliated colleges to install the ICT facilities and generate a digital environment. INFLIBNET is actively involved in the automation and digitization of university libraries. Really, the encouragement and cooperation given by the INFLIBNET by its various activities like funding, training, orientation, workshops and publication made the university libraries equipped with all ICT tools for providing better services to the students researchers and teachers.

ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video-conferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, healthcare, or libraries. ICT is defined as the combination of information and communication technology. Information and communication technology is defined as the technological applications of information in society. The information is derived from the word informatics which is defined as the science dealing with the design, realization, evaluation, use and maintenance of information processing systems, including hardware, software, organizational and human aspects, and the industrial, commercial, governmental and political implications of these.

Technologies like Personal Computer, Mobile Phones, The Internet, Medical scanners, Satellites, Lasers, CD and DVD, Television, Car electronics, Credit cards
and others have changed the way we live. Information and communication technologies or ICT is about digital information passing between devices. ICT development has changed every aspect to the human society. It has affected our life in many ways. ICT tools can be used to find, explore, analyze, exchange and present information responsibly and without discrimination. ICT can be employed to give users quick access to ideas and experiences from a wide range of people, communities and cultures.

Modern communication has become almost instantaneous. E-mail is cheap and fast and ICT allows documents and diagrams to explore around the world. More and more people are now working from home and this is likely to increase as video-conferencing becomes more commonplace. In communication technology, there have been huge advances in digital communication through satellite and cable television and digital radio. The vast quantity of information available through the Internet requires new skills to search out and select the information needed from the various sources and articles. Mobile phones is also being used to communicate via text messages, images and even video as well as being able to access information over the Internet and send email.

From Farming and Horticulture to Business and Commerce, from Aviation to Shipping, from Banking to Life Insurance, from Health Care to Court of Law, Information Communication Technology (ICT) has made its effective presence in almost all sphere of human life. Libraries and information centers are also not untouched with wide spread impact of ICT. It has drastically transformed the way for collection, processing, storage, retrieval and communication of information in libraries. Particularly the Internet has completely transformed the traditional method of processing information from collection to communication. It has emerged as the most powerful medium for storage, retrieval and communication of information.

“With an unprecedented growth in the quantum of knowledge worldwide and the easy accessibility, Internet has become an unavoidable necessity for every institution of higher learning and research. The World Wide Web (www), because of its ability to work with multimedia and advance programming languages, it is the fastest growing
component of the Internet. The amount of available information on the web is increasing consistently at an unbelievable rate. It has turned into a gigantic digital library, a searchable 15 billion-world encyclopedia and is still growing every minute of a day. Information available on Internet in public domain as well as through different subscription based databases provided by various hosts and aggregators is bound to play a very important role in teaching, learning and research activity. For maximum utilization of these resources academicians needs to explore such kind of information as per the users need. In this context the University libraries and information centers has a very important role to play. University Libraries has such ability to identify information needs, seek out resources to meet those needs, and then analyze, evaluate, synthesize, and communicate the resulting knowledge in the context of ICT usage.

We know that in the explosion of ICT and in the mobile era the teenagers and the students of colleges and universities are giving their maximum time to acquire their need or information. We do not know that whether their need or information is worth or useless, whether they are retrieving good or bad from the lakhs of resources of world with the use of internet. Researcher believes that they need such filter which does or which provide such good or worth material for them. The University Libraries of Gujarat and others also are providing such filter for their user for their overall development in their life. Now in a day the university libraries of Gujarat state are being equipped with the maximum resources of ICT to fulfill the need of their users. Ultimately, it will helpful in the overall development of the students of university.

Thus, we can say that ICT plays a vital role in the development of University Libraries as well in the development of the entire user community in the recent advancement of technology.

1.2: Subject Selection

In research process, the first and the foremost step happens to be that of selecting and properly defining a subject. The selection of subject undertaken for study must be
selected carefully. It should be familiar and feasible so that the related research material or sources of research are within one's reach. So, the subject must involve the researcher and must have an uppermost place in his mind so that he may undertake all pains needed for the study. I have also kept in mind such important points for any researcher to select the subject which are as under.

(i) Subject, which is overdone, should not be normally chosen, for it will be a difficult task to throw any new light in such a case.

(ii) Controversial subject should not become the choice of an average researcher.

(iii) Too narrow or too vague problems should be avoided.

(iv) The subject selected for research should be familiar and feasible so that the related research material or source of research is within one's reach. Even then it is quite difficult to supply definitive ideas concerning how a researcher should obtain ideas for his research. For this purpose, a researcher should contact an expert or a professor in the University who is already engaged in research. He may as well read articles published in current literature available on the subject and may think how the techniques and ideas discussed therein might be applied to the solution of other problems. He may discuss with others what he has in mind concerning a problem. In this way, he should make all possible efforts in selecting a problem.

(v) The importance of the subject, the qualifications and the training of a researcher, the costs involved, the time factor are few other criteria that must also be considered in selecting a problem. In other words, before, the final selection of a problem is done, a researcher must ask himself the following questions:

(a) Whether he is well equipped in terms of his background to carry out the research?
(b) Whether the study falls within the budget he can afford?
(c) Whether the necessary cooperation can be obtained from those who must participate in research as subjects?

If the answers to all these questions are in the affirmative, one may become sure so far as the practicability of the study is concerned.
The selection of a problem must be preceded by a preliminary study. This may not be necessary when the problem requires the conduct of a research closely similar to one that has already been done. But when the field of inquiry is relatively new and does not have available a set of well developed techniques, a brief feasibility study must always be undertaken.

If the subject for research is selected properly by observing the above mentioned points, the research will not be a boring drudgery, rather it will be love’s labor. In fact, zest for work is a must. The subject or the problem selected must involve the researcher and must have an upper most place in his mind so that the may undertake all pains needed for the study.

We know that in the entire world's universities are developing with the usage of latest technology. Impact of ICT is shown each and everywhere whether it is a field of Business, Industry, Government, Science & Technology or Education. In India also universities becoming modernize with the latest development of technology. For any academic development, libraries play a vital role. Nowadays, library is an important department of university which involved in the exchange of information and providing the various information sources and services for their users. Because of this I have selected the topic "A Contribution of Information and Communication Technology (ICT) in the Development of Grant-in-aid University Libraries of Gujarat: A Study"

1.2.1.: Important Factors of Subject Selection

In the selection of researcher's topic, under mentioned points to be considered for further research work i.e.....

1. Distribute burdens and benefits fairly
2. Ensure social value of research
3. Enhance scientific validity
4. Minimize risks to subjects
5. Maximize benefits to subjects
To fulfill the above points, such factors have inspired researcher to go ahead with my research work, which are as under.

1. My mother is a teacher and she has a habit of reading and learning. So, during my early childhood, my mother used to tell many short stories, which resulted in the creation of interest for reading.

2. Because of enormous reading habit, a natural interest was created towards the library and books satisfied the same tremendously, which provided the foundation of this study.

3. During researcher's Bachelor of Library & Information Science, he was introduced about the various departments of the library.

4. During the Master of Library & Information Science, researcher got an opportunity to undertake a dissertation work on different aspects of functioning of library and library staff. For the selection of research area for the present work, researcher looked back to his early work in the area of library science and the same was conveyed to his supervisor, who immediately accepted the version and in this way the researcher was able to decide the subject of the present investigation.

5. As a part of curriculum activity of Master of Library & Information Science, it is compulsory to write a dissertation thesis. The writing of this thesis made researcher's feel the taste of research work. In this way, when the researcher put forth his idea before the supervising guide, the guide has immediately accepted and approved the subject of the research work. Thus, the research work was selected.

6. Researcher is working in library since last 13 years. Researcher became librarian in the year 2006. When he became librarian, there is a traditional method of working in his Engineering College library. Researcher has started to change it, as he was much interested to develop the library with the use of ICT. First researcher has purchased SOUL software. Researcher has converted all my old data into SOUL as per AACR2. Researcher has taken training from INFLIBNET at Ahmedabad. His management has given him
12500 sq.ft. space to develop the library. Researcher have made it a real learning and resource center i.e. knowledge center with his library professionals team.

7. Now in researcher's library, everything is being computerized. In the library of researcher's institute, there is a separate web access area, separate Audio-Visual room, e-resources, online journals, e-consortia, DELNET membership, Wi-Fi connectivity and many other ICT enabled tools and techniques being used.

Thus, with the above points and with researcher's own interest with the kind guidance of his respected Guide Dr. Kirit Shukla and kind blessings of his honorable expert Dr. Shivdanbhai Charan, he has decided to go further in his topic i.e. "A Contribution of ICT in the Development of Grant-in-aid University Libraries of Gujarat: A Study."

1.3: Definition of Terminology

1.3.1: Information

As per Online Dictionary for Library and Information Science the Information is a data or raw material presented in readily comprehensible form to which meaning has been attributed within the context of its use. [1]

According to "Pettit" information is a "news or facts about something," [2]

According to Oxford English Dictionary information means, "When someone is informed, what they know is changed. In this sense "information" is "The act of informing; communication of the knowledge or 'news' of some fact or occurrence; the action of telling or fact of being told of something." [3]

Braman, S (!989) states that "information is the feed stock for knowledge. In an idea world of unimpeded flow of information amongst individuals of equal capacity to
process the information into knowledge there would be no advantage to be gained by any individual or group as compared with another by possession of information.\(^4\)

According to business dictionary, Information is a Data that (1) has been verified to be accurate and timely, (2) is specific and organized for a purpose, (3) is presented within a context that gives it meaning and relevance, and (4) that can lead to an increase in understanding and decrease in uncertainty.\(^5\)

Marga (1999) has defined the information as the "factual data, ideas and other knowledge emanating from any segment of society that are identified as being of value, sometimes gathered on a regular basis, organized in some fashion, transmitted to others and used in some meaningful form."\(^6\)

Buckland, M. (1991) distinguishes three meanings of information, (1) information as process (2) information as knowledge and (3) information as a thing.\(^7\)

1.3.2: Communication

Shannon & Weaver (1949) defines communication as: “all the procedures by which one mind may affect another. This involves not only written and oral speech, but also music, the pictorial arts, the theatre, the ballet, and in fact all human behavior."\(^8\) Fig.1

According to Library Philosophy and Practice-2010, "Communication is a social activity. It is carried out in various ways in everyday life knowingly and unknowingly. Communication is carried out through verbal and non-verbal channels."\(^9\)

Communication is the establishment of meaning and understanding between people (Kpangban, 1995.)\(^{10}\)

According to Gunther (1988) "communication is two-way process of reaching mutual understanding, in which participants not only exchange (encode-
decode) information, news, ideas and feelings but also create and share meaning. In general, communication is a means of connecting people or places.

According to John (1982) Communication means exchanging information between two parties. “Communication” the word has drive from the Latin word “Communis” and came from French word “communing." It is a process of exchanging any kinds of information between the sender and receiver that is called Communication. Two parties exchange information than that is Communication.

According to American Heritage Dictionary, communication means "the exchange of thoughts, messages, or information, as by speech, signals, writing, or behavior." Thus, Communication can be defined as the two-way meaningful exchange of ideas, emotions, information, attitudes and, most importantly, experiences.

1.3.3: Technology

Bernard Stiegler, in Technics and Time, 1, defines technology in two ways: as "the pursuit of life by means other than life", and as "organized inorganic matter." The Merriam-Webster dictionary offers a definition of the term: "the practical application of knowledge especially in a particular area" and "a capability given by the practical application of knowledge." Technology is often a consequence of science and engineering—although technology as a human activity precedes the two fields. For example, science might study the flow of electrons in electrical conductors, by using already-existing tools and knowledge. This new-found knowledge may then be used by engineers to create new tools and machines, such as semiconductors, computers, and other forms of advanced technology. In this sense, scientists and engineers may both be considered
technologists; the three fields are often considered as one for the purposes of research and reference.\[16\]

According to (Macek, J), a modern definition of "technology", which has lessened barriers to human interaction and, as a result, has helped spawn new subcultures; the rise of cyber culture has, at its basis, the development of the Internet and the computer.\[17\]

According to Chapman (1995) A technology is the structured application of scientific principles and practical knowledge to physical entities and systems\[18\]

According to Litterer, J (1978) "the knowledge of how to produce something is called technology.\[19\]

Thus, the word technology refers to the making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, and methods of organization, in order to solve a problem, improve a preexisting solution to a problem, achieve a goal, handle an applied input/output relation or perform a specific function.

1.3.4: ICT (Information and Communication Technology)

According to Verma, K. (2004), ICT is short for "Information and Communication Technologies." It is similar to IT (Information Technology), but focuses more on telecommunications mediums, such as the Internet, cell phone networks, and satellite technology. Modern forms of ICT have made it possible for users across the world to communicate with each other in real-time on a regular basis. Examples include instant messaging, video-conferencing, online multiplayer gaming, and social networking websites.\[20\]

The term ‘ICT’ is composed of two words, where every word has its own general meaning. Therefore, Information Technology = Information + Technology and Communication Technology = Communication + Technology. ICT is concerned with different aspects of communication, information transmission and information exchange using modern technologies. In the general sense, information
communication technology refers to collection, storage, transmission, dissemination and recovery of information to developed different kinds of techniques and technologies. This kind of facility is being provided in the libraries using computers. [21]

(Ref: http://en.wikipedia.org/wiki/Information_and_communications_technology)

According to wiki dictionary, ICT means "the processing of data using computers, and the movement of data between computers." [22]

According to Kaliammal, A. (2005), ICT refers to technology that provide access to information through telecommunication. [23]

Thus we can say that ICT is technology that supports activities involving information. Such activities include gathering, processing, storing and presenting data. Increasingly these activities also involve collaboration and communication. Hence IT has become ICT.

1.3.5: Development

According to Blowfield, Michael (2005), "Development is a process in which things are improving. It is a process in which something passes by degrees to a different stage especially a more advanced or mature stage. It is a recent event that has some relevance for the present situation. It is an act of improving by expanding or enlarging or refining." [24]

According to business dictionary developments means;

(i) The systematic use of scientific and technical knowledge to meet specific objectives or requirements.

(ii) An extension of the theoretical or practical aspects of concept, design, discovery, or invention.
(iii) The process of economic and social transformation that is based on complex cultural and environmental factors and their interactions.

(iv) The process of adding improvements to a parcel of land, such as grading, subdivisions, drainage, access, roads, utilities.\[25\]

According to free dictionary.com, development is an act of improving by expanding or enlarging or refining.\[26\] Source: http://www.thefreedictionary.com/development

According to oxford learner's dictionaries, development is the gradual growth of something so that it becomes more advanced, stronger, etc.\[27\]

1.3.6: Grant-in-Aid:

According to investopedia, "Grant-in-aid means it is a system to transfer of money from the federal government to a state government, local government or individual person for the purposes of funding a specific project or program. The federal government gets this money from income tax revenues. Grant money is not a loan, and does not have to be repaid, but it does have to be spent according to the federal government's guidelines for that particular grant."\[28\]

According to Collins English dictionary, grant-in-aid means a sum of money grant-in-aid by one government to a lower level of government or to a dependency for a programme, etc.\[29\]

According to 'hinkhoj' "a grant from a central government to a local government."\[30\]

According to Oxford learners dictionary, grant-in-aid means "a sum of money given to a local government or an institution, or to a particular person to allow them to study something."\[31\]
1.3.7: University

According to Shukla, K.H. (1994, p.4), "university is an institution where teaching and research are conducted in more than one discipline of universe of knowledge, and which has authority to award degrees, diplomas and certificates in their respective subjects." [32]

According to Webster's dictionary, "a university is an institution of higher learning providing facilities for teaching and research and authorized to grant academic degrees; specifically one made up of an undergraduate division which confers bachelor's degrees and a graduate division which comprises a graduate school and professional schools each of which may confer master's degrees and doctorates." [33]

According to Random House Webster's College Dictionary, university is "a large and diverse institution of higher learning created to educate for life and for a profession and to grant degrees." [34]

According to Collins English dictionary, "university is an institution of higher education having authority to award bachelors' and higher degrees, usually having research facilities." [35]

According to Webster's 1913 directory "a University is an institution organized and incorporated for the purpose of imparting instruction, examining students, and otherwise promoting education in the higher branches of literature, science, art, etc., empowered to confer degrees in the several arts and faculties, as in theology, law, medicine, music, etc. A university may exist without having any college connected with it, or it may consist of but one college, or it may comprise an assemblage of colleges established in any place, with professors for instructing students in the sciences and other branches of learning." [36]

According to Wikipedia, "a university is an institution of higher education and research which grants academic degrees in a variety of subjects and
provides both undergraduate education and postgraduate education. The word "university" is derived from the Latin universitas magistrorum et scholarium, which roughly means "community of teachers and scholars." [37]

1.3.8: Library

The Whole Library Handbook of America offers this definition: "A library is a collection of resources in a variety of formats that is (1) organized by information professionals or other experts who (2) provide convenient physical, digital, bibliographic, or intellectual access and (3) offer targeted services and programs (4) with the mission of educating, informing, or entertaining a variety of audiences (5) and the goal of stimulating individual learning and advancing society as a whole." [38]

Library is a store house of knowledge. According to online dictionary of library and information science, library word is derived from the Latin liber, meaning "book." In Greek and the Romance languages, the corresponding term is bibliotheca. A collection or group of collections of books and/or other print or non print materials organized and maintained for use."[39]

According to Collins English dictionary, library is a "collection of literary materials, films, CDs, children's toys, etc, kept for borrowing or reference." [40]
A library (from French "librairie"; Latin "liber" = book) is an organized collection of resources made accessible to a defined community for reference or borrowing. A library or library system established, administered, and funded by a university to meet the information, research, and curriculum needs of its students, faculty, and staff."[41] Source: http://en.wikipedia.org/wiki/Library.

According to Merriam Webster's dictionary, library means "collection of information resources in print or in other forms that is organized and made accessible for reading or study. The word derives from the Latin liber ("book"). The origin of libraries lies in the keeping of written records, a practice that dates at least to the 3rd millennium BC in Babylonia. The first libraries as repositories of books were those of the Greek temples and those established in conjunction with the Greek schools of philosophy in the 4th century BC. Today's libraries frequently contain periodicals, microfilms, tapes, videos, compact discs, and other materials in addition to books. The growth of on-line communications networks has enabled library users to search electronically linked databases worldwide."[42]

As per the Gala dictionary, the word ‘granthalaya’ is derived from two words: Granth + Aalaya (means house or place for keeping). In this way, the general meaning of ‘granthalaya’ is the place for keeping books. However, the definition of library has now widened to include many other aspects."[43]

1.3.9: Gujarat

The State of Gujarat was separated from the then Bombay State on May 1, 1960. The north-south boundary of the State extends up to 590 KM, while its east-west width extends up to 500 KM. The state of Gujarat lies on the western coast of India. In fact, it is the westernmost state in India and is bordered by Pakistan in the north east, Madhya Pradesh in the east, and Maharashtra and the Union territories of Diu, Daman, Dadra and Nagar Haveli in the south. The Arabian Sea borders the state both to the west and the south west. The geographical location of Gujarat is between 20° 6'
N t° 24° 42' N north latitude and 68° 10'E to 74° 28'E east longitude. The total area of Gujarat is 1,95,984 square KM, which is about 5.97% of the total area of India.

**1.4: Objectives of the Study**

The purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet. Though each research study has its own specific purpose, we may think of research objectives as falling into a number of following groupings:

(i) To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as exploratory or formulative research studies)

(ii) To portray accurately the characteristics of a particular individual, situation or a group (Studies with this object in view are known as descriptive research studies)

(iii) To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as diagnostic research studies)

(iv) To test a hypothesis of a causal relationship between variables (such studies are known as hypothesis-testing research studies)

Every research, whether educational, entrepreneurial, scientific, historical or social, has some objectives. It is important to delineate the objectives of the research. The present research has following objectives:

1. To study the contribution of ICT in the development of grant-in-aid university libraries of Gujarat.
2. To study the usage of ICT in the libraries of universities of Gujarat.
3. To study the role of ICT tools and techniques used in the grant-in-aid university libraries of Gujarat.
4. To study the attitude of users regarding the use of ICT.
5. To study the financial sources providing ICT facility in the libraries of Gujarat States.
6. To study the impact of ICT.
7. To study the need of ICT in the university libraries.
8. To study the overall development of the grant-in-aid university libraries of Gujarat State in the context of ICT's contribution.

1.5: Research Problems

1.5.1: Research:

Redman and Mory define research as a "systematized effort to gain new knowledge." [44]

D.Slesinger and M. Stephenson in the Encyclopedia of Social Sciences define research as "the manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art." [45]

The Advanced Learner's Dictionary of Current English lays down the meaning of research as "a careful investigation or inquiry especially through search for new facts in any branch of knowledge." [46]

According to Bhattacharya, K. (2010), "research is always begins with a question or problem. Its purpose is to find answers to questions through the application of systematic and scientific methods." [47]

The word research refers to the study to explore deeply in any subject. (Ref: Gala’s Advanced Dictionary p. 406) [48]
1.5.2: Research Problem

Researcher has taken a subject which will show the development of grant-in-aid university libraries of Gujarat state. Researcher thought that since last 7 or 8 years Gujarat has made tremendous development in all sector, particularly in the usage of ICT is increased in the field of education. University Libraries has been started to adopted such ICT tolls rapidly for their development. So, researcher have decided to do study the contribution of ICT in the development of university libraries of Gujarat from which one can know that which library has to do more compare to other for their user community. If, user can be more knowledgeable, if he can get the required information within fraction of time, from entire world, he will be get more benefited in his study and can make his/her carrier far batter. If, the student or person will be very knowledgeable and intelligent, he can be useful for the society and nation also. This can be possible only if the sources of information are proper and should be new, reliable, cost effective, speedy and beneficial to their user. The ICT can fulfill this entire requirement very easily. That's why the researcher has chosen his research work in the direction of ICT. Researcher personally believe that if ICT is anywhere; everything is there as Dr. Ranganathan says in his law of library science that "every user has its books", which may be say like this "Every User has its information." Researcher will try to explain some brief introduction of such main terms which will be going to used in his further research work.

1.6: Research area and boundaries (Limitations)

It is important to critically evaluate the results and the whole study. The present study has certain limitations that need to be taken into account when considering the study and its contributions. The quality of the research has been discussed in the end of Chapter/Part 5 and 6. However, some of these limitations can be seen as fruitful avenues for future research under the same theme.

1. The present research is limited to the libraries of grant-in-aid universities of only Gujarat states.
2. Only the university libraries of Gujarat state receiving grant from the UGC are considered.
3. SFI (Private), Deemed, and Open University Libraries are not considered in this research work.
4. Ayurved Universities, Agricultural Universities and other universities of Gujarat are not considered in the present research as it is not relevant in the work area of researcher.
5. Researcher has given the weightage only on the ICT tools and techniques.
6. Public libraries are not covered under this research.
7. Special libraries and research libraries are not under the preview of this research work.
8. Research work is depending upon the response of the questionnaire distributed to the grant-in-aid university libraries of Gujarat state.
9. The present research is the part of Ph. D. Program and therefore, finance and time are the natural constraints of this research work.
10. "Information and Communication Technology" word will be mentioned as "ICT" in the entire thesis.
11. At the time of registration of present research, researcher has taken only eight Grant-in-aid universities of Gujarat State which is purely relevant to the present research work.

1.7: Significance of Research

Research is actually an act of studying something carefully and extensively in order to attain deep knowledge in the same. For being successful, research should be systematic, arranged, summarized and recorded properly. Research is not only a process that is limited to the field of science. It can, as well, cater to people and scholars from artistic, historic or any other field where an individual is willing to do extensive study to get relevant information. The Significance of research can also be understood keeping in view the following points i.e.

(a) to those students who have to write a master's or Ph.D. thesis, research may mean a careerism or a way to attain a high position in the social structure;
(b) to professionals in research methodology, research may mean a source of livelihood;
(c) to philosophers and thinkers, research may mean the outlet for new ideas and insights;
(d) to literary men and women, research may mean the development of new styles and creative work;
(e) to analysts and intellectuals, research may mean the generalizations of new theories.

If we talk about the present research work, we know that in the present scenario all the development of society in the entire field, it is mostly depend upon the ICT (IT). In the field of education also ICT plays a vital role to develop the internal quality of education. Libraries and the Librarians are also be a part of this ICT for developing the libraries. Now user became aware and trying to get his/her required information from anywhere from the world. Libraries have to play a key role for providing such required information to their user. As per Dr. Ranganathan's say in his second and third law that "Every User/reader has its book, and Every Books has its reader." In the age of information exploitation it is a real need to explore the information towards the end user not only from library physically but from outside the library also as globally. To fulfill the global availability of library resources, implications of ICT is essential. So, researcher has selected his research topic "A contribution of ICT in the development of grant-in-aid university libraries of Gujarat: A study." This research work will help particularly to ascertain the role of ICT in the development of libraries of grant-in-aid universities in the States of Gujarat. Some of the major factors would have been beneficial to the library professionals as well others are as under.

1. This research work is helps to know the contribution of ICT in the grant-in-aid university libraries of Gujarat state.
2. This research work could help to the researchers who wish to know about the ICT and its usefulness for an academic development.
3. This research work could help to study the exchange of ICT among the grant-in-aid universities of Gujarat.
4. The present research can facilitate the comparative study of the use of ICT in the libraries of the grant-in-aid universities of Gujarat.

5. The present study can help to determine the approximate budget for using ICT in the libraries of universities in Gujarat.

6. The present study could help to ascertain the services provided by ICT facility of grant-in-aid university libraries of Gujarat state.

7. The present research can help to study the attitude of employees on the use of ICT.

8. The present study will help to determine the financial sources available for providing ICT facilities to the university libraries.

9. The present study will help to determine the benefits derived by the users of ICT.

10. The present study could help to find out the problems of using ICT and their possible and practical solutions for further development of library.

1.8: Methodology of the study

Most of the research work is begun with the help of such powerful search tools. In this research; researcher began his investigation with literature search. For this purpose researcher accessed various print and online resources like Books, Journals, conference proceedings, dissertations, thesis and online resources from various library and from the internet with different types of searching techniques and tools.

No survey can achieve success without a well-designed questionnaire. All the researcher has to guide him/her is a lengthy list of do's and don'ts born out of the experience of other researchers past and present. Hence, questionnaire design is more of an art than a science. Questionnaires are an inexpensive way to gather data from a potentially large number of respondents. Often they are the only feasible way to reach a number of reviewers large enough to allow statistically analysis of the results. A well-designed questionnaire, which used effectively, can gather information on both the overall performance of the test system as well as information on specific
components of the system. If the questionnaire includes demographic questions on the participants, they can be used to correlate performance and satisfaction with the test system among different groups of users.

1.8.1: Preliminary decisions in questionnaire design

There are nine steps involved in the development of a questionnaire:

1. Decide the information required.
2. Define the target respondents.
3. Choose the method(s) of reaching your target respondents.
4. Decide on question content.
5. Develop the question wording.
6. Put questions into a meaningful order and format.
7. Check the length of the questionnaire.
8. Pre-test the questionnaire.
9. Develop the final survey form.

1.8.2: Piloting the questionnaires

Even after the researcher has proceeded along the lines suggested, the draft questionnaire is a product evolved by one or two minds only. Until it has actually been used in interviews and with respondents, it is impossible to say whether it is going to achieve the desired results. For this reason it is necessary to pre-test the questionnaire before it is used in a full-scale survey, to identify any mistakes that need correcting.

The purpose of design the questionnaire is to determine:

- whether the questions as they are worded will achieve the desired results
- whether the questions have been placed in the best order
- whether the questions are understood by all classes of respondent
- whether additional or specifying questions are needed or whether some questions should be eliminated
• whether the instructions to interviewers are adequate.

To take the consideration in above points the researcher has used a questionnaire as a research instrument which would be used to find out the basic information about the use of ICT in the grant-in-aid university libraries of Gujarat state.

1.8.3: Personal meet

As per the requirement, the researcher will meet the professionals and experts in the field of academic library to explore the views and ideas to proceed further in his research work.

1.9: Research Hypothesis

Hypothesis usually considered as the principal instrument in research. It's main function is to suggest new experiments and observations. Ordinary, when one talks about hypothesis, one simply means a mere assumption or some supposition to be proved or disproved. But for the researcher, hypothesis is a formal question that he intends to resolve. Thus, a hypothesis may be defined as a proposition or a set of proposition set forth as an explanation for the occurrence of some specified group of phenomena either asserted merely as a provisional conjecture to guide some investigation or accepted a highly probable in the light of established facts. Hypothesis states what we are looking for and it is a proposition which can be put to a set to determine its validity.

Here, for the present topic researcher can ask such questions him self to determine and to resolve his topic, such hypothesis are.....

1. Questions on usage and contribution of ICT tools and techniques to develop the grant-in-aid university libraries of Gujarat.
2. Budgetary questions on the use of ICT by the libraries of grant-in-aid universities of Gujarat.
3. Questions on the systems and services provided by the use of ICT.
4. Questions on the attitude of employees for using ICT.
5. Economical questions on the financial sources for using ICT.
6. Questions on the benefits derived by the users of ICT.
7. Questions on ICT related problems and their solutions.
8. How ICT is being used in collection development?
9. How ICT can develop the user community with the use of online resources, consortium, e-books, e-journals etc.?
10. What effect appears due to automation in the grant-in-aid university libraries of Gujarat?
11. How many university libraries having OPAC and WEB OPAC?
12. How many in house activities are done through computer in the university libraries?
13. What benefits gets the user with the implementation of ICT in the grant-in-aid university libraries of Gujarat?

1.9.1: Future perspective of the present research

The present research work would help to open the ways for further future research. The present research can be undertaken on the following subjects.

1. The role of ICT in the development of university libraries
2. The need of automaton in an academic libraries
3. Man, Machine, Computer, Internet, e-resources, digital libraries, and automation: the combination of above is the need of any libraries in present scenario: a study.
5. Computer and information technology in academic libraries: past, present and Future.
1.10: Chapterization

The present research work is consisting of eight chapters mentioned as below.

**Chapter-1:** In this chapter initial introduction of the topic, subject selection, objectives of the study, research area, research problem and hypothesis.

**Chapter-2:** This chapter includes reviews of the literature of previous studies on the base of usage of ICT.

**Chapter-3:** This chapter covers the research methodology of present study.

**Chapter-4:** This chapter emphasized purely on ICT, its origin, development and role.

**Chapter-5:** In this chapter development, role, challenges and features of ICT in grant-in-aid university libraries will be discussed.

**Chapter-6:** In the sixth chapter profile of university library, contribution of ICT and role of U.G.C. will be discussed.

**Chapter-7:** Provides the data analysis using different analysis techniques.

**Chapter-8:** Conclude with findings, suggestions and conclusions for further research work in this area.
End Notes:


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