CHAPTER I
INTRODUCTION

1.0 Overview

Information technologies have developed dramatically during the past 10 years. The use of microprocessors has led to the increasing computing power for decreasing cost. Laser disk technology, fiber optics, packet switching for the transfer of electronic data have all become a reality. The proliferation of large databases available for access over telephone lines and the increased use of computers as tools for the management of information is a fact of life in the developed countries.

The objective of information technology (IT) is to provide better services to users by means of transmitting data or messages in the form of written or printed records, electronic, audio or video signals by using wires, cables and telecommunication techniques. Information technology plays an important role in information handling, i.e. reduction in computing time, capabilities of resource sharing, economic storage capacities of files on video discs, use of TV for displaying information, telecommunication and satellite communication facilities for networking, etc.

There are more genuine reasons today, than ever before, why libraries in the developing countries should automate their services. Increased number of users, an increase in the amount of material being published, changes in the nature of reading materials (i.e. more use of CD-ROMs, electronic journals, online sources of materials, etc.), development of new and cheaper computers, are but some of the reasons for the trust in automation in these countries. In order to exploit the current information
explosion, which is important for rapid development, information technologies are necessary. In addition to normal in-house activities, like cataloguing, acquisition, serials and circulation control, information technologies can also be used for other activities, like data processing. This is very important for academic libraries since most of them call for more and more research work. This important fact is convincing many libraries in the developing countries today that computerisation is no longer a thing of the past.

The basic functions of a modern university may briefly be identified as "conservation of knowledge and ideas, teaching, research, publication, extension and service, and interpretation" (Prasher, 1991). Thus information - its creation, transmission and retrieval - is central to the functioning of any university. The changes in technology affect the methods and economics of collecting, storing, retrieving, communicating and disseminating information. To a large extent, this will affect the way teaching and research are carried out at the university. Without doubt, a well-administered university library directs its activities towards the fulfilment of these functions. For the library to maintain its position as the university’s principal information resource and service, it will have to take advantage of modern information technologies. Customer oriented, technology based services which are proactive will need to be developed. In the future, information will proliferate and become more and more vital. Thus, the new information processing technologies will increase the importance and enlarge the role and capabilities of the academic library (Amekueedee, 1995).
In Iran, provision of computerised services in the libraries was a matter of interest in the Late 1970s, but due to the violent economic and financial conditions as the consequence of the political changes within the country, and the war between Iraq and Iran, libraries had little opportunity to try automation at that time. The cease fire between the Islamic Republic of Iran and Iraq led to the beginning of a reconstruction period in the country. Evaluation of five-year plans, has provided opportunities to the management of the universities and other educational institutions to include computerisation of services in their plans (Farajpahlou, 1994). There is evidence that they now intend to spend some of their budgets on computerisation. The authorities of university libraries in Iran, have realized the importance of library automation and are doing all that is within their power to make the libraries functional based on information technology.

Although the need for automation in a developing country like Iran is becoming more obvious every day, this does not eliminate problems which are becoming ever more crucial because of lack of sufficient essential facilities in the country. As Igwe (1986) believes “in discussing the problems that have delayed the meaningful indulgence in the new technology in libraries, one must think of the non-availability of infrastructural facilities”. The change will require commitment, financial and technical resources, managerial and professional skills, and imagination. It is therefore, essential to continue finding ways and means to overcome these problems in future. All the same, for the time being with the limited available resources, computers be acquired so as to boost the development of the libraries. In the present context, the library authorities should examine the problems faced
by those already automated or likely to be encountered by the libraries under consideration for automation. As the IT environment has become complexed and is continuously changing, therefore, the future of university libraries depends on how quickly and effectively they can manage the change.

1.1 Background

In order to have a better understanding of the distinctive nature of the setting, it is felt desirable to provide a general picture of Iran, Iranian education system, as well as the status of the university libraries in Iran.

1.1.1 Description of Iran

The Islamic Republic of Iran is situated in the Middle East, bordered by Armenia, Azarbaijan, Turkmenistan (the former Soviet Union) and the Caspian sea to the north, by Turkey and Iraq to the west, by the Persian Gulf and the Gulf of Oman to the south, and by Pakistan and Afghanistan to the east. It has an area of 1,648,000 square kilometres, with a population of 60.6 million according to 1996 census. (Iran statistical year book, 1997).

Historically, Iran is an ancient country. It has a little more than 2,500 years of civilization, more than 1,400 years of Islamic culture, and a rich background in education, literature and arts. Until 1979, Iran was a constitutional monarchy headed by "Shah". A prolonged struggle for a popular government culminating in 1978, resulted in the downfall of the "Shah" and victory for the Islamic Revolution. In February 1979, the centuries old monarchy was replaced by popular Islamic Government.

The principal language is Farsi (Persian) spoken by about 50% of
However, because of the variety of ethnic groups inhabiting the country, many dialects are also spoken in different parts of the country. Turkic-speaking Azerbaijanis form approximately 27% of the population, and Kurds, Arabs, Balochis and Turkemans form less than 25% are the most widely spoken.

The principal formal religion is Islam with about 98% population. There are also small minorities of Christian (mainly Armenians), Jews and Zoroastrians as a recognised religion in the country. Iranians adopted Islam as their national religion 12 centuries ago with the fall of the Sassanid dynasty and prior to that Zoroastrianism was the national religion. (Europa world year book, 1998).

According to the latest divisions of the country, Iran is divided into 28 provinces, each with an appointed Governor. Tehran is the capital of the country (Appendix I). Economically, the country is mainly dependent on the oil industry and the export of petroleum products.

1.1.2 Education System in Iran

During the post-revolution period, the country has had many reforms and developments in different areas including, education and higher education. Number of schools, colleges, universities and other educational institutions have increased enormously. Number of students at various levels and that of teachers has also risen accordingly. During 1994-95, according to official figures, the rate of literacy among the population aged six years and over was 78% (Europa world year book, 1998). Though languages spoken may differ by minority groups such as Turk, Kurd, Baloch,
Arab, Turkeman, etc. the only medium of instruction from the primary to the tertiary level is Farsi (Persian).

The current education system in Iran comprises two general levels, for which the responsibility is with the government:

(i) School Education
(ii) Higher Education

1.1.2.1 School Education

School education is under the jurisdiction of the Ministry of Education. School education in Iran consists of twelve years of instruction, divided into three main periods:

- Primary School (Dabestan)
- Guidance Cycle (Doreh-e-rahnamaii)
- Secondary School (Dabirestan)

Public special education through the primary and guidance school levels is compulsory, and thereafter, in other type of schools, education is voluntary. Most primary, guidance and secondary schools are state schools. Primary and guidance education are free and children are generally admitted. A nominal fee is charged for the state-run secondary schools. In general, success in entrance examination is one of the prerequisites to enter any school beyond the compulsory school levels.

Primary education is the first stage of general and compulsory education in Iran. It is a 5-year course and covers children of 6-to-10 years of age. Primary education is designed to provide the basis skills.

Guidance Cycle is the second stage of the compulsory education
and covers children of 11-13 years of age. It is a 3-year course program.

Secondary School education is the third stage of public education. Secondary schooling, sometimes called the Intermediate Cycle, is neither compulsory nor entirely free. It covers children in the age group of 14 to 17 years. Secondary school is divided into two main streams of general academic and vocational/technical.

Formerly, in the Iranian education system, the last four years of education were presented in high schools and students were awarded Secondary Education Certificate (SEC). In the new system which has been operational since 1993, secondary level has been divided into two periods of three years of high school and one year of pre-university period. Having completed the high school period successfully, students are awarded the Secondary School Certificate (SSC). However, those who want to attend the university have to take the pre-university entrance test. This is a general knowledge test which covers syllabus of the subjects studied by the student during the 3 years of high school education. Students who successfully pass the examinations at the end of the pre-university period are awarded the Higher Secondary Certificate (HSC). They become eligible to sit for the national university entrance test (konkur) which enable them to enter the tertiary programmes. Figure 1.1 as under presents the school education levels in Iran.
There are special schools for the blind, deaf and the other handicapped students at the above three levels (Ministry of Education of Islamic Republic of Iran, 1993, PP. 19-20; Monshi Toussi, 1998.

1.1.2.2 Higher Education

Universities and colleges based on the western pattern have not had a long history in Iran. Iran's experience with postsecondary education started in the 1920s with the small teacher's colleges. The first modern Iranian University was established in Tehran, the capital, in 1934. In the
decade following the World War II, the major provincial universities were founded, and in the following years many other institutions for higher education were established. By 1967 the Ministry of Science and Higher Education (after 1979, called the Ministry of Culture and Higher Education) coordinated and monitored most colleges and universities (Library Encyclopedia; 13:28).

At present, the higher education is offered by different groups of institutions as given below:

- Universities (daneshgah);
- Colleges, Higher Institutes, Advanced Schools (madrasai-ali);
- Teacher Training Colleges;
- Post-Secondary Technical Institutions.

Most higher education institutions are state institutions and provide education free of charge. Two Ministries i.e. Culture and Higher Education (MCHE), and Health, Treatment and Medical Education (HTME) are responsible for non-medical and medical higher education, respectively. Establishment of medical education institutions as universities started functioning effectively in 1985. These universities were established on the basis of the medical schools which were actually part of the existing universities. Previously all the universities were controlled by the Ministry of Culture and Higher Education (Farajpahlou 1994). After the implementation of the new plan, all the medical universities have been placed under the control of the Ministry of Health, Treatment and Medical Education. Teacher Training Colleges are under the jurisdiction of the Ministry of Education. In 1991 the number of teacher training centres throughout the country exceeded
187 units. In addition to these, some other ministries such as the Ministry of Telecommunications and the Ministry of Petroleum have their own universities dealing with technological courses/research in their respective professional fields.

Post-secondary technical institutions, although offering the Higher Diploma (also offered by universities) are considered as a higher education award in Iran. These are more closely integrated with the technical and vocational sector of the education system, because of the orientation of their courses.

Universities normally offer a full range of courses; although not all universities currently offer the Ph.D.; Colleges (including teacher training colleges) and higher institutes, offer Associates Diploma and Bachelor degrees, sometimes Master degree but not Ph.D. However, several major universities have doctoral and masters programmes in a considerable variety of subject fields.

The Associate Diploma (Kar-dani) is full time two year course where as the Bachelor degree (Kar-shenasi) normally takes about four years to complete. Master degree (Karshenasi-arshad) requires about two to three years of study. The Doctorate of Philosophy requires a minimum of three years and maximum of six years of study following a master degree.

The language of instruction in higher education (as in all levels of education in Iran) is Farsi (Persian), except at Shiraz university and the College of Petroleum where English is also used.

In terms of institutional structure, all the major universities are composed of largely autonomous faculties (daneshkadeh), each covering a
major subject areas such as literature (letters or arts) and humanities, technology, science, agriculture.

The education system is similar to the US semester credit system. Academic year commences wef September of each calender year and concludes in June of next year. Each academic year has two semesters. The university students are admitted annually through the National University Entrance Examination which is conducted by the MCHE (Country Education Profiles, Iran, 1992).

There are 79 universities, of which 45 deal with non-medical, and the remaining 34 with medical education. Sixteen universities are located in Tehran, i.e. 22 percent of the total universities in the country. Payam Noor University as a non-medical type university was established in 1987 to run distance education courses through 130 study centres in Iran (MCHE, 1998). There were 867,748 students enrolled at Iranian universities and equivalent institutions in 1995-96. Expenditure incurred on education by the Central Government during the financial year 1996-97 was budgeted at IR7,999,000 m (13.1% of the total expenditure) (Europa World year book, 1998).

1.1.2.3 Private Institutions

Private schools and higher education institutions are permitted, mainly to alleviate the financial burden on the state. They are independent with regard to internal policies and administration. These institutions do not receive any financial support from the Government. Private institutions have to abide by MCHE, HTME and Ministry of Education guidelines regarding the courses and educational standards. Islamic Azad University is the most popular private institution established in 1982. It has branches in most of the cities, throughout the country (Davarpanah, 2000).
1.1.3 Library and Information Science Education in Iran

Traditional library practice has a very long drawn history in Iran and it can be traced back to the pre-Islamic era, more than 14 centuries ago. A peep into the annals of history of Iran would show that it had rich and well organized libraries even in the distant past. Some of its libraries are famous for their rich collections, especially that of manuscripts relating to religion, medicine, philosophy and arts. But somehow, Iran had no facilities for formal training and education in librarianship on modern lines till the year 1966. The first academic library education programme was introduced in the University of Tehran in 1966 with the establishment of the Department of Library Science in the School of Education. This programme was offered on a Master’s level with a 2-year programme leading to an M.L.S. degrees (Harvey, 1989).

After the establishment of Islamic Republic of Iran in 1979, there has been a tremendous growth in the field of library and information science education in Iran. Today there are 23 university departments, including one higher education centre, which offer regular training courses in library and information science. Of these universities, 22 are supported by the government while one university namely, Islamic Azad University, Tehran, is a private university. Seven of these 23 universities offer Associate Diploma, whereas only one university has facilities for BLS, MLS and Ph.D. Degree. Seven universities run both BLS and MLS courses. One university offer MLS course only. Fifteen universities have facilities for BLS programme only (Kiani, 1998). The important universities with credible reputation are: Tehran University, Tehran; Tarbiat-Modarres University, Tehran; Iran
As far as selection of students, admission requirements and procedures, duration of courses, curriculum course contents and methods of examination and evaluation are concerned a uniform pattern is followed by all the governmental supported universities.

It would be noteworthy that there are four levels of education in library science in Iranian Universities: Associate Diploma (Ass. Dip.), Bachelor of Library Science (BLS), Master of Library Science (MLS) and Doctorate in library science (Ph.D).

Islamic Azad University started Ph.D. programme in 1991. Admission to this course is open to the candidates who have MLS degree with at least 3.25 out of 4 marks. These candidates have to take an entrance test conducted by the said university (Kiani, 1998). For admission to all of the other mentioned three courses in library science viz: Ass. Dip., BLS and MLS, a centralized national entrance examination but separate for each course is conducted every year by the Ministry of Culture and Higher Education.

All the above levels are adopted to prepare students for two main objectives:

1. To train qualified librarians capable of administering four major types of Iranian libraries: academic, school, public and special.
2. To educate qualified people to be able to run librarianship courses in library science departments in Iranian Universities. However, there
is a need for periodical examination and analysis leading to necessary changes and improvements in curriculum so as to give place to new and desirable areas.

1.1.4 Status of the University Libraries in Iran

University library is defined as a “library or group of libraries which are established, maintained, and administered by a university to meet the need of its students and members of the academic staff” (corea, 1993).

The university libraries are the hub centre of advancement of the academic activities with their motto being “maintain the standards of teaching and research”. If the two major functions of a university are teaching and research, the essential function of a university library, as an equal partner in higher education, is to support the reading and research programmes of the university by acquiring printed and non – printed materials, processing them and making them available for use.

The history of university library in Iran started by the establishment of the first modern university in Tehran in the year 1934. During the last decades higher education institutes have grown rapidly. The growth of universities, especially after Islamic Revolution, necessitated a new approach towards the management of university libraries, in order to meet the ever-changing needs of fast growing student population. This requires such libraries to be well equipped, organized and have comprehensive information records like books, journals, reports, monographs, database readily available to the students, faculty members and other service staff of the institution.
A review of the present status of Iranian university libraries reveals that these libraries are facing problems in their different functions. These are discussed in the succeeding paragraphs.

1.1.4.1 Library System

Usually in each university there is a central library and a number of faculty libraries. Presently, there are three patterns in practice with regard to the organization of library services in Iranian universities. These are:

i) Centralised. In the centralised system, the central library is responsible for the management of the whole library system and provision of almost all technical services for the faculty libraries. As an example Shahid Beheshti University, Tehran, right from the beginning has chosen this type of organisation.

ii) Partially Centralised. In the partially centralized system, the central library provides some of the technical services for the faculty libraries and management of the faculty libraries remains with the parent faculty or school. At universities of Tehran, Isfahan, Tabriz and Ferdowsi, all the faculties have their own libraries under the jurisdiction of their respective faculties. The central library is held responsible for acquisition of library material and technical processing.

iii) Decentralised. In the decentralised library system, there is still a so-called central library which functions as a major information centre on the campus, housing different collections of books and other
library materials. But, in the organisational structure, this library and the faculty libraries remain independent of each other. Shiraz University, Shiraz, has a Director of Libraries, but he acts as a coordinator and each faculty has its own library (Farajpahlou, 1994). Although the aspect of the centralisation of university libraries has now been taken into consideration yet the trends indicate that the administration is not reacting fast to bring in the unity system.

1.1.4.2 Resources and Collection Building

In each university, library collections are usually comprised of Farsi and non-Farsi materials. Non – Farsi collections are mainly in English, Arabic, French and German. The university libraries in Iran, as a matter of fact, are much smaller in respect of resources in comparison with their counterparts in the developed countries. According to purely quantitative surveys among the university libraries in the country, the total library resources in dealing with the student number of the universities are much below the standards set out by the ACRL, Formula A (Association of College and Research Libraries). The main academic library collection, it may be stressed, are at the University of Tehran with 1035, 564 volumes in both printed and non-printed materials in the central and faculty libraries. The central library of this university, with a collection of about 650,000 volumes, is the largest of its type in the country (Haghighi, 1993 a; Monfared, 1994). Based on available statistics, nearly 30% of Iranian university libraries, mostly the faculty libraries, have a collection between 2000 to 5000 books. About 26% of these libraries are subscribing to more than 150 periodicals and 24% of them are subscribing to less than 50 periodicals. It may also be
mentioned that in some libraries the number of periodicals being subscribed to has fallen in recent years, due to an exorbitant increase in the subscription rates (Neshat, 1996).

A survey of the central university libraries of Iran was conducted for a comparative assessment of the various aspects of procurement of periodicals. It revealed that the number of journals procured in these libraries vary considerably. It is also observed that there has been more emphasis on foreign journals rather than on Iranian ones. This is so, because of the specialized needs of the department. The uneven and inadequate allocation of grants to many libraries results in the discontinuity of the periodicals and this results in gaps in maintaining the periodicals sequentially. About 80% of central libraries have no effective acquisition policy and they are acting only subjectively. Also, 75.8% of these libraries use a subjective method for discontinuing, while periodical selection should be carried out according to a plan and on a regular continuing basis (Hashemzadeh, 1996).

Another important factor concerning resources which warrants serious consideration is the place accorded to audio-visual materials in university library acquisition programme of Iran. Although in some libraries such as Iran University of Medical sciences, audiovisual section has been set up but, this type of material is very poorly represented in university libraries of Iran. It could be concluded that the university libraries, as a whole, did not make use of this facility to enrich their collection. Also, no plan seems to be in the offing to this effect. This could be primarily attributed to the lack of information with regard to the impact of microphotography on library
resources, educational programmes and research (Haghighi, 1993 a; Monfared, 1994).

The present acquisition practices offer a wide variation. The book, journal or reference book selection, for the most part, is done by the academic staff, either independent or in collaboration with the library staff. The procurement of foreign origin selected titles is itself a problem against country’s hard earned foreign exchange. Some of the problems encountered by the university libraries in the import of books and journals from the other countries are summarised as:

1. Lack of information about the currently published titles because of non-availability of sufficient bibliographic aids, for these are costly and soon get superseded by new editions;

2. Shortages in foreign exchange allocations, and the rise of the value of foreign currencies such as the American Dollar and British Pound against Iranian currency the Rial;

3. The complicated procedures involved in obtaining the necessary import license, and the difficulties involved in payment, etc;

4. Lack of effective acquisition policy;

5. Lack of expertise in acquisition selection.

In fact, the acquisition of resources, particularly of serial literature, is perhaps the most pressing problem of the present day librarianship in Iran.

Because of the lack of an organized book trade in the country the acquisition of books published in Iran also present problems such as:

(a) The non-appearance of the Iranian National Bibliography on a regular basis;
A dearth of selected and special bibliographies;
The non-existence of publisher’s catalogues on a regular basis;
Limited budget allocations.

1.1.4.3 Technical Processing

Despite the fact that the catalogue in its present shape is losing its importance in the wake of rapidly developing technology, there is no likelihood of such an essential tool vanishing altogether, especially in countries like Iran. As a matter of fact both cataloguing and classification had been the backbone of librarianship in this part of the world.

As compared with other types of libraries the university libraries are in a much better position in information processing. A fairly satisfactory catalogue does exist in all these libraries. Three systems of classification, Library of Congress (LC), Dewey Decimal Classification (DDC), and National Library of Medicine (NLM), are in use at the university libraries of Iran. Therefore, it is almost impossible to impose a standard classification scheme on all the libraries. With the increase in indigenous literature the inadequacy of the above systems was gradually felt. Therefore to catalogue the Farsi materials some home-made tools such as “Farsi Subject Heading”, “Farsi Medical Subject Heading”, authority list of the Government Corporate Bodies, authority list of Author Names have been formulated.

Lately, most central university libraries such as Tehran, Iran (medical sciences), Ferdowsi, Shahid Chamran-Ahwaz have installed computer-based descriptive cataloguing system. Many of these systems
were originally developed to print catalogue cards. Presently, Iranian National Bibliography database, including 70,000 records, is available on machine-readable device. In recent years, some primary attempts have been made to prepare IRANMARC format to include cataloguing data for library materials published in Farsi. Despite some efforts with regard to installation of computer-based descriptive cataloguing system, cataloguing and classification system in university libraries of Iran has not been standardised. The differences on the card catalogues are much and there is no uniformity even in descriptive cataloguing between the libraries. Also, these libraries are still suffering from the delays associated with manual system. Very little attention has been manifested by university libraries towards documentation services, either manual or automated for data processing. These problems can be seen as mainly due to lack of professionally qualified librarians in the technical section of the libraries (National Library of Iran, 1995; Modiramani, 1996).

1.1.4.4 User Services

However, little attention has been paid by Iranian university libraries towards reader’s services. Librarians occupied themselves in administrative problems in the acquisition of materials, and in search of status, but not in reader services.

A few libraries bring out the list of current acquisitions, although not very regularly. To facilitate research work, it is imperative that the university libraries compile bibliographies, indexes and abstracts in anticipation of, or on demand. Although not many university libraries in Iran provide such
services yet, these are now essential. University libraries must take the initiative and also motivate their staff to produce well-planned and classified indexing and abstracting services for covering largely the Iranian periodicals. Information of academic community can be updated through suitable regular Current Awareness Service (CAS). Also, keeping in view the interest of each individual researcher, a regular Selection Dissemination of Information (SDI) service, should be started (Haghighi, 1993b). The photocopying service is the most frequent requested element of user services, in university libraries. Materials such as reference works, rarebooks, thesis, periodicals or heavily used items, which are not normally loaned, may be photocopied. About 51 percent of university libraries in Iran have photocopying machines (Neshat, 1996).

1.1.4.5 User Education

It is generally experienced that an average university student in Iran has poor understanding as to how to use the library resources. There is thus the necessity of organising user education through an appropriate section of the university library. In most cases, the university libraries do not provide any form of instructions in the use of library. Also, there is no formal syllabus for effective use of library, at the school or higher education levels. Only a few departments such as Education Science and Persian Literature at the undergraduate level offer a formal course in the use of library and reference resources (Banieqbal, 1992).
1.1.4.6 Cooperation and Resource Sharing

Knowledge explosion, on the one hand, and the limited resources on the other, make it imperative for the libraries to cooperate and share their resources for mutual benefit. In Iran it is not so. Only 22 percent of Iranian university libraries cooperate with each other in different areas such as interlibrary loans, cooperative acquisitions, cooperative cataloguing. A number of libraries have no planning in such cooperative programmes. The failure of library cooperation is due to the lack of union catalogue of books, lack of union list of serials, lack of electronic data transmission facilities, limited resources, inadequate budget, shortage of professional staff and high cost of post facilities (Neshat, 1996).

1.1.4.7 Personnel

Most of the Iranian university libraries suffer from absence of competent personnel in top managerial positions. Usually, the faculty members are responsible for the libraries. According to surveys conducted in 1992 and 1996 about 26 percent of university library Directors, in general and 35 percent of medical university library Directors in particular are professional. Other libraries are led by the non-professional directors and this affects the efficiency of the library staff which is left without a leader, and their energy is not properly channelised for productive work (Amirhosainie, 1992; Modiramani; 1996).

An analytical examination of the statistics relating to professional and non-professional staff indicates a wide variation in the professional and non-professional staff ratio, in different university libraries. The result of
studies reveal that the overall number of professionals in the university libraries is inadequate for the volume of library collection and the increasing size of university enrolment. The ratio of non-professional staff is much higher than the professional staff. About 28% of the university libraries throughout the country have professional personnel. Most of the libraries have no in-service training for the library staff (Haghighi, 1993 b; Amirhosaini, 1992; Neshat, 1996).

During the last couple of years, the ratio of professional to non-professional staff has been promoted due to increase in library graduates and the fact that the university library seeking the consultancy services. The population in personnel is increasing with more professional staff than non-professional. A very important event in the academic libraries which will revolutionize the whole system of these institutions is the employment of professional librarians as library directors. The faculty members who were responsible for the libraries up to recent times are being replaced by librarians who are educated in the field of library science. Certainly their established position in the libraries will create a tremendous reform.

Staffing structure and hierarchies in university libraries have great implications for managerial styles and the successful functioning of administrative public and technical service units. In Iran, the university library is usually led by the university librarian/library director, and normally one deputy librarian and a number of qualified personnel are in charge of serials, acquisition, cataloguing, and other departments in the library system. The Library Director is directly responsible to the Vice-Chancellor and has immediate control over of the deputy librarian.
The growth of complexities in the administration of universities, as a result of the educational development after Islamic Revolution, necessitated to adopt a new approach towards the management of university libraries in order to meet the ever-changing needs of fast growing student population. This required an analysis of the flow of work, definition of duties, disposition of personnel, preparation of job classification and formulation of standards for professional as well as non-professional staff.

1.1.4.8 Financial Administration

University libraries in Iran receive their funds in varying degrees from the grants allocated out of their respective university budget. The funds of central libraries are generally given for one academic or financial year. The funds of faculty libraries remain under the control of their respective faculty account sections. The proportion varies from university to university. It depends on several factors, e.g. the economic condition of the country, availability of total funds, sources of income, whether or not the library is placed high on the list of priorities of the university and, above all, the attitude of the higher authorities towards the library. Only a few university libraries are provided sufficient funds for their maintenance and growth. Most of the university libraries are suffering because of inadequate funds made available to them.

The success of any institution depends upon the adequate and regular flow of its finance. The foundation of proper financing depends upon the correct and efficient estimation. In Iranian university libraries there is no formula, in particular, for estimating with precision how much finance a
university should invest in its library. A review of the expenditure of university libraries revealed that their budgetting is not made in accordance with specific subject heads. (Haghighi, 1993 a; Farajpahlou, 1994; Aslani, 1995).

1.2 Research Design of The Study

The study was conducted by the survey method. This section outlines the research design of the study undertaken. It describes the statement of the problem, definition, objectives, hypotheses, and the research methodology that has been used to examine the current status of IT application and the problems of IT application in Iranian university libraries.

1.2.1 Statement of the Problem

Every library grows over a period in terms of reading materials, equipment, space, readers, etc. Also, there is a change in the specialized needs of interests of the readers, the kind of services being expected and the speed at which the reading material and the information are being produced and circulated. All these have contributed to a change in the nature of the libraries, which are becoming more and more complex and require rethinking, replanning and reorganisation.

In order to meet all these pressures, information technology is necessary for the efficient functioning and systematic development of fast growing libraries. In the absence of this, it can suffer from a lopsided development. The operations in an automated library system are usually more complex and require more precision in their execution than in a manual system.
A large volume of literature is available on computerisation procedure, and some efforts, have been made to discover what problems actually hinder the successful automation. Despite a large body of literature on IT and IT application, it is not known that whether any systematic study with regard to the problem of IT application has been carried out or not in Iran. Of late, it has been realized that the problem of IT application ought to be studied in the Iranian university libraries as well; because of the fast expansion of university libraries, rapid development of IT, and the rapid trend of recent years toward computerization in Iranian university libraries. Finally, it seems that, information technology has not had much impact on the services provided by these libraries. Unfortunately, they have infrastructural problems with their chosen areas of IT application and these have prevented them from successfully automating library process. In addition to these, in most problematic areas, Iranian university libraries experience problems different from other developing countries, though not in all areas.

This study examined the current status of IT application and the perception of central university library directors towards the problems of information technology application. More specifically, it posed the following general questions:

1. What is the present degree of development of information technology in Iranian university libraries?
2. What infrastructural barriers are militating against the IT application in Iranian university libraries?
1.2.2 Information Technology Infrastructure

Infrastructure is an umbrella term for many activities. It can be said that almost every thing has its infrastructure. Information and similarly information technology has its infrastructure. Some key studies of the infrastructure of information were published during the period 1971-79 by UN ESCO and similar international and national organisations and later on by some individuals such as Ononogbo (1986) and Peaz-Urdaneta (1989). A definition per se as to what the infrastructure of information or information technology is has not been easy to come by in the literature. The term has been defined by outlining elements of such an infrastructure. Atherton (1977) probably provides the most direct definition for information infrastructure. In her words, a country’s information infrastructure is “the national capabilities for making knowledge and information accessible for the transfer of knowledge and information and therefore for putting knowledge to work”.

Information technology is defined as electronic technologies for collecting, storing, processing and communicating information. These are two main categories: those which process information, such as computer systems; and those which disseminate information, such as telecommunication systems. The term can generally be understood to describe systems that combine both. “Information technology infrastructure” is usually considered with respect to its main areas which are: Information education, computer hardware and software, and telecommunication (Farajpahlou, 1994).

Until the 1970s it was assumed that the process of economic and social development was a simple matter of transferring advanced
technology to developing countries and that this process should be carried out as quickly as possible. Many countries were emerging from colonial rule and most of them wished to have the best and the latest technology. It became increasingly obvious that this did not work. Huge debts were incurred, socio-cultural problems developed, projects failed or did not live up to the expectations (Davies, 1985).

Today, many authors such as Ferreiro (1997), Park (1997) and Hannal (1994) believe that informatics development and diffusion depend heavily on infrastructure and policy. Information society cannot be realized by technological possibilities alone. Besides the technological side, some socio-political, and other factors should also be considered. As Igwe (1986) stated, the primary concern today is the provision of the basic infrastructural facilities for meeting the requirements for entering into the electronic age.

Information technology application is a complex process involving many interrelated factors, some related to the library and the library situation, others to the information technology itself and the society. In other words, a variety of technical, managerial, personnel, economical, socio-cultural and governmental factors are likely to affect the IT application in the libraries. The roots of these variables lie, in some cases in the society while in other cases in the libraries. In this study, these interlocking variables have been developed as “information technology infrastructure” to cover all problematic areas. The extent of success in application a new technology depends on achieving the maximum agreement between these interlocking variables as follows:

**Technical Factor.** Hardware, software, telecommunication, standards, computer sharing, power supply, information services.
Managerial Factor. Implementation process, top management support, stability of library management, Co-operation.

Personnel Factor. Professional personnel, staff recruitment, attitudes towards information technology, continuing education of staff.

Economical Factor. Financial resources, cost of information technology, foreign exchange.

Socio – Cultural Factor. Education system, existence of internal information industry support, language, professional associations.

Governmental Factor. National information policy, legal regulation and national agency.

These six components are intrinsically related and dependent on each other, and should be cultivated together. All of these have to be taken into account when IT application is required. The adequacy of infrastructure helps determine on country’s success and another’s failure. Good infrastructure raises information productivity and lowers production costs, but it has to expand fast enough to accommodate growth. As countries develop, the infrastructure must adapt to support changing patterns.

1.2.3 Objectives of The Study

This study was designed and carried out with the view to achieve the following objectives:

1. Providing a current status of information technology application in the university community, including:
   a. Hardware being used;
   b. Applications software;
2. Determining the level of IT application.

3. Finding out the respondent's views concerning the barriers of information technology application, including:
   a. The technical problems;
   b. The managerial problems;
   c. The personnel problems;
   d. The economical problems;
   e. The socio-cultural problems; and
   f. The government problems.

4. Examining to what extent the following factors would affect the problems of IT application in the university libraries:
   a. Level of IT application;
   b. Demographic variables such as sex, age, educational qualification and managerial experience of the respondents;
   c. Professional and non-professional view.

5. Identify the relationship between attitude of the respondents towards IT application and the problems of IT application.

6. Exploring to what extent the level of IT application in the university libraries would increase with the following factors:
   a. Expenditure on IT application; and
   b. Number of computers being used.
7. Providing suggestions for the successful application of information technology in Iranian university libraries.

1.2.4 Research Hypotheses

In the light of the objectives discussed in this chapter and the review of the existing research, the following hypotheses were formulated to guide the present investigation. The null hypotheses and their alternative ones are both stated.

Hypothesis 1

$H_1$: There will be significant difference between the problems of IT application in libraries with high level and low level of IT application.

$H_0$: There will be no significant difference between the problems of IT application in libraries with high level and low level of IT application.

Hypothesis 2

$H_1$: There will be significant difference between the technical, managerial, personnel, economical, socio-cultural and governmental problems of IT application in comparison with each other.

$H_0$: There will be no significant difference between the technical, managerial, personnel, economical, socio-cultural and governmental problems of IT application in comparison with each other.
Hypothesis 3

\( H_1 \) There will be significant difference between the problems of IT application in the MCHE and HTME university libraries.

\( H_0 \) There will be no significant difference between the problems of IT application in the MCHE and HTMT university libraries.

Hypothesis 4

\( H_1 \) There will be significant difference between the perception of the professional and non-professional respondents in relation to the problem of IT application.

\( H_0 \) There will be no significant difference between the perception of the professional and non-professional respondents in relation to the problem of IT application.

Hypothesis 5

\( H_1 \) There will be relationship between the overall attitude of the respondents towards IT usage and the problem of IT application.

\( H_0 \) There will be no relationship between the overall attitude of the respondents towards IT usage and the problem of IT application.

Hypothesis 6

\( H_1 \) Demographic variable such as age, sex, educational qualification and experience would influence the perception of the respondents in relation to the overall problems of IT application.

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$H_0$ Demographic variable such as age, sex, educational qualification and experience would not influence the perception of the respondents in relation to the overall problem of IT application.

**Hypothesis 7**

$H_i$ There will be significant difference between the level of IT application in the MCHE and HTME university libraries.

$H_0$ There will be no significant difference between the level of IT application in the MCHE and HTME university libraries.

**Hypothesis 8**

$H_i$ There will be relationship between the level of IT application and the percentage of annual expenditure on IT.

$H_0$ There will be no relationship between the level of IT application and the percentage of annual expenditure on IT.

**Hypothesis 9**

$H_i$ There will be relationship between the level of IT application and the number of computers in use.

$H_0$ There will be no relationship between the level of IT application and the number of computers in use.

**Hypothesis 10**

$H_i$ Majority of the university libraries would prefer commercial applications software for library automation.

$H_0$ Majority of the university libraries would not prefer commercial applications software for library automation.

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1.2.5 Population of The Study

The design of the study called for the directors of central university libraries as the population. At the time of survey based on directory of higher education (MCHE, 1998), in Iran there were 79 universities under the supervision of two ministers – Culture and Higher Education (MCHE), and Health, Treatment and Medical Education (HTME). A list of these will appear in Appendix II. Also, Appendix I illustrates the distribution of the universities in various provinces of the country. As brought out earlier in each university there is a central library. In this study there is no sampling and questionnaires were sent to the 79 central university libraries based on the following considerations:

1. They are located in different provinces in the country; hence, ensuring a national coverage.
2. These libraries are most active in using various types of information Technology. From all the literature reviewed, it can be seen that the attention given to computerization of library operations in Iran has been maximum in university libraries, closely followed by libraries of research institutes. School and public libraries have fallen into the secondary position in the race towards computerisation.
3. Decisions made by these libraries and their automation practices have usually substantial impact on other libraries in their areas.
4. They belong to academic institutions that are characterized by a significant level of activity in, and commitment to, research which
would, supposedly, require an advanced level of information services.

5. It is assumed that the directors of central libraries, because of their central role, are aware of the problems in other academic libraries.

1.2.6 Research Instrument

To gather the necessary data in the present study, a questionnaire was designed. Major formatting in the construction of the questionnaire was to obtain items to measure current status of information technology application and problems of IT application in the university libraries. In order to produce a reliable questionnaire, efforts have been made to acquire maximum available material on the present topic. Individuals statements on the questionnaire were formulated based on the major selected literature reviewed. It has been recognised as the most applicable and reliable instrument for measuring the current status of IT application and Problems of IT application.

After the drafting of the questionnaire as Gupta (1993) suggests, a pilot study of the instrument was conducted with the aid of a small group of academic librarians. The purpose of this pilot study was to test the validity of the questionnaire, both as a data collection instrument and a statistical measurement device. At this stage it was intended to make the questionnaire easily understandable to the people and to eliminate the probability of misunderstanding, confusion and bias. The questionnaire was refined and improved from the comments of the participants in the pilot study. This approach yielded valuable information for constructing the final instrument.
In addition to the librarian's feedback, the questionnaire was examined for face validity by four judges. All judges were well experienced and trained in their field of expertise. Two of the judges were specialist in teaching library and Information Science, one of them was specialist in English as a foreign language and the fourth judge was from Geography. All of the judges possessed Ph.D. in their field of experience.

The final version of the questionnaire which appears at the end of this report as Appendix III was used to collect the research data is in three parts as follows:

(i) Personal information and attitude of library directors;
(ii) Problems of information technology application;
(iii) Present use of information technology.

The questionnaire contains items which are divided as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal information and attitude of</td>
<td>10</td>
</tr>
<tr>
<td>library directors</td>
<td></td>
</tr>
<tr>
<td>Problems of IT application</td>
<td>37</td>
</tr>
<tr>
<td>Present use of IT application</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
</tr>
</tbody>
</table>

The purpose of the first part was to gather data on the academic and demographic characteristic of library directors and their attitude towards IT application. The second part was intended to gather data on problems of IT application of the libraries under study and the respondent's view concerning the six variables with which this study was concerned, including
the technological, managerial, personnel, economical, socio-cultural and governmental problems. The purpose of the third part was to gather data on current uses of information technology including area of IT application, the type and number of computers, methods of acquiring software, IT expenditure, training programme and existence of IT/computer section in the university library systems.

The pilot and final versions of the questionnaire mostly contained items that required the respondents to rate them on a five and six point Likert-Type Scale. Items on sections of personal information and present use of information technology were of multiple choice type. The reason behind choosing the Likert-Type Scale and multiple choice type were: (i) The difficulty of processing and analysing the other types of scales, (ii) The objectivity of the answers, and (iii) The less amount of time required by the respondents to answer the questions.

The pilot and final versions of the questionnaire had questions specific to the research objectives and hypotheses. In order to eliminate possible response set on the part of respondents, as Balian and Garst (1982) suggest, some items needed to be presented in reverse direction to match the scale order i.e. "strongly agree" to "strongly disagree" or "very high" to "very low".

At the beginning of the questionnaire, a general direction explained the purpose of the research project and assured the respondent of confidentiality of answers. In the direction, library directors were also notified how their accuracy and frank answers were important for achieving meaningful results. A copy of the cover letter that was sent with each questionnaire is included in Appendix IV.
Moreover statistical analysis was performed on the data taken from the instrument. According to Hatch and Farhady (1982) reliability can be defined as the extent to which a test produces consistent results when administered under similar conditions. To assess the reliability of the questionnaire used in the present study, its internal consistency was calculated by using the internal consistency reliability formula. The reason to use this method was that the questionnaire needs to be administered only once. Table 1.1 as given below shows the reliability coefficient of the problems of IT application part of the questionnaire as a whole and its different sub-parts.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Internal Consistency Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Problems</td>
<td>0.89</td>
</tr>
<tr>
<td>Personnel Problems</td>
<td>0.88</td>
</tr>
<tr>
<td>Managerial Problems</td>
<td>0.76</td>
</tr>
<tr>
<td>Economical Problems</td>
<td>0.74</td>
</tr>
<tr>
<td>Socio-Cultural Problems</td>
<td>0.86</td>
</tr>
<tr>
<td>Governmental Problems</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Table 1.1 Reliability Coefficient of the Questionnaire

The findings Table above indicates high correlation among the total score of the questionnaire and its sub-parts. Therefore the questionnaire is consistent in its measurement and thus reliable.
1.2.7 Data Collection

The questionnaire along with a self stamped envelope, under a covering letter was forwarded by mail to the directors of the 79 libraries in June 1998. The name of the universities were obtained from the directory of higher education. After a sufficient length of time had passed a follow-up distribution was made in August, 1998. Also a visit and interview was conducted with sixteen respondents from Mashhad and Tehran. The interview was planned to complete the missing data and clarify the respondent’s suggestion on successful application of information technology in the libraries.

With the initial and follow-up distribution of the questionnaire, a total of approximately 70 per cent of the instrument was returned. The respondent libraries were from all provinces in the country. None of the respondents indicated that they had any difficulty in interpreting the statements on the questionnaire.

1.2.8 Research Variables

As mentioned before, the present study is mainly conducted to investigate the problem of IT application and current state of IT application. Therefore, the major independent variables used to test the hypotheses are those represented in different scales of the questionnaire. In the first group of the hypotheses (1-6), which deals with IT application problems, independent variables included in the project are respondents academic and demographic characteristics, level of IT applications, and library group

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i.e. MCHE and HTME. Major dependent variable in this study is respondents scores on problems of IT application given to them in the second part of the questionnaire. In the second group of the hypotheses (7-10), which deals with the level of IT application, the independent variables are the number of computer being used, the library expenditure in IT, and library group. Here, dependent variable is the level of IT application.

1.2.9 Statistical Analysis of Data

The data collected has been analyzed statistically using appropriate descriptive and inferential techniques included in the SPSS package. On the one hand, the descriptive statistics, including frequency distribution, percentage and mean, median, mode, standard deviation as measures of central tendency and dispersion and graphic representations were used to provide a general picture of the current major trends in respect to the information technology movement in the library systems surveyed. On the other hand, the inferential statistics techniques were intended to point out any functional dependencies among the dependent and independent variables, as discussed earlier. The principal technique used under this category was the Analysis of Variance (ANOVA), Scheffe’s Test, 't'-Test, Chi-square and Pearons’s correlation coefficient, whenever needed.

For those situations where the differences between several variables, not only two, were tested, ANOVA was used. Analysis of variance supplemented by Scheffe’s test was used for paire wise comparis on of variables.

For those situations where only two variables were compared the
't' Test was used. Chi-square was computed for the comparison between a number of frequency distribution.

The main objective of the study of the concept of correlation was to ascertain if there was casual relation of connection between the two groups or series under study. If they were related, there was correlation. Correlation is an absolute relationship. The coefficient of correlation is an indication in itself to point out if the relationship between the two attributes are significant (Thakur, 1993).

The level of significant set for the statistical tests in the study were 0.01 and 0.05.

1.3 Literature Review

In this section the related literature is reviewed. At the end the differences of this study with the reviewed ones, as well as its significances are discussed. The related literatures are categorised into two categories: Iran and other developing countries.

1.3.1 Iran

In spite of the current trend towards computerisation in Iranian university libraries, no serious attempt has been made to study or evaluate the problem of IT application or automation difficulties on the whole.

There have been a number of studies related to information technology in Iran, however most of them have concentrated on limited areas of interest.

In a survey conducted in 1991 in 14 major libraries in Iran, of which 12 were non-academic libraries the status of computer application was
surveyed and analyzed. The result of the survey brought to fore that there was a severe discrepancy between the growth rate of the application of the modern technology, and the fairly primitive nature of the organisation of libraries as they were mainly based on manual activities. According to the finding of this survey, in terms of software application, because of limitations caused by specifications of Farsi script and language, five of libraries using computerised systems preferred to use in house systems. The UNESCO CDS/ISIS ranked second in the sample and Faxbase was preferred third. Other softwares such as DBase III+, Dataease and Sina came afterwards. This study also brought out that not only in the management of Farsi collections, but also for English collections, nine libraries preferred to use home-made non-commercial softwares (Ghanbari-pour, 1991).

Farajpahlou (1994) in an attempt to illustrate the status of automation in Iranian academic libraries conducted a survey in 1991. In the first phase of the study the questionnaire was sent to 28 academic libraries and in the second phase 14 questionnaires more were distributed to the special faculty libraries of the universities in two cities. It was found that nine (31%) of the surveyed libraries were already using computers in their services. Another seven (24%) were in the process of installing computers at the time of survey, and another five (18%) revealed that they would install the computers in the next year. The remaining eight (27%) were planning to buy and install computers in the more distant future. Circulation, acquisitions, periodicals, cataloguing, user services and administrative activities such as accounting were the most frequent functions in which computers were being applied. Two libraries reported offering on-line searching in CD-ROMs and international databases for their users. UNESCO software, CDS/ISIS, is
playing a major role in computerised library services in Iran. Also it has been reported that library automation in Iran is encountering some serious problems. Apart from many minor problems, lack of networked bibliographic databases, unadjusted status of library education programmes in regard to dealing with modern technology, and lack of structural strategic plans for library automation are among the main problems that the Iranian academic libraries have to cope up with.

Horri (1993) and Akbarinejad (1997) discussed the linguistic problems of Persian language in regard to dealing with modern technology. Persian language is an important tool for storage and retrieval of Farsi publications. Farsi script and language because of its special linguistics points causes some limitation in information computerisation. These problems occur in alphabet, morpheme, words and dictation aspects of Persian language. They stated that the computerised systems that are presently available in the market in Iran may not be appropriate to handle effectively the records management and information storage and retrieval tasks in Iranian library in terms of language specifications.

Mahdavi (1993) argues about the common barriers of adequate information flow in Iran. He has noted that the following restrictions are the main problem of information flow in Iran: (a) Lack of national information policy and planning, (b) Non-existence of a national agency to co-ordinate the government’s action in the information system, (c) Lack of appreciation by national decision makers of the role of information in social development, (d) Lack of skills and awareness among users regarding the utilization of new technology, (e) Inadequate telecommunication
infrastructure to support networking, (f) Lack of thesaurus and inadequate indexing services to process the information, (g) Lack of professional staff, (h) Lack of user’s familiarity with foreign languages, (i) Lack of funds, (j) Lack of sufficient hardware and software and traditional education system.

Banieqbal (1994) has surveyed the status of all 22 faculty libraries of Tehran University in general. It was found that only 3 faculty libraries were already using computers in their services. In terms of software, the surveyed libraries had preferred to use the UNESCO CDS/ISIS software. Cataloguing was the only unique function in which computers were being applied. The surveyed faculty libraries listed the following as their problems that had prevented them from acquiring the number of computers desired for automation of all library processes: Lack of funds, professional staff, adequate software and skills regarding the utilization of information technology.

In 1995 the result of a study conducted on the status of automated acquisition systems among all university libraries in Iran showed that 35% of university libraries were using computers in their services. Acquisitions, periodicals, cataloguing, reference services and circulation were the most frequent functions in which computers were being used. As reported, 75% of the surveyed libraries were using computers for cataloguing (Mohseni, 1995).

Mazinani (1995) in a study has discussed the role of libraries in technology transfer. He noted, for improving the role of Iranian libraries in technology transfer the following steps should be come done:
1) Planning national information policy;
2) Giving more attention towards the role of libraries and librarians in the society;
3) Establishing library association;
4) Reforming the procedure of student admission especially in Master degree of library and information science;
5) Development of special library and information centers, especially in industrial areas; and
6) Development of creative education system curriculum especially in Masters and Ph.D. curriculum.

In a survey conducted in 1996 among 23 libraries of medical sciences universities in Iran the status of retrieval and storage systems were surveyed. The result of the study showed that 86.95% of these libraries were using computers in their library services. Of which 26.09% were using computers for information storage, 13.04% for information retrieval and 21.74% for producing card catalogues. 86.95% of computerised libraries were using Medline databases. In the surveyed libraries because lack of skilled personnel information technologies were not being used successfully (modiramani, 1996).

Gholami (1996) conducted study to survey the status of Iranian communication system in dealing with networking among university libraries. The result of the study showed that there have been major achievements in telecommunication system in Iran. Nowadays telecommunication technologies such as Public Data Networking (PDN), Public Switch Telephone Networking (PSTN), Integrated Digital Network
IDN), and Integrated Services Digital Network (ISDN) are available and also in progress in Iran. PDN technology is manufactured in Iran, mainly for national and international data transmission. This kind of networking technology is suitable for library networking and accessing to national and international database. It has been added that almost all of the university library directors under survey, have, at least aspirations to install computer network.

1.3.2 Other Developing Countries

Although no serious studies have reported to deal with the problems of information technology application in Iran, several reports and studies conducted in other countries confirm that there are also such application problems in the developing countries. Most of these studies began in 1980s. In this period the first most comprehensive study dealing with the problems of transferring of information technology in developing countries was carried out by Eres in 1981. In this study the major factors inhibiting information technology transfer in the developing countries are identified and discussed. The problems have been categorized under six categories as: 1) economic, 2) manpower, 3) physio-ecological, 4) cultural, demographic and social, 5) political, 6) existing information infrastructure. Also under each of these six general factors, sub-conditions in the developing countries have been identified.

In the following many investigators such as: Molino and Guadarrama (1983), Griffiths (1983), Menon (1983), Lim (1983), Thorpe (1984), Davies (1985), and Mwinyimbegu (1993) have attempted to investigate the barriers of using IT in the developing countries in general. The investigations
revealed that automation in the developing countries is an undertaking surrounded by a number of harsh realities which constrain the whole objective of computerisation and, thus create obstacles to the proper planning and implementation of IT projects. The obstacles are embedded in areas such as personnel, economic, operational and infrastructural. These obstacles obstruct, and frustrate the efforts to plan, implement, manage, maintain and perpetuate computerisation in the developing countries. Also there are several other factors which make it difficult for developing countries to acquire IT. These include: the political instability of some developing countries; changing priorities of their governments; geographical isolation; lack of scientific impact among top leaders of governments; the centralisation of decision making; and even the near-total absence of compatibility of computer gadgets. All these and more, are hindrances to proper computerisation in the developing countries.

Lau (1987) stated that in Mexico there are several libraries with no computerisation. Foreign software used in the country is limited due to cost and language barriers, factors which fostered software development in the country. He believes that Mexican libraries face the following automation problems:

- Require faster microcomputer with higher storage capacity.
- Need to build local area network, since there are just a few.
- Network connectivity at national level is nil.
- Networking of departmental university libraries is needed.
- The country requires an academic backbone network.
- Computing skills are still limited among libraries.
Standardization has to be achieved in several activities.
Library school programmes are to be updated in this subject.

Mambo (1993) based on the situation in Tanzania has stated that in Africa the problem of IT application is more of a concern for two reasons. One is that her countries economic position are very poor and many of the African countries are unable to develop their own manpower. The presence of many forces oppose to computers in African countries is another problem which should be tackled. These forces include officials in high office and even in institutions such as libraries. The majority of such groups have argued against using computers in their institutions for several reasons, including that of dependency.

Igwe (1986), Enyia (1991) and Abifarin (1993) conducted survey method studies in the university libraries of Nigeria on availability, use and constraints of information technology. The result of these studies revealed that the era of information technology has not yet fully incorporated in Nigerian university libraries. The researchers believe that Nigerian university libraries faced some of the constraints on the use of information technology such as: Limited financial resources, lack of good telecommunication systems, lack of trained manpower, linguistic problems, unreliable power supply, political instability, low level of awareness of the importance of libraries, information and information technology, inadequate documentation services and so on. Iheaturu (1996) stated that the computerisation problems of Nigerian libraries can be best seen from three major areas namely: 1) Manpower, 2) communications infrastructure, and 3) Finance. He argues that if Nigerian university libraries are effectively to fulfil
their teaching, learning, research and community service functions, then the only alternative course of action is to incorporate the application of IT. Although frequent interruption of power supply is still there, but the destructive effect can be minimized with the use of uninterrupted power supply system and power stabilizers. The financial burden could be reduced and progress facilitated by assistance from international bodies.

Amkuedee (1995) surveyed the barriers to successful university library automation in Ghana. In this study, a questionnaire was administered to the staff responsible for library automation. Also interviews were conducted at three universities. The result of the study showed that even though computers have been installed in the three university libraries in Ghana, computerisation has not had much impact on the services provided by these libraries. This is due to problems such as: Lack of trained personnel and programmer, lack of funds, lack of standardization, lack of co-operation among libraries, power-custs and inadequate hardware and software which are militating against successful university library automation. Also the attitude of the university authorities in helping with automation has been unco-operative. On the other hand, the attitude of librarians to automation in the past had not been very positive. People’s attitude must change and libraries be recognized as very important instrument of national development. This would go a long way to ensure success in library automation. Kedem also conducted a survey on application of computer technology in the libraries of Ghana by questionnaire method in 1990. The survey has revealed same results as enumerated above.

Several studies have been done in dealing with status, problems and future of IT application in academic libraries in India such as Prasher (1990),
Ravichandra (1997), Verma and Raj (1997) and Upadhya (1997). The studies indicate that automation activities in academic libraries in India have gradually picked up. Though funding agencies have started providing the hardware facilities yet software facilities are not adequate enough to start automation activities at a reasonable pace. Further, CD-ROM based information services and E-mail services are becoming popular. However, academic libraries in India still face several challenges in automating the libraries. Major challenges include: manpower requirement/development; design, development and maintenance of machine-readable catalogues with certain standards; lack of proper consultancy services, especially in those libraries which are at remote places; lack of proper infrastructures-space, continuous power supply, telecommunication facility, etc, and availability of limited budget and increasing cost of the system. During the period 1994-95, a survey carried out to evaluate technological infrastructure of governmental funded academic and research libraries in India, observed “of the total 1213 government – funded academic libraries in the institutions, 339 libraries responded; among them 64 percent have PCs, 16 percent have LAN, 9 percent have UNIX system, 46 percent have library automation packages, 23 percent have CD-ROM drive, 2 percent have CD-NET, 11 percent have online facility, 45 percent have microfiche reader/printers and 23 percent of them are members of a library network” (Ravichandra, 1997).

Ferreiro (1997) has argued the problem of information technology usage in the Latin American countries1 from different angle. He believes that cultural diversity is broader than ethnic and language considerations alone. It includes gender, age, economic or social conditions, education, technology infrastructure and computer and information literacy. All of these

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1 The surveyed Latin American countries consists of these countries: Argentina, Belize, Bolivia, Brazil, Chile, Columbia, Costa Rica, Cuba, Ecuador, El Salvador, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Dominican R., Surinam, Uruguay, Venezuela.
have to be taken into account when digital information is received or provided. Adoption of English as the second language in Latin American will have a high cost, and the difficulty of converting people into English speakers would be extreme. In spite of projections for positive growth, the inexistence of the necessary infrastructure in each country (basically as phones, wires, bandwidth and computers) is still a strong barrier which marginalizes at least half of the 478 million Latin American. The millions of people who are without computer literacy, who have no access to technology, and thus have little or no possibility to be included. Telephones have grown per capita, but still they are not inexpensive enough for everyday to use them. There are almost one and a half million users of the Internet in Latin America. Of them, Chile has 15470 hosts with 150,000 users which represents 1% of total population. Based on IDC, International Data Corporation facts, Chile in 1995 had 5.04 computers per 100 inhabitants, and Argentina 1.34. Chile, compared to the countries of the European Community, is in the 12th position of 14 countries, where Norway has 21.88, while the average of the EC 11.89. The average of computers in the APEC countries is 9.20, with the USA having the highest with 28.26 and Canada second with 19.31. The situation in Latin America is very poor in this respect, both in the number and the capacity of computers. The low density and inadequacy of the computers in Latin America is a major problem for the use of digital information, as they are insufficient and not powerful enough for digital transmission.

Qari (1998) has reviewed the university library systems in the Arabian countries of Persian Gulf region. The review indicates that the
university library systems in this region resemble each other. There are nine university libraries, of which, four are in Saudi Arabia and one each in Kuwait, Bahrain, Oman, Qatar and the United Arab Emirates. More than 50 percent of library staff of King Abdulaziz university are not LIS graduates, while in the Kuwait university library more than 40 percent do not hold college degrees. The information service-handling activities in these libraries are of many types. There is an absence of a skilled LIS graduate staff that can deal with electronic services, multimedia, the Internet, etc. Furthermore, training programmes to keep the staff current acquainted with the changes in IT do not exist. Arabian country's libraries in Persian Gulf region facing problems associated with knowledge and skills obsolescence and that there is a necessity for rethinking and revising professional competencies to suit the new electronic realities.

According to Qiang Zhu (1998), academic libraries in China face many problems in adoption of information technologies. In more than 1000 academic libraries in China, less than 5 percent of them are using computers for library functions. Peking University library and Tsinghua university libraries are the only two academic libraries in the country that are able to access their online catalogues through the Internet. Most libraries still use manual systems for acquisitions, cataloguing, processing, searching, and circulation. Thus, it is impossible for one library to know the holdings in other libraries collections. In recent years, some university administrations have allocated funds for purchasing computer equipment for their libraries, but they did not allocate funds at the same time for purchasing the necessary software and databases. Therefore, the computer hardware is not being fully utilized. There has been very little
cooperative planning among China's academic libraries. They started their respective automation projects independent of one another. Lack of adequate information resources and technologies has widened the gap between the academic libraries in China and their counterparts in other countries.

Kyung-mook Oh and Meadows (1998) in a study examined the usage of information technology in South Korean universities. In this study questionnaires were sent to all academic staff, research students and research assistants in six selected universities. Interviews were arranged with personnel from the computer centre and the library of each university, along with academic staff who were concerned with departmental computing. The surveyed universities were divided into three groups (A,B,C) depending on the level of their electronic networking activities. The result of the study indicated that the majority of respondents (70%) have less than ten year's experience of using computers. In terms of subject background, engineers make more use of information technology than scientists, and also there are differences between the engineering groups. 86% respondents in group A, 50% in group B, and 26% in group C universities have access to computing facilities such as: data collection, statistical analysis, graphical display, word processing, personal database, electronic mail, bulletin board, file transfer, telnet, OPAC, CD-ROM search, campus database, nationwide database and international database. The survey also investigated the problems respondents faced in their use of information technology. In terms of infrastructural provision, expansion is clearly being affected by lack of finance, lack of trained personnel, lack of access to facilities and lack of cooperation. One problem is the continuing reliance on
assistance from overseas vendors for software development. Lack of organized access to information is a major complaint of users.

The literature reviewed indicates that there has been a steady movement to introduce information technology into information storage and retrieval for both traditional and new areas of application in developing countries. The movement of information technology in libraries will not depend only on the technological changes in the hardware and software but also on the current data processing movement in libraries, and socio-cultural, economical, governmental, personnel and managerial factors.

The literature includes some surveys conducted to investigate the problem of IT application in libraries from different parts of the world. One of the most important differences which might influence the overall result of the studies would seem to be the setting in which the studies take place. However, common to most of the studies discussed in this section is the documented conclusion that developing countries face problems in IT application. These surveys did not, however, go beyond the description of the current practices. In addition, the studies did not try to explain the current trends in light of the current situation in libraries, the status of their data processing affairs, and demographic and academic characteristics and attitude of the respondents.

With realization that these differences exist, the current study has been confined to university libraries of Iran. Attempts have been made to conduct a detailed analysis of current status and problems of IT application. As such, those academic, demographic and attitude factors which are likely to affect the views of the library directors in the context of Iranian university
library situation also have been taken up. Furthermore the IT application problems have been analyzed in the light of the current situation of the libraries. In short, what makes the undertaken study different from the reviewed studies is the target population, area and purpose of the study, and the analysis methods used.

It is expected that the findings of this study may help to:

- Provide librarians with a clear idea about the projects currently taking place in university libraries in Iran.

- Provide library directors and automation planners at the national level with some clear insights as to the present and future trends that would affect their perceptions of future planning in this area.