CHAPTER I

INTRODUCTION
## CHAPTER I

**INTRODUCTION OF THE PROBLEM**

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CHAPTER I

INTRODUCTION OF THE PROBLEM

1.0 INTRODUCTION

The present age is called as *era of Information & Communication Technology (ICT)*. “The ICT generally relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information.”¹ (Curtin, 2001, P. 20). It refers to the integration of computing technology and communication. It can be defined as “anything which allows us to get information, to communicate, or to have an effect on the environment using electronic or digital equipment.”² (Mohanty, 2006, P.17). These technologies include hardware devices; software applications and connectivity e.g. access to, Intranet and other information networks videoconferencing, etc”³ (Kaspar. 2001, P. 1).

The growth and developments of the ICT is one of the most significant achievements of the present century and the university departments are no exception to these changes. The process of globalization and revolution in ICT has been changing Higher Education (HE) system and development. “Technological progress and innovation in most areas have significant increased within recent decades. No area has experienced a more rapid growth than that of IT & ICT. The ICT has been developed dramatically during the recent decades.”⁴ (Rezaee sharifabadi.1997, P.2). The use of microprocessors has led to the increasing computing power for teaching, learning, decreasing cost, etc. Laser disc 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 and communication media as tools for management of
ingformation is a fact of life in the developed countries. This technology
provides better services to users by means of transmitting data or
messages in the various forms of written or printed records, electronic,
audio or video signals and also plays an important role in information
handling, i.e. reduction in computing time, capabilities of resource
sharing, economic storage capabilities of the files on digital discs, use
of TV for displaying information, telecommunication and satellite
communication, facilities for networking, etc.

ICT is the most significant challenge that is now confronting
Education at all levels. The challenge in brief is that how the process of
education and teaching are affected by the increasing pace of the digital
information and communication technology revolution and the
emergence of a knowledge society, where a much greater percentage of
workforce than previously will need skills to create, access and share
knowledge. Advancement in science was a prelude to this movement,
since it is a universal pursuit. “The development of modern means of
communication has enabled humanity to share scientific and
technological progress on a very large scale. In recent decades, the
barriers between nations have broken down as never before, and the
latest development in computer technology and the Internet
communication systems have pushed us into a global era with
unprecedented speed and even a sense of surprise”5 (Khirwadkar,
2005). “The role of ICT in universities and academic departments is
also shifting dramatically from traditional chalkboards, classroom, i.e.
chalk, walk and talk to an instructional aid i.e., Computer-Assisted
Instruction (CAI) to help students and faculty members to learn
different subjects. ICT is now at the centre of education reform efforts that involve its use in coordination with changes in curriculum, teacher training, pedagogy and assessment (Kozma, 2002, P.17). Educators are increasingly aware of the need, and concomitant demand to have skills to access the information to enable them to continue learning through their careers. “In the past most learning was considered to be teacher-centered, the new shift is to a student-centered approach. If faculty members want to help students to achieve a high level of competency and competitiveness, they have no choice but to add ICT in their education systems as an integrated tool in the learning process. They must have a basic qualification including ICT related topics, from the view point of their professional pedagogic and didactic considerations. They must be able to communicate in a much easier and effective way the knowledge about the social importance of ICT” (Shah, 2002, P.5). ICT plays an important role in every aspect of life and university departments are no exception to it. Clearly the advantage of having access to information resources irrespective of geographical location should come as a boost to researchers, faculty teachers, educators, and scientists, especially those in developing countries like Iran. The efficiency and effectiveness of departments of education can be seen only by using the modern means of ICT. The present study investigates “study of deployment of Information and Communication Technology by faculty members in the departments of Education in Iran.

1.1 IRAN (PERSIA)

Iran earlier Persia, officially the Islamic Republic of Iran (Persian transliteration: Jomhuriye Eslami-ye Iran), is a country
Located in *Middle East (West Asia)*. Most of the Middle East countries are part of the Asia, with the exception of Egypt, which is part of Africa, and the north western part of Turkey, which is part of the European landmass.

1.1.1 LOCATION AND AREA

Iran is located in eastern portion of the northern hemisphere, in *South West of Asia*, and is considered one of the *Middle Eastern* countries. Iran borders Armania, Azarbaijan and Turkmenstan to the north, Pakistan and Afghanistan to the east, and Turkey and Iraq to the west, The Persian Gulf and the Gulf of Oman to the south (*Appendix-A*). It has an area of *1,648,195 Square Kilometers*, 16th largest country in the world⁸ (*Iran tody, 2001, P.15*).

1.1.2 HISTORY

Historically, Iran is an *ancient country*, settled some 3500 to 4000 years ago by *Aryan people*, who migrated from the region around the Aral Sea⁹ (*Gitashenasi, P. 11*). The written history of Iran begins in about 3200 years BC⁰¹⁰ (*History of Iran, 2007*) Iran has more than 2,500 years 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* (king). A prolonged struggled for a popular government culminating in 1978, resulted in the down fall of the Shah and victory for the *Islamic Revolution*. In February 1979, the centuries old monarchy was replaced by an *Islamic Government*. Since February 1979 Iran is an *Islamic Republic*. The founder of the Islamic Republic and the Supreme leader of the Revelotion was *Emam Khomeini*, who passed away in June 1989. The Constitution defines the president as the highest state authority after
the supreme leader, who is elected by universal suffrage for a term of four years.

1.1.3 TOPOGRAPHY AND GEOGRAPHY

About 90% of the territory of Iran lies in the western part of the Iranian plateau. Iran is thus a mountainous country. Mountains cover more than half of the country’s area¹¹ (Iran today, 2001, P.16). About 14% of Iran is arable land, 8% forest, 47% natural pastures; and the remaining 31% is infertile land, including desert”¹² (Yale, 2004, P. 24). There are four major drainage basins in Iran, namely: The Caspian Sea, The Persian Gulf, Oman Sea and the largest lake inside the country is Orumiyeh lake basin. Because of its varied topography and altitude, Iran has a variety of climates. Winters (December to February) cold in most parts of the country, while in summer (June to August) hot. The average temperature for the whole country is 18 degrees centigrade and the maximum 50% (in southern deserts and low lands) and the minimum of -30 degree are common to the mountainous areas of the north and northwest¹³ (Iran today, 2001, P.16).

1.1.4 POPULATION

The total population of Iran is 70,472,846: Females: 49.1% and males: 50.9%¹⁴ (Iran statistics center, 2007). Iran is the 15th populous country in the world with an average density of 35.26 per sq.km¹⁵ (Iran today, 2001, P. 22) and 68% of the population live in cities.”¹⁶ (Iran statistics center. 2007). Tehran, the capital of the country by itself claimed 19% (13,000,000) of the country’s population.¹⁷ (Census report, 2007). “The percentage of literates over 6 years of age
is 82.5% in the urban areas and 63.1% in the rural areas. (Iran today, 2001, P. 22).

1.1.5 LANGUAGE AND RELIGION

The national language of Iran is Farsi (Persian) an Indo-European language spoken by about 50% of the population. 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) are approximately 25% of the population, and Kurdish 9%, while other communicative languages, which comprise the remaining 16%, include Arabic, Balochi and Turkemeni, Armenian, etc. (Yale & Ham, 2004, P. 25).

The official religion is the Islam with about 98.8% population. Out of this 91% are Shi- as and the remaining belong to other branches of Islam such as: Hanafi, Shafe-ee, Maleki and Zeidi. There are also small minorities of Christians 0.7% (mainly Armenians), Jews 0.3% and Zoroastrians 0.1% as the recognised religions in the country (Iran today, 2001, P. 24). “Iranians adopted Islam as their national religion 12 centuries ago with the fall of the Sassanid Dynasty and prior to that, Zoroastrainism was the national religion of Iran.” (History of Iran, 2007).

1.1.6 ADMINISTRATIVE DIVISIONS

According to the latest divisions of the country, Iran is divided into 30 provinces (Persian transliteration ostan), each with appointed Governor (Ostandar) (Appendix-B). Tehran is the capital of the country.

1.2 EDUCATIONAL SYSTEM IN IRAN

Since the Islamic Revolution of 1979 in Iran, the number of schools, colleges, universities and other educational institutions has increased
enormously. So as to number of students at various levels and consequently, teachers have also risen, accordingly. “Educational system in Iran is basically divided into five steps viz:

1) pre-school
2) primary
3) Middle or guidance
4) Secondary
5) post-secondary” (Education system in Iran, 2007).

Though languages spoken may differ by minority such as: Turk, Baloch, Arab, Turkeman, etc. However the only medium of instruction from the primary to the tertiary level is farsi (Persian) language. The current education system in Iran comprises two general levels: School Education and Higher Education.

1.2.1 SCHOOL EDUCATION

The School System is under the jurisdiction of the Ministry of Education and Training (MET). In addition to schools, this Ministry also has the responsibility for arranging some teacher training programs and some technical institutes. School education in Iran consists of twelve years of instruction divided into three main periods:

1. Primary School (Dabestan)
2. Guidance Cycle (Doreh-erahnama-ee)
3. Secondary School (Dabirestan)

Public special education through the primary and guidance school levels is compulsory, and there after, in other type of schools, education is voluntary. Most of the 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 pre-requisites to enter any school beyond the compulsory school levels.

1. **Primary education**: Primary education is the first stage of general and compulsory education in Iran. It is a five-year course and covers children of six to ten years of age.

2. **Guidance Cycle**: Guidance Cycle is the second stage of the compulsory education and covers children of 11–13 years of age. It is a three year course program.

3. **Secondary School Education**: Secondary School Education is the third stage of public education. Secondary Education, Secondary School, sometimes called the Intermediate Cycle, is neither compulsory nor entirely free. It covers children in the age group of 14 to 17 years. Formerly, in the Iranian educational system, the last four years of education were presented in high school and students were awarded Secondary Education Certificate (SEC). In the new system, operational since 1993, secondary level has been divided into two periods of three years of:

   * high school  
   * pre-university period (one year)

   Having completed the high school period successfully, students are awarded the Secondary School Certificate (SSC). However, those who want to attend the universities have to take the pre-university entrance test. This is a general knowledge test, which covers syllabus of subjects studied by the student during the three years of high school education. Students, who successfully pass examinations at 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 (Davarpanah, 2000, P.11-14). There are also special schools for the blind, deaf and the other handicapped students at the above three levels in Iran.

1.2.2 HIGHER EDUCATION IN IRAN

Documented history of education in Iran dates back to the third millennia BC at the time of the Elamites. Clay tablets, marked with stylus, that were found in the first capital city of the world Susa, when deciphered, revealed they were homework assignments done by the students of this country’s ancestors. Upon the establishment of the Achaemenian Empire (550-334 BC), as the first and most benevolent of all empires, a multitude of races, religions, languages, and cultures coexisted peacefully under one central government.

Higher education in Iran subsequently commenced when the Sassanid founded the Jondi Shapur University in 250 A.D in southwestern present Iran as the center for higher learning. Later, many books were translated from different languages into Middle Persian so that the library of Jondi Shapur had one of the largest collections of books in the world. Soon after the rise of Islam in the seventh century, Iranians converted to Islam and its prophet Muhammad (P.B.U.H), who placed high emphasis on the paramount significance of education by advising the believers to seek knowledge even if in China. (China was considered then as the most remote and far-fetched part of the world to the inhabitants of Mesopotamia).

Under the Islamic teachings, for centuries Iran was the center of excellence with such prominent figures as: Sibovayh 840 (the author of the first Arabic dictionary and grammar book), Kharazmi 850 (the writer of the first algebra book), Razi 865-925 (who found out the
medical use for alcohol), Avicena 980-1037 (a renowned sage who authored over 200 books, including the Cannon of Medicine as the first encyclopedia of medicine), Ghazali 1058-1111 (a theologian), khayam 1048-1122 (a celebrated sage who, as a mathematician, reformed the Persian solar calendar into its still-in-use structure and, as an astronomer, built an observatory in Isfahan), Nasir-ed Deen Toosi 1274- (an astronomer who, some 200 years before Copernicus, developed mathematical calculations, showing the earth’s revolution around the sun and its spherical shape and size), along with a host of great poets and thinkers like Ferdowsi, Rumi, Sa’di, and Hafez Shirazi who recorded human’s mental, and societal developments in the course of time in their magical, harmonious tongues.

Modern higher education, however, initiated when students were awarded scholarships to pursue their studies abroad. Following the trend, in 1851 Amir Kabir, the wise Minister of Qajarids founded Dar-al-fonoon (House of Techniques) in Tehran. It was in this institution that Iranian, as well as foreign, instructors were recruited to provide modern education to the applicants.

A number of teacher training and medical schools were subsequently founded. Eventually, in 1934 the establishment of the University of Tehran (UT) marked the onset of university education, in the modern sense of the world. Shortly after, colleges and universities were added to the educational institutions of the country.

Upon the victory of the Islamic Revolution in February 1979, the need for higher education was felt more than ever in the country had staged a path towards self-sufficiency. To that end, after a brief halt in higher education for the purpose of restructuring the educational system
known as “the cultural Revolution” a large array of higher education institutions were established across the country to provide more-needed programs to the interested people. The student population index quadrupled in less than ten years.

Planning and policy making for the higher education at the national level is mainly shouldered by the parliament (Islamic Consultatives Assembly), the Cabinet, the Supreme Council of Cultural Revolution, and the National Planning and Management Organization.

The term higher education in Iran is attributed to the education offered by either a governmental or a non-governmental university or an institute at the tertiary level. Upon completion of the required courses, the student is awarded an Associate’s; a Bachelor’s a Master’s, or a Doctoral degree. Higher education in Iran is, however, offered by governmental and non-governmental sectors. The governmental higher education sector includes 105 universities, 16 independent schools, 9 higher education centers. Public (governmental) higher education is financed by state funds and includes the programs offered by the Ministry of Science, Research and Technology (MSRT), as well as the Ministry of Health, and Medical Education (MHME), whereas non-governmental higher education is not funded by the government. Islamic Azad University (IAU), with over 150 branches throughout the country and some branches abroad is a sample of non-governmental university. Regular Higher Education forms the major body of the higher education in Iran. It refers to the kind of education that requires the students to attend classes in two semesters during each school year, in line with the educational calendar starting in September and finishing in June. Regular higher education classes are held daytime or in the
evenings. Daytime programs include the regular morning and afternoon classes in which no student is charged a tuition fee. In daytime programs, all fields of study and levels of study are offered. In order to meet the growing public demand for higher education, the facilities of the universities are mobilized to offer education in the evening. The funding of this kind of education, called Evening Programs, is secured through the tuition fees the students pay.

Distance Higher Education is another type of education in which students are not required to attend classes. Instead, they have their hands on the required course books through intermediary links mainly through Payame Noor University. Distance higher education aims to provide opportunities for those interested in higher education but not able to enter the traditional educational system.

Medical Higher Education applies to that part of higher education delegated to the Ministry of Health, and Medical Education upon parliament ratification in 1985. Ever since higher education in medicine and related fields have been offered by the Ministry of Health, and Medical Education, as well as the medical sector of the Islamic Azad University.

Applied-Scientific Higher Education, a vocational and technical type of higher education, refers to a particular type of education that aims to upgrade the know-how, productivity, and experience in various professions.

Modular Applied-Scientific Higher Education stands for a discrete form of higher education in which students take independent modules of vocational skills. Different modules eventually lead to the acquisition
of a new skill. The graduates of this type of education are awarded an associate’s degree.

Technical-Vocational Higher Education is mostly provided by the centers affiliated to the Ministry of Education. Technical-vocational programs aim to train, refresh, or promote the capabilities of high school teachers who work in specialized vocational fields. And finally Further Education is a post secondary education which is offered on the basis of applied specialized, short-term courses. Upon successful completion of the programs, participants receive a certificate, but not a degree. Admissions to universities are possible through four types of entrance examinations; a nation-wide university entrance examinations, Payame-e-Noor University conditional admission, entrance examination for the Comprehensive Scientific-Applied University, and a non-centralized qualifications exam for the doctoral applicants.

Those higher education application who manage to pass the entrance examination and find their way to universities and higher education centers are termed as the “admitted”. The admitted, upon enrollment, are known as “student” and can major in one of the study fields in **Humanities, Basic Science, Engineering, Agriculture and veterinary, Medical sciences, or Arts.**

Higher education programs are offered at various “levels of study”, There are a specific number of credit hours for each level of study that must be covered within a certain time limit. The undergraduate students, based upon their study level, can receive an Associate’s Degree (68-72 credits, normally covered in four semesters). Or a Bachelor’s Degree (130-145 credits, normally covered in eight semesters). The graduate students receive a Master’s Degree upon
completion of 28-32 credits, normally covered in four semesters, a professional Doctorate Degree or a Ph.D degree which requires 42-50 credits, normally covered in 8-9 semesters. Graduate students must submit a thesis or a dissertation in partial fulfillment for the masters and doctoral degrees, respectively. All collegiate degrees are conferred by the Ministry of Science, Research, and Technology upon successful completion of the programs. Faculty members are employed at the higher education system of Iran as members of the teaching staff or the research staff.

Faculty members are chosen among those applicants who hold a doctoral degree and meet the qualifications required. Based upon their degrees, years of experience, and populations, they carry such titles as Educators, Instructor, Assistant Professor, Associate Professor, and Professor^{24} (Higher education in Iran, 2005, P.17-22).

1.2.3 NON-GOVERNMENTAL HIGHER EDUCATION IN IRAN

Private universities and higher education institutions are permitted, mainly to alleviate the financial burden on the state. These universities and institutions do not receive any financial support from the government. Private universities and institutions have to abide MSRT, MHTME and Ministry of Education guidelines regarding courses and education standards. Islamic Azad University is the most popular private university established in 1982. It has 124 branches in the various cities, throughout the country^{25} (IAU report, 2006). Number of faculty members and students in universities of Iran has been given in Tables 1.1 -1.2
### University Students’ Distribution by Educational Levels in Iran

<table>
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<th>Educational Levels</th>
<th>Sectors</th>
<th>Governmental Universities</th>
<th>Non-governmental Universities &amp; Institutes</th>
<th>Total</th>
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<tr>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Associate of Arts</td>
<td>Governmental Universities</td>
<td>279038</td>
<td>24.42</td>
<td>24626</td>
</tr>
<tr>
<td></td>
<td>Non-governmental Universities &amp; Institutes</td>
<td>763007</td>
<td>66.77</td>
<td>30953</td>
</tr>
<tr>
<td>Bachelors</td>
<td>Governmental Universities</td>
<td>54880</td>
<td>4.8</td>
<td>2895</td>
</tr>
<tr>
<td></td>
<td>Non-governmental Universities &amp; Institutes</td>
<td>29689</td>
<td>2.59</td>
<td></td>
</tr>
<tr>
<td>Masters</td>
<td>Governmental Universities</td>
<td>15999</td>
<td>1.4</td>
<td>208</td>
</tr>
<tr>
<td></td>
<td>Non-governmental Universities &amp; Institutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Doctorate</td>
<td>Governmental Universities</td>
<td>1142608</td>
<td>100</td>
<td>58682</td>
</tr>
<tr>
<td>PhD</td>
<td>Governmental Universities</td>
<td></td>
<td></td>
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**Table- 1.1**

Table 1.1 “indicates students’ distributions based on educational levels in universities of Iran. It also shows that total 2398811 students are in universities of Iran (governmental and non-governmental). This comprises of Associate of Arts students (720926), Bachelor students (1525110), Master students (92991), Professional Doctorate (40475) and PhD (19309). This table also displays that 48% of the students study in the governmental universities 2% in non-governmental higher education institutes and 50% in non-governmental Islamic Azad Universities. According to this table number of students in non-governmental universities are more than governmental universities.” (Statistic of higher education in Iran .2006, P.1)
### Full-time Faculty Members Distribution by Academic Ranks and Sectors in Iran

<table>
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<th>Sectors</th>
<th>Governmental</th>
<th>Non-governmental</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
</tr>
<tr>
<td>Professors</td>
<td>1297</td>
<td>5.05</td>
<td>153</td>
</tr>
<tr>
<td>Associate professors</td>
<td>2765</td>
<td>10.76</td>
<td>164</td>
</tr>
<tr>
<td>Assistant professors</td>
<td>12295</td>
<td>47.87</td>
<td>2697</td>
</tr>
<tr>
<td>Lecturers</td>
<td>8945</td>
<td>34.83</td>
<td>11336</td>
</tr>
<tr>
<td>Educators</td>
<td>378</td>
<td>1.47</td>
<td>506</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25680</td>
<td>100</td>
<td>14856</td>
</tr>
</tbody>
</table>

**Table 1.2**

Table 1.2 “indicates full time faculty members’ distribution by academic ranks and sectors (governmental and non-governmental) in Iran. It shows that maximum number of faculty members 20281 (50%) are Lecturers followed by 14992 (37%), Assistant Professors, 2929 (7.2%) Associate Professors, 1297 (3.6%) Professors and 884 (2.2%) Educators. It can be concluded that number of faculty members in governmental universities are more than non-governmental.”

1.3 ICT IN IRAN

In 2002, Iran introduced its ICT Agenda with the aim to erect and invest in further developing the necessary infrastructure, and establish the right legal and business environment for rapid growth within the ICT sector in Iran.

1.3.1 ICT IN FRASTRUCTURE

Infrastructure is a key factor for many activities of any organization. Some key studies of the infrastructure of information were published
during the period 1971-79 by UNESCO and similar international and national organizations and later on by some individuals such as Ononogbo\textsuperscript{28} (Ononogbo, 1976) and Peaz-Urdaneta\textsuperscript{29} (Paez, 1980). 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\textsuperscript{30} (Atherton, 1977) defined information infrastructure, the national capabilities for making knowledge and information accessible for the transfer of knowledge and information and therefore for putting knowledge to work.

Until the 1970s, it was assumed that 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 quickly as possible. However now many countries are emerging from colonial rule and most of them wish 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\textsuperscript{31} (Davies, 1985). Today, many authors such as Ferreiro\textsuperscript{32} (Ferreiro, 1997), Park\textsuperscript{33} and Hanna\textsuperscript{34} 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 considered. As Igwe stated that the primary concern today is the provision of the basic infrastructural facilities for meeting the requirements for entering into the electronic age\textsuperscript{35} (Igwe, 1986).
In Iran, major steps have been taken especially in the recent years to maintain a steady growth in the Information and Communication Technology sector. Nonetheless, the sector today faces major and some basic challenges requiring a lot more to be carried out to narrow the gap between developed and developing countries. Consequently, there is a heavy investment in the telecommunication system. Since 2000, it shows that the number of telephone lines, cellular phone, and radio and television stations have grown.\textsuperscript{36} (Kousha and Abdoli, 2004). On the eve of the Islamic Revolution, there had been 850,000 fixed telephone lines in service in Iran, however by the end of 1988, it rose to 1,879,682, and in 1993 increased to 3,597,900 lines. The growth remained unabated since. By 1999, there were 8,400,000 telephone lines in service throughout the country, while in 2005 the number of telephone lines 17.4 million and mobile phones were 4.6 million and estimate that it will reach to 35 million for fixed lines and 28 million lines for mobiles in 2009.\textsuperscript{37} (Sadri, 2005). It is observed that the number of main lines in the urban systems have approximately been doubled during five years and thousands of mobile cellular subscribers are being served.

There has been a considerable increase in number of the Internet users in the recent years. According to national statistics, from early 2005 to 2009, number of Internet users will increase from 6.5 million to more than 25 million. Many villages (43000) have been brought into the net.\textsuperscript{38} (Rahimi, 2003). In 2005 there was one computer for per 12 people. Regarding such growth in investing on human resources and ICT infrastructure, the government has stressed the importance of improving more access to novel technologies and using ICT potential in
private and governmental sectors, through allocation of about 25 billion dollars initiating budget for the development of communication and ICT infrastructure during the fourth-fifth Year National Development Plan of Iran. There were more than 30000 km operational Fiber-Optic Network and 35000 high speed ports. Total international Internet gateway bandwidth has been 550 Mbps in 2005. Furthermore, some projects have been carried out for developing ICT infrastructure in the country. The latest macro project in the field was the National Internet Project, became operational in September 2006 and domestic users have been able to receive web services at far lower costs.

Consequently, it becomes necessary to build the infrastructure to support the development and properly use of ICT, including the facilities for training and communication infrastructure, provision for maintenance facilities for computer hardware and software and organizational mechanism for procurement, development and application of the technology.\(^\text{39}\) (Report of consultation meeting, 2006). These conditions are not only required at one sector or one organization, but it is also necessary to develop this capability at national level. Accordingly, the government in the country has a major role to play if the country is to stand perfectly in this global information arena\(^\text{40}\) (Pradhan, 2002).

### 1.3.2 ICT NATIONAL POLICITIES STRATEGIES AND PROGRAMMES

As mentioned before ICT plays an important role in the development processes of countries. It affects all society sectors including industry, economic, agriculture, mining, banking, commerce, health-care, education, publishing, environment, management, energy conservation,
ICT can be the main factor in increasing productivity in public administration, communications infrastructure, industry and agriculture. Furthermore, many studies have already shown that ICT can be useful for educational purposes, geographical applications, financial applications, health systems, tourism and other sectors. Such centralized ICT system requires administrative and supportable infrastructure (Hanna, 1994). Governments can play a catalytic role in developing this infrastructure and stimulating the effective use of these infrastructures in supporting of nation-wide competitiveness. About 15 years ago, in Iran ICT looked like a vital tool for economic and social development, but no priority and national plan were defined by the government in this regard. Some organizations had their own ICT plans, but they were old and out dated with the limited specific budget allocation at national level. Several authorities with different and sometimes overlapping responsibilities were involved in ICT application (Tabesh, 2004). The oldest entity, which is responsible for developing ICT policies and strategies in Iran, is the High Council of Informatics, established after the Iran Revolution to systemize Information Technologies and ICT activities. Its primary role was to assess and classify ICT enterprises and supervise software development activities. Another entity is the National ICT Agency (NICTA); in Farsi called TAKFA. It has the overall responsibility for ICT initiatives in the country. NICTA (TAKFA) is responsible for designing and managing the Application Plan of Information and Communication Technology in Iran. Further, the Iran Informatics Companies Association (IRICA) was formed in 1944 with the primary objective of being a catalyst for the growth of the
ICT industry. IRICA is a non-governmental, not-for-profit organization, financed mainly by the annual payments of its 600 members. The Information and Communication Technology Application program (TAKFA) is, at this point, the most important policy initiative for Iran. Its mission was to foster the development of a knowledge-based economy by achieving the following objectives:

i) Creating infrastructure (network, law and security) for Iran’s information and communications development.

ii) Compiling and applying a comprehensive system of communication and information.

iii) Developing productive employment.

iv) Promoting the development of ICT skills at both individual and institutional levels.

v) Implementing flagship projects. A number of plans are to be developed to guide the pursuit of these objectives:

i) A plan for electronic government (system, virtual network, law and security).

ii) A plan for promoting ICT application in education and expanding digital skills in Iran’s manpower.

iii) A plan for expanding ICT in higher education.

iv) A plan for expanding ICT in health, treatment and medical education.

v) A plan for expanding ICT in economy, commerce and trade.
vi) A plan for expanding the culture and knowledge of ICT, and strengthening the Persian script and language in the computer environment.

vii) A plan for expanding active SME in ICT by creating ICT centers and ICT parks.

A number of initiatives have been undertaken to execute these plans, and the most relevant to the education sector are:

1. Developing a science network (universities and research institutes).
2. Developing a growth network (Ministry of Education Schools).
3. Creating a national information portal (i.e., creation of a web for all executive bodies and dissemination of relevant information through it.
4. Developing ICT in schools.
5. Creating digital libraries.
6. Developing remote control medical services.

The main activities of TAKFA that have affected education in Iran are:

1. The application of ICT in schools and workforce development (at primary and secondary schools as well as vocational training institutes).
2. The application of ICT in higher education (Medicine, Engineering, Social Sciences, Arts, etc.).
3. The development of ICT in cultural issues (Farsi writing, usage, art, culture and, etc).

In all, a total of 1,650 projects have been officially submitted to the Supreme Council of ICT (SCICT) with a total value of over 2.7 billion US$. Most of them were for consultancy, concept development and feasibility studies, creating infrastructures in organizations, completion
of projects defined in the past and human resource development\textsuperscript{53} (Sadeghnezhed, 2001).

1.3.3 ICT ACCESS AND USE IN EDUCATION

The most widely used ICT(s) are multimedia CD-ROMs, web portals, electronic support of traditional curricula (PowerPoint presentations, etc.) and online newsgroups. The governmental partners in Iranian education are:

i) The Ministry of Education has planned to develop ICT applications in primary and secondary education. The Growth Network is the ministry’s plan for establishing ICT facilities in schools. Guidelines for the Growth Network include research and development, putting hardware and the Internet connectivity in place, developing educational materials and providing training for people in the education sector.

ii) The Vocational Training Institute has a few courses on IT and ICT.

iii) The Tehran Technical Training Institute provides training leading to the Microsoft Certificate of System Engineering (MCSE).

iv) The Electronic Education Committee of TAKFA is responsible for expanding the use of ICT in education by continuing to manage the progress of projects, conducting seminars to develop ICT expertise, identifying appropriate educational models and establishing a digital education database. They continue to develop education software products.

v) The Iran National Radio and TV offers the Education Channel, which offers many Programmes in the realm of ICT-related subjects ranging from how to use various software to scientific shows and documentaries. There is also a radio station, the Education Station,
which offers similar programmes. The other effective public broadcasting medium is the tele text provided by TV channels 2 (Farsi version) and 3 (English version). It offers a wide variety of information that is periodically updated, as well as daily information on topical matters.

vi) The Private Sectors offers computer training in computer labs certified by the Ministry of Jobs and Social Insurance. These are the centers of ICT-related training (Sadeghnezhed, 2001).

1.3.3.1 MAJOR INITIATIVES

The various efforts have been made to develop ICT based education Iran are:

i) The Ministry of Education has initiated an Electronic School Plan in 10 schools that facilitates the use of computers and provides training for teachers and learners.

ii) Pardis Technology Park is located in Pardis area in the northeast of the capital city of Tehran. It plans to provide a range of services including ICT services; training and education; consulting, investing and marketing; banking, financing and insurance; and laboratory and workshop facilities.

iii) School Net was established with the support of the Science and Arts Foundation (SAF) and Sharif University of Technology. School Net makes it possible for schools and cultural institutions to connect to the Internet. Moreover the central intranet at School Net facilitates access to the educational resources on the web and provides a portal to interact with the users.

iv) The Vocational Training Institute has established more than 50 centers for ICT education.
v) The Electronic Education Committee of TAKFA has held some electronic education seminars in Tehran that brought together experienced specialists and technologists to brainstorm about both the literature and the perspective of e-learning.

vi) The website www.irankids.com provides services to children that include training in areas such as science arithmetic, safety, art and music; entertainment such as proverbs, comics, jokes, picture galleries and computer games; parental training such as nutrition for kids, how to “tech” your kid and how to behave towards your kids; an Internet school for Iranian children; and a news board for kids.

vii) The first virtual classroom was an online teacher training class promoted by the Research and Programming Organization. It provided an opportunity for a number of experts of the Educational Department of Technology Lab (EDTL) to take part in the classroom as students and experience a virtual classroom. The project was suggested by Parviz Dullayee, President of EDTL and the staff of Electronics, Computer and Telecommunication Department (ECTD) of Wollongong University. The content of the eight-week course focuses on computer hardware and software, connection to the Internet and web-based applications.

1.3.3.2 DETAILS OF SOME TRAININGS COURSES IN ICT

The details of some of the training courses are given below:

i) The Vocational Training Institute has established ICT courses for teachers.

ii) All governmental staff must take a 130-hour course on MS Office and ICT concepts.
iii) Seventy percent teachers of the Ministry of Education have passed ICDL courses. The content of these courses includes general IT information, introduction to OS and working with files, word processing, electronic presentation, spreadsheets, databases, the Internet and mail and using search engines (Sadeghnezhed, 2001). At present, Ministry of ICT is responsible for national development of ICT in Iran and Information Technology Council Excellence (ITCE) is responsible for national level strategic decision making and IT policies. Iran Telecom Research Center (ITRC) is also responsible for research, knowledge creation and high level consultancy in IT development in Iran. National approach on IT could be viewed at two aspects;

(a) IT as an enabler for national development and
(b) Promote local IT industry. Currently the focus of Iranian IT is on the following areas:

i) Telecom Development  
ii) Information and Data Restructuring;  
iii) Infrastructural Development of Data communication Networks  
iv) Research  
v) Deregulation and Privatization  
vi) Human Resource Development and International Presence

1.3.4 THE FOURTH FIVE YEAR DEVELOPMENT PLAN

In the fourth 5-Year Iran National Development Plan (2005-2009), ICT has major role. The main goals of This plan includes:

i) Increasing the Internet users to 35% of population.  
ii) Increasing telephone subscribers to 50%;  
iii) Increasing mobile cell phone subscribers to 40%. The value of ICT projects in this plan consists of 19 billion dollars for communication development and 5 billion dollars for ICT infrastructure.
The government’s policy in telecommunication sector has comprised:
i) Migration from monopoly to competition in telecom industry;
ii) Telecom de-regulation;
iii) Migration from traditional telecom to Next Generation Network (NGN); and Promotion foreign investment. The quantitative goals in this plan contains 40 million telephone lines, 30 million mobile lines, and 20 million Internet access accounts.
The qualitative goals of government includes: developing e-enabled national services such as: E-commerce, E-learning, E-health, and E-government.
First-step ICT infrastructure implementation plan also includes some projects for developing IT infrastructure in the country. These projects mostly contain e-services in fields of commerce, learning, health, and government.
These projects need to cooperate between related Ministries and Ministry of ICT. The IT has to be treated as a priority segment, which will improve the existing segments of the economy (Bowonder, Miyake and Singh, 1993).
It becomes necessary for each country to have an ICT strategy. As an example, Japan was one of the first countries to have a national level strategy for the informationalization of the society (Motohashi, 1986).
This policy envisages promotion of ICT development, promotion of software development and acquisition and promotion of education and training, promotion of database establishment and development of complete information providing services, and international cooperation.
“Iran ICT plan has comprised these strategies:
    i) National ICT development strategy document (finalized)
ii) Telecom revolution plan     iii) Migration to NGN plan
iii) Migration to NGN plan
iv) Telecom Liberalization plan
v) National IT policy and strategy document
vi) National IT strategy for e-government
vii) National IT strategy for e-commerce
viii) National IT strategy for E-learning, and for E-health (Shafiee, 2005).

1.3.5 RESEARCH AND INNOVATION IN ICT

Iran Telecom Research Center (ITRC) proceeds as a national level organization for research management in IT fields such as: Developing National Strategy in ICT, Developing Migration Plan to NGN, and Supporting Innovation in IT Industries. Government has created several ICT parks and Incubators such as: Tehran Software & Information Technology Park, IT Park and proceeding to the Regional Center of Excellence of ICT (RCEICT) and other provinces technology parks such as: GSTP - Guilan Science Technology Park; KSTP - Khorasan Science and Technology Park; SBTP - Sheikh Bahai Technology Park; Yazd ICT Park and PTP - Pardis Technology Park (Unido Org., 2006).

More than 427 companies located in Science and Technology Parks as well as Incubators 1600 individuals employed. Their main objective is to increase the wealth of the society by encouraging and furthering a culture of innovation and competitiveness among the companies and institutes relying on science and technology and located in these parks. These parks offer:
i) A tool for knowledge based development
ii) A tool for regional development

iii) Appropriate, high-quality infrastructures for technology-intensive enterprises

iv) Services with high added value (expert, communication and support)

v) Synergism among universities, research centers and private companies

Expanded international linkage and attractive investment opportunities in technology (Karimian, 2004). Regarding to Iran Government’s policies, it observes that the existing ICT initiatives have been made in a context, wherein there are some integrated policies on ICT for development, which takes into account the national and regional specifics. In fact, the Government has developed researches relatively in the field of ICT and its policy in developing national capabilities.

1.4 The NEED AND SIGNIFICANCE OF THE STUDY

Despite the increasingly widespread use of ICT by faculty members, relatively few research works and aggregate data are available on the behavior of these groups of scholars with respect to their use of ICT and the impact of such use on their scholarly activities. The need for research on the use of ICT among faculty members has been also expressed in the literature. Among the issues related to the academic use of networks, McClure raises the following questions:

How can the use of electronic networks facilitate the tasks and goal of particular communities of users within this academic setting?

What problems do particular academic groups of users face in attempting to exploit networks for the accomplishment of those tasks and goals? (McClure, 1992) The aim of the present study is, therefore, to address these and other ancillary questions to find out ICT utilization among faculty members in the Iranian departments of Education.
However new trends in Education have happened. There is an indisputable need to maintain continuity, change and growth. The rapid development of using ICT in the teaching departments has made a need to study technology tools, e-resources, and the related services. A large amount of universities budget is spent for purchase of ICT facilities and equipment in Iran. Authorities and decision makers should know whether the ICT equipment is used properly in the academic departments or not and also for which purpose the academics use them.

In the information age, Information and Communication Technology (ICT) is a vital tool for teaching organizations and education departments. The development in (ICT) have changed scene of education departments in universities. Consequently, in the information era, new technologies are everywhere. They can lower the unit per cost of communication. New technologies can provide quality training at the faster speed at a cheaper rate, at chosen places, at convenient times and for longer masses, with untiring repetitions and continuities.

If we want to educate students to be life – long learners and successful contributors to the new global market, and want to help students achieve a high level of competency and competitiveness, to achieve this goal, teachers and academics now should use computer and information and communication technology (ICT) as a tool in the educational process. Today faculty members have to learn using new educational technologies especially ICT to achieve new goals in their jobs. We have no choice but to make technology an integrated tool in the learning process.

1.5 CONTEXT FOR THE PRESENT STUDY:

Faculty members must make new choices about their pedagogy to incorporate ICT into their classroom practices and also students to support in their various works, which are expected to do.
1.5.1 STATEMENT OF THE PROBLEM

The problem selected for the present study is “Study of Deployment of Information and Communication Technology (ICT) by Faculty members of Education Departments in Iranian Universities.

1.5.2 DEFINITION OF MAJOR TERMS USED

Deployment: effective use

Information and Communication Technology (ICT): “Information and Communication Technology (ICT) refers to the integration of computing technology and communication. It can be defined as anything which allows user to get information, to communicate with each other or to have an effect on the environment using electronic or digital equipment. These technologies that are creation, gathering, processing, storage, manipulating creation, gathering, processing, storage, manipulating, presenting or communicating of Information and include hardware devices; software applications; and connectivity e.g. access to the Internet and other networks, videoconferencing, and so on” (Laxman, M., Naharka, V., 2006, p. 20). In this study Information and Communication Technology (ICT) defines as new technologies like: Computers, compute networks, information networks the Internet, Intranet, LAN, WAN, online and offline databanks, CDs&DVDs, mobiles, faxes, multimedia, animations, educational software, electronic boards, printers, scanners, digital cameras, data projectors, videoconference, satellite and digital TV, etc. associated with utilizing of information.

Departments: Departments which offer courses in Education for Associate of Arts, Bachelor, Master and PhD students in the subject of Education.
Iran: The Islamic Republic of Iran is situated in the Middle East (West Asia), bordered by Armenia, Azerbaijan, 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 1,648,195 square kilometers, with a population of 70,472,846 million.

v) Iranian Universities: In Iran there are 457 universities and 77 higher education institutes, colleges and research centers. Out of these, 67 universities are under the jurisdiction of the Ministry of Science, Research and Technology (MSRT), 37 universities are Medical Science Universities, which are affiliated to the Ministry of Health, Treatment and Medical Education (MHTME), 229 universities are Distance Education Universities (Payame Noor Universities) under the control of MSTR and 124 universities are non-governmental universities which are known as Islamic Azad Universities (IAU).

Department: One of several divisions of a faculty in a university. e.g.

Department of Education: There are more than 200 significant departments of Education in universities of Iran conducting Bachelor, Master and Ph.D courses. There are 600 faculty members teaching education courses in the mentioned department. Attempts will be made to cover all education departments in universities of Iran.

1.6 OBJECTIVES:
In the information age, Information and Communication Technology (ICT) is a vital tool for teaching organizations and education departments. The development in ICT have changed scene of education departments in universities. This research will seek to investigate:
Main Objective:
1. To study the use of ICT by faculty members in the departments of Education in universities of Iran.

Sub Objectives:
1.1 To identify users and non-users of ICT by Iranian faculty members
1.2 To find out ICT services used by faculty members in their teaching and research activities
1.3 To find out purposes of ICT use by faculty members
1.4 To study problems faced by faculty members while using ICT

Main Objective:
2. To suggest ways to overcome problems faced by faculty members.

1.7 RESEARCH QUESTIONS:

In connection with the objectives of the study, the following research questions will be addressed:
1. Do Iranian faculty members of Education departments use ICT?
2. How is the status of ICT utilization among Iranian faculty members of departments of Education in Iran?
3. Who are the users and non-users of ICT by faculty members of Education in Iran? If not used why?
4. Why do Iranian faculty members of Education use ICT? What are their purposes in using ICT?
5. Which ICT tools and services are used by faculty members of Education departments in Iran?
6. What are the barriers in using ICT?
7. Is there significant difference in the use of computer between faculty members' English Levels?

8. Is there significant difference in the use of internet between faculty members' English Levels?

1.8 ASSUMPTIONS:

1. The status of ICT utilization by Iranian faculty members of departments of Education is not at desirable extent.

2. Most of faculty members of departments of Education use ICT in their teaching and research activities.

3. A few of faculty members of departments of Education are not aware of using ICT.

1.9 THE SCOPE AND LIMITATIONS:

The present study is limited to the above statement of the problem, objectives, research questions and samples selected for the purpose. Apart from these, the other limitations are:

i. This study includes only departments of Education in universities of Iran.

ii. The study covers only full-time faculty members of Education departments in universities of Iran.

iii. The study covers only full-time male and female faculty members of departments of Education in universities of Iran.

iv. This study includes faculty members of departments of Education with the following specialization: curriculum Development, Educational Management, Philosophy of education, Educational Planning, Instructional technology, Educational Evaluation. Researcher has taken experience review of related research and literature, and it is presented in chapter II.
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