CHAPTER 6

MAJOR FINDINGS, RECOMMENDATIONS, IMPLICATIONS AND CONCLUSIONS
6. Summary, Findings, Recommendations, Suggestions and Conclusions

6.1. Summary

The present research attempted to investigate the use of ICT in Pharm ICLs of Iran. It also aimed at carrying out a state-of-art of current ICT existing scenario in Pharm ICLs; identifying and critically evaluating different aspects of ICT facilities; determining the use and awareness of various ICT among users, as well as the utilization trends of ICT by librarians and users; clarifying the ever changing role of Pharm ICLs and the challenges that the librarians and users encounter due to these alarming ICT changes; finding out the Government of Iran’s policies related to ICT promotion and its implementation (problems and solutions, and professionals, and also training facilities available to the users); and recommending the possible model system ICT based ICL services.

To cope up with the proposed objectives, there was a need for a comprehensive survey of both ICLs and users in pharmaceuticals in Iran. Therefore, instruments for collecting relevant and valid data were devised and validated with pilot study. Two major tools of data collection: ICLs’ Questionnaire and Users’ Questionnaire were administrated and at the same time observations, personal and telephonic interviews, and e-mail were utilized to explain the probable difficulties and strengthen the data. The collected data were processed and entered into SPSS for statistical analysis. The analyzed data were presented in either descriptive form or in form of graphs, figures, tables, however cross tables formed the basis of interpretation and discussion in this study. The results of the study support the fulfillment of the objectives of the study. They gave an overall view of the present ICT scenario in Pharm ICLs of Iran. The weaknesses and shortcomings of ICT facilities and services were mentioned by both parties from ICLs and users. Librarians’ ICT knowledge and awareness were determined through ICLs and also they were evaluated in the same aspects by users. ICT objectives were evaluated by both ICLs and users. The major findings of the present study were described with reference to the objectives of the study in several sections.
6.2. Major Findings ICT Related

The major findings are categorized based on the objectives of the study, sequence of the questions in the questionnaire.

6.2.1. Government Policies in the Promotion of ICT in ICLs

It is Government of every country that plays a vital role in its all round development. ICT is no exception to it. With reference to the fifth objective of the study that accounted for recognizing the policies of Government related to the promotion of ICT particularly in Pharm ICLs, the following findings are mentioned:

- In recent years, Government of Iran has taken extensive and vigorous steps to increase the access to Internet especially during the last five years. The Government objective of these actions is to provide simple and inexpensive public Internet access facilities to the masses. Government of Iran has also a special provision in its Fourth Five-year Development Plan to raise Internet penetration rate from the current 9.74% to 30% state-wide. There also hidden plans for the ICT developments in general and internet in particular.
  - Iran has one of the biggest satellite communication centers in the Middle East, and have proposed to have more in near future with application of ICT. Iran has already established 3358 satellite circuits which are used directly with 48 countries and through transit with 182 countries.
  - International communication takes place through international satellite (Intelsat) by using three ground stations and IDR/DCME equipment through 6 satellites set over Atlantic and Indian oceans. This has also special application of ICT.
  - The Government of Iran has stressed the importance of improving more access to novel technologies and using ICT potential in private and state sectors, through allocation of about 550 million dollars initiating budget for the advancement of ICT in Iran during the first phase of the Iran’s National ICT Plan (2002-2004). The allocated budget is $450 Million up to the end of 2009.
  - Iran’s National ICT Agency (NICTA) medicine including pharmaceuticals related activities include rendering Public Electronic Services: Medical Database; Database of medical equipments and facilities; Patient’s E-file; and E-Health Tele medical center. E-training: training to the experts and instructors, establishing IT training
centers in cooperation with private sector, equipping the technical and vocational training organizations with ICT training centers, introducing training courses in order to learn ICT skills. Government of Iran is also proposing **E-University**: presenting the courses in multimedia environment, buying Electronic magazines, virtual university, digital libraries in the universities, with latest hardwares and softwares, doubling the current band-e-width for universities; and the most importantly **Content Development**: digital ICLs in Iranian universities, the digital archive of cultural and artistic content, establishing digital archive and e-content are some of the note worthy steps of Government of Iran. However, above efforts are not up to the mark, if we see the international scenario. Consequently, it is recommended that ICT Ministry should have depth and long term planning for ICT with special provision of biomedicine like developed countries. Government of Iran should also have specialized improved network for biomedicine with the latest ICT facilities to cope up with information even at grass root level.

- **ICT Training Program of Staff in Governmental Organizations** intends to acquire all Iranian staff (who are about 2 millions) - regardless of their role and previous levels of training or experience - with seven fundamental digital and computing skills (known as ICDL) in order to be effective in their ICT-based working environment and services. However, more improvements in the existing system is required at far with developed countries.

### 6.2.1.1. Staff's ICT Training and Courses (Pharm ICLs)

- With the special provision of ICT, the majority (80%) of Pharm ICLs' staff have successfully completed courses in the **International Computer Driving License** (ICDL) and **Information Retrieval Techniques**. Almost, three third of staff have gone through courses in **Database Searching** and **Internet and Search Engines**. 30% of them have **Network Literacy** and only 15% have taken part in **Workshops or Conferences**. However, this facility does not fulfill the present requirements. Hence, it is suggested that Government of Iran should make mandatory for ICT trainings for those who are working and should include compulsory papers of ICT at different educational level in their syllabus.
• More than half of staff have sufficient knowledge and skills needed to use ICT facilities and give services. Therefore, the hypothesis accounting for the possession of ICT knowledge and skills by more than half of Pharm ICLs' staff is confirmed.

6.2.2. ICT Status in Pharm ICLs and its Evaluation

With reference to the first and second objectives of the study that dealt with carrying out a state-of-art of current ICT existing scenario in Pharm ICLs and identifying and critically evaluating different aspects of ICT facilities, the following findings are mentioned below:

6.2.2.1. Electronic Collection

All Pharm ICLs under study have online databases. About three quarter of them have CD databases and about one third have e-books and e-journals (on CD-ROMs). It seems that the existing electronic collection is rich in online databases and almost satisfactory with CD-Databases. However, it lacks online electronic resources. Since CD-ROM networking is obsolete, online access of e-resources need to be encouraged.

It has been observed that the existing Electronic Collection does not include sufficient e-book and e-journals. Only few (33.3%) of ICLs have these collections based on ICT.

6.2.2.2. Hardware

• The number of computers ranges from 4 to 50 in these ICLs. Half of ICLs have between 10-19 sets of computers. One third of them have less than 10 computers and 22.22% have more than 20.

• Printers available range from one to nine. More than half of ICLs have between 1-3 printers, and about one third have between 4-6 printers. The highest number of printers is mentioned to be between 7-10, which exist in only 11.11% of ICLs.

• Scanners are not as many as computers and printers. Majority of ICLs have only one scanner, and 22.22% of them have two sets of scanners. One of the ICLs does not have a scanner which should take actions to purchase it.

• Headphones are not available in majority of ICLs. Only one fifth of them have this facility. This facility is needed in libraries since whenever the users want to watch
any program in the form of multimedia they should use headphones not to disturb others.

- **Network Cards** are available in all these ICLs. This facility is required to get connected to network.
- The number of available **Modems** range from 1 to 51. Three quarter of ICLs have one modem, 11.11% six modems, and 11.11% fifty one modems. Wherever ICL provides services for the users in computerized centers, one modem can be sufficient for all the computers. They can share the modem through ICL net. Therefore, the large number of modems can not be considered as strength of ICLs.
- **Electronic Security System** is not available in about half of ICLs. 11.11% of them have two security systems of “Gate and Close Circuit TV”. 33.33% of them have “Gate” and 11.11% have “Close Circuit TV”. RFID is not available in any of these ICLs. ICLs’ satisfaction of the electronic security system is mentioned to be “Good” for half of the centers that have the system.
- **Specialized ICT Equipment**, which are needed for users with learning and language difficulties or physical disabilities are not available in any of ICLs.
- **Internet Connection** type in majority of ICLs is Broadband and only 11.11% connect to internet through satellite. It seems that broadband is more convenient than the satellite type. ICLs have expressed the quality of use of their internet to be mostly “Good”.

6.2.2.3. Software

- The **operating system** in all ICLs is Windows. The software used in all Government Pharm ICLs is **Pars Azarakhsh**. Only one of these ICLs that is affiliated to a private-not-for-profit university has **in house development software**. Majorities (66.67%) of these ICLs have **upgraded** their software more than three times up 2008 (June), and the rest have done it once, twice or thrice.
- Information on **Software Features and Language** indicates that all softwares are multi users, and running on windows. Only in one center, the software is running on web and possessing web OPAC facilities. The approach to the system is bilingual including Persian and English in almost all ICLs. However, only in one of them, the software is monolingual (Persian).
The **Software Activities** include: Acquisition, Cataloguing, SDI/ CAS, OPAC, Serials Control, Circulation, Database Creation, DDS, Indexing, ILL, and Bar coding System. All ICLs (100%) use the software for circulation, followed by cataloguing and bar coding system (88.89%). Furthermore, 66.67% of ICLs use it for Serials Control, 44.44% for Acquisition. It also indicates that one third of ICLs, use the software for Indexing and Database Creation. However, Document Delivery carried out is 22.22%. The least used activities are OPAC and SDI/CAS (11.11%) each. It seems that the software is used mostly for the main activities of libraries including: circulation, cataloguing and bar coding system.

**Access to Software** has been paid for and the **Maintenance Services** are charged for. Majority of ICLs expressed the level of their **satisfaction** on the maintenance services to be “Good”. The degree of utilization of software is stated to be “Partial” in all ICLs.

### 6.2.2.4. Telecommunication Media

- **Intercom** is available in all ICLs. Most (66.67%) of ICLs have 1-2 lines. 22.22% of them have 3-4 intercoms, and only one of ICLs has 5 intercoms.

- All of these libraries have one **telephone** line. Most of them have one direct line and about one third have telephone lines in common use with other sections of the college.

- The availability of **fax** has been indicated in two third (66.67%) of ICLs, half of which are exclusive for ICLs and the other half are in common use for organization as whole. The other ICLs which do not have faxes have already proposed to procure, as they need for electronic document delivery.

- Considering the **mobile** services, it is mentioned that there is no mobile line devoted exclusively for ICLs. However, almost all the Head of ICLs have their personal mobiles. This facility is convenient for the cases that expert librarians or library managers are away and there is an urgent need for their advice or guidance on the use of ICT facilities.

- The **E-mail** facility in these ICLs is mentioned to be existing for three fourth (77.78%) of them. The study indicates that majority of library staff uses e-mail for
their personal matter, however, the number of ICL staff use e-mail for official uses are very rare: reservation, renewing borrowed materials, ILLs and electronic document delivery.

- **Wireless Network** is not available in most of ICLs, and only two centers have this facility. The reason for the lack of this kind of network could be the fact that they are not as reliable or as fast as the best wired networks. Also as mentioned in the literature (Totterdell, 2005), they have security implications in that anyone with a wifi laptop within range could access the network unless severe security measures are taken.

6.2.2.5. Network Facilities

- All ICLs have LAN. The reason for this selection is the fact that LAN reduces hardware costs, since several computers and users can share peripheral devices. Users can also share data and software through the network.
- The peripheral equipment connected to the network are printers (in all ICLs), scanners (in almost half of them), and CD-Derivers (in one third of ICLs). DVD-Derivers connected to the network are in use in only 22.22% of ICLs. Those centers that do not have scanners and CD-Driver and DVD-Driver connected to the network ought to link them since it quickens and promotes ICT services.
- There are three types of antivirus software available in ICLs. More than half of them use NOD32, and 22.22% of them use NORTON. Kaspersky is used in 11.11% of ICLs. One of ICLs uses both NORTON and NOD32. All ICLs mentioned that they always update antivirus.

6.2.2.6. Reprography Facilities

This facility is available in two third of ICLs. The maintenance services are available for all of them. The quality of maintenance services was mentioned to be “Satisfactory” for all ICLs that have this technology.

6.2.2.7. CD-ROMs and DVD-ROMs Services

All ICLs have CD-ROM facility, and CD-Writer is available in 88.89% of ICLs. In almost half of ICLs, there are DVD-ROMs and DVD Writers.
6.2.2.8. International Databases
There are 12 international databases available in these ICLs. Ovid is offered in almost all of ICLs (88.89%). Medline and Science Direct are available in 77.78% of them. The least available database is Toxline (22.22%). Databases are interrelated, interdependent component of ICT. Access of databases is possible only by using ICTs’ other components. It seems that databases are of much interest to the ICLs. Various factors, which has led to the interest in the databases include: growth in the telecommunication and data networks, penetration of computers in every sphere of activity, and the introduction and popularization of various information services and products like online services, bulletin boards, and value added reports.

6.2.2.9. Electronic Document Delivery
Online Access is available in all of these ICLs. More than half of them have e-mail for this service, and only 11.11% of them have Web OPAC. It further indicates that some of the ICLs use more, while some are using rarely. EDD via E-mail is more popular.

6.2.2.10. Users’ Guideline in the Use of Networking
Majority of ICLs either have no user guidelines or incomplete provisions. Available users’ guidelines mostly include information on how to log on where many more things are to be considered. One third of ICLs offer information on how to print out the work, and where the main programs are to be found. The other information included are how to format disks (22.22%), and how to save work and back up (22.22%).

6.2.3. Users’ Awareness and Use of ICT
The third objective of the research was to determine the use and awareness of various ICT among users. The following findings are related to accomplishment of this objective.

6.2.3.1. Locating Information (Electronic)
• 18.4% of ICLs’ users have indicated that they use CD-ROM Databases to find out the needed information, but majority (81.6%) of them have not attempted to use this source of information.
• Majority (79.5%) of users locate information in **Online Bibliographical Databases**. 20.5% of users do not use this source of information.
• About half of them (45.3%) use **Online Full text Databases**, and the rest do not use them.

### 6.2.3.2. Use of Modern ICT

• Almost all of respondents use **computers**. Only 0.8% are not aware of this technology. More than half of users use this facility as **Frequently**, and **Very Frequently**. Therefore, majority of users use computers in their ICLs for different applications. This indicates the paramount importance of computers in academic affairs.
• Almost all of users (98.1%) are aware of **Photocopying** and use it. Only 1.9% are not aware of photocopying. More than half of respondents use this facility very **Frequently and Frequently**. It has raised the level of library services, and it is still a widely used technology in ICLs which has made a big impact on the document delivery systems.
• Almost all of respondents (98.7%) use **Internet**. Only 1.3% are not aware of Internet. Majority of those who use Internet have indicated a high degree of use.
• Most of respondents (70.3%) use **Intercom** in their ICLs. Less than one third of respondents are not aware of intercom.
• About two third of respondents (65.8%) are aware of **Telephone** in ICL and use this technology. About one third of users (34.2%) do not use this ICT facility.
• 62.3% of respondents use **Fax**. 37.8% of respondents do not use this technology.
• Majority of respondents (82.3%) use **E-mail**. 17.7% of respondents do not use this technology in ICLs.

• 62.3% of users **use all** ICT facilities and services, and the rest (37.7%) **do not use** all of them. Therefore, 62.3% of users are **ICT User**, and the rest (37.7%) are **ICT Low User**.

• The second hypothesis related to the use of ICT in ICLs, which assumed that “More than half of Pharm ICLs’ users use all ICT facilities and services in their ICLs” is confirmed since 62.3% of users use all ICT facilities and services, and the rest (37.7%) **do not use** all of them, but use some of them.
6.2.3.3. Use of Information Services

- The study indicates that about four fifth of respondents use Database Search. The rating of evaluation of this service shows that about 32.6% of them have considered the service to be Good. The least percentage is in Poor (9.2%). It can be assumed that most of users have almost a good view about this service.

- SDI (Selective Dissemination of Information) is not used by many users, only 28.9% use these services. Those, who do not use SDI Services are 71.1% of the whole sample. Users who use the services have rated them to be Good with the percentage of 10.

- About two third of respondents do not use Current Reviews in ICLs. The rest (32.9%) who use the service rated it as 15.8% Poor, 7.9% Good, 7.4% Fair, and 1.8% Excellent.

- 39.5% of users use Abstracting and Indexing Services. They have rated the services as 17.9% Good, 12.6% Fair, 6.1% Poor, and 2.9% Excellent. 60.5% do not use these services.

- Clipping Services are used by 34.7% of users. They evaluate these services to be 14.5% Fair, 11.3% Good, 6.8% Poor, and 2.1% Excellent. 65.3% of respondents do not use these services.

- 45.8% of users use Online Searching Services. They have rated the service to be 18.9% Good, 13.9% Fair, 6.8% Poor, and 6.1% Excellent. 54.2% of respondents do not use this service.

- 55.8% of respondents use E-Journals. They have evaluated E-Journal Services to be 21.8% Good, 14.2% Fair, 10.3% Poor, and 9.5% Excellent. 44.2% of respondents do not use these services.

- 39.5% of respondents use E-Books. The users have rated them as: 13.9% Poor, 12.4% Good, 8.9% Fair, and 4.2% Excellent. 60.5% of respondents do not use E-Books.

- Interlibrary loan services are used by 53.7% of users. They evaluate these services to be 18.2% Good, 16.3% Fair, 10% Excellent, and 9.2% Poor. 46.3% of respondents do not use these services. As it is indicated, Interlibrary Loan is used
by more than half of respondents, most of whom have evaluated it to be almost Good.

- Only 17.6% of respondents use Document Delivery services. They have evaluated the Services to be 7.4% Poor, 5% Fair, 3.9% Good, and 1.3% Excellent. 82.4% of respondents do not use these services.

### 6.2.3.4. Use of International Databases

- Access to international database have been indicated during the study. Majority of respondents do not use IPA database (81.6%). The percentage related to those, who use this database is 18.4. They have mentioned the type of database to be as: 13.2% Online, 2.6% CD-ROM, and 2.6% Manual.

- It also shows that 63.4% of respondents have indicated that they use Medline. 56.6% of them use Online, 4.5% Manual, and 2.4% CD-ROM types. Majority of the users use it through Online. About one third of respondents do not use this database. It summarizes that more than half of the users use the electronic type.

- It summarizes that 60.3% of respondents use Chemical Abstracts. They have mentioned the type of database to be as: 30.8% Online, 28.2% Manual, and 1.3% CD-ROM. The percentage related to those who do not use this database is 39.7. This indicates that the use of printed form and electronic one is almost similar. This could be due to the sufficient availability of printed form in these ICLs.

- Majority of ICLs’ users (90.8%) do not use Toxline. The minority (9.2%) who use the database have indicated the type of use to be as: 6.8% Online, 1.6% Manual, and 0.8% CD-ROM. It can be concluded that electronic form has been used more than printed form by these users.

- Majority of ICLs’ users (81.3%) do not use ProQuest. The minority (18.7%) who use the database have indicated the type of use to be as: 17.1% Online, and 0.8% CD-ROM.

- 40.3% of respondents use Ovid. They have mentioned the type they use to be in two forms: 39.5% Online, and 0.8% CD-ROM. More than half of respondents (59.7%) do not use this database.
• Majority of users (84.2%) do not use Ebsco. 15.3% of users use online type and 0.5% use CD-ROM type. It can be concluded that Ebsco is not very necessary for Pharm ICLs’ users in Iran.

• 69.2% of respondents use Science Direct. They have mentioned the type of database to be as: 61.8% Online, 6.1% Manual, and 1.3% CD-ROM. The percentage related to those who do not use this database is 30.8. It can be summarized that more than two third of Pharm ICLs’ users use this database (majority of whom use the online type). It indicates this database has been very important and useful for the users.

• 37.1% of respondents use Spring. They use two types of database: 37.1% Online, and 0.8% CD-ROM. The percentage related to those who do not use this database is 62.1 which is about two third of respondents. It can be concluded that Springer sources are almost useful to the Pharm ICLs’ users in Iran and especially in its electronic form.

• 34.5% of respondents use Scopus. They have mentioned the type they use to be in two forms: 33.9% Online, and 0.5% CD-ROM. About two third of respondents (65.5%) do not use this database. It can be summarized that Scopus in its electronic form, is almost useful for Pharm ICLs’ users in Iran.

• 35.8% of respondents use Oxford. They have mentioned the type of database to be as: 29.2% Online, 5.8% Manual, and 0.8% CD-ROM. The percentage related to those who do not use this database is 64.2. This indicates that Oxford is almost useful for these users.

• 29.5% of respondents use Wiley. They have mentioned the type of database to be as: 27.1% Online, 1.8% Manual, and 0.5% CD-ROM. The percentage related to those who do not use this database is 70.5. Therefore, most of respondents do not use it.

6.2.3.5. Users’ Updating of ICT Knowledge

Reading with 46.1% is the first method of updating ICT Knowledge used by the participants. The second most used method is Personal Discussion (43.4%). The next methods are Television and ICT Classes with 26.8% and 11.6% respectively. In
answering open ended question (Other) users have mentioned the updating method of using Internet.

6.2.3.6. Users’ Familiarity with Websites of Iran’s Pharm ICLs

Majority of respondents (88.9%) are not familiar with Iran’s websites of Pharm ICLs. This is because of the fact that there are a limited number of Pharm ICLs websites available in Iran and also there is interaction among them as well as lack of users’ awareness programmes.

6.2.3.7. Kinds of Assistance from the Library Staff

- More than half of respondents get help from library staff in the Selection of Research Tools. They have evaluated this assistance to be 24.7% Good, 17.1% Fair, 9.7% Poor, and 2.9% Excellent. 45.5% of respondents do not get assistance from library staff. Therefore, as it is shown more than half of ICLs’ users get assistance in the selection of research tools.

- About three fifth of users get assistance from staff in collecting information from the Internet. They have rated this assistance as: 26.3% Good, 20.8% Fair, 9.5% Poor, 4.7% Excellent.

- More than three fifth of respondents get help from library staff in the Online Accessing of Various Databases. They have evaluated this assistance to be 30.3% Good, 21.3% Fair, 8.7% Poor, and 6.8% Excellent. 32.9% of respondents do not get assistance from library staff.

- About one third of respondents get assistance from staff in Providing Electronic Publishing of the Research Outcomes. They have rated this assistance as: 12.1% Fair, 11.8% Good, 9.2% Poor, and 2.1% Excellent.

- Almost half of respondents get help from library staff in Information Retrieval on the Internet. They have evaluated this assistance to be 17.4% Poor, 13.9% Good, 13.2% Fair, and 0.8% Excellent. 54.7% of respondents do not get assistance from library staff.
6.2.3.8. Access System
More than three quarter of Pharm ICLs have fully opened access system and the rest have partial system. However, for the various ICT facilities users have to take prior permission/booking.

6.2.4. Challenges in the Use of ICT, Users' and ICLs' Evaluation of ICT
The other objective of the study aimed at clarifying the ever changing role of Pharm ICLs and the challenges that the librarians and users encounter due to these changes. To account for this objective the following findings have been attempted.

6.2.4.1. ICLs' Problems in Application of ICT
6.2.4.1.1. Personnel
- Lack of Knowledge of LISc among Computer Professional exists often in more than half of ICLs. The rest have stated that the problem occurs ‘Sometimes’ and ‘Very Frequently’. If the choices of Often and Very Frequently be added together, this item seems problematic in 78% of these ICLs.
- Communication Gap between Lib. Professional & Computer Professional occurs in 44.4% of ICLs with the frequency of Often, in 33.3% Very Frequently, and Sometimes in the rest. If the choices of Often and Very Frequently be added together, this item seems problematic in 77.7% of these ICLs.
- Lack of Staff Training happens ‘Sometimes’ in almost 70% of these ICLs. 20% of ICLs have marked ‘Very Frequently’, and 10% have chosen ‘Often’. None of them have marked ‘Rarely’. If the choices of Often and Very Frequently be added together, this item seems problematic in 30% of these ICLs.
- Lack of Vendors Maintenance occurs with equal frequency of ‘Often, Sometimes, and Rarely’ (33.3% for each choice) in these ICLs.
- Staff Unwillingness to Use ICT problem exists Rarely in majority (78%) of ICLs, ‘Sometimes’ in the rest (22%). This indicates that staff are willing to use ICT which is a very contributing factor in providing and improving ICT based services to the users.
- Lack of Awareness about the ICT in the University occurs Rarely in about half of ICLs, Sometimes in 33%, Often in 11% and Very Frequently in 11%. If the choices
of Often and Very Frequently be added together, this item seems problematic in 22% of these ICLs.

6.2.4.1.2. System Problems

- **Loss of Data Due to System Crash** occurs Rarely in 67% of these ICLs. The same problem exists Sometimes in 33% of ICLs. It seems that the problem of loss of data because of system crash is not a serious problem in most of these centers.
- **Hardware Incompatibility** problem exists Rarely in more than half (55.6%) of ICLs, and Sometimes in 44.4%.
- **Cost of Equipment** as a problem occurs Sometimes in 33% of ICLs, Often in 33%, Rarely in 22%, and Very Frequently in 11% of ICLs. In case the choices of Often and Very Frequently are considered problematic, 44% of ICLs require more budgets to solve the problem.

6.2.4.1.3. Network Problems

- **Access Control** problem happens Often in 44%, Sometimes 33%, and Rarely in 22% of ICLs. Therefore, almost half of these centers have the mentioned problem to occur Often.
- **Computer Viruses** occurs Often in almost half of ICLs (44.4%), Very Frequently in 33.3%, Sometimes in 11.1%, and Rarely in 11.1%. Putting the options of Very frequently and Often together, it can be concluded that the problem has a high frequency of occurrence in majority of these ICLs (77.7%).
- **Low bandwidth** happens Very Frequently in 22%, Often in 11%, Sometimes in 33%, and Rarely in 33% of ICLs. If the choices of Often and Very Frequently be added together, this item seems problematic in one third of these ICLs.

6.2.4.2. Users' Problems in the Use of ICT

**Lack of training program** and **No guidebook** are the most problematic issues (34.2% for each) for users. Then, is the problem of **No time** (31.3%). **Poor Maintenance of ICT** is reported by 22.9% of ICLs. **No help from Library Staff** is the least problematic issue (6.3%). Library staff’s assistance in ICT services seems satisfactory because the percentage reported is very low.
6.2.4.3. Users' Interest in the Use of ICT

Quick Access has the highest frequency (80.3%) among the other reasons. Time effectiveness is the second in the rank with the percentage of 54.5 followed by the other reasons: Cost effectiveness (19.9%), Not meeting requirements (10%), Poor service (6.3%), and Inadequacy of printed sources management (6.3%). It can be concluded that ICL Users are willing to save time and have quick access to information.

6.2.4.4. The Gap in the Evaluation of ICT Objectives by ICLs and Users

- More than half of ICLs (55.6%) have rated the Computerization Objectives as Very Satisfactory, but this rating by Users is 31.6%. All ICLs have marked Very Satisfactory and Satisfactory, but 13% of Users have marked Not Satisfactory.

- Communication Objectives has not been evaluated differently through the selection of Very Satisfactory, but in the case of Satisfactory there is a difference. The rating done by ICLs is higher than Users' rating. The difference is 24.1% in this item. Also, there is a difference between ICLs and Users rating in Not Satisfactory. ICLs do not consider the accomplishment of objective to be Not Satisfactory, but 25.6% of Users have mentioned their dissatisfaction.

- More than half of ICLs have rated Databases Objectives as Very Satisfactory, but only 22.7% of Users have rated it Very Satisfactory. All ICLs have marked Very Satisfactory and Satisfactory, but 20.7% of Users have marked Not Satisfactory.

- Two third of ICLs have marked Very Satisfactory for Internet Objectives which is different from Users evaluation. 38% of Users have chosen Very Satisfactory. The other difference is in the option of Not Very Satisfactory. The difference between ICLs and Users in Not Satisfactory is 7%.

- 44.44% of ICLs have evaluated the Reprography Objectives to be Very Satisfactory, but 19.2% of Users have selected the same rate for these objectives. The other difference is in the option of Not Satisfactory. 26.8% of Users believe that the rating for these objectives is Not Satisfactory, while less number of ICLs (22.22%) have the same idea. In majority of items, the ratings that ICLs consider for these objectives are higher than the ratings that Users mention for them.
• The hypothesis that dealt with the existence of gap between ICT Producers and Users is confirmed due to the above mentioned findings.

6.2.4.5. Program to Encourage Users to Enhance the ICT Use

More than half of ICLs (55.56%) have programs to encourage users to promote the ICT use. The program includes first Awareness to New Databases (55.56%), then, it includes Training from Time to Time and Addition of any New ICT (44.44% each). The program in these ICLs does not often Check the Feedback from the Users to Evaluate ICT base Services (22.22%). The program in these ICLs does not often check the feedback from the users to evaluate ICT base services. It seems that there should be a program with the mentioned purposes in all ICLs. Users are the important factor of any ICL system; hence feedback of users is very essential from time to time. Consequently, these programmes of users’ feedback will not only provide the shortcomings but will also help to improve ICT based ICL services.

6.2.4.6. Users’ Opinions about Pharmaceutical Databases of Iran

Majority of users (90.5%) are in agreement with the establishment of Iran’s Pharmaceutical databases. Only 4.2% disagree with it. The rest of respondents (5.3%) are not sure about it. Therefore, it seems that the establishment of National (Iran’s) Pharmaceutical databases will be very useful and practical.

6.2.4.7. Users’ Opinions about Printed and ICT Sources

Majority of respondents (88.9%) like to Continue with both Printed and ICT Sources. Only 10.6% of them have selected the options of Discontinue with Printed Sources. A very small percent of them like to Continue Only with Printed Sources. A very small percent of them like to Continue Only with Printed Sources. Based on the opinions of these users it can be assumed that what has been suggested in the literature about the remarkable increase of ICT sources, which in turn raises the need of users in this area is confirmed.
6.3. Suggestions and Recommendations

6.3.1. ICLs’ Problems in the Use of ICT

- It is suggested to narrow the Gap between LISc Professional and ICT Professional, the computer professionals, who are involved in LISc should be given enough LISc knowledge. It is suggested to hire/appoint only those computer specialists that are possessing LISc knowledge, or willing to get LISc knowledge from library specialists. It is recommended that Government of Iran should have the plan for courses that covers both computer and LISc in their syllabus.

- Regular combined refresher courses, common trainings/courses, programmes, seminars, conferences are also essential to improve the communication gap between LISc and ICT professionals. To solve the problem of Lack of Staff Training, it is suggested that responsible bodies organized more training courses, workshops and conferences, at local, national and regional levels from time to time on regular interval.

- To account for the problem of Lack of Awareness about the ICT in the University, ICT capabilities and benefits should be reminded to the university people. There should be enough revealed information made known through news activities carried out in colleges.

- To solve the problem of high Cost of Equipment, there should be sufficient provision for financial support from the responsible bodies. ICLs should make them aware of the necessity of purchasing the materials. It is also suggested to give especial incentives to the individual, organizations, who are using ICT including exception in export/import duties.

6.3.2. ICT Facilities and Services

- It is suggested to procure latest and more number of computer sets depending upon the size of the ICLs and number of users.

- It is suggested to have the sufficient number of printers in Pharm ICLs. Alternatively, powerful printers may procure in less number and can be shared online. Although some of the ICLs are using shared printer facility.

- Digitization has become an inseparable activity of each Pharm ICLs in Iran. Hence, it is suggested to procure more scanners with better resolution, latest model.
and speed of scanners. It is also suggested to see the compatibility of scanner with existing hardware and software including computer.

- It is also recommended that there should be more computers in the centers, that have less than 10 computers, especially Pharm ICLs, in Iran.
- In spite of the practicality of Headphones in ICLs, majority of them do not have the facility. Therefore, it is suggested that they should purchase it.
- There is no security system in majority of ICLs in Iran. Since Electronic Security System reduces losses caused by both deliberate theft and inadvertent removal very significantly. Those ICLs do not have the system should try for it, and put their proposal procure at the earliest.
- The ICLs that do not have Specialized ICT Equipment (hardware/software) should take actions to provide the needed equipment, since they have the right to use ICT which could be more convenient for them. It is also suggested to procure the latest ICT to avoid compatibility and out-datedness.
- The ICLs, which do not have E-mails should simply log up for it, since it is a convenient and modern means for communication and correspondence between ICLs and users through which ICLs can inform them of news related to their affairs, and users can send their requests such as reservation, renewing borrowed materials, interlibrary loans and electronic document delivery.
- For the efficient use of networking facilities, there should be guidelines with sufficient information for the users. It is suggest that all the Pharm ICLs should have their own standard operating procedure (SOP) for routine working, maintenance, etc.
- It has been observed during the study that majority of ICLs do not possess sufficient number and the latest Reprography Facilities. Hence, it is suggested to have more and the latest machines.
- It has also been observed that due to the insufficient of E-books and E-journals, Pharm ICLs are unable to cope with the users needs. Hence, it is suggested to have a national policy for consortium based e-books and e-journals for biomedicine.
- It has been observed that Pharm ICLs either have no provision or little programmes to enhance the ICT for its staff as well as users. Hence, it is suggested
to have a regular refresher courses, workshops, training programmes at different levels for ICL staffs and users. Users’ feedback should also be taken into consideration.

- Although maintenance of Hardware and Software are the common and universal problems, due to the high occurrence of Computer Viruses in Pharm ICLs in Iran, it is suggested that these centers be more careful about the electronic devices and users as well as ICLs staffs should be given necessary instructions, passwords to use any system. It is also suggested to update antiviruses software periodically.

- Due to the Users’ Problems in the Use of ICT, it is recommended that ICLs provide suitable guidebooks and present training programs not only for users, but also for their staffs.

- More budgets should be allocated to ICT facilities and services. It is recommended to provide 15-20% institutional budget to ICLs and 15-20% of ICLs’ budget to ICT development.

6.3.3. ICT Objectives Evaluation

It has been observed during the survey that there is a gap between ICT Producers and Users, it is advised that ICLs should inform their users’ about any latest new development including its facilities and services to know about the gap. It is also suggested to take users’ surveys from time to time to find out their general to specific problems and suggest the solutions for the same.

6.3.4. Promoting ICT Knowledge and Skills

It has also been observed that only very low level ICT training programmes have been initiated by Pharm ICLs in Iran. To promote ICT knowledge and skills among users, and ICLs staffs, it is suggested to hold ICT training courses for users and staff in regular intervals. It is also suggested to design compulsory courses of Application of ICT in ICLs for all students in different colleges. There could be short or long courses delivered in ICLs or virtually. This will complement and supplement to the existing traditional systems.
6.3.5. Establishment of Iran's Pharmaceutical Databases
ICLs' users were mostly agreed for establishment of Iran's Pharmaceutical databases. Therefore, it is suggested that specialized database for pharmaceuticals to be established as soon as possible.

6.4. Implications for Further Studies

6.4.1. This investigation was restricted to the use of ICT in Pharm ICLs and also to Iran. Hence, it is suggested for further studies in other colleges' ICLs in other disciplines to find out the status of ICT and the related issues. The present study, may work as foundation for the same. The same questionnaires (ICLs' and Users’) with some modification in the questionnaires can be used to the survey the other ICLs as well. It is also suggested to take all the ICT components separately for their depth study.

6.4.2. The present study showed that there is a gap between ICT producers and its users. Further studies are suggested in this regard to determine the ways of bridging the gap. It is also suggested to study ICT based information seeking behaviors of users of Pharm ICLs in Iran particular and other biomedical disciplines general.

6.4.3. The suggested national network model for Pharm ICLs for Iran has been illustrated in Figure-6.1 called “Proposed ICT Based Model of Iran Pharm ICLs”. It is also suggested to approach to Government of Iran to implement the suggestions recommendations, especially to proposed model (Figure-6.1).
Figure-6.1: Proposed ICT Based Model of Iran Pharm ICLs
6.5. Conclusions

The present study aimed at investigating and evaluating the use of ICT in Pharm ICLs' of Iran. The result of the study indicate that in spite of the increasing tendency of ICL user's toward the use of electronic resources, ICLs do not possess the required resources (i.e. money, manpower, machines and materials), they are especially in shortage of e-books and e-journals. Some steps have been taken to promote the access to online databases; however, there should be an ongoing evaluation of the ICT ability of these databases to minimize the costs and maximize the uses. Databases should be purchased by a central body through which they can be placed for the shared use of all ICLs i.e. consortium based. The hardware facilities in some cases do not meet the needs of users; therefore, this is the responsibility of ICLs' to match their facilities to the user's needs. However, the authorities may consider the importance of ICLs' condition in the universities of Iran with priority and make provision for adequate fund for increasing automation of each ICL activity in each university.

The present study also indicates that Government of Iran has taken various initiatives in different directions related to ICTs and ICT programs that are capable to ICLs. ICT education for librarians is a must due to the evolving nature of ICT facilities and services. Librarians' appropriate and up-to-date knowledge of ICT has a paramount role in the development of knowledge in Pharm ICLs and the university academic affairs as well. Through the present study, it has been made known that the lack of ICT training programs for users, and also users' guidelines are the major problems that the users face in the use of ICT in ICLs. Therefore, ICLs should attempt for the provision of appropriate user's guidelines and plan for ICT training programs for the users, as they try to acquire and improve ICT based services.