CHAPTER VI
SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

6.0 Introduction

With the advent of Information and Communication Technology (ICT), the world has changed into a "Global Village". Information and Communication Technology involves essentially the storage and communication of information. The greatest potentiality of ICT, thus, is its ability to serve as a tool to circulate information and to induce a qualitative change in the life of a man (Vasudeva Rao, 2006).

Application of ICT in libraries has become inevitable in an era of information explosion and widespread use of digital information resources. Effective application of ICT in libraries helps in performing their operations and services most efficiently. The modernization of libraries and information centers enabled information transfer, access, and meeting objectives and there by establishes a network of libraries and information centers. They subscribe to e-journals, CD-ROM databases, online databases, web-based resources, and a variety of other electronic resources (Williams & Channaveeraiah, 2008).

The success of any organization depends on its workforce, and to get the best from the workforce, it must be continuously trained and developed (Udoh-Ilomechine, 2009). Development of human resources lies at the core of the knowledge-productive organizations, like libraries and universities. The process will inevitably involve participation of all employees in developing the knowledge of the organization (Cribb, 2006). Further, it is imperative to recognize that factors that impact the library employee as an individual can impact his or her performance as a service provider as well (Murray, 1999).

Furthermore, it has also been noted that when a change occurs in the way employees handle information materials, services, and their users, there is bound
to be some change in their perception of their work. Siggins (1992) supports this view, arguing that the automation of operations and changes in stock or equipment and in the organization of work have a direct impact on jobs and staff.

Since – in today's work environment – employees and their knowledge are each institution's key assets, it is obvious and expected of each institution to be aware and prepared for such changes. Managers need to be aware of these changes, try to sense them in advance and adapt to them appropriately. At the time of rapid change in the use of technology in libraries, it is therefore, very important to consider what impact ICT has on library staff. It seems that the present study of its kind is fully new and it reveals the importance of the study.

The results of this study could help library and information center administrators and country planners to assess their current and previous goals regarding the implementation of information technologies in their libraries. Therefore, this study is of importance to library administrators and to the field of library and information science in India and Iran. Moreover, the results of study will help policy makers to allocate adequate budget to libraries for implementing ICT in their day-to-day operations. Therefore, this study aims to investigate the role of ICT on human resources development in university libraries of India and Iran.

6.1 Overview of Research Outline

The main objective of the study is to assess and compare the impact of information and communication technology on human resource development in university libraries of Hyderabad of Andhra Pradesh, Bangalore University of Karnataka, India and Ferdowsi University of Mashhad and Shiraz University of Fars, Iran. Therefore, five specific objectives and five hypotheses have been considered.
For carrying out the present survey, the researcher conducted a complete literature search by browsing the online databases and Internet.

In this study primary and secondary data/information from various sources were used. Primary data/information was collected through structured questionnaire distributed to all the library staff at selected university libraries in India and Iran. Further, the data was collected by personal observation and discussion with all concerned to the libraries. While secondary data/information was collected from various books/journals/magazines/reports and the like and also from electronic media like Internet, websites and the like on various aspects of the present study. Furthermore, Information regarding libraries’ collection and their ICT facilities were collected through personal visit and with the use of a checklist.

Based on a comprehensive literature review and in the light of the study objectives, a well-structured questionnaire was designed and its validity was confirmed by an expert in the field. Preliminary questionnaire was pretested through a pilot study. Reliability of the questionnaire was obtained through Cronbach's Alpha.

A total number of 235 structured questionnaires were distributed to all the library staff in selected university libraries in India and Iran in person or via e-mail. Overall, 195 useable questionnaires were obtained and they were coded. The data obtained were tabulated and analyzed using the Statistical Package for the Social Sciences (SPSS) Version 16. Hypotheses have been tested and findings have been drawn in the light of the objectives of the investigation. Necessary statistical techniques such as Frequencies, Percentages, Mean, Independent-Samples t-test, Contingency Coefficient (CC), and Chi-Square ($\chi^2$) test have been used in the analysis of the data. Finally, the results have been reported in the form of thesis. Tables, charts and figures have been used to make the presentation clear and simple. Conclusions on the basis of findings have been drawn and
constructive suggestions wherever necessary have been made. The significance values that fall below the 0.05 level have been accepted.

The important issues studied and analyzed by the researcher include application of ICT in library, impact of ICT on training, impact of ICT on productivity, impact of ICT on performance and impact of ICT on job satisfaction. While detailed study and interpretation of data was presented in chapter 5, the summary of findings is listed in succeeding sections.

6.2 Summary of Findings and Discussion

6.2.1 Background Information

Nationality:

Of 195 respondents to this survey, 117 respondents came from Iran and 78 came from India representing 60% and 40% of the total respondents, respectively. In other words, Iranian respondents are more than Indian respondents (60% against 40%) (Figure 5.1 and Table 5.1). It may be due to the fact that in Iran, in each university in addition to a central library there are one or more constituent libraries attached to faculties or colleges so the number of library staff in Iranian libraries are more than their Indian counterparts.

University Affiliation:

The highest number of the respondents are affiliated to Ferdowsi University of Mashhad, Iran (70; 35.9%). It is followed by 48 respondents affiliated to University of Hyderabad in India, 47 respondents affiliated to Shiraz University in Iran, and 30 respondents affiliated to Bangalore University in India. They represent 24.6%, 24.1% and 15.4% of the total respondents, respectively (Table 5.1).
**Designation:**

Regarding respondents’ designation, 13 (6.6%) are 'University Librarians', 15 (7.7%) 'Deputy Librarians', and 33 (17%) 'Assistant Librarians', whereas most of the respondents (133; 69%) belong to 'Other' library staff. Further, data analysis shows a similar pattern in designation in both countries (CC=0.105, p=0.53>0.05) (Table 5.2 and Figure 5.2).

**Job Status:**

About two third of the respondents (147; 75.8%) are professional library staff and around one fourth of them (47; 24.2%) are paraprofessional library staff. It is observed that there is a similar pattern in job status in both countries (CC=0.071, p=0.32>0.05), i.e., the majority of the respondents from both countries are professional library staff (Table 5.3 and Figure 5.3).

**Gender:**

About 93 respondents are male and 101 are female representing 48% and 52% of the total respondents, respectively. In addition, data analysis reveals that this pattern of gender distribution is not similar in both countries (CC=0.365, p*=0.000<0.05). In other words, there are more male respondents in India (71.8%) than in Iran (31.9%), whereas there are more female respondents in Iran (68.1%) than in India (28.2%). This means that majority of LIS professionals in university libraries of Iran is consisted of women. While majority of LIS professionals (71.1%) in university libraries of India is consisted of men (Figure 5.4 and Table 5.4). It seems that in Iran, more women are employed in LIS section than men.
Age:

The age of the respondents varies between twenty one years to above fifty one years. Although, the largest age group is between thirty one to forty years (70; 36.3%), it is followed respectively by the other age groups: forty one to fifty (55; 28.5%), twenty one to thirty (36; 18.7%), and above fifty one (32; 16.6%). Country-wise comparison reveals that there is not a similar pattern in age groups in both countries (CC=0.495, p* =0.000<0.05) i.e., the largest age group in India is above 51 years (31; 39.7%), while the largest age group in Iran is 31-40 years (60; 52.2%). Moreover, there are more respondents in India having age in the range of 21-30 years and above 51 years (20.5% and 39.7%) than Iran (17.4% and 0.9%), whereas there are more respondents in Iran having age in the range of 31-40 years, 41-50 years (52.2% and 29.6%) than India (12.8% and 26.9%) (Table 5.5 and Figure 5.5). In other words, Iranian respondent are younger than their Indian counterparts.

Education Level:

Approximately half of the respondents (89; 45.9%) hold Bachelor, more than one third of them (73; 37.6%) Master, 17 (8.8%) Ph.D. and 15 (7.7%) other education levels. Country-wise comparison reveals that there is not a similar pattern in the education level in both countries (CC=0.508, p* =0.000<0.05). There are more respondents holding Ph.D. and Master in India (15.6% and 66.2%, respectively) than in Iran (4.3% and 18.8%, respectively), whereas there are more respondents holding Bachelor and other education levels in Iran (68.5% and 8.5%) than in India (Table 5.6 and Figure 5.6). It means that Indian respondents hold higher education level than their Iranian counterparts.
Field of Study:

The respondents with 'Science & Technology' background are the highest in number (138; 73%). It may be due to the fact that 'Library & Information Science' is considered among 'Science & Technology' field. The other respondents belong to 'Other' fields of study (22; 11.6%), 'Arts' (20; 10.6%), and 'Commerce' (9; 4.8%), respectively. Furthermore, data analysis presents no similarity in distribution of respondents’ field of study in both countries (CC=0.368, $p^* = 0.000<0.05$). It is observed that although the highest segment of respondents from India and Iran belong to 'Science & Technology' (70.8% and 74.3%, respectively) the Indian respondents belonging to 'Arts' and 'Commerce' (18.1% and 11.1%, respectively) are more than Iranian respondents (6% and 0.9%, respectively). The respondents belonging to 'Other' fields of study constitute 18.8% of the Iranian respondents, while there is no respondent belonging to 'Other' fields of study in India (Table 5.7 and Figure 5.7).

Computer Literacy:

More than half of the respondents (102; 52.6%) have evaluated their computer skill as ‘Good’, approximately one third of them (62; 32%) ‘Average’, 22 (11.3%) ‘Expert’ and equal number of them (4; 2.1%) ‘Below Average’ or ‘Beginner’ in this regard. Moreover, 64.1% of Indian respondents against 44.8% of Iranian respondents have evaluated their computer skill as ‘Good’, 21.8% of Indian respondents against 38.8% of Iranian respondents have evaluated their computer skill as ‘Average’, 6.5% of Indian respondents against 15.7% of Iranian respondents have evaluated their computer skill as ‘Expert’. Similarly, a few percentages of respondents from both countries evaluated their computer skill as ‘Below Average’ or ‘Beginner’. Further, data analysis shows that there is no
statistically significant difference between Indian (mean=3.65) and Iranian respondents (mean=3.71) regarding their level of computer literacy ($t=0.539, p=0.591>0.05$) (Figure 5.8 and Table 5.8).

**Income Level:**

The highest segment of the respondents (74; 38.1%) have from Rs 20,000 to Rs 25,000 income. It is followed by 51 (26.3%) respondents having from Rs 15,000 to Rs 20,000 income, 35 (18%) having less than Rs 8,000 and 34 (17.5%) having from Rs 8,000 to Rs 15,000. *Data analysis shows that the income pattern in two countries is significantly non-similar (CC=0.417, $p^*<0.05$).* In other words, Indian respondents have either the highest level of income (Rs 20,000 to Rs 25,000) or the lowest one (less than Rs 8,000) and only a few of them have the middle levels of income (Rs 8,000 to Rs 15,000 or Rs 15,000 to Rs 20,000), while Iranian respondents are distributed in all income levels (Table 5.9 and Figure 5.9).

**Professional Experience:**

Around one fourth of the respondents (46; 24.6%) have '6-10 Years' professional experience. Equal number of the respondents (30; 16.05) have 'Less than 6 Years' or '16-20 Years' professional experience. It is followed by the other respondents respectively: 28 (15%) having '21-25 Years', 27 (14.4%) having '26 Years and Above' and 26 (13.9%) having '11-15 Years' professional experience. *Country-wise comparison shows no similarity in professional experience among LIS professionals in both countries (CC=0.477, $p^*=0.000<0.05$).* The respondents having ‘26 Years and Above’ professional experience are 35.7% in India versus 1.7% in Iran. Further, the respondents having ‘21-25 Years’ professional experience and ‘Less than 6 Years’ of experience are larger in number in India (15.7% and 20%, respectively) than Iran (14.5% and 13.7%, respectively). While in Iran,
respondents with '16-20 Years', '11-15 Years' and '6-10 Years' of experience are larger in number (17.1%, 17.1% and 35.9%, respectively) than in India (14.3%, 8.6% and 5.7%, respectively) (Table 5.10). In other words, Indian respondents have more professional experience than their Iranian counterparts. It may be due to the fact that Indian respondents are older than their Iranian counterparts.

Work Section:

The respondents who work in 'Circulation Section' are the highest in number (30; 16.4%). The second group is the respondents who work in 'Technical Section' (24; 13.1%). The third group of the respondents work in 'Acquisition Section' (21; 11.5%) or in 'Reference Section' (21; 11.5%). The fourth group of the respondents work in 'Management Section' (18; 9.8%). The respondents who work in 'Stack Section' and 'All Sections' are the same in number (13; 17.1%). The other respondents work in the other sections as follows: 'Cataloging Section' (12; 6.6%), 'Computer Section' (11; 6%), 'Periodical Section' (10; 5.5%) and 'Information Services' (10; 5.5%). This pattern of distribution is not similar in both countries (CC=0.394, p*=0.000<0.05), where the respondents who work in 'Stack Section' in India are the highest in number (17.6%), whereas they are the least in Iran (7.1%) (Table 5.11). If we consider that in Iranian university libraries under study personnel who work in 'Circulation Section' also provide services for 'Stack Section', the highest portion of respondents from both countries work in similar section.

6.2.2 Application of ICT in Library

Library Automation:

All central libraries in both countries are fully automated, however pattern of automation among constituent libraries is not similar in both countries
where 25% of Indian libraries versus 39% of Iranian libraries are fully automated. Further, partially or not automated libraries are 61% and 0% in Iran against 0% and 75% in India, respectively (Figure 5.10 and Table 5.12). This is similar to the results reported by Ramzan and Singh (2009); as well as Sampath Kumar and Biradar (2010) that showed low level of automation in college libraries of Pakistan and India, respectively.

'NewGenLib' and 'VTLS' are used as the library management software at university libraries of India (Bangalore University Library and University of Hyderabad Library, respectively). Further, the library management software at university libraries of Iran is 'Simorgh' and 'Pars Azarakhs' (Ferdowsi University of Mashhad and Shiraz University, respectively).

Respondents’ Use of ICT Facilities for Library Operations:

About 184 (96%) respondents use ICT facilities in their day-to-day operations, while 7 (4%) do not. In addition, country-wise comparison shows a different pattern in respondents’ use of ICT facilities in both countries (CC=0.182, p=0.01<0.05), where 99% of respondents in Iran against 92% in India use ICT facilities in their day-to-day operations (Table 5.13 and Figure 5.11).

Effect of ICT on Library Services:

More than half of the respondents (109; 58.3%) opine that ICT facilities have affected the library in extending information services 'To a High extent'. About one fourth of them (46; 24.6%) say that ICT facilities have affected the library in extending information services 'To a Very High' extent, and about 29 (15.5%) respondents state 'A Moderate Extent' effect in this regard. Only 1 (0.5%) respondent perceive the effect of ICT facilities in extending library information services 'To a Low Extent' and 2 (1.1%)

'Not at all' in this respect. *Country-wise comparison shows that Iranian respondents (mean=4.26) have perceived the effect of ICT on their library in extending information services significantly more than their Indian counterparts (mean=3.70) (t=5.48, df=185, p*<0.05) (Table 5.14).

**Time Span of Using ICT Facilities in the Job:**

The highest portion of the respondents (88; 47.1%) have an experience 'More than 8 Years' in using ICT facilities in their job. The second portion of them (44; 23.5%) have an experience '4-6 Years' in using ICT facilities in their job. This is followed by 33 (17.6%) and 22 (11.8%) respondents having 'Less than 4 Years' and '6-8 Years' experience in using ICT facilities in their job. Furthermore, *it is observed that there is no significant difference between Indian (mean=3) and Iranian respondents (Mean=2.81) regarding time span of using ICT facilities in their job (t=-1.062, df=185, p=0.290>0.05).* In other words, the respondents having experience 'More than 8 Years' and 'Less than 4 Years' in using ICT facilities in their job are larger in number in India (54.9% and 21.1%) than Iran (42.2% and 15.5%), respectively. While in Iran, respondents with '6-8 Years' and '4-6 Years' experience (12.1% and 30.2%) in using ICT facilities in their job are greater in number than India (11.3% and 12.7%), respectively (Table 5.15 and Figure 5.12).

**Frequency of Using ICT Facilities:**

A notable number of the respondents (152; 79.6%) use ICT facilities 'Most' of the time, whereas a negligible number of them (2; 1%) do not use ICT facilities at all. The respondents who use ICT facilities 'Sometimes' and 'Occasionally' are 29 and 8 representing 15.2% and 4.2% of the total respondents, respectively.
Data analysis shows that 92.2% of Iranian respondents versus 60% of Indian respondents use ICT facilities 'Most' of the time. About 6% of Iranian respondents against 29.3% of Indian respondents use ICT facilities 'Sometimes'. The respondents who use ICT facilities 'Occasionally' and 'Not at all' in India (9.3% and 1.3%) are more than in Iran (0.9% and 0.9%), respectively. Furthermore, data analysis indicates that Iranian respondents (mean=3.89) use significantly ICT facilities more than their Indian counterparts (mean=3.48) ($t=4.55$, $df=104$, $p^*<0.05$) (Table 5.16). It may be attributed to the age difference of respondents in both countries, where Iranian respondents are younger than Indian respondents. It is held that younger people are more interested in using ICT facilities in their job.

**ICT Application in the Library:**

- ICT applications at central libraries of both countries are similar in the areas of library housekeeping operations (including Acquisition, Cataloging, Circulation, Reference Services, OPAC, Periodical Control, Inter Library Loan), office automation (Accounting System, Documentation System), Networking (Local Area Network), Information services (including Internet Services, and Bibliographic Database), some Hardware Infrastructure (including Fax-machine, CD-ROMs/DVDs, CD Writer/Driver, Data Projector, Personal Computer, Laptop, Network Server, Scanner, Printer, Barcode Scanner, Barcode Printer, Security Gate, and UPS). In other words, all central libraries (100%) use ICT for the above mentioned library services and operations (Table 5.17).
- However, some of ICT applications are available only at Iranian central libraries including In-house/National database, Audio/Video Cassette, Microfilm/Microfiche.
- Further, 100% of central libraries in Iran against 50% of central libraries in India have CD tower, which provides access to CD-ROM databases and
other CD-based information resources. Library users can access this facility through the network and they can access the same resources simultaneously. This finding contradicts with the results reported by Tavassoli & Ramesh (2011a), who found that Indian medical libraries owned more CD-ROM servers/CD Towers than their Iranian counterparts.

Regarding constituent libraries, ICT applications in the area of 'Library Housekeeping Operations' are ranked as follows (Table 5.17):

- **In Iranian** constituent libraries:

  1. Circulation, and OPAC (18 libraries, 100%). *This finding is validated by the results reported by Haneefa (2007) and Davarpanah (2003).* In fact, it is a held opinion that circulation and cataloging apart from being high volume are also well structured and understood, therefore, they are often the first areas chosen for automation.

  2. Periodical Control and Inter Library Loan (10 libraries; 56%)

  3. Acquisition, and Cataloging (7 libraries; 39%). *This finding contradicts with that reported by Tavassoli & Ramesh (2011a) and Davarpanah (2003)* who identified that cataloging was the first area for automation in medical libraries and university libraries in Iran, respectively. It may be attributed to the fact that central libraries are responsible for cataloging for the most of constituent libraries under study. So constituent libraries are not involved in cataloging activities.

However, 2 (25%) Indian constituent libraries use ICT for all 'Library Housekeeping Operations' (such as Acquisition, Cataloguing, etc).

- **In the area of 'Office Automation' (Accounting System, and Documentation System)** Indian constituent libraries use ICT more than their Iranian counterparts (25% against 17%, respectively). However, in the area of 'Networking’ this proportion is vice versa (39% of Iranian libraries against 25% of Indian libraries).
Iranian constituent libraries use ICT in the area of 'Information Services' more than their Indian counterparts as follows:

Availability of 'Internet Services', 'In-house/National Database', 'Bibliographic Database' and 'Reference Services' is 100%, 100%, 100% and 78%, respectively at Iranian libraries, while they are available at 37.5%, 0%, 25% and 25% of Indian libraries, respectively.

In the area of Hardware Infrastructure, except CD tower which is not available at both Indian and Iranian constituent libraries, some hardware facilities are available at Indian constituent libraries, while all hardware facilities are available at Iranian constituent libraries with different levels of availability as follows:

Personal Computer (100% of Iranian libraries versus 50% of Indian libraries), and Printer (100% of Iranian libraries versus 37.5% of Indian libraries)

2. CD Writer (89% of Iranian libraries versus 37.5% of Indian libraries)
3. CD-ROMs/DVDs and Scanner (83% of Iranian libraries versus 25% of Indian libraries) and Barcode Scanner (83% of Iranian libraries versus 12.5% of Indian libraries). This finding is comparable to that reported by Ramzan (2004). In his study, he found that only 12% of libraries had barcode scanner. However, it can be concluded that more respondents from Iran use barcode scanner for circulation than respondents from India.

4. Security Gate (72% of Iranian libraries versus 0% of Indian libraries)
5. UPS (44% of Iranian libraries versus 25% of Indian libraries)
6. Microfilm/Microfiche (33% of Iranian libraries versus 0% of Indian libraries)
7. Audio/Video Cassette and Fax-Machine (28% of Iranian libraries versus 0% of Indian libraries)
8. Data Projector and Laptop (22% of Iranian libraries versus 0% of Indian libraries)
9. Barcode Printer (5% of Iranian libraries versus 0% of Indian libraries)

10. Network Server (56% of Iranian libraries versus 37.7% of Indian libraries)

In a nutshell, it may be concluded that **central libraries** (100%) of both countries similarly use ICT in the areas of 'Library Operations', 'Office Automation', and 'Networking' but **Indian** central libraries use ICT less than their **Iranian** counterparts in the areas of 'Information Services' and 'Hardware Infrastructure'.

Moreover, regarding **constituent libraries**, few **Indian libraries** (25%) use ICT in the areas of 'Library Housekeeping Operations', 'Office Automation' and 'Networking' however, ICT application in the areas of 'Information Services' and 'Hardware Infrastructure' among Indian constituent libraries is at a lower level. In comparison, constituent libraries in Iran use ICT in all areas however, ICT application in the areas of 'Information Services', 'Library Housekeeping Operations', and some 'Hardware Infrastructure' is at a higher level. The result regarding inadequacy of hardware infrastructure in Indian libraries is similar to the finding of Ali’s (2004) study, who found that most of the seven libraries in New Delhi needed proper computer hardware, software, and networking. Further, Walmiki and Ramakrishnegowda (2009) found that the majority of the six libraries in Karnataka, lacked sufficient hardware and software facilities and did not have adequate internet nodes and bandwidth.

Sampath Kumar and Biradar (2010) point out that despite widespread awareness about the importance of libraries, college libraries often remain the most disregarded division in colleges. Kargbo (2002) argues that the financial position of most academic libraries is uncertain, most of these institutions are funded on the basis of percentage of the institutional expenditure.
In order to test whether there is a difference between ICT application in university libraries of India and Iran (hypothesis no. 1), Chi-square ($\chi^2$) test was conducted at 0.05 level of significance. It is observed that all central libraries of India and Iran use similarly ICT for 'Library Housekeeping Operations', 'Office Automation', and 'Networking', however Iranian libraries use ICT significantly more than Indian libraries for Information Services. Moreover, regarding having 'Hardware Infrastructure', Iranian libraries have more 'Hardware Infrastructure' than their Indian counterparts.

Constituent libraries of Iran use significantly ICT more than their Indian counterparts for four 'Library Housekeeping Operations' (Circulation, Periodical Control, Inter Library Loan and OPAC), while there is no significant difference in using ICT for 'Acquisition' and 'Cataloguing' operations.

There is no significant difference between constituent libraries of India and Iran in using ICT for 'Office Automation' and 'Networking'.

Constituent libraries of Iran use significantly ICT more than their Indian counterparts for 'Information Services'.

In addition, regarding having 'Hardware Infrastructure', Iranian constituent libraries differ significantly from Indian libraries i.e., Iranian libraries have more 'Hardware Infrastructure' than their Indian counterparts (except Network server) (Table 5.17).

In sum, ICT application in university libraries of India and Iran is significantly different in almost all aspects. Thus, the hypothesis (no. 1) is supported (Table 5.37).
6.2.3 ICT and Training

**Impact of ICT on Training (ICT-based Training):**

- The statements about impact of ICT on training (ICT-based training) are ranked by total respondents (Indian and Iranian respondents) as follows:
  - IT-based training can be more effective (mean=4.16); Possibility of distance learning (mean=4.05); Multi trainees can train simultaneously (mean=4.03); Training opportunity for all (staff to manager) (mean=3.97); No limitation for the number of trainees (mean=3.97); Motivation for training (mean=3.96); Asynchronous training (mean=3.95); More economical (mean=3.90); Results of training will be got sooner (mean=3.88); Possibility of interaction with trainees and trainers (mean=3.87); No time limitation for training (mean=3.82); More memorizing of trainees (with using multimedia) (mean=3.82) and No place limitation for training (mean=3.81) (Table 5.18). *In other words, the respondents have the highest agreement with the statement “IT-based training can be more effective.”* This finding supports the result of Harrington and Walker (2004) as well as Urdan and Weggen (2000, as cited in Mishra and Sharma, 2004) studies, who concluded that computer-based training could be an effective and efficient alternative training technique.

- Indian respondents have ranked the statements about the impact of ICT on training (ICT-based training) as follows:
  - IT-based training can be more effective (mean=4.20); Motivation for training (mean=3.96); Training opportunity for all (staff to manager) (mean=3.93); Possibility of interaction with trainees and trainers (mean=3.88); More economical (mean=3.73); Results of training will be got sooner (mean=3.67); No time limitation for training (mean=3.67); No limitation for the number of trainees (mean=3.66); Possibility of distance
learning (mean=3.65); Multi trainees can train simultaneously (mean=3.65); No place limitation for training (mean=3.63); Asynchronous training (mean=3.56); and More memorizing of trainees (with using multimedia (mean=3.54) (Table 5.19).

Iranian respondents have ranked the statements about the impact of ICT on training (ICT-based training) as follows:

- Possibility of distance learning (mean=4.31); Multi trainees can train simultaneously (mean=4.28); No limitation for the number of trainees (mean=4.17); Asynchronous training (mean=4.17); IT-based training can be more effective (mean=4.13); Results of training will be got sooner (mean=4.01); More economical (mean=4.00); Training opportunity for all (staff to manager) (mean=4.00); More memorizing of trainees (with using multimedia) (mean=4.00); Motivation for training (mean=3.97); No place limitation for training (mean=3.93); No time limitation for training (mean=3.92); and Possibility of interaction with trainees and trainers (mean=3.87) (Table 5.19).

Although Indian and Iranian respondents allotted different ranks to the statements about ICT-based training, agreement for the following eight statements by the Iranian respondents is significantly higher than their Indian counterparts: 'More economical', 'Results of training will be got sooner', 'No limitation for the number of trainees', 'Possibility of distance learning', 'Multi trainees can train simultaneously', 'No place limitation for training', 'Asynchronous training', and 'More memorizing of trainees'. While, there is a non-significant difference between respondents from India and Iran about the following five statements: 'IT-based training can be more effective', 'Motivation for training', 'Training opportunity for all (staff to manager)', 'Possibility of interaction with trainees and trainers' and 'No time limitation for training'.

In order to find out whether there is a difference between Indian and Iranian library staff regarding impact of ICT on training (hypothesis no. 2), Independent-Samples t-test was run. The results indicate that ICT impact on library staff training in India and Iran differs significantly at the 0.05 level of significance (t=5.46, df=192, p*=0.000<0.05) meaning that **Iranian respondents (mean=56.18)** have higher mean score than their Indian counterparts (mean=49.37). **Hence, the research hypothesis (no. 2) is supported** (Table 5.38 and Table 5.39).

**Effect of ICT on Training Needs:**

A large number of the respondents (181; 97%) believe that introduction of ICT in libraries has affected their training need, while a small number of them (6; 3%) do not. Furthermore, *country-wise comparison reveals a different response pattern among Indian and Iranian respondents (CC=0.227, p*=0.000<0.05)*, where we find that Indian and Iranian respondents have not similar opinion in this regard. In other words, **100% of Iranian respondents against 91.5% of Indian respondents believe that introduction of ICT in libraries has affected their training need** (Table 5.20 and Figure 5.13).

**Extent of ICT Effect on Training Needs:**

More than half of the respondents (103; 59.5%) opine that introduction of ICT have affected library staff training needs 'To a High Extent. About one fourth of them (43; 24.9%) opine that introduction of ICT have affected library staff training needs 'To a Moderate extent', while about 19 (11%) respondents have stated 'A Very High Extent' effect in this regard. Only 5 (2.9%) respondent believe that introduction of ICT have affected library staff training needs 'To a Low Extent' and 3 (1.7%) 'Very Low Extent' effect in this respect (Table 5.21).
Further, country-wise comparison shows that, Iranian respondents (mean=3.87) have perceived the effect of ICT on library staff training needs significantly more than their Indian counterparts (mean=3.50) \( (t=3.08, \text{df}=114, p^*<0.05) \). In other words, the respondents who believe that introduction of ICT have affected their training needs 'To a Very High' and 'High Extent' are larger in number (14% and 64.9%, respectively) than India, while in India the respondents who opine that introduction of ICT have affected library staff’s training needs 'To a Moderate' and 'Low Extent' are greater in number (39% and 5.1%, respectively) than in Iran (17.5% and 1.8%, respectively) (Table 5.21).

**Long-Term Plan for Staff Training on Using ICT:**

More than half of the respondents (101; 53%) have stated that there is not a long–term plan for staff training on using ICT in the library, while 85 (44.5%) respondents have mentioned that there is a long–term plan for staff training on using ICT in the library. Further, a small number of respondents (5; 2.5%) do not know in this regard. This pattern of distribution is not similar in both countries \( (CC=0.394, p^*=0.000<0.05) \), where in India more respondents (71%) have mentioned that there is a long–term plan for staff training in using ICT than in Iran (28%) (Figure 5.14 and Table 5.22).

**Training on Using ICT:**

A large number of the respondents (158; 82%) have received necessary training on using ICT for meeting the patrons’ needs, while only 34 (18%) respondents have not. This type of response pattern is found to be similar for both Indian and Iranian respondents \( (CC=0.103, p=0.150>0.05) \). In other words, a majority of both Iranian and Indian respondents have received necessary training on using ICT (Table 5.23 and Figure 5.15).
Means and Methods of Training:

- The respondents have received training through the following means and methods, respectively: Attending workshop/seminar (120; 23.5%), On-the-job training (116; 23%), Self study/self learning (112; 22%), Friends/colleagues guidance (91; 18%), Training by vendors/suppliers (67; 13%) and other ways of training (2; 0.4%) (Table 5.24).

- Data analysis indicates that 'Self study/self learning' (42; 22%) is a popular mode among librarians as medium of learning and updating their knowledge and skills of ICT in Indian libraries. It is followed by methods such as 'Attending workshop/seminar' (40; 21%), 'On-the-job training' (40; 21%), 'Training by vendors/suppliers' (35; 18%), 'Friends/colleagues guidance' (32; 17%) and 'Other' ways (1; 0.6%) (Table 5.24 and Figure 5.16). This finding shows similarities to the results reported by Babu et al. (2007), who reported 'Self-study' as a popular mode among librarians in Tamil Nadu as medium of learning and updating their knowledge and skills of ICT, it was followed by methods such as attending workshops/seminars, through colleagues, and training at workplace. In addition, the findings of present study are in accordance with those reported by Tavassoli & Ramesh (2011b), who found that 'Self-study' was the most popular mode of learning and updating knowledge and skills of IT among medical librarians from India. It was followed by methods such as ‘Training at work place’ and ‘Attending workshops/seminars’.

- The respondents from Iran have received training through the following means and methods: 'Attending workshop/seminar' (80; 25%), 'On-the-job training' (76; 24%), 'Self study/self learning' (70; 22%), 'Friends/colleagues guidance' (59; 18.5%), 'Training by vendors/suppliers' (32; 10%), and 'Other' ways (1; 0.3%) (Table 5.24 and Figure 5.16). These findings are in accordance with
those reported by Tavassoli & Ramesh (2011b), who found that 'Attending workshops/seminars' and 'On-the-job training' were the most popular modes among medical librarians from Iran as medium for acquiring IT skills.

Furthermore, it is seen that 'Self study/self learning', 'Attending workshop/seminar' and 'On-the-job training' are the first three means of training among both Iranian and Indian respondents.

**Need for Regular Training:**

A majority of the respondents (165; 86.4%) need regular training for effective use of ICT facilities in the library, while a small segment of them (26; 13.6%) do not (Table 5.25). This type of response pattern is not similar in both countries ($CC=0.256$, $p^*=0.000<0.05$), i.e., more Iranian respondents required training on ICT than their Indian counterparts as 94% of Iranian respondents against 75% of Indian respondents required training for effective use of ICT facilities in the library (Table 5.25 and Figure 5.17). This finding is similar to the result reported by Tavassoli & Ramesh (2011b) who found that a majority of medical librarians from India and Iran need ICT training to develop their IT skills. Moreover, this finding is in accordance with the several authors’ opinion (e.g., Ali, 2004; Moarefzadeh and Sannei Dehkordi, 2006), who stated that to keep up with the ICT innovations the LIS professionals need continuous ICT training.

**Preference for Mode of Training:**

A majority of respondents (141; 85.5%) have preference for mode of training and a small portion of them (24; 14.5%) do not. Country-wise comparison indicates that the type of response pattern is not similar in both countries ($CC=0.158$, $p=0.04<0.05$) indicating that more Indian respondents have preference for mode of training than their Iranian
counterparts, where 93% of Indian respondents versus 81% of Iranian respondents have preference for mode of ICT training. Further, 6.9% of Indian respondents versus 18.7% of Iranian respondents do not have preference for mode of ICT training (Table 5.26 and Figure 5.18).

Preferred Mode of Training:

- 'On-the-job training' is the first preferred mode of training by 109 respondents comprising 32% of the total respondents. 'Attending workshop/seminar' is the distant second with 103 (30.5%) respondents, followed by 'Training by vendors/suppliers' (64; 19%), 'Friends/colleagues guidance' (59; 17.5%) and 'Other' means of training (3; 1%), respectively.

- Data analysis shows that Indian respondents consider the following as preferred means and methods of training (in order of priority): 'On-the-job training' (34; 29%), 'Attending workshop/seminar' (30; 26%), 'Training by vendors/suppliers' (28; 24%), 'Friends/colleagues guidance' (22; 19%) and 'Other' means and methods of training (3; 2%).

- While Iranian respondents have priorities as given below: 'On-the-job training' (75; 34%), 'Attending workshop/seminar' (73; 33%), 'Friends/colleagues guidance' (37; 17%), and 'Training by vendors/suppliers' (36; 16%).

It is worth noting that 'On-the-job training' and 'Attending workshop/seminar' are the first and second preferred modes of training by both Iranian and Indian library staff (Table 5.27 and Figure 5.19).

Obstacles of ICT Training:

- The respondents have ranked the obstacles of ICT training as follows: 'Lack of policy for continuous training' (119; 20.2%); 'Lack of financial support' (87; 14.7%); 'Lack of time' (82; 14%); 'Long working hours of library staff' (77; 13%); 'Lack of support from supervisor/manager' (76; 12.9%);
'Insufficient library staff' (54; 9.1%); 'Lack of trainers in the organization' (53; 9%) and 'Lack of interest' (40; 7%) (Table 5.28).

Indian respondents have rated the obstacles of ICT training as follows: 'Lack of policy for continuous training' (40; 20.3%), 'Lack of time' (25; 12.6%), 'Long working hours of library staff' (24; 12.1%); 'Insufficient library staff' (24; 12.1%); 'Lack of support from supervisor/manager' (23; 11.6%); 'Lack of financial support' (22; 11.1%); 'Lack of trainers in the organization' (21; 10.6%) and 'Lack of interest' (18; 9.1%) (Table 5.28).

Iranian respondents have rated the obstacles of ICT training as follows: 'Lack of policy for continuous training' (79; 20.2%); 'Lack of financial support' (65; 16.6%); 'Lack of time' (57; 14.5%); 'Long working hours of library staff' (53; 13.5%); 'Lack of support from supervisor/manager' (53; 13.5%); 'Lack of trainers in the organization' (32; 8.1%); 'Insufficient library staff' (30; 7.6%); and 'Lack of interest' (22; 5.6%) (Table 5.28).

It is interesting to note that 'Lack of policy for continuous training', 'Lack of time', and 'Long working hours of library staff' are the most important obstacles of ICT training and 'Lack of interest' is the least one in both countries. This finding is similar to that of Tavassoli & Ramesh (2011b), who found that lack of policy for training as the major constraint and 'Lack of interest' as a minor constraint to ICT training among Indian and Iranian medical librarians.

6.2.4 Impact of ICT on Productivity

Regarding the impact of ICT on productivity, the statement ICT Helps in 'Quicker responses to customers' (mean=4.32) has the highest mean score followed by 'Improving customer service quality' (mean=4.30), 'Saving time' (mean=4.27), 'Improving organizational efficiency' (mean=4.25), 'Savings in labor' (mean=3.99), 'Increasing employee cooperation and coordination' (mean=3.81), 'Improving decision-making ability' (mean=3.81), 'Deeper
knowledge and understanding of customers' (mean=3.78) and 'Reducing costs' has the lowest mean score (mean=3.60) (Table 5.29). These findings are in accordance with several authors as follows: Pouyioutas, Poveda, and Kalogerou, 2005 (Saving time); Oladapo, 2006 (facilitating decision-making); Karadag and Dumanoglu, 2009 (Improving customer service quality); Safahieh and Asemi, 2010 (Improving organizational efficiency).

Indian respondents have ranked the statements regarding ICT productivity as follows: Improving customer service quality (mean=4.22); Quicker responses to customers (mean=4.21); Saving time (mean=4.13); Improving organizational efficiency (mean=4.07); Deeper knowledge and understanding of customers (mean=4.02); Increasing employee cooperation and coordination (mean=3.86); Improving decision-making ability (mean=3.75); Savings in labor (mean=3.57) and Reducing costs (mean=3.26) (Table 5.30).

Iranian respondents have ranked the statements regarding ICT productivity as follows: Quicker responses to customers (mean=4.40); Saving time (mean=4.37); Improving organizational efficiency (mean=4.37); Improving customer service quality (mean=4.36); Savings in labor (mean=4.26); Improving decision-making ability (mean=3.85); Reducing costs (mean=3.82); Increasing employee cooperation and coordination (mean=3.77) and Deeper knowledge and understanding of customers (mean=3.63) (Table 5.30).

It is worth noting that the statements ICT helps in 'Improving customer service quality'; 'Quicker responses to customers'; 'Saving time'; and 'Improving organizational efficiency' are the first four important statements by respondents in both countries.

Furthermore, data analysis indicates that agreement for the four statements i.e., ICT Helps in: 'Saving time', 'Improving organizational efficiency', 'Savings in labor' and 'Reducing costs' by the Iranian respondents is significantly higher than Indian respondents. However, agreement for the
statement ICT Helps in: 'Deeper knowledge and understanding of customers' by the Indian respondents is significantly higher than their Iranian counterparts. While, there is a non-significant difference between two countries about the following statements: 'Improving customer service quality', 'Quicker responses to customers', 'Increasing employee cooperation and coordination' and 'Improving decision-making ability' (Table 5.30).

In order to find out whether there is a difference between Indian and Iranian library staff regarding impact of ICT on productivity (hypothesis no. 3), Independent-Samples t-test was conducted. The results show that the impact of ICT on library staff productivity in India and Iran differs significantly at the 0.05 level of significance (t=2.40, df=188, p=0.017). It implies that Iranian respondents (mean=36.58) have higher mean score than their Indian counterparts (mean=34.80). Therefore, the research hypothesis (no. 3) is supported (Table 5.40 and Table 5.41).

6.2.5 Impact of ICT on Performance

Regarding the impact of ICT on performance, the statement ICT Helps in: 'Acquiring new skills' (mean=4.32) has the highest mean score followed by other statements as follows respectively: Increasing job innovations (mean=4.31), Increasing skill level of employee (mean=4.29), Increasing variety of tasks (mean=4.15), Doing tasks effectively (mean=4.10), Increasing certainty and control over services (mean=4.10), Greater job flexibility (mean=4.08), Increasing job accuracy and exactness (mean=3.96), Improving employee competence (mean=3.96), Reducing employee work load/drudgery (mean=3.84), and Increasing more responsibility to work (mean=3.64) (Table 5.31).

These findings are in accordance with several authors as follows: Horsfall, 1992 (Acquiring new skills, increasing the variety of tasks and greater
flexibility); Geleijnse, 1994 (increasing the variety of tasks); Jerabek et al., 2001 (Greater job flexibility and Doing tasks effectively); Koellinger, 2006 (Increasing job innovations); Safahieh and Asemi, 2010 (flexibility).

Indian respondents have ranked the statements regarding impact of ICT on performance as follows: Acquiring new skills (mean=4.12); Improving employee competence (mean=4.06); Increasing job innovations (mean=4.05); Increasing skill level of employee (mean=4.05); Increasing certainty and control over services (mean=4.01); Doing tasks effectively (mean=3.98); Increasing more responsibility to work (mean=3.98); Increasing variety of tasks (mean=3.97); Greater job flexibility (mean=3.86); Reducing employee work load/drudgery (mean=3.85); and Increasing job accuracy and exactness (mean=3.60) (Table 5.32).

Further, Iranian respondents have ranked the statements regarding impact of ICT on performance as follows: Increasing job innovations (mean=4.47); Increasing skill level of employee (mean=4.46); Acquiring new skills (mean=4.46); Increasing variety of tasks (mean=4.27); Greater job flexibility (mean=4.22); Increasing job accuracy and exactness (mean=4.20); Doing tasks effectively (mean=4.17); Increasing certainty and control over services (mean=4.17); Improving employee competence (mean=3.89); Reducing employee work load/drudgery (mean=3.83); and Increasing more responsibility to work (mean=3.42) (Table 5.32).

Moreover, data analysis reveals that agreement for the statement ICT Helps in: 'Increasing more responsibility to work' by the Indian respondents is significantly higher than Iranian respondents. However, agreement for the statements ICT Helps in 'Acquiring new skills', 'Increasing job innovations', 'Increasing skill level of employee', 'Increasing variety of tasks', 'Greater job flexibility', and 'Increasing job accuracy and exactness' by the Iranian respondents is significantly higher than their Indian counterparts. While there is a non-significant difference between
two countries about the following statements: Improving employee competence, Increasing certainty and control over, Doing tasks effectively, Reducing employee work load/drudgery (Table 5.32).

In order to find out whether there is a difference between Indian and Iranian library staff regarding impact of ICT on performance in India and Iran (hypothsis no. 4), Independent-Samples t-test was carried out to compare the mean scores of the two groups. The results indicate that ICT impact on library staff performance in India and Iran differs significantly at the 0.05 level of significance (t=2.543, df=192, p=0.012<0.05). It implies that Iranian respondents (mean=45.17) have higher mean score than their Indian counterparts (mean=42.66). Hence, the research hypothesis (no. 4) is supported (Table 5.42 and Table 5.43).

6.2.6 ICT and Job Satisfaction

ICT Effect on Job Satisfaction:

A majority of respondents (87.3%) believe that ICT have affected their job satisfaction, while 12.7% of them do not. Further, country-wise comparison reveals a different response pattern by Indian and Iranian respondents (CC=0.326, p*<0.05), it means that there are more respondents in Iran who believe that ICT have affected their job satisfaction than in India. About 96.5% of Iranian respondents believe that ICT have affected their job satisfaction, however 73% of Indian respondents have the same opinion (Table 5.33 and Figure 5.20).

ICT Application and Overall Job Satisfaction:

Regarding ICT application in the library, more than half of the respondents (97; 52%) are satisfied with their job to a great extent and about 78 (42%) respondents are satisfied to some extent, while only a small number of the respondents are satisfied with their job to a little extent (8; 4.3%) or not at
all satisfied (3; 1.6%). Data analysis clearly shows that there is a similar response pattern in job satisfaction in both countries (CC=0.164, p=0.161>0.05) (Figure 5.21 and Table 5.34).

It seems that the respondents from both countries view ICT as a source of satisfaction with their jobs. This result is similar to several studies (e.g., Bii and Wanyama, 2001; Hector, Gibson, and Zorn, 2009).

**Impact of ICT on Job Satisfaction:**

- Regarding the impact of ICT on job satisfaction, the statement 'ICT makes my job more interesting' (mean=4.01) have the highest mean score and the statement 'ICT can affect job compensations and benefits' (mean=3.04) has the lowest one. According mean score, the other statements are ranked as follows: ICT increases career development (mean=3.96); ICT increases promotion in the organization (mean=3.95); ICT increases interaction with patrons (mean=3.90); ICT improve job prestige (mean=3.85); Use of ICT makes me self-confidence/esteem (mean=3.84); ICT makes good job working conditions (mean=3.83); ICT improves autonomy on the job (mean=3.76); ICT increases interaction with coworkers (mean=3.63) and ICT increases job security (mean=3.34) (Table 5.35).

- These findings are comparable to those reported by several authors as follows: Horsfall, 1992 (increasing the interest in the work, self-esteem, interpersonal communication and client relations); Edwards et al., 1995 (increasing self confidence); Bii and Wanyama, 2001 (job prestige and a complete revolution of the work environment); Geleijnse, 1994 (job security).

- The respondents from India have ranked the statements as follows: ICT increases career development (mean=4.08); Use of ICT makes me self-confidence/esteem (mean=4.01); ICT makes my job more interesting (mean=3.97); ICT makes good job working conditions (mean=3.92); ICT...
improve job prestige (mean=3.89); ICT increases interaction with patrons (mean=3.87); ICT improves autonomy on the job (mean=3.82); ICT increases promotion in the organization (mean=3.75); ICT increases interaction with coworkers (mean=3.68); ICT can affect job compensations and benefits (mean=3.55) and ICT increases job security (mean=3.47) (Table 5.36).

The respondents from Iran have ranked the statements as follows: ICT increases promotion in the organization (mean=4.08); ICT makes my job more interesting (mean=4.03); ICT increases interaction with patrons (mean=3.92); ICT increases career development (mean=3.89); ICT improve job prestige (mean=3.82); ICT makes good job working conditions (mean=3.78); Use of ICT makes me self-confidence/esteem (mean=3.73); ICT improves autonomy on the job (mean=3.72); ICT increases interaction with coworkers (mean=3.60); ICT increases job security (mean=3.27) and ICT can affect job compensations and benefits (mean=2.71) (Table 5.36).

Although Indian and Iranian respondents assigned different ranks to the statements about impact of ICT on job satisfaction, there are statistically significant differences between Indian and Iranian respondents as follows: Agreement for the statements 'Use of ICT makes me self-confidence/esteem' and 'ICT can affect job compensations and benefits' by the Indian respondents is significantly higher than Iranian respondents. However, agreement for the statement 'ICT increases promotion in the organization' by the Iranian respondents is significantly higher than their Indian counterparts, While Indian and Iranian respondents agree similarly with the following statements: 'ICT increases career development', 'ICT makes my job more interesting', 'ICT makes good job working conditions', 'ICT improve job prestige', 'ICT increases interaction with patrons', 'ICT improves autonomy on the job', 'ICT increases interaction with coworkers' and 'ICT increases job security'.
In order to test whether there is a difference between Indian and Iranian library staff regarding impact of ICT on job satisfaction (hypothesis no. 5), Independent-Samples t-test was done. The results show that ICT impact on job satisfaction among library staff in India and Iran does not differ significantly at the 0.05 level of significance ($t=-0.295$, $df=192$, $p=0.768>0.05$). Hence, the research hypothesis (no. 5) is rejected (Table 5.44 and Table 5.45).

6.3 Recommendations and Suggestions

In the light of the findings of the study, as well as respondents’ feedback, the following suggestions are made.

1. Since no library can function properly without ICT infrastructure, it is suggested that computers, printers, library software and other types of ICT facilities be provided to enhance quality of library operations and information services.

2. Library automation is considered as the most important part of ICT application in libraries, which will help better services to clients. Therefore, automation of all library operations should be done.

3. Few constituent libraries from India are automated. The libraries in which automation has not been initiated should try to become automated as soon as possible.

4. In this information driven society, Internet connection should be provided for all university libraries.

5. It seems that constituent libraries have remained the most disregarded division in universities, sufficient funds should be allocated to these libraries.
6. It is essential for university libraries to initiate regular ICT training programs for library staff to keep up with ICT developments through on-the-job training, workshop/seminar and so on.

7. Since lack of policy for continuous staff training is the most important hindrance of ICT training, the development of training policy seems necessary to make some consistency in human resource development.

8. There is a need to revise working hours of library staff to have more time for acquiring needed ICT skills.

9. Since ICT enhance the quality and efficiency of training, use of ICT-based training for library staff training should be taken into account.

10. Regular assessment of staff’s training needs from top administrators is suggested.

### 6.4 Conclusion

The present study has provided insight into impact of ICT on human resource development in university libraries of India and Iran that has not been explored much by library and information science researchers. The comprehensive information was gathered through questionnaire and personal observation, involved different categories of human resource development and ICT from application of ICT to impact of ICT on training, productivity, and so on.

Though university libraries use ICT in several areas such as library housekeeping operations, office automation, information services and hardware infrastructure, it was found that application of ICT in central libraries of both countries have reached a good level, however constituent libraries have not. Further, it is seen that university libraries of India and Iran differ significantly regarding ICT application.

It is concluded that regular ICT training are very important that enable the library professionals to provide value added services to their users. Moreover,
training is considered as an appropriate mean of enabling staff to cope effectively with technological change.

The results show that respondents have a positive response to ICT-based training, so it can be regarded as an efficient tool for staff training in the libraries.

Another conclusion is that, although, Iranian library staff showed higher agreement about impact of ICT on productivity, the respondents from both countries evaluated impact of ICT on productivity positively regarding improving customer service quality; quicker responses to customers; saving time and so on.

Though library human resources from India and Iran differ significantly regarding impact of ICT on performance, they have evaluated impact of ICT on performance as positive through acquiring new skills, increasing job innovations, increasing skill level of employee and so on.

The library human resources in both countries believe that ICT has made their jobs more interesting, increased career development and promotion in the organization. It is worth noting that the importance of “interesting work” and “promotion in the organization” is supported as job motivators by Herzberg’s two-factor theory. This theory states that employees are motivated by their own inherent need to succeed at a challenging task. Herzberg’s survey of USA workers clearly demonstrated that about 80% of the factors in satisfying job opportunities came from the intrinsic elements of the job such as achievement, recognition, and the work itself. Managers’ responsibility, then, is to provide opportunities for employees to be motivated to achieve (Herzberg, 1987).

Furthermore, the result of the study is in accordance with Goddard (1989) who believes that there is an impressive shift in attitudes towards work, from work as a means of survival to work as a means of enhancing self-development and self-expression. In addition, the study shows that although Iranian library staff have perceived the effect of ICT on job satisfaction more than their Indian counterparts,
regarding impact of ICT on job satisfaction Indian and Iranian library staff do not differ significantly in this regard. Moreover, the library staff from both countries similarly view ICT application in their library as a source of satisfaction with their jobs.

The consensus of the literature would tend to indicate that automation can be either a positive or negative force on employees, while the results reveal generally that library staff in both countries have a positive attitude toward the use of ICT in their libraries which ultimately results in development of library human resources. Earl (1996) has mentioned that the positive attitudes and actions of librarians can play an important role in the successful implementation of technology-based systems. In addition, it is well established that librarians’ attitudes towards new information technologies play a fundamental role in the provision and application of these technologies in libraries. Ramzan and Singh (2010) opine that librarians’ positive attitudes result in high morale, motivated response to innovations and enhanced use of IT, while negative attitudes produce low morale and resistance to changes in the status quo.

The findings of this research will provide a foundation for future research and will help policy makers in understanding the current state of affairs of the usage and impact of ICT on university library human resources of India and Iran. The findings of this study will contribute to the body of ideas and knowledge about strategies of implementing technology integration in university libraries of India and Iran. Therefore, it is time to take the necessary steps to create a work environment that develop the library human resources effectively.