IT skills among LIS professionals of medical libraries in India and Iran: A comparative study

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A questionnaire-based survey was conducted to elicit IT skills needed for LIS professionals working in medical, dental, and pharmacy colleges affiliated to Rajiv Gandhi University of Health Sciences (RGUHS) in Karnataka, India; and Ministry of Health and Medical Education and Islamic Azad University (MOHME & IAU), Iran. Results revealed that all the skills listed under IT basics and internet were considered important by medical librarians in India and Iran. However, skills in working with non-popular software packages in areas such as presentation, publishing, and email were considered unimportant. Concludes that Iranian LIS professionals’ IT skills requirement was higher than that of Indian LIS professionals. Iranian professionals attributed more importance to the ability to use non-popular software packages in some areas, such as electronic mail, publishing, presentation, and databases than their Indian counterparts did.

Introduction

The emergence of information technology has brought tremendous changes and developments in the field of library and information science in general and medical libraries in particular. With the advent and availability of new technologies, library environments and methods of providing services to library users have drastically transformed from traditional to electronic environment. The developments in the field of information and communication technology have posed many challenges to LIS professionals. It has become inevitable for the LIS professionals to change their attitudes and approaches, be up to date with the latest developments, adopt new skills and techniques for better and sophisticated services and improve facilities in the libraries for the benefit of user groups. As a result, more and more libraries are digitizing collections. Further, procurement and owning of documents have been replaced with accessing and sharing of information resources through various types of networks.

Studies on information technologies in Iran indicate that computerization of library systems and services in Iran started in the late 1970s and resumed after an apparent gap in 1980s. However, computerization has accelerated in the last decade especially in institutions of higher education as a result of an increased number of users, greater demand for the use of library materials within and outside the libraries, increase in the amount of materials being published, changes in the nature of reading material, and the development of new and cheaper computers¹⁻³.

According to Moorthy⁴, many of the libraries and information centers in India started using computers for their works after the introduction of mini-computers during late 1970s. However, since these were expensive, in the beginning only elite institutions of the public, academic, research and development (R&D) and private sectors could afford them and the libraries in these institutions were able to utilize them to some extent. Library automation, as a result did not progress satisfactorily. However, the arrival of microcomputers and personal computers (PCs) in Indian market in the 1980s gave the necessary impetus, the environment began to change and library automation picked up momentum.

Hence, in order to cope up with the information challenges of the 21st century and to meet the increasing and changing needs and requirements of the users more effectively and efficiently and to keep pace with the ever-increasing technological changes; the medical LIS professionals should acquire knowledge and skills in information technology.
In view of the above facts this paper aims to present the IT skills needed for LIS professionals of medical libraries in India and Iran.

Related studies

A few studies on the IT skills of librarians in India, Iran, and other countries have been published. Abu Bakar\(^5\) in his study found that 12 out of 13 key IT competencies were recognized as the most essential competencies needed by information professionals in Malaysia, and yet the respondents were not exposed to these competencies. Mahmood\(^6\) provided a list of 75 competencies needed by entry-level academic librarians. Validated by 70 chief librarians of universities and post graduate level colleges from the public and private sector, ten competencies were recognized as the most essential competencies, seven of which belonged to information technology category. The validated list was then compared with the curricula of LIS programs in Pakistan.

Gosine-Boodoo and McNish\(^7\) studied the impact of particular environment of today’s professional librarians upon their skills capabilities. Librarians’ perspectives reflected similar zones of skills insecurity viz, IT and managerial skills. Anwar and Al-Ansari\(^8\) report a questionnaire survey on the current continuing professional development practices and perceptions of academic library employers about skills that need to be developed in their staff in the six Gulf Cooperation Council countries. It was found that a systematic staff development program is generally lacking. Current continuing professional development activities focus on immediate institutional needs. Information and communication technology skills preferred relate to automated systems, electronic resources, networking, and multimedia applications.

Rehman, Majid and Baker\(^9\) interviewed 60 top and middle-level managers of academic libraries in Malaysia to validate a list of competencies (knowledge and skills) required by entry-level academic librarians. They identified sets of foundation and operational competences namely: knowledge of collection, automation, information technology, database design and management. The competences to work with different information systems and resource-sharing consortia were perceived to be a need for future years.

Babu, Vinayagamoorthy and Gopalakrishnan\(^10\) examined the ICT skills among librarians in engineering educational institutions in Tamil Nadu. Results indicated that a good number of library professionals were conversant with the popular operating system Windows. The library professionals evidenced interest and proficiency in MS-Office package such as Ms-Word, MS-Excel, Ms-Access, MS-Power point with first four ranks, respectively. Respondents have fair knowledge of library automation softwares. For online facilities most of library professionals preferred OPAC/Web OPAC and it was followed by CD-ROM search, email, internet surfing and search engines.

Regarding technical skills of library professionals, creating a catalogue and metadata were the prime choices of the respondents. Self-study is a popular mode among librarians as medium of learning and updating their knowledge and skills of ICT, it is followed by methods such as attending workshops/seminars, through colleagues, and training at workplace. Workload, negative attitude of the higher authorities and limited opportunities were mentioned as the major constraints to acquiring ICT skills.

Soudbaksh and Farzin\(^11\) opine that medical library and information centers are witnessing major revolution in their activities and services and this has caused the librarians to feel that in addition to their traditional activities, they need to achieve modern knowledge and skills. Safahieh and Asemi\(^12\) undertook a study to assess the level of computer literacy skills of librarians in the University of Isfahan, Iran. The investigation showed that the majority of the librarians did not possess a good level of computer skills and even their long experience of using computers had not necessarily improved their level of computer literacy. They suggest that the findings can be utilized by library managers in order to organize and offer regular training programs to train or retrain librarians with the latest advancement of information technology. Pournaghi and Abazari\(^13\) performed a comparative questionnaire-based study on librarians working in central libraries of Iran and Shahid Beheshti Universities of Medical Sciences and Tarbiat Moddares, Tehran, and Shahid Beheshti (non-medical) Universities. Findings showed that LIS professionals working in central libraries did not yet possess a good level of information literacy skills.
The authors suggested training programs on information literacy skills and English language need to be organized.

**Objectives of the study**

- To identify types of information technology skills possessed by LIS professionals of medical libraries in India and Iran;
- To study means and methods of acquiring IT skills by medical librarians
- To identify hindrances in acquiring IT skills;
- To suggest measures for enhancement of Indian and Iranian LIS professionals IT skills.

**Methodology**

This study was limited to libraries of medical, dental, and pharmacy colleges affiliated to Rajiv Gandhi University of Health Sciences (RGUHS), Karnataka, India and medical, dental and pharmacy colleges affiliated to the Ministry of Health and Medical Education (MOHME), and Islamic Azad University (IAU), Iran. Websites of RGUHS, MOHME, and IAU were used to identify the names and addresses of libraries for the study. Based on a comprehensive literature review and in the light of objectives of the study a questionnaire was designed to elicit responses on a variety of IT skills. The questionnaire included competencies in IT basics that included electronic mail; internet; presentation and publishing; development and administration of databases; and system analysis and programming. The questionnaire was administered to chief librarians with a cover letter indicating the significance of the study. To collect the primary data on IT skills needed for medical librarians, the researcher identified 155 medical, dental, and pharmacy colleges in India, and 77 medical, dental, and pharmacy colleges in Iran. Two hundred and thirty two questionnaires were distributed, through e-mail, mail, and personal visits, out of which 210 questionnaires were returned, of which 181 (78%) were useable. The collected data are presented in tables.

**Analysis**

**Background information about the libraries surveyed**

Out of 113 Indian libraries surveyed, 23 percent were established at the beginning of the millennium, while 35.3 per cent of Iranian libraries were established during 1986-1990. On the whole, more than half of the Indian samples were established after 1995, whilst majority of Iranians samples were established before 1991. Table 1 shows that about half (46.9 per cent) of
Indian medical institutions offer PG, and UG courses, while about one-fifth (29.4 per cent) of Iranian medical institutions offer both PG and UG.

Table 1 also shows that majority of Indian and Iranian medical institutions offer PG courses among others representing 84 percent and 48 percent respectively. The libraries of these institutions have varied collections such as printed books and periodicals as well as e-resources such as e-journals, e-books, online/CD-ROM databases, and e-theses.

Background information about the librarians

Table 2 shows that 95.6 percent of professionals from India have postgraduate qualification, whilst 36.8 percent of their Iranian counterparts hold PG qualifications and more than half (63.2%) have UG qualification. Majority of PG professionals (59.3%) from India have MLISc and about one-fourth (24.8%) have MPhil. Data analysis shows that a sizeable number of respondents have 6 to 10 years of experience. By and large, more than half of respondents have less than eleven years of experience.

IT skills needed for the medical librarians

In order to elicit medical librarians’ perceptions on needed IT skills, they were requested to indicate on a Likert five-point scale the skills that they feel more crucial for their day-to-day activities based on the competencies that they used during the past year. Since there were five gradations including from ‘Not at all’, to ‘Fully important’, which were assigned from number one to five, respectively, the calculated mean for these options is 3. Therefore, the aspects having a mean value of more than 3 can be considered as skills perceived important by medical librarians.

All the skills listed under IT basics were considered important by medical librarians from India and Iran (Table 3). However comparing mean scores, Iranian professionals gave higher ratings to skills under this category than their Indian counterparts did. Based on the ranking given by Iranian professionals, the top three competencies in the list is the ability of ‘Using web browsers and knowing their functions’, ‘Understanding PC operating systems’, and the ability to ‘Gather data from various sources’. Indian LIS professionals ranked ‘Using web browsers and knowing their functions’, followed by the ability of ‘Gather data from various sources’. The next most important skill was the ability to provide technical support.

Email skills

As Table 4 indicates a similar ranking of the three aspects with regard to email, viz., ‘Set up and use e-mail functions’, ‘Use of Microsoft Outlook Express’ and ‘Use of Lotus Notes’. The respondents gave lower rating for ‘Use of Lotus Notes’ and did not
This finding is similar to that reported by Babu et al.\textsuperscript{14} and Abu Bakar.\textsuperscript{15}

### Internet skills

Table 5 depicts that all the skills listed under internet category were considered important by the respondents from India and Iran. As was expected, the ability to use common search engines topped the list of skills in this category. The next most important skills were the ability to use the internet for accessing electronic sources and the ability to employ effective search techniques, and the ability to use the internet for accessing online services whether local or foreign. This finding may be due to the huge impact that internet and other network resources have exerted on LIS professionals. The ability to ‘Use video-conferencing software’, and the skill of ‘Using bulletin board, newsgroup and Usenet’, were among the skills considered the least important by Indian and Iranian respondents respectively.

### Presentation skills

Table 6 indicates that all the skills listed under presentation were considered important by the Indian respondents except the ability to use Adobe PaintShop Pro, which was rated lower, indicating unfamiliarity with this software for creating presentation. The table also shows that all the skills listed under presentation were considered important by the respondents from Iran. The ability to create presentation using PowerPoint topped the list of skills in this category, the next most important skill was the ability to understand scanning and OCR software products, followed by use of Adobe Photoshop, and Paint Shop Pro, which received the lowest score.
Table 7 also indicates that the ability to author and publish an internet homepage received the highest score by Iranian respondents, the next most important skill was the ability to use Web publishing software, followed by the ability to use Microsoft FrontPage to create web pages, the ability to use Adobe PageMaker, and the ability to use desktop publishing software, which received the lowest rating. Considering Mean scores, all the skills in this category were considered as important skills by medical librarians from Iran.

Table 8—Skills in presentation

<table>
<thead>
<tr>
<th>Skills</th>
<th>Indian respondents</th>
<th>Iranian respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Use of Microsoft PowerPoint</td>
<td>3.973</td>
<td>1.235</td>
</tr>
<tr>
<td>Understand scanning process and standards, and OCR software</td>
<td>3.592</td>
<td>1.265</td>
</tr>
<tr>
<td>Use of Adobe Photoshop</td>
<td>3.132</td>
<td>1.385</td>
</tr>
<tr>
<td>Use of Paint Shop Pro</td>
<td>2.734</td>
<td>1.246</td>
</tr>
</tbody>
</table>

Table 7—Skills in publishing

<table>
<thead>
<tr>
<th>Skills</th>
<th>Indian respondents</th>
<th>Iranian respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Use of Web publishing</td>
<td>3.274</td>
<td>1.377</td>
</tr>
<tr>
<td>Author and publish an internet site</td>
<td>3.265</td>
<td>1.316</td>
</tr>
<tr>
<td>Use of desktop publishing software</td>
<td>3.044</td>
<td>1.291</td>
</tr>
<tr>
<td>Use of Microsoft FrontPage</td>
<td>2.902</td>
<td>1.309</td>
</tr>
<tr>
<td>Use of Adobe PageMaker</td>
<td>2.893</td>
<td>1.352</td>
</tr>
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</table>

Database skills

As it can be seen from Table 8, skills to use Microsoft Access were ranked first by Indian respondents. The next most important skill in databases was install, maintain and administer databases. These skills were followed by ‘Use of client/server database design tool’, and the ability of ‘Use of visual application development tools’, followed by ‘Use of FoxPro’ that received the lowest rating. Regarding Mean scores, only abilities to ‘Use Microsoft Access’ and ‘Install, maintain and administer databases’ with mean value
of greater than 3 were considered as important skills by respondents from India, whilst ranked highest by the respondents from Iran is the ability to install, maintain and administer databases. The ability to use Microsoft Access was a distant second. These competencies were followed, in descending order of importance, by the ability of use of client/server database design tool, use of visual application development tool, and use of FoxPro which was considered the least important. Considering Mean scores the ability to install, maintain and administer databases, the ability of use of Microsoft Access, the ability of use of client/server database design tool, and the ability of use of visual application development tool, which have mean score higher than 3 can be considered as perceived important database skills needed for medical librarians from Iran. Majority (60 or 88.2 per cent) of respondents were interested to further develop their skills in database.

**Acquiring IT skills**

Table 9 depicts that self-study, formal education, informal education, education through colleagues, training at work place, attending IT programmes, and workshops were the prominent modes of acquiring IT skills by library professionals. Self-study is the most popular mode of learning and updating their knowledge and skills of IT among medical librarians from India. It is followed by methods such as ‘Training at work place’ ‘Attending workshops/seminars’, ‘Formal Education’, and so on. This finding is in accordance with the finding reported by Babu et al. and Sampath Kumar and Biradar.

As Table 7 shows, ‘Attending workshops/seminars’ is the most popular mode among medical librarians from Iran as medium of learning and updating their knowledge and skills of IT. The next most popular means of acquiring IT skills among Iranian medical librarians are, ‘Formal Education’, ‘Self-study’, and ‘Attending IT programs’, etc.

**Hindrances in acquiring IT skills**

Table 10 shows that Indian respondents rated ‘Lack of sufficient staff in the library’ as the major barrier in acquiring IT skills. This is followed by ‘Work overload’ and ‘Lack of financial support’, whilst Iranian respondents rated ‘Lack of written continuing development (CPD) policies’, as the major constraint in acquiring IT skills, followed by ‘Lack of financial support’, and ‘Inadequate CPD activities’ in the second and third rank respectively. It is interesting to
note that among the barriers ranked unimportant by Iranian respondents was ‘Work overload’.

**Recommendations**

Based on these findings and feedbacks from medical librarians, the following recommendations are made:

- Medical library managements need to give more priority to staff training;
- Written training policies should be formulated for medical libraries in both countries to create some consistency in staff training and human resource development;
- Medical libraries in both countries should periodically conduct workshops and orientation programmes for their staff on the new developments in information technology;
- In order to meet medical libraries needs of qualified and well trained library staff, the library director and decision makers should inform library staff about all available training programs, workshops, and conferences and encourage them to attend;
- On-site training facilities and self-learning packages are required to deal with the need for continuous upgrading of skills;
- It is essential for medical libraries to initiate training programs for library staff in collaboration with campus computer centers, departments of studies in library and information science, and Medical Library Associations in both countries.

**Conclusion**

This survey was conducted to examine and compare IT skills needed for medical librarians in India and Iran and to identify the means and methods of acquiring IT skills among medical librarians and the constraints to acquiring IT skills. The present research may conclude that all the skills listed under some areas were considered important by Indian and Iranian LIS professionals. However, Iranian respondents ascribed more importance to those skills, indicating that their IT skills requirement was higher than Indian professionals. Indian and Iranian professionals gave lower ratings to the ability to use non-popular software products in some areas. Iranian respondents indicated higher requirement for the ability to use software packages in areas such as creating documents and web pages than their Indian counterparts. There are certain competencies that are important for LIS professionals in both countries, although they were not exposed to those competencies. Lack of policies and professional development and lack of sufficient staff in the library were considered as the most important hindrances in acquiring IT skills by Iranian and Indian LIS professionals, respectively. Self-study is the most popular mode among Indian medical librarians as medium of learning and updating their knowledge and skills of IT, whereas, attending workshop/seminars is the most popular mode of learning IT skills among Iranian professionals. Developing information technology training programs based on regular need assessment studies enhances LIS professionals IT Skills. Medical library administrative and professional bodies in both countries should seek to develop written CPD for information technology skills. Finally, developing interactive software packages,
online training programmes, publishing manuals and introducing useful Web sites for obtaining IT skills is recommended.

References

16. Ibid., p. 274.