CHAPTER 7
FINDINGS, CONCLUSIONS AND SUGGESTIONS FOR
FURTHER RESEARCH

7.1 Findings of Library and Information Storage and Services for the People with Disabilities

The availability of the electronic resources along with the sufficient information services and ICT facilities at the institutions/libraries for the users with disabilities are studied. The various accommodations for the users, Assistive Technology facilities and the Web services provided by the libraries are also examined in the study and the findings of the data analysis are presented below under the following headings.

7.1.1 Electronic Resources for the Users with Disabilities

There are sufficient electronic resources and information storage facilities available in the libraries for the blind and locomotor impaired users while there are insufficient electronic resources and information storage facilities available in the libraries for the deaf/hearing impaired users. The people with disabilities are ‘Dependent’ on the electronic resources to fulfill their information needs and requirements in all the libraries.

7.1.2 Information Services for the Users with Disabilities

The sufficient information services and facilities are available in the libraries for the people with disabilities to meet their needs and requirements. The highest number of information services and facilities are available in RNBTBL, NDS and CRL serving the blind, deaf and locomotor users respectively. All the libraries serving the people with disabilities publicize their services and resources via different promotional methods.

7.1.3 ICT Facilities for the Users with Disabilities

Out of all the libraries, HKU, NDS and CRL serving the blind, deaf and locomotor impaired users respectively have the maximum ICT Infrastructure and facilities available at the institution/library for the people with disabilities. It is examined that all the libraries serving the blind/vision impaired users have the Internet facility available at the institution for the users but among all the libraries serving the deaf/hearing impaired
users, only AIFD and NDS has the Internet facility for their users. Lastly, among the libraries serving the locomotor impaired users, only CRL, CSL and ZHL has the Internet facility available at the institution.

7.1.4 Accommodations for the Users with Disabilities

Among all the libraries serving the blind, deaf and locomotor impaired users, the HKU, NDS and MIPSL respectively provides maximum accommodations to create the accessible environment for the users. The library professionals in majority of the libraries serving the people with disabilities ‘Strongly Agree’ that ‘Digital Divide leads to Disability Divide’ among the users. All the libraries have the specialized staff for serving the users with disabilities to meet their information needs and demands. There is a provision of training programmes for the library professionals in all the libraries except DDCL, AIFD, LNSSD and ZHL to provide training on the latest technological trends and other areas dealing with the disability. All the libraries except DDCL organize Orientation/Training programme at their institution for the development of the skills and awareness of the blind/vision impaired users. Only AIDDS and NDS organize Orientation/Training programme at their institution for the deaf/hearing impaired users whereas among all the libraries serving the locomotor impaired users, only CRL (JNU) organize Orientation/Training programme for its users. It is found that all the libraries have the ‘Policy Document’ that describes the services to people with disabilities. Lastly, out of all the libraries serving the blind users, only HKU and RNBTL, among the libraries serving the deaf/hearing impaired, only DRL and all the libraries serving the locomotor impaired users respectively are involved in R&D activities in the area of disability.

7.1.5 AT Facilities for the Users with Disabilities

All the libraries serving the people with disabilities keep them updated with the latest technological trends in the area of disability. The majority of library professionals in all the libraries rated their Digital Infrastructure and Assistive Technology facilities in ‘Good’ status. Lastly, majority of the library professionals in all the libraries are either ‘Inclined to Agree’ or ‘Strongly Agree’ for the inclusion of the potential users at the time of introduction of new technology at the institution/library for the users with disabilities.
7.1.6 Web Services for the Users with Disabilities

The majority of libraries serving the blind and locomotor impaired users have ‘Web-based Library Catalog’ for the users whereas not a single library serving the deaf/hearing impaired users have a ‘Web-based Library Catalog’ for its users. All the institutions/libraries serving the blind (except DDCL), deaf (except LNSSID) and locomotor impaired users have the webpage/website describing the services/facilities for the person with disabilities which is regularly updated at a certain period of time. Lastly, in majority of libraries, the webpage/website is developed ‘In-House’ and only RNBTFBL and DRL follows ‘Standards/Guidelines for the people with disabilities’ during the development of their website.

Finally, the above findings from the analysis of the libraries reveal that people with disabilities are ‘dependent’ on the electronic resources to fulfill their information needs and requirements in all the libraries. There are sufficient information services and facilities available in the institutions/libraries for the people with disabilities. All the libraries serving the blind/vision impaired users have the internet facility for the users while majority of libraries serving the deaf community and some libraries serving the locomotor impaired users do not have the internet facility. All the libraries have the specialized staff for serving the users with disabilities and there is a provision of training programmes for the library professionals in all the libraries except DDCL, AIFD, LNSSID and ZHL respectively. The ‘Policy Document’ that describes the services for people with disabilities is available in all the libraries. All the libraries serving the locomotor impaired while only few libraries serving the blind/vision impaired and deaf/hearing impaired users are involved in R&D activities in the area of disability. The majority of library professionals in all the libraries rated their Digital Infrastructure and Assistive Technology facilities in ‘Good’ status but the users’ responses in all the libraries shows that they are not satisfied with the AT facilities available at their institution/library. Lastly, the results shows that majority of libraries do not follow any ‘Standards/Guidelines for the people with disabilities’ during the development of their website.
7.2 Findings of Access and Use of Electronic Information by People with Disabilities

The information needs and requirements along with the user’s preferences regarding the use of electronic resources, information services, assistive technology and web services in the digital environment are studied and the findings of the user analysis are presented below under the following headings.

7.2.1 User’s Preferences in Electronic Environment

The people with disabilities prefer digital resources over print resources for their academic or research work in all the libraries as they are easy to use, time saving, provides access to wider range of information and facilitates access to current information. The most preferred format to read the digital content among blind/vision impaired users in all the libraries is ‘Doc’ format because it is completely compatible with the screen readers available today and allows users to make changes and the required modifications in the data accordingly. The ‘Internet’ is a leading resource among all the electronic resources used by majority of the blind/vision impaired, ‘Captioned videos/media program’ by deaf/hearing impaired and ‘Library/Institution Website’ by locomotor impaired users respectively in all the libraries. In the types of electronic resources mostly used by the users on the basis of their preference of use, the Audio books on CDs/DVDs are preferred by majority of blind/vision impaired while Internet is preferred and used by majority of deaf and locomotor impaired users in all the libraries. Again, Internet is the first source for locating and access of information among the majority of the blind/vision impaired and locomotor impaired users in all the libraries due to its easy availability (i.e. 24x7) and accessibility (i.e. with the help of AT) to them. ‘Teacher’ is the first source for locating and access of information among the majority of deaf/hearing impaired users.

7.2.2 Assistance Received in Electronic Environment

The majority of people with disabilities in all the libraries prefer to receive information assistance ‘Whenever required’ by them and are ‘Moderately Satisfied’ with the information assistance received from the library staff. The majority of people with disabilities in all the libraries never requested for online information assistance from
the staff. The Orientation and Training programmes are found ‘Essential’ by the majority of users in all the libraries but they have not ever attended any Orientation/Training programme at their or any other institution/library.

7.2.3 Use of Information Services
The majority of blind/vision impaired users avail the information services of more than one institution/library to fulfill their information needs and requirements while the majority of deaf and locomotor impaired users do not avail the services of other libraries. The majority of blind and locomotor impaired users are found aware of the ‘Internet Service’ whereas majority of deaf/hearing impaired users are found aware of ‘Computer Training Service’ at their institution/library. The people with disabilities in all the libraries are ‘Fairly well Satisfied’ with the information services available at their institution/library.

7.2.4 Use of Assistive Technology
The majority of blind/vision impaired users have their own computer system equipped with latest AT but the majority of deaf and locomotor impaired users don’t have personal computers for use. The users are found ‘Strongly Agree’ towards the need of the Assistive technology to use a computer for the people with disabilities. Lastly, the majority of users with disabilities in all the libraries are ‘Not Satisfied’ with the assistive software/hardware facilities available for them at their institution/library.

7.2.5 Use of ICT Technology
The majority of blind and locomotor impaired users have ‘Good’ understanding of the computing concepts and they use the internet ‘Everyday’ at their institution/library. Whereas, although deaf/hearing impaired users have ‘Fair’ understanding of the computing concepts they do not use the internet at their institution/library because there is no Internet facility for the users at the institution/library. The people with disabilities face various barriers during Internet access but the ‘Complexity of content available on Net’ is found as the major barrier faced by the blind users and ‘Lack of sufficient ICT facilities’ at the institution/library is the major barrier faced by deaf and locomotor impaired users. The ‘Search Engines’ is the first approach to browse the Internet for the information access among the people with disabilities. ‘Email’, ‘Internet browsing’ and
‘Downloading informative material’ are the preferred Internet services/applications in which people with disabilities are involved in all the libraries. The ‘Study and Updates’ is the major purpose for which Internet resources are mostly accessed and used by the users with disabilities. Also, it is found that ICT plays an important role in the lives of people with disabilities as it helps to work independently and increase the level of confidence among them.

7.2.6 Use of Web Services

Although there is facility of ‘Web-based Catalog’ for the blind and locomotor impaired users in majority of institutions/libraries but majority of blind/vision impaired users are not aware of the ‘Web-based Catalog’ at their institution/library while there is no facility of ‘Web-based Catalog’ for the deaf/hearing impaired users in the libraries. There are various problems faced by blind/vision impaired users in comparison to users with deaf and locomotor impairment. The blind/vision impaired users ‘Sometimes’ face difficulty during the Web access with Assistive Technologies as AT like ‘Screen Readers’ available today are ‘Somewhat Compatible’ with the Web. Although, it is found that all the institutions/libraries serving the blind/vision impaired users have accessible Webpage/website design but the users demand that there should be ‘Fewer Graphics, Less Hyper-linking and Less Advertising’ to be easily read by Screen Readers for the better accessibility of the Webpage/Websites. Lastly, the deaf/hearing impaired users are found ‘Strongly Agree’ regarding the use of ‘Sign Language Videos’ as an alternative solution for the acoustic (i.e. sound related) information on the Web.

Finally, the above findings from the ‘User Analysis’ reveal that people with disabilities prefer electronic resources over print resources for the academic or research purpose. Among all the electronic resources, Internet is an important resource of information for the users with disabilities. The ‘User Orientation and Training Programmes’ is the area of major concern for the libraries as majority of users have not ever attended any orientation/training programme at their or any other institution/library. The users with disabilities are found ‘satisfied’ with the information services and facilities but they are not ‘satisfied’ with the assistive software/hardware facilities available for them at their institution/library. The people with disabilities are actively involved in the various ICT
services and applications and lastly, it is found that people with disabilities face various problems during the ‘Web accessibility’ which need to be taken into consideration by the web developers during the development of any webpage/website.

7.3 **Findings of Chi-square Testing, Users’ Impact and Cluster Representation of Libraries**

During the study four hypotheses were tested, out of which two were proved and two were disapproved. The **First Hypothesis**, ‘Electronic resources serve the best source of information to the people with disabilities’ is **proved** because majority of users with disabilities in all the libraries prefer to use electronic resources like Internet as the first source for locating/access of information. The **Second Hypothesis**, ‘Orientation and Training Programmes for the users lead to the increased and effective use of the institution/library resources’ is **disapproved** because majority of users in all the libraries have not ever attended any orientation/training programme at their or any other institution/library therefore its effectiveness cannot be tested. The **Third Hypothesis**, ‘ICT has a positive influence on the level of independence of people with disabilities’, is **proved** because majority of users in all the libraries are involved in various ICT services/applications like Internet browsing, Email and Downloading informative material etc. which helps to build the confidence among them to work independently. Lastly, the **Fourth Hypothesis**, ‘Sufficient software and hardware facilities are available in the institutions/libraries for the people with disabilities’ is **disapproved** because majority of users in all the libraries responded that they are ‘not satisfied’ with the available Assistive software/hardware facilities available for them at their institution/library as they are not sufficient to meet their basic information needs and requirements.

Among all the user groups, blind/vision impaired and deaf/hearing impaired users have the highest impact in all the six categories because blind/vision impaired users have the highest response rate in C3, C4 and C5 whereas the deaf/hearing impaired users have the highest response rate in C1, C2 and C6. Among the libraries serving the blind/vision impaired users, HKU has the highest DAP-Impact/occurrence rate i.e. HKU ($\sum C_{1-6} = 20$) while among the libraries serving the deaf/hearing impaired users, the AIFD has the
highest DAP-Impact i.e. AIFD ($\sum C_{1,6}=35$) and lastly, among the libraries serving the locomotor impaired users, CRL has the highest DAP-Impact i.e. CRL ($\sum C_{1,6}=15$).

7.4 Conclusions

It is concluded from the survey results that among all the libraries serving the blind/vision impaired users, HKU and RNBTBL are the leading libraries working for the upliftment of the users with disabilities by providing them maximum number of Electronic resources, Assistive software/hardware facilities, Information services and facilities along with maximum ICT Infrastructure and Wi-Fi facility which enhances the accessibility of the Internet within the campus environment by the users. Out of all the libraries, HKU provides maximum accommodations to create the accessible environment for the users and organize the orientation programme for the users in every six months at the beginning of each semester. All the libraries follow their ‘Personal Policy’ while HKU follows the UGC (MHRD) policy for the persons with disabilities. Out of all the libraries, only HKU and RNBTBL are involved in R&D activities for the people with disabilities and have ‘Web-based Catalog’ equipped with Screen Reader for the users. Only RNBTBL follows WAI guidelines for the people with disabilities during the development of their website. The HKU and RNBTBL regularly evaluate their institution/library website for the accessibility problems with automatic checkers (like Bobby) freely available on the web.

The survey results shows that NDS has edge above all the libraries serving the deaf/hearing impaired users as it has highest number of information services and facilities and is actively involved in the promotion of its resources and services for the deaf/hearing impaired users. NDS has the maximum ICT Infrastructure and facilities available for its users including the Internet facility. Among all the libraries, only AIDDS and NDS organize orientation/training programme for the users but the maximum accommodations are provided only by NDS to create the barrier-free environment for its users.

Finally, CRL (JNU) can be considered as the best library among all the libraries serving the locomotor impaired users, as it has the maximum number of electronic resources available for the users and is actively involved in assessing the information needs and
demands of the users. CRL has highest number of Information services and maximum ICT facilities for its users. Out of all the libraries, only CRL organize orientation/training programme at the institution for the users with disabilities.

The survey results show that the information needs and demands of the people with or without disabilities are same. Therefore, Libraries need to adopt modern and sufficient aids/equipments for the development of the library and information services in the digital environment for the users with or without disabilities. It is also concluded that the status of the services in NCR libraries for the deaf/hearing impaired people is not good as compared to the people with blind/vision impairment and people with locomotor disability. The provision of orientation/training programmes can enhance the skills of the users to access the information which is the most neglected area in majority of the NCR libraries in the study. Finally, it is concluded that libraries have the sole responsibility to bring the change in the world of information for the people with disabilities and the digital era brings yet another opportunity to leave the mark.

7.5 Suggestions for Further Research

Due to the rising complexities in the technologies, the libraries of future are tasked with an enormous amount of responsibility therefore the development of an effective communication network between the creators of information and the end users will prove beneficial in adopting the new technologies by the libraries in modern digital environment. The detailed research on the various issues related to the ‘Web accessibility’ is required where the ‘Web Information Retrieval Model’ for the people with disabilities can be developed. An exhaustive research on the ‘Role of Assistive Technology in the lives of People with Disabilities’ can be done which can help to explore the types of assistive aids/devices required by the people with disabilities on the basis of the degree of disability suffered by them. The detailed study of the ‘Compatibility of the available Assistive Softwares for the Blind/vision impaired people with the Web’ can help the libraries in selecting the suitable software for the users which can reduce the technical barriers faced by the blind/vision impaired users during the access of the Web.