Attitude of library professionals towards information technology of university libraries in Bangladesh

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MAY 2010

Thesis submitted to the University of Dhaka in fulfillment of the requirement

for the degree of Master of Philosophy

in Information Science and Library Management

ABSTRACT

This study has been designed to understand the attitude of library professionals towards information technology of Bangladesh particularly of university library professionals. Achievements in any transformation in the libraries, mostly depend on the positive attitudes and involvement of the library professionals. The role and responsibility of a library today cannot be confined within its four walls and ever remain traditional in its approach while the bulk of information is increasingly available in diverse formats. Managing information under such a situation has become very tricky and almost difficult without the application of relevant information technologies. It is very significant to understand the human factors involved in the process, if libraries are to successfully and meaningfully introduce information technology and its applications. The basic assumption was that the library professionals' attitudes will differ considerably based on socioeconomic variables, i.e., age, sex, designation, professional qualifications etc. Furthermore, it was realistic to presume that attitudes will be affected by experience with computers in the workplace and nature of exposure to information technology in the workplace.

The population of this study was comprised of library professional those were working in the selected ten university libraries. All library professionals of these universities were included in the sample. These included professionals having a minimum qualification of bachelor degree in information science and library management, semiprofessional having minimum qualification of a post-graduate diploma in library and information science, and para-professional having an at least certificate course in library science. Primary data were collected using questionnaire methods. The questionnaire was divided into two sections. Section one was designed to examine library professionals' attitudes towards information technology, and Section two applied for socioeconomic variables for collecting background information and computer experience of library professional.

Four factors emerged after factor analysis of thirty items. These are competency, work performance, anxiety and acceptance. These four factors are highly inter-correlated. Among the four factors, acceptance tops the list, followed by competency, work performance and anxiety respectively. It was seen that the factors were not overlapping. The highest positive correlation between work performance and acceptance give an idea that higher the

acceptance, higher is the work performance on the job. The second highest positive correlation between acceptance and competency demonstrate that acceptance is reciprocally depends on competency, and work performance will strengthen with competency. Since anxiety is negatively correlated with all the other factors, the analysis optimistically inferred that competency, work performance and acceptance are lower if anxiety levels are higher towards information technology. Even the anxiety level does not allow acceptance of information technology as they are negatively correlated.

The ANOVA between socioeconomic variables and attitudes towards information technology illustrated that some socioeconomic variables like age, sex, level of management, total work experience in the library field, the number of organizations served in career and continuing education influenced attitudes towards information technology. However, other socioeconomic variables have not any significant influence on attitudes towards information technology. So, the first hypothesis of the study *'Attitude of library professionals towards information technology will differ based on the socioeconomic variables' is partially accepted.* It was found that there were disparity among library professionals who have experience with computer, age of first computer learning, work with computer at job place, work with computers at home in relation to competency, work performance, anxiety and acceptance. As a result, the second hypothesis of the study *'Library professionals having experience with the computer will show a positive attitude compared to the professionals without experience in the computer as well as technological development'* is accepted.

It showed that sex has negative correlation with all the variables except additional degrees, promotion received since first job, and continuing education. It indicated that there were sex differences in promotion received, further study and continuing education or participating in a training program. It pointed out that marital status played a role for further professional development. Level of management is encouraging correlation with additional degree, promotion has received since first job, work with computers at work place, and work with computers at home and continuing education. It was a sign of having more orientation with technology, new knowledge through additional degrees, and continuing educations was getting higher positions in the library management. It has also reflected that persons having higher professional qualification at the beginning of the early career got better chances for more studies.

The results of this study have implications for both education and business, as well as for further research. This study was investigative in nature since in Bangladesh there was no previous research that studied the correlation between library professionals' attitudes towards information technology with socioeconomic variables. This research did not study the way to find out whether there was an attitude change between, before, or after pursuing information science courses. Attitude may also be related to specific experiences with information technology, or the means of instruction in information science courses. For a better understanding of the underlying relations and dimensions of attitudes towards information technology, a more extensive study using the above-mentioned variables may be necessary. These factors could be taken up for further research in the future. Additional research on these and other topics will assist individuals responsible for training in either academic or work environments to plan effective, pertinent instruction about technology.

DECLARATION

I, hereby declare that the subject matter of this thesis is the record of work done by me. The contents of this thesis did not take form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and the thesis has not been submitted by me for any research degree in any University/Institution.

I have duly acknowledged all the intellectual thought and opinions found relevant have been borrowed and used in this thesis. This is being submitted to the University of Dhaka for the degree of Master of Philosophy (MPhil) in Information Science and Library Management.

A I M Jakaria Rahman

ACKNOWLEDGEMENTS

I would like to express my appreciation to Dr. Muhammad Mezbah-ul-Islam, Associate Professor for shaping out of this work. I am indebted and thankful to him.

I would like to thank all those who filled up the questionnaire and provided the information, which enabled me to write this dissertation. I oblige all faculty members and office staffs of the department of information science and library management of the University of Dhaka who have shown me their affection during the period of my research. Acknowledgement also goes to all those of my friends, local and abroad who in one-way or other advised me on the rather complex discipline of attitudes. I am grateful to my colleagues of ICDDR,B and East West University, and other library professionals those who had helped me during my research. Their commitment inspired me to achieve my goal.

I am grateful and acknowledge the significant role of Dutch-Bangla Bank Foundation. The study was made possible through partial financial assistance provided with the fellowship program of Dutch-Bangla Bank Foundation.

Finally, my sincere thanks and appreciation is to my parents Md. Fazlur Rahman and Sabera Khatun, younger brother A. I. M. Arifur Rahman and my wife Momena Khatun for the loneliness they experienced.

Dhaka
May, 2010

A I M Jakaria Rahman

Dedicated to my parents

Md. Fazlur Rahman and Sabera Khatun

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List of Abbreviations

ALA	:	American Library Association
ANOVA	:	Analysis of Variance
BA	:	Bachelor of Arts
BAEC	:	Bangladesh Atomic Energy Commission
BCOM	:	Bachelor of Commerce
BIDS	:	Bangladesh Institute of Development Studies
BRAC	:	Building Resources Across Communities (former Bangladesh Rural Advancement Committee)
BSS	:	Bachelor of Social Sciences
BUET	:	Bangladesh University of Engineering and Technology
CAL	:	Computer Assisted Learning
CDS/ISIS	:	Computerized Documentation System-Integrated Set for Information Systems
CIRDAP	:	Center Integrated Rural Development for Asia and the Pacific
CPA	:	Certified Public Accountants
DU	:	University of Dhaka
GDP	:	Gross Domestic Product
GLAS	:	Graphical Library Automated System
IBM	:	International Business Machines Corporation
ICDDR,B	:	International Centre for Diarrhoeal Disease Research, Bangladesh
ISLM	:	Information Science and Library Management
IT	:	Information Technology
LAB	:	Library Association of Bangladesh

LIS	:	Library and Information Science
LISU	:	Library and Information Services Unit
MA	:	Master of Arts
MPhil	:	Master of Philosophy
MSS	:	Master of Social Sciences
NU	:	National University
PCA	:	Principal Component Analysis
PGD	:	Postgraduate Diploma
PhD	:	Doctor of Philosophy
RU	:	University of Rajshahi
SAARC	:	South Asian Association for Regional Cooperation
SPSS	:	Statistical Package for the Social Sciences
UGC	:	University Grants Commission
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
USA	:	United States of America

CHAPTER – I: INTRODUCTION

1.1 Background and context of the study

Implementing information technology in the library depends largely on library professionals' attitudes towards it. The widespread growth of information and its availability in diverse formats and media go beyond the time. The cultural and geographical barriers across the globe are the new challenges for the library professionals. In developing countries, technological transformation is showing-off a meticulous challenge to librarians. In some developing countries, the library professionals were not prepared to hug the changes required of them by new technologies (Ramzan, 2004b). The majority of the library professionals are uncertain due to lack of knowledge about information technology applications and benefits of the libraries (Mohammed, et al., 1992, Khan, 1995, Torkzadeh, Pflughueft and Hall, 1999 and Popoola, 2002). However, librarians in developed countries have been motivated quickly to learn and adopt new information technologies (Ramzan, 2004a; Adekunle, Omoba and Tella 2007). Rozell and Gardner (1999) stated that that computer experience, and attribution styles are to be predictive of computer attitudes, which were in turn related to computer efficacy, task-specific performance expectations, and post-performance anxiety. Pope-Davis and Twing (2002) showed that gender did not significantly influence attitudes towards the use of information technology, but age and computer experiences influence attitudes in some cases. Mizrachi and Shoham (2004) identified that age and gender did not show any significant relationship to computer attitudes; Computer use, especially home use, is strongly and consistently associated with positive computer attitudes although there are positive correlations between all computer-attitude factors.

The role and responsibility of a library today cannot be confined within its four walls and ever remain traditional in its approach while the bulk of information is increasingly available in diverse formats. Managing information under such a situation has become very tricky and almost difficult without the application of relevant information technologies. Achievements in any transformation in the libraries, mostly depend on the positive attitudes and involvement of the library professionals. For this reason, it is very significant to understand the human factors involved in the process, if libraries are to successfully and meaningfully introduce information technology and its applications. Thus, the present study has been designed to understand the attitude of library professionals towards information technology of Bangladesh particularly of university library professionals.

1.2 Information technology in libraries of Bangladesh

Information technology is now widely used in library and information centers in the world. The use of computers in Bangladesh took place in 1960, their uses in libraries have been introduced since 1980, three special libraries along with the British Council Library started using computers in their respective libraries (Sattar, 1997). In Bangladesh, computers were widely used in libraries for mostly for administrative and office management tasks. The use of information technologies in libraries may be classified in three broad groups: Integrated library system, information storage and dissemination, and administration/office management tasks (Islam, 2007).

The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) library and the SAARC Agriculture Centre (previously known as the SAARC Agricultural Information Centre) are pioneers in creating bibliographic databases on specialized fields using microcomputers (Khan, 1989). The ICDDR,B library first used two IBM personal computers with 10- megabyte memory capacity. Initially, it had used the UNESCO-supported software CDS/ISIS (Computerized Documentation System-Integrated Set for Information Systems), and is now using the Alice for Windows software. This trend of ICDDR,B library was followed by the Bangladesh Institute for Development Studies (BIDS) with many other libraries. In the year 1998, the Dhaka University Library installed the Graphical Library Automation System (GLAS) software, and a number of computers were distributed in a local area network within the different sections of the library.

Since the mid of the last decade of the 20th century, the use of information technologies speed up in the university libraries of Bangladesh. The public university libraries like the Shahajala University of Science and Technology, Jahangir Nagar University etc., introduced computers in a small scale for administrative works only. Top private universities came ahead and gave emphasis to establish automated modern library system in respective premises with all information technology facilities. The North South University library introduced computer in the year of 1992. Independent University, Bangladesh library inaugurated computer in 1996. In 1998, East West University library started using computers. The BRAC university library installed KOHA, a full-featured open-source integrated library system in the year 2010. Islam (2007) found that fifty-four percent of special libraries of Bangladesh are using computers. The use of computer in public libraries and other government organizations' libraries are not that much cheerier able. Currently, some libraries

are in the initial stages of the automation and networking process. Till now other than ICDDR, B library there is no fully automated library or information centers in Bangladesh. However, the overall situations are encouraging as the library professionals become aware of the immense use of information technologies in their respective libraries.

1.3 Present scenario of library professionals of Bangladesh

Library education needs to survive with the changes of information technology to educate the library professionals with modern technologies. Library and information science education in Bangladesh is presently offered at different levels like certificate course, post-graduate diploma, bachelor, master, master of philosophy, and doctor of philosophy, etc. Twelve and seventeen institutions respectively that are affiliated with the Library Association of Bangladesh (LAB) and National University respectively conduct certificate course and post-graduate diploma. However, four-year bachelor with honors, master, MPhil and PhD degree are provided by only two universities that is University of Dhaka, and University of Rajshahi. Apart from that, Lalmatia Mohila College under National University is providing four-year bachelor with honors and master degree too. Simultaneously, Darul Ihsan Univesity, Royal University of Dhaka, Asian University of Bangladesh are providing two-year master degree in library education (Rahman, Mezbah-ul-Islam and Khatun, 2008).

The table 1 below shows that different types of degree are obtainable in Bangladesh. These variances are due to the affiliating and conducting authority. The majority of certificate and postgraduate diploma course syllabuses have given major importance to traditional library skills like classification and cataloguing, which covers almost half of the syllabus in both the levels. Institutions are involved in library education in diploma level have introduced a paper on computer application, but it has been found to be a theoretical gamble, because many of them are yet to acquire a computer for their students. In universities, the course for the bachelor and master degree programs are also very much traditional, although increased quantum of information technology is being introduced.

Table 1: Pattern of library education at different levels

Level of education and institution	Year of first establis-hment	Nomenclature	Name of degree	Minimum entry qualifications	Duration of study
Certificate (LAB)	1952	Certificate in Library and Information Science	CLIS	Secondary School Certificate	6 months
Postgradua te diploma (NU)	1959-60	Postgraduate Diploma in Library and Information Science	PGDLIS	BA/ BSS/ BCOM (Pass)	1 year
Bachelor (DU, RU, NU)	1987-88	Bachelor of Library and Information Science	BA (Hons.)	Higher Secondary Certificate	3 years
	1992-93	Bachelor of Arts (Pass) (Optional)	BA (Pass)	Higher Secondary Certificate	3 years
	1997-98	Bachelor of Information Science and Library	BA(Hons.)/ BSS (Hons.)	Higher Secondary Certificate	4 years
Master (DU, RU, NU)	1962-63	Master of Information Science and Library Management	MA/ MSS	BA (Hons.) in ISLM/ BSS (Hons.) in ISLM	1 year
	2004-05	Master of Information Science and Library Management	MA (Evening)	BA/ BSS /BCom /BSc (Pass) /PGDLIS	2 years (4 semesters)
	2005-06	Master of Science in Library and Information Management	MSc	BA /BSS /BCom /BSc (Pass) /PGDLIS	2 years
	2006-07	Master of Library and Information Science	MA	BA (Hons.) in LIS	2 years
Research (DU, RU, NU)	1974-75	Master of Philosophy	MPhil	MA/ MSS	2 years
	1978 -79	Doctor of Philosophy	PhD	MA/ MSS	2 - 4 years

LAB = Library Association of Bangladesh, DU = University of Dhaka, RU = University of Rajshahi, NU: National University.

Modification and developments in the syllabuses are necessary and that had begun to include courses related to information technology, library automation, computer technology, database management, library software, etc. The main reasons at the back of these tendencies are to familiarize and prepare the library professionals with information technologies. Nevertheless, most of the institutions are either unable or partially successful in providing the fundamental requirements in acquiring computer peripherals, necessary software's, Internet facilities and other infrastructure requirements due to financial constraints. Even though information technology related topics are being taught across the country, it has been a very difficult task to determine as to what extent the topics are being dealt with (Rahman, Mezbah-ul-Islam and Khatun, 2008). Moreover, there have been no empirical studies to show how effective the current syllabus is and what should be the content of syllabus related to information technology. Therefore, it is very important on the part of the institutions offering library

education, to put required importance on providing the professionals with sufficient skills and knowledge to cope up with the condition in today's technology-based library environment.

1.4 Statement of the problem

Technological innovations are introduced to the library with the intention of providing better library service and increasing efficiency of library work (Rubin, 2004). The use of information technology has multiple advantages to library professionals as well as the end-users. Nevertheless, there are reservations and hesitation among library professionals towards the use of information technology too. Lancaster (1991, 1993) has pointed out that many librarians may lose their service ideals because they have become fascinated by the glamour of technology. According to Bergen (1988), people fear the technology itself, cost of error, ability to learn, job security, reduced socialization, big brother phenomenon are the very prominent. The fear of technology and its possible effects towards daily works, making a mistake that will spoil the tools, delete a file, which may prove to be costly to the organization, inability to learn and use a new system. Older and non-trained employees panic that their jobs are being in danger of extinction and will be replaced by highly trained and qualified professionals. At the same time, reorganization of staff, changing job responsibilities and the loss of conventional skills are being considered with alarming results. Another fear relates to reduced socialization. They fear that if attached to equipment for a large part of the day, one will have less contact with other staff members or with the public.

The purpose of this study is to identify general characteristics and patterns that exist with regard to the innovation of librarians as it relates to the adoption of information technologies. Considering that most of the university libraries in Bangladesh, using information technology to accelerate their daily tasks the study addresses the following questions:

1) How much influenced are the library professionals in fostering positive or negative attitudes towards information technologies?
2) How innovative are library professionals in relation to their peers in the adoption of information technologies?
3) Do socioeconomic variables affect library professionals' innovation?
4) What implication might the innovative attitudes of library professionals have on the diffusion of modernism within libraries?

This study was driven by the identification of the key roles of library professionals in the transmission of modernization in the library, and by the recognition of the increased need to understand their behavior toward information technologies in their everyday life as a precursor to their role as adopters and disseminates within the library setting. In this study, an attempt has been made to determine the attitudes of university library professionals concerning information technology in Bangladesh. In addition, information technology highlighted the roles of library professionals and information scientist in the context of the current application and further developments of information technology and their use patterns.

1.5 Operational definitions

1.5.1 Attitude

The term "attitude" is a transliteration of the term "aptitude" which had been used exclusively by painters and sculptors. "Aptitude" is derived from the Latin "aptitudo" which in turn comes from "aptus," meaning suited, fitted. As soon as "aptitude" took the form of "attitude," its use became a general one. Droba (1933) stated that Giddings was the first to use the term in his Principles of Sociology, published in 1896. Judd, a psychologist, came next in 1907. Another psychologist, Münsterberg, employed it in 1917; and Warren, a psychologist, in 1919, all others used the term after 1920.

Attitude is a concept in psychology. It is a theoretical assembles that stands for an individual's grade of, like or dislike for an item. Attitudes are usually optimistic or pessimistic views of individual, place, thing, or event and this frequently referred to as the attitude entity. People can also be disagreement or unsure toward an object, meaning that they concurrently possess both positive and negative attitudes toward the item in the query. The behavioral purpose is an oral sign of the intention of a human being. The cognitive reply is a cognitive assessment of the individual to form an attitude. Most attitudes in individuals are a result of observational learning from their environment (Eagly and Chaiken 1995). Psychologists have given high importance to the study of human beings and its surroundings in the context of attitude. Many psychologists and researchers have defined attitude in their own contexts, though all having similar concept and ideas. Overall, in the context of the present study, some of the well-known definitions of attitude are depicted below to get a deep understanding on the concept of attitude:

Allport (1929) said that “an attitude is a disposition to act which is built up by the integration of numerous specific responses of a similar type, but which exists as a general neural 'set' and when activated by a specific stimulus result in behavior that is more obviously a function of the disposition than of the stimulus.” Mac Donald (1965) had defined attitude as a predisposition to act in a positive or negative way towards persons, objects, ideas, and events. Taiwo (1998) stated, “attitudes are inclinations and feelings, prejudices or bias, preconceived notions, ideas, fears and convictions about any specific topic. Temjen (2002) defined attitudes as “a certain predisposition to act or react in a positive or negative way towards certain situations and ideas. Reactions can be preconceived notions, ideas, fears, convictions, etc.” Carno & Prislin (2006) stated that “an attitude represent an evaluative integration of cognitions and affected experienced in relation to an object. Attitudes are the evaluative judgments that integrate and summarize these cognitive/affective reactions; these evaluative abstractions vary in strength, which in turn has implications for persistence, resistance, and attitude-behavior consistency.”

Important elements regarding attitudes as found from the above definitions are:

- Attitudes are private
- Attitude is the single most powerful tool that anyone has in any situation.
- Attitudes are formed and organized through experience.
- An attitude is not passive, but rather it exerts a dynamic or direct influence on behavior.
- A good attitude can overcome all barriers and a bad one can defeat every advantage.

It can be summarized that attitude may involve predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation. It encompasses, or is closely related to, opinions and beliefs and is based upon experiences. Since attitudes often relate in some way to interact with others, it represents an important link between cognitive and social psychology. For the purpose of this study, **Attitude is defined as *a psychological affinity that is articulated by evaluating a particular article with several ranks of approval or disapproval.***

1.5.2 Information technology

The term information technology is made up from two parts ‘information’ and ‘technology’ that prompts to study the two terms. Information is derived from the Latin word "INFORMATIO" which literally means classifying and summarizing. Information is considered to be a tool dedicated to delivering knowledge and means the raw data that can be exchanged between people through the oral or written methods. On the other hand, technology is derived from the Greek word "TECHNE" which literally means an art or craft, but as a concept, it means all the methods and tools dedicated to helping in executing the productive and unproductive processes. The common conception of technology is that it is the process of total or partial substitution of the human productive functions with automatic methods for the purpose of facilitating the work and raising the level of production. It should be mentioned here that technology is used most of the time to refer back to and describe modernism. This term ‘information technology’ uses most of the time with the processes related to computer (Moodgel, 2001, Mohssin and Al-Ahmed, 2005).

In the 1960s and 1970s, the term information technology was a little known phrase that was used by those who worked in places like banks and hospitals to describe the processes they used to store information. Its basic concept, however, can be traced to the World War II alliance of the military and industry in the development of electronics, computers, and information theory. The two words, ‘information’ and ‘technology’, used together, have acquired special significance in the last few decades. If someone has heard them used separately or together before 1976, they probably would not have attached to them any special importance (Islam, 2007).

Over the next several years, with the advent of the personal computer in the 1980s and its everyday use in the home and the workplace, the world has evolved into the information age. With the paradigm shift to computing technology and paperless workplaces, information technology has come to be a household phrase. It defines an industry that uses computers, networking, software programming, and other equipment and processes to store, process, retrieve, transmit, and protect information. In reality, information technology is the use of computers and software to manage information.

The American Library Association (1983) had stated that information technology is the application of computer and other technology to the acquisition, organization, storage, retrieval, and dissemination of information. Defining information technology from the library and information point of view, Rowley (1988) quoted Albert as "application of various technologies for the acquisition, processing, storage and dissemination of information". Cochrane (1992) cited UNESCO's definition of information technology that offers a broad view: The scientific, technological and engineering disciplines and the managerial techniques used in information handling and processing; their applications; computers and their interaction with men and machines, and associated social, economic and cultural matters. Sangam and Byadagi (1999) stated that the phrase 'information technology' is a combination of computer and telecommunication techniques, which make possible new systems and products to help people at, work, in education, and at home. Hill (2008) stated that information technology is a general term that describes any technology that helps to produce, manipulate, store, communicate, and/or disseminate information. The Oxford Advanced Learner's Dictionary of current English (2009) term information technology as "the study or use of electronic equipment, especially computers, for storing and analyzing information"

In this study information technology is being defined as ***both the hardware and software that are used to store, retrieve, and manipulate information in its various forms (business data, voice conversations, still images, motion pictures, multimedia presentations, and other forms, including those not yet conceived) for providing competent and well-organized information services.***

This study has measured the attitude of library professionals towards information technology of university libraries in Bangladesh. It has taken empirical evidences from a population of university libraries on this relevant issue. Attitude of library professionals cannot be studied by studying one or two variables. This study has focused on attitudes (anxiety, acceptance, etc) as a multifaceted and included library professionals and other aspects of the library. The main variables deliberated for the purpose of this study were socioeconomic variables (age, designation, qualification, etc) of library professionals.

In the next chapter, the review of related literature has been discussed to get ideas about the outcome of various studies on attitude of library professionals.

CHAPTER – II: LITERATURE REVIEW

Every social investigation demands pre-ordained and background knowledge on the subject being investigated. To acquire relevant ideas and outcomes regarding attitudes of library professionals of university libraries in Bangladesh, a comprehensive search for related references, articles and catalogue of several universities and special libraries has been done. It helped to find out what has been published on the topic by accredited scholars and researchers. An effort has been made to re-examine the literature spreading chronologically over last two decades and have been discussed under the following areas:

i) Information technology in libraries;
ii) Attitudes towards information technology in other disciplines;
iii) Literature review on international authors' publications;
iv) Literature review on national authors' publications;

To bring together the views of theorists on the use of information technologies in libraries in home and abroad a study of the subject literature was done. A total, forty literatures have been reviewed based on the above-mentioned areas.

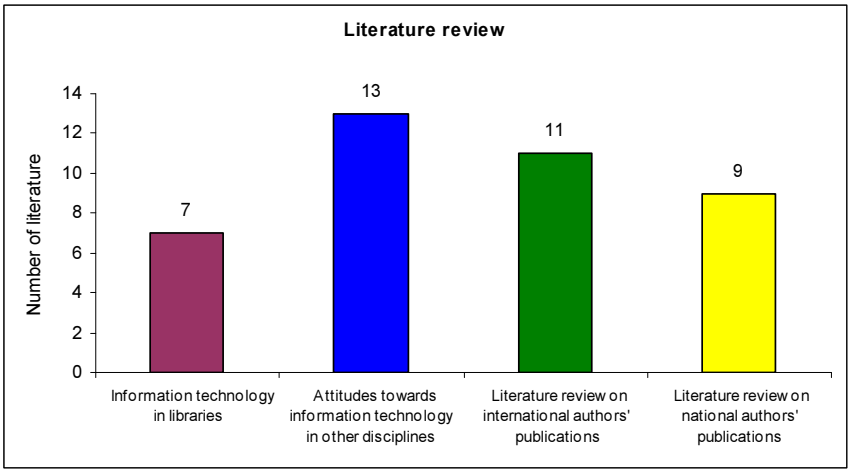

Figure 1. Number of literatures reviewed

2.1 Information technology in libraries

How the use of information technologies started in the library? Growth of libraries taking place with the preservation of knowledge on leaves, bones, wood, ivory, surfaces, clay, bark, metal hides, textiles, stones, clay tablets, papyrus, parchment, vellum, etc. and subsequently on paper with the advent of printing machine. The mechanism for conservation of information on paper has been moved steadily to the electronic medium since the start of the computer system that is used all over the world, including Bangladesh.

This change and growth of library systems from traditional to modern concepts have, like computers, several generations of the development in the library system since its inception. The generations are, first generation: generation of the early archival library system with early writing materials; Second generation: generation of the traditional library system with collection of printed materials and without the use of modern tools of library organization, such as cataloguing rules and classification schemes; Third generation: generation of the traditional library system organized with modern tools of library organization; Fourth generation: generation of the computerized library system with the use of information technologies; Fifth generation: generation of the digital library system without any space, time and language barriers and highly depending on the Internet/web-based resources (Khan, and Uddin, 2006).

The application of information technology in libraries is not a sudden movement, but it is a product of continual development of telecommunications and computer technologies. The exact date of information technology applications in libraries is not only imprecise, but also hard to trace since no authentic source on the subject is available in library and information science literatures. However, it is assumed that, perhaps in 1936 first information technology was used in libraries that are Ralph Parker installed Hollerith punched card for circulation control in the University of Texas (Salmon, 1975 and Islam, 2007). In 1942, the Montclair public library of New Jersey, installed two specially designed book-charging machines, which recorded individual transactions automatically in punched cards. The Library of Congress produced a book catalogue using punched cards in 1950, and the King County (Washington) public library produced another one in 1951. From the above statements, it is sure that punch card was the first ever used in libraries as information technology. On the other hand, Adams (1986) cited in his book as-computer applications to library tasks first appeared in the United States in the 1950s. Library automation was first started by using

punch cards for circulation of books. After that, some modules were added in that automated programs. Library automation had come chronologically from stand-alone workstation to online public access catalogue over a period of nearly six decades (Islam, 2007). In 1966, University of Chicago introduced an integrated library system includes acquisitions, serial control, and cataloguing system modules. It continued to be used, was replaced by new hardware and software in 1975 (Adam, 1986). The expression of information retrieval was initiated in 1952, which expanded attractiveness among the research neighborhood from 1961 onwards. At that time, information retrieval function was considered as a major advance in libraries that were no longer just a storeroom of books, but also spaces where the information was catalogued and indexed (Choudhury, 1999).

Bangladesh is one of the Asian countries where the importance of information technology is growing fast. The library is one of the major areas in which the use of computer is visible in Bangladesh. Since 1960, Computer has used in Bangladesh. Adamjee jute-mill and Agrani bank limited (the then Agrani bank) is the pioneer in installing computer (Sattar, 1997). In 1964, mainframe computer was installed in Bangladesh Atomic Energy Commission (BAEC). After a long time, in the year 1980, use of computers started slowly but remains steady in Bangladesh. Personal computers used by the common people was increased after the withdrawal of the import taxes on computer and computer accessories in 1999. The use of computers in libraries was started since 1980. In this year, four special libraries started to use computer in their libraries. The libraries were, Library and information services unit (previously known as Dissemination of information service center) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), Bangladesh University of Engineering and Technology (BUET) Library, Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP) Library, and the British Council Library, Dhaka, Bangladesh. These libraries started their official works with computers, and had started library automation with CDS/ISIS package (Sattar, 1997).

Table 2: Use of computers in university libraries in Bangladesh*

Type of University	Total number	Number of Installed computers in library	Percent
Public University	31	13	41.94%
Private University	51	16	31.37%
International University	02	02	100%
Total:	**84**	**31**	**36.90%**

* Handbook: Universities of Bangladesh 2009.

Table 2 indicates the number of universities installed computer operations in their libraries in Bangladesh. Use of information technologies accelerated in university libraries in Bangladesh during the mid of the last decade of the 20th Century. By examining the status about the use of computers in university libraries, it is found that 13 (41.94%) public university libraries out of 31, and 16 (31.37%) private university libraries out of 51 are using computers, both the international universities are using computer in their libraries. So, in Bangladesh, 31 university libraries are using computers out of 84 (36.90%). Computers are mainly used for creating library database, catalogue searching and using MS office applications, etc. Some of them are giving facilities of online search, e-journal searching facilities too. However, compared to the private university libraries, technical support and modernized library operations are better than public university libraries. The private universities which are already automated themselves are ahead to provide computerized services.

2.2 Attitude towards information technology in other disciplines

What do professionals of other disciplines think about information technologies? Zoltan and Chapanis (1982) surveyed certified public accountants (CPAs), lawyers, pharmacists and physicians in the Baltimore City area in the USA to determine their experience with, and attitudes towards computers. Analysis of the background information supplied by the four groups showed that CPAs in general had more training on, were more familiar with, and had greater access to computers than the other professional groups. Lawyers in general had the least exposure to computers; Multivariate analysis of variance indicated significant differences in attitudes among the four groups. CPAs and pharmacists tended to view computers more positively than do the other two groups. Lawyers were most likely to describe computers in negative terms, such as depersonalizing, formal and difficult.

Rafaeli (1986) presented a theoretical analysis and empirical observations about the correlates of employees' attitudes toward working with computers. The study was conducted with a sample of 284 white-collar employees from three manufacturing organizations and it was found that employees who used a computer to support their work hold more positive attitudes than employees who reported very limited use of the computer. Employees who were highly involved in their jobs, or committed to their organization typically reported lesser concerned about working with computers than employees at a low level of job involvement. Gardner, Young and Ruth (1989) reviewed factor analysis based studies of aggregate attitudes concerning the computer background and compare them with a recent one done by

the authors. The four studies spanned almost twenty years. While providing a useful basis for generalizing about current perceptions of the computer's role, the latest study also sought to determine whether there was a group of persons who were fearful or anxious about the computer, whose concerns were masked in studies of aggregate attitudes. Peters (1990) surveyed the attitudes of staff toward computers at all field units of greater Vancouver Mental Health Services. Positive attitudes were found with notable variations across different professionals. Psychologists' attitudes were discovered to be less positive, while social workers held more intermediate views. The most positive attitudes towards computers were those of nursing, clerical and other administrative, rehabilitation and support staff. The attitudes of younger staff were more positive than those of older one. At the same time, staffs of higher level with previous computer experience showed were positive towards information technology. Brock and Sulsky (1994) carried out a study participated by 165 students in introductory psychology classes in the Southeastern United States. The study stated that attitudes toward computers were generally thought to be composed of two factors: (1) beliefs that the computer is a beneficial tool, and (2) beliefs that computers are autonomous entities. The results supported the idea that two distinct beliefs about computers were present and that these two beliefs were significantly related to computer use. Whitley (1997) found in a meta-analysis of studies of gender differences in computer-related attitudes and behavior using US and Canadian participants found that men and boys exhibited greater sex-role stereotyping of computers, higher computer self-efficacy, and more positive affect about computers than did women and girls. Macalimbon (1997) studied to determine the variables that predict athletic performance of the University of the East athletes in the Philippines. The majority of the respondents were females. The study revealed that the attitudes towards information technology in sports of the athletes were moderately positive. The athletes in an effort to possess superb ability, considered an information technology phenomenon a less important tool in athletic performance; despite the fact that it altered the way the workers in business and economics, psychology, medicine, sociology, and education, among others, lived and interacted with each other and the ways and means in which they used to do things.

Brosnan and Lee (1998) had carried out a study that examined the computer attitudes and anxieties of 207 British nationals and 286 Hong Kong nationals to determine the factorial structure for each sample and any gender differences. Both samples shared a comparable educational environment and level of technological sophistication. The United Kingdom sample reported more computer-related experience, less anxiety and attitudes that are more

positive. There were no gender differences in computer anxiety, but males held more positive attitudes than females. In the Hong Kong sample, there were no gender differences in computer attitudes, but males reported greater computer anxiety than females. The study assured that it was the first sample in which males have been found to be more computer anxious than females, despite Hong Kong males reported more computer experience than females. Tsitouridou & Vryzas (2003) surveyed 107 in service female early childhood teachers who were taking part in a two-year program of in service training. The study examined whether or not attitudes are differentiated by a series of factors, such as: years of previous service, the use of a computer at home (with Internet access), in service training, and experience of teachers with computers, as well as their views about the introduction of computers into early childhood education. The results showed that early childhood educators have limited access and positive, but temperate attitudes to the world of computers. Teachers' attitudes appear to be influenced significantly by computer use at home, experience with computers and in service training. Salanova, Cifre and Martin (2004) analyzed the information technology implementation styles in companies and its relation with different indicators of shop floor workers'. The results of the study provided evidence for the existence of two different information technology implementation styles termed: "continuous implementation style" and "first time implementation style". The study exposed that the workers from companies with a first time implementation style, showed more positive attitudes toward information technology (both evaluation and consequences), more role ambiguity, more job satisfaction and feel more commitment with the company than workers from companies with a continuous implementation style.

Welk et al. (2005) studied on German dental faculty attitudes towards computer-assisted learning. The results indicated a distinct discrepancy between the desire for and actual occurrence of lectures, seminars, etc to instruct students in ways to search for and acquire knowledge, especially using computer technology. The highest-ranked advantages of computer assisted learning (CAL) systems in order, as seen by respondents were the possibilities for individual learning, increased motivation, and both objective theoretical tests and practical tests. Moreover, the higher the computer skills of the respondents, the more they noted insufficient quality of CAL and content differences from their own dental faculty's expert opinions as reasons for low use. Popovich et al. (2008) of the department of Psychology at Ohio University in United States, examined how computer attitudes have changed from 1986 to 2005 among the undergraduate students. The study found that the

relationship between computer attitudes and computer anxiety remained significantly negative, in that people with more positive attitudes toward computers tend to indicate less computer anxiety. The relationships between anxiety and computer attitudes were almost twice as strong as it was 20 years ago. Males and females no longer significantly differ in their attitudes toward computers, whereas they did in 1986. Additionally, no significant sex differences were found in the number of college computer courses, the amount of time spent using computers, or on the amount of self-reported computer anxiety. The only sex differences that were found in 2005 were males scoring more positively to the factor reflecting positive reactions to computers, and females having more positive attitudes toward the factor reflecting computer related mechanisms. Eley et al. (2009) studied the views of the Australian nurses' use of computers in the workplace. The study showed that most respondents (79%) agreed that the use of computers had improved information access. Less than 5% stated that they have no interest in computers, and 87% considered that their age was never or rarely a barrier to their use of the technology. The proportions of respondents who considered that the use of computers had made their work easier, reduced duplication of data entry, and reduced errors in handing patient data were only 42%, 32%, and 31%, respectively. Results demonstrated a positive attitude towards information technology by Australian nurses.

From the above review, it is found that authors agreed on the attitudes of people towards working with information technology. There is also some harmony with the structure of general attitudes toward information technology. However, the transfer of this structure to attitudes towards working with information technology has not been sufficiently authenticated. Moreover, there was little information about the correlates of attitudes toward information technology, or the correlates of attitudes toward working with information technology.

2.3 Literature review on international authors' publications

A number of literatures on attitudes related to information technologies written by the foreign authors have been examined to get an idea about the attitudes status in a foreign country towards information technology. Yaacob (1992) investigated the patterns of use of information technology in government supported special libraries and explored the relationship between the librarians' attitudes and perceptions and the extents of the application of the technology. The results showed a correlation between the librarians'

attitudes towards information technology and the amount of technology available in government-supported special libraries. A correlation was also found between the librarians' attitudes towards the cost and resource allocation and the amount of technology available. There were no significant relationships between librarians' attitudes towards the impact of information technology and the amount of technology. Idowu (1999) analyzed the experiences and attitudes of research and university librarians in Nigeria. The study showed that training on the use of computers and practical knowledge was factored that determined the attitude of librarians towards computerized information systems. There was a relationship between previous training/experience with the use of computers and a positive attitude towards the computer. The result also showed that practical knowledge of computer usage accepted a relationship to a positive attitude towards the use of computers. Curry and Harris (2000) used face-to-face interviews, gathered data on the attitudes of reference librarians working within a large British Columbia public library consortium, focusing on how these information professionals felt about integrating the Web into their duties. The responses indicated that the librarians believed the Web has a positive effect on their work with regard to efficiency and answering rates, but they have serious concerns about the accuracy of web information, technical problems, and demanded of them for customer training.

Janes (2002) surveyed reference librarians in public and academic libraries of various sizes in the United States, asking them about their experiences with and attitudes towards the use of digital and networked technologies and resources in reference work. It is found that in general, respondents were positive and optimistic in their outlook, but not unreservedly so. The strongest findings was a correlation between experience at doing digital reference and positive attitudes towards it, a clear set of opinions about what such services would be best and worst at, and differing perspectives and patterns of responses between academic and public librarians. It revealed that reference librarians with digital reference experience tended to have more positive attitudes than those who had no experience. Temjen (2002) surveyed library professionals working in North-East India. The study showed that library professionals of higher designation have higher qualifications and those with higher qualifications have a good working experience with computers. The correlation between socioeconomic variables and attitudes towards information technology showed that most of the socioeconomic variables were not significantly correlated with attitudes towards information technology. Library professionals who have more work experience with computers showed higher work performance while those who have low working experience

with computers have very high levels of anxiety towards information technology. Houstan and Ricigliano (2003) revealed that technological change had a different impact on women workers than it had on men. It shaped the way in which work was conducted and by whom. The study showed that men are increasingly occupying technology-based positions that included higher salaries and access to administration that improved their status and empowered them to make or influence decisions.

Ramzan (2004) presented the extent of information technology utilization in libraries in Pakistan along with te librarians' level of knowledge in information technology and their attitudes toward information technology in libraries. The analysis of relationships revealed that information technology utilization in libraries, librarians' awareness of the potential of information technology, achieving professional qualifications, and knowledge in information technology had a significant relationship with librarians' attitudes. The study showed that knowledge of information technologies had a significant relationship with librarians' attitudes and with the likelihood, they would use information technology. Uwaifo (2007) examined age and exposure to computers as determinants of librarians' attitudes towards library automation in Nigerian universities. The investigation showed that an overwhelming majority of the librarians registered a high and positive attitude towards library automation. The study differed from others because it established that, even though the librarians registered a positive attitude towards library automation, their age and exposures to computers do not determine such an attitude. Rabina and Walczyk (2007) examined the innovativeness of librarians with regard to their willingness to adopt information technology. The study suggested that, when considered as a whole, the librarians' attitude towards innovations was unevenly distributed, with most either accepting of innovations or being late adopters. These findings were consistent regardless of demographic variables. Age, role, tenure, and library type were shown to have little effect on librarians' attitude toward the adoption of information technology innovations. Melchionda (2007) provided a review of discussions and perceptions of librarians' roles in the literature of the last ten years within the context of the impact of the internet on their working life. The literature review found evidence of contrasting attitudes on the part of librarians towards imposing networked and digital technologies in the information landscape. Adeyinka (2008) examined the attitudinal correlates of selected Nigerian librarians towards the use and application of information technology in their libraries. The results indicated that four out of the five variables age, gender, educational qualifications and prior knowledge of information technology significantly correlate with the librarians'

attitudes towards information technology. The other variable, information technology anxiety, correlates negatively with the librarians' attitudes towards information technology. The findings further showed that all the five variables significantly predicted librarian's attitude towards information technology with prior information technology experience showing the greatest predictive effect.

Above studies dealt directly or indirectly on the attitudes towards information technology. It is revealed that librarian should be able to find a correct balance between traditional roles and new roles in order to let their professional category survive and should continue to be a crucial and vital part with the use of information technology.

2.4 Literature review on national authors' publications

To examine the attitudinal situation towards information technology by the library professionals, several studies were made by Bangladeshi authors. Satttar (1997) studied the problems and prospects of new technologies in libraries and information centers in Bangladesh. He surveyed 132 libraries all over the country. The sample was selected based on using at least one of the new technologies in the daily operations or services along with the traditional library system. The study exposed that in some cases administration and management of the library were vested upon non-professionals without any professional qualifications, experiences or ideas. Generally, those people were not aware of the potentiality of use of new technologies in the libraries. Their reluctance to change and their fear and inability to face a new challenge in the form of new technologies were the major psychological hindrances in implementing new technologies in those libraries.

Ahmed, Munshi and Ahmed (1997) examined the state of library computerization in Bangladesh. The study covered different bodies and institutions in the country that initiated to automate their library operations and disclosed problems faced by the libraries. The study acknowledged that there was resistance from the library personnel because they were not aware of library computerization due to lack of computer knowledge. There was fear of the unknown and feelings that computer use would result in the reduction of expenditure of a large number of employed staff. Library personnel in Bangladesh in general had inadequate knowledge about the potential of computers and its use in library and information work. The lack of suitably trained library staff in computers and their use in libraries hindered the way of computerization of the libraries. Their study also found that library staffs were not

professionally trained, and therefore lacked the knowledge of using computers in libraries due to the unavailability and/or inaccessibility of computers. Mannan and Bose (1998) analyzed 25 libraries and 100 users of different categories to measure the satisfaction level of users on library networking and resource sharing activities among the major libraries in Bangladesh. The key variables for this study included: the status of infrastructures and facilities, collections, mode of subscription of journals, user's visit to the libraries, availability of services and use of databases. Among the users, 57 percent had given emphasis on establishing library networking and resource sharing system. The second highest response that was 13 percent stressed on installs modern technological facilities in the library. The overall results suggested that the library and information services were below the expectation level of users despite quite a good number of rich academic and specialized libraries existed at that time.

Islam and Uddin (2005) explored the major information systems and services of rural development libraries in Dhaka, Comilla and Bogra districts in Bangladesh. The study covered six libraries and found that none of the services of those libraries provided were fully automated. Majority libraries indicated that their services are partly computer-based. The study revealed that five libraries have computer facilities and they use the computer for information storage and retrieval functions, and clerical and administrative. The study also indicated that all of the rural development libraries have no adequate information technology facilities and adequate resources for proper information services to the users. Uddin (2005) investigated 18 agricultural libraries of Bangladesh including agricultural universities. The study found that 44% of agricultural libraries of Bangladesh were providing computerized information services. The overall trend was to go for computerization of bibliographic data of agricultural libraries and 88.80% of agricultural libraries were interested to join in agricultural networking while the rest showed indifference. Islam and Islam (2007) stated that information technologies were changing the work of libraries and information centers. The study indicated that an increased number of users, a greater demand for library materials, an increase in the amount of material being published, new electronic formats and sources, and the development of new and cheaper computers were some of the reasons for the growing need for information technologies in Bangladesh. Islam (2007) exposed that 55% of special libraries of Bangladesh were using computers, but multiple using of computer in libraries was not satisfactory at all. The study showed that 23 (70%) out of 33 special libraries had less than 6.18 computers per library, 21 (64%) out of 33 had computers in between 1-5; followed

by 8 (24%) had between 6-10; 2 (6%) had between 11-15; and the remaining 2 (6%) special libraries had more than 16 computers. The study indicated that only 17 % of special libraries were having an automated catalogue; followed by 3% of special libraries have automated circulation control system, and 28% of them were connected with Internet.

Roknuzzaman (2007) studied the status of human resource management in public university libraries in Bangladesh. The survey was conducted in five renowned public university libraries and identified that there were a great shortage of ICT-literate manpower in the libraries. Only 2.7% staff had a professional information technology background with short-term certificate courses, while 6.3% had minimum knowledge of information technology, and the rest of the staff (91%) had no information technology knowledge. Five libraries reported to have computer facilities and four libraries claimed to have Internet connectivity, but these facilities were very much restricted to official use only. In most of the cases, computers were used for word processing, and in some cases for creating and maintaining bibliographic databases. Islam and Panda (2009) assessed the status of special libraries of Bangladesh and their ability to adopt information technology in various library operations and services. The study found that being a developing country, Bangladesh were confronted with certain problems to introduce information technology based services and other facilities in the special libraries. The study had revealed the developing state of information technology in the special libraries of Bangladesh.

It is very clear that the attitudes of library professionals of Bangladesh towards information technologies are not discussed or studied yet in a real sense. There is less emphasis on conducting research on measuring attitudes and no empirical study conducted so far to study of library professionals' attitudes towards information technologies in Bangladesh. However, the foregoing reviews generally indicate that in general use and application of information technologies has become imminent and is going to stay more vigorously in the days ahead. Various authors described different variables for ascertaining attitudes of library professionals. The various approaches were consistent regardless of socioeconomic variables e.g.: age, sex, position, tenure, library type, exposures to computers, previous training on information technology, knowledge of information technology, professional qualifications etc. Organizational approach towards information technology also plays a key role in the alleviating or worsening the problem. Some organization holds the view that the use of computer processors cannot be justified economically unless they can be utilized all day. It

seems that machines are more important than humans are! Many employers view the introduction of information technology as their right to manage, and often take unilateral actions to introduce technological changes as they see fit (Evans, 1983). On the other hand, employees are fearful that the introduction of new information technology will lead to a widespread displacement of workers (Deery, 1982; Er, 1989).

From the above discussion, it can be concluded that to understand the attitude of library professionals towards information technology of Bangladesh, a study is essential. Consequently, the propose study attitudes of library professionals towards information technology in university libraries in Bangladesh is a significant one. The findings from this study would be relevant as one of the sources of reference for policy makers and top management of the university libraries in order to improve the current information technology competency of the library professionals to determine the needs, trends and training in information technologies.

In the next chapter, research objectives and methodology of this study has been discussed.

CHAPTER - III: OBJECTIVES AND METHODOLOGY

The review of related literatures in the previous chapter showed that there is no harmony among the authors as to what should be included in assessing the attitudes of library professionals towards information technology. The various approaches were consistent regardless of socioeconomic variables like age, sex, position, tenure, library type, exposures to computers, training on information technology, knowledge of information technology, professional qualifications. All these have a significant relationship with library professionals' attitudes. In this chapter the objectives and methodologies of this study has been discussed.

Libraries are transitional institutions that rapidly meld into a new form. The greatest shift is from print materials to electronic resources. Use of microcomputer is predominant in the libraries to handle their housekeeping activities. Simultaneously, libraries are using internet, e-mail, online access to bibliographical and non-bibliographical databases, etc. Sullivan (1980) stated that without knowledge of computer's purpose and benefits, an individual might show signs of anxiety, reduced job performance, and increased job insecurity. In another study, Chu and Spires (1991) indicated that anxiety towards computer use is expected to be negatively related with computer skills, such as low anxiety toward computer use should be related to higher computer skill and high anxiety with lower computer skill.

In Bangladesh, during the last two decades, many libraries adopted information technologies for supporting local and wide-area networks to register, organize, and provide public access to their materials. Application of information technology in libraries helped to provide better services. On the other hand, it has put incredible stress on library professionals to be trained and use information technology for improved service. However, it is surprising that no research has been done on attitudes towards information technology of the library professionals in Bangladesh. In this state of affairs, it turns out to be very vital to recognize the attitudes of library professionals towards information technology. Thus, the purpose of this study was to gather information regarding the attitudes of the university library professionals of Bangladesh towards learning and working with information technologies.

3.1 Objectives of the study

The objectives of the present study are:

i) To measure the attitude of library professionals towards information technology
ii) To identify the nature of the relationship between attitudes towards information technology with socioeconomic variables of library professionals
iii) To examine the extent to which attitudes towards information technology is related to the use of information technology by library professionals

3.2 Hypotheses

The basic assumption was that the library professionals' attitudes will differ considerably based on socioeconomic variables, i.e., age, sex, designation, professional qualifications etc. Furthermore, it was realistic to presume that attitudes will be affected by experience with computers in the workplace and nature of exposure to information technology in the workplace. Keeping in view the above assumptions, the hypotheses to be tested were as follows:

H1: ***Attitude of Library professionals towards information technology will differ based on socioeconomic variables.***

H2: ***Library professionals having experience with the computer will show a positive attitude compared to the professionals without experience in the computer as well as technological development***

3.3 The Research site

The history of university libraries in Bangladesh goes back to the establishment of Dhaka University in 1921. There are a total 84 universities (Public 31, Private 51, and international 2) in Bangladesh (UGC, 2009). Out of which, 53 universities (public 14 and private 43) are situated in the Dhaka Division. Since majority (67.86%) of the universities is situated in Dhaka, a comprehensive list of university libraries was prepared based on the secondary sources like university grants commission handbook 2009. University libraries having a collection range from 20,000 to 40,000 copies books and at least five library professionals working in the library are considered for this study. Based on these criteria following ten university libraries were selected:

Table 3: Research site

Sl. No.	Name of University	Year of Establishment
1	North-South University	1992
2	Independent University, Bangladesh	1993
3	East West University	1996
4	BRAC University	2001
5	Stamford University Bangladesh	2002
6	Southeast University	2002
7	State University of Bangladesh	2002
8	Prime Asia University	2003
9	United International University	2003
10	University of Liberal Arts Bangladesh	2003

Source: Handbook University of Bangladesh 2009

3.4 The sample

The population of this study was comprised of library professional those were working in the selected ten university libraries. All library professionals of these universities were included in the sample. These included professionals having a minimum qualification of bachelor degree in information science and library management, semi professional having minimum qualification of a post-graduate diploma in library and information science, and para-professional having an at least certificate course in library science.

3.5 Data collection tools

Primary data were collected using questionnaire methods. The questionnaire was divided into two sections. Section one was designed to examine library professionals' attitudes towards information technology, and Section two applied for socioeconomic variables for collecting background information and computer experience of library professional. A pilot survey has been done before finalizing the questionnaire to check out, if there were any complicacy or not in the questionnaire as it was designed in English language. Five library professionals were selected randomly for this survey. The pilot survey also helped to rephrase the technical and technological terms that are used in Bangladeshi context.

3.6 Questionnaire

3.6.1 Section I: Attitude towards information technology

The section of the questionnaire based was designed as a modified version based on attitudes towards information technology scale developed and tested by Pareek et al. (1979) and used by Temjen (2002). The scale items were averaged on a five-point Likert-type rating scale ranging from Strongly Disagree (1), Disagree (2), Undecided (3), Agreed (4), and Strongly Agreed (5). A total thirty items were used in this section of the questionnaire, and has attached as Annexure 'A'.

3.6.2 Section II: Socioeconomic variables

A self-administered questionnaire consisted of twenty items on socioeconomic variables were used in this section. Out of twenty items, the first fourteen items were for socioeconomic variables (part A) like age, sex, educational qualifications, etc., and the rest six items were for experience with computer (part B). This section of the questionnaire attached as Annexure 'B'.

3.7 Data collection methods

It is found that the selected libraries have ninety-two sanctioned posts as per their Organogram. Among them eighty-five persons were working and seven positions were vacant due to various reasons. The questionnaires were distributed among 85 library professionals of the selected libraries.

Two weeks' time was allowed to fill up the questionnaire by the respondents. In some cases where respondents showed inability to fill up the questionnaire within two weeks time, a self addressed and stamped envelope was given to them for sending it back by mail. Out of the eighty-five questionnaires, eighty-three were received.

Table 4: Data summary regarding sample

SL. NO.	Name of University	Sanctioned Post	Existing Manpower	Vacant	Questionnaire	
					Distributed	Received
1	North-South University	13	11	02	11	11
2	Independent University, Bangladesh	10	10	----	10	10
3	East West University	15	14	01	14	14
4	BRAC University	08	07	01	07	06
5	Stamford University Bangladesh	08	08	----	08	08
6	Southeast University	09	08	01	08	07
7	State University of Bangladesh	05	05	----	05	05
8	Primeasia University	08	08	----	08	08
9	United International University	07	07	----	07	07
10	University of Liberal Arts Bangladesh	09	07	02	07	07
	Total:	**92**	**85**	**07**	**85**	**83**
					Partially filled up questionnaire:	**05**
					Finally selected questionnaire for analysis:	**78**

After scrutinizing, it was found that five questionnaires were partially filled up; therefore, only seventy-eight questionnaires were finally selected for the analysis giving a response rate of 84.78 percent.

3.8 Data analysis and presentation

SPSS (Statistical Package for the Social Sciences) software was used to get an accurate analysis of the related data. Executed varimax rotation, Pearson's coefficient of correlation, analysis of variance (ANOVA) of SPSS to examine different relation and factors related to identify the attitudes of library professionals towards information technology of university libraries in Bangladesh.

After scrutinizing, the finally selected questionnaires that were duly filled up, the following functional steps have been pursued for data processing, analysis and presentation:

i) Prepared code manual and coding all the answers in the questionnaire

ii) Designed database using SPSS (version 12.0), impose variable labels and value labels, necessary constraints and validation check as per instruction of the code manual

iii) Input relevant data in the database

iv) Data cleaning and removing/correcting inconsistencies

v) Processed factor analysis with varimax rotation

vi) Executed Pearson's correlation among factors

vii) Produced 23 tables and used them in text

viii) A total of 16 graphical presentation was designed and presented using Microsoft Excel 2007

ix) Executed Pearson's coefficient of correlation among socioeconomic variables

x) Executed analysis of variance (ANOVA) for hypothesis testing.

In the next chapter, factor analysis about the attitude of library professionals towards information technology has been discussed.

CHAPTER – IV: ATTITUDE TOWARDS INFORMATION TECHNOLOGY: FACTOR ANALYSIS

Factor analysis was used to identify the attitude of library professionals towards information technology of university libraries in Bangladesh. It is a statistical approach that can be used to analyze interrelationships among a large number of variables and to explain these variables in terms of their common underlying dimensions (factors). Gorsuch (1983) indicated that the start of factor analysis can be outlined back to Pearson in 1901 and Spearman in 1904, the term was first introduced by Thurstone in 1931. The purpose of factor analysis is to discover simple patterns in the pattern of relationships among the variables. In particular, it seeks to discover if the observed variables can be explained largely or entirely in terms of a much smaller number of variables called factors (Darlington, Weinberg, and Walberg, 1973). The statistical approach involving finding a way of condensing the information contained in a number of original variables into a smaller set of dimensions (factors) with a minimum loss of information (Hair et al., 1992 and DeCoster, 1998).

The questionnaire's 'section one' has thirty items relating to attitudes towards information technology. Therefore, the factor analysis was the most suitable statistical approach for this study for data reduction and analyzing related patterns. Principal Component Analysis (PCA) method of factor analysis has been used in this study. The purpose of PCA is to derive a relatively small number of components that can account for the variability found in a relatively large number of measures. This procedure, called data reduction, is typically performed when a researcher does not want to include all of the original measures in analyses, but still wants to work with the information that they contain (DeCoster, 1998)

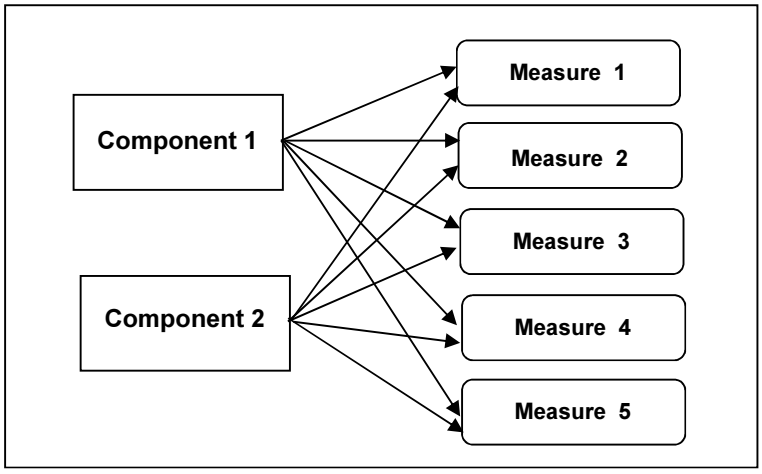

Figure 2. Model for principal components analysis

PCA is used as a means of detecting underlying structure or order among variables. The tabulated data were subjected to factor analysis in order to identify and group the variables that are related. At the final steps in factor, analysis involves determining how many factors to interpret and then assigning a label to those factors.

4.1 Attitude towards information technology: factor analysis

The thirty items of section one of the questionnaires were analyzed and examined to identify the underlying dimension of library professional attitude toward information technology. Statistical Package for the Social Sciences (SPSS, version 12) was used to calculate factor analysis. The tabulated data from the thirty items were submitted to factor analysis using varimax rotation. Nine factors were loaded having eigenvalue greater than one, amounting to 71.951% of the variance. Four factors out of nine were thus retained for the analysis based on the following criteria:

i) Factor loading of each item was not less than 0.30;
ii) More than three items with above mentioned loading were on one factor; and
iii) Items having significant loading on more than two factors were credited to the factor on which the loading was highest

The identified factors with their loadings are shown in the following table:

Table 5: Attitude towards information technology: factor analysis

Sl. No.	Items	Factors			
		Competency	Work performance	Anxiety	Acceptance
1.	'Library is a social institution', this concept becomes meaningless with the application of information technology to libraries	-0.231	**0.414**	0.396	0.264
2.	Library professionals will be needed adequate training/knowledge to implement information technology in the library successfully	**0.684**	-0.126	0.205	-0.205
3.	Application of information technology would become obsolete in the moment it has completed installation, as it is a fast changing field	-0.103	0.209	**0.514**	-0.066
4.	Information technology has significantly improved the existing condition of library services	-0.214	-0.266	0.056	**0.657**

Sl. No.	Items	Factors			
		Competency	Work performance	Anxiety	Acceptance
5.	Information technology has enabled users to have greater access to more accurate information in the libraries	**0.683**	0.025	-0.047	0.097
6.	Resource sharing among different libraries has been notably enhanced by the application of information technology	0.363	**0.577**	-0.059	0.178
7.	Information technology has helped in saving the time of the users and library professionals	0.043	-0.100	-0.073	**0.875**
8.	Information technology has eliminated the boring and repetitive routine work of the library professional	0.103	0.211	0.090	**0.719**
9.	Information technology has enabled users to have information at a shorter span of time	-0.026	-0.143	0.038	**0.778**
10.	Information search and retrieval (eg. catalogue search) has become easy and fast because of Information technology	**0.743**	-0.239	-0.061	-0.169
11.	Library professionals have become more efficient in their work, and their performances have significantly improved because of the application of information technology	**0.843**	-0.098	-0.072	-0.095
12.	Library professionals are now more satisfied with their job due to the impact of information technology	0.240	**0.658**	-0.165	-0.089
13.	The induction of information technology to libraries have smoothen the way for library professionals to provide efficient services	0.454	**0.674**	-0.138	-0.056
14.	Library professionals who are not skilled in information technology have lost their job or position or displaced by the professionals who are skilled in information technology	0.288	0.322	**0.430**	-0.212
15.	Library professionals are anxious about the effect of information technology on their health, i.e., monitor radiation, eye strain, body posture, backache, stress on the fingers, etc.	-0.011	0.187	**0.425**	-0.062
16.	Library professionals feel that their professional status has been improved as they use information technology in their workplace	0.056	-0.067	-0.019	**0.631**
17.	Libraries having information technology facilities generate more interest and encourage users than libraries without information technologies	**0.568**	-0.119	0.024	0.361
18.	Library having information technology facilities is considered more prestigious than libraries without Information Technology	**0.642**	-0.180	0.009	0.192
19.	Information technology has improved the decision making process of the library management	**0.604**	0.422	0.256	0.167
20.	Information technology has put incentive for the progress of library professionals	**0.358**	-0.115	-0.397	0.256
21.	The benefits of information technology are more important than its financial cost	**0.509**	-0.127	-0.014	-0.079
22.	Users can be served with more satisfaction by the use of information technology facilities in the library	**0.755**	-0.100	-0.031	0.254

Sl. No.	Items	Factors			
		Competency	Work performance	Anxiety	Acceptance
23.	The abilities of the library professional will not be properly utilized if information technology is used in the library	0.014	0.144	**0.153**	-0.596
24.	Information technology may cause a feeling of personal inadequacy among the library professionals	-0.068	**0.471**	0.391	-0.426
25.	Introduction of information technology in libraries may result in the reduction of the number of library professionals	0.209	0.165	**0.387**	-0.405
26.	Information technology will enable library professionals to do more interesting and imaginative work. i.e., have more time for making decisions, planning, supervision, users education etc	**0.561**	-0.222	-0.064	0.192
27.	Information technology can force the library professionals to do other duties more difficult than the routine ones	0.178	0.287	**0.507**	0.294
28.	Information technology can reduce the level and the quality of interpersonal communication	-0.054	-0.451	**0.690**	0.259
29.	Information technology can change professional 'territorial' workplace to something uncomfortable or unfamiliar	-0.018	-0.383	**0.662**	0.006
30.	Libraries in Bangladesh are not ready for use of information technology and will not be ready for quite sometimes	-0.031	-0.278	**0.310**	-0.240
	Eigenvalue	9.313	3.663	5.544	2.932
	Percentage of variance	29.208	11.366	14.022	9.895

Note: n = 78.

It is evident from the above table that thirty items loaded on factors with significant loadings. Items loading on more than 2 factors with >0.3 loadings were credited to factor having higher loading. The four factors accounting for 64.491% of the variance. The factors name and loading items are depicted below:

4.1.1 Factor: Competency

Eleven items were loaded on this factor (items no. 2, 5, 10, 11, 17, 18, 19, 20, 21, 22 and 26). The loadings ranged from 0.843 to 0.358. Eigenvalue of this factor was 9.313 with 29.208% of the variance. The items loaded on this factor were:

i)	Library professionals have become more efficient in their work, and their performances have significantly improved because of the application of information technology	**0.843**
ii)	Users can be served with more satisfaction by the use of information technology facilities in the library	**0.755**
iii)	Information search and retrieval (e.g. catalogue search) has become easy and fast because of information technology	**0.743**
iv)	Library professionals will be needed adequate training/knowledge to implement information technology in the library successfully	**0.684**
v)	Information technology has enabled users to have greater access to more accurate information in the libraries	**0.683**
vi)	Library having information technology facilities is considered more prestigious than libraries without information technology	**0.642**
vii)	Information technology has improved the decision making process of the library management	**0.604**
viii)	Libraries having information technology facilities generate more interest and encourage users than libraries without information technologies	**0.568**
ix)	Information technology will enable library professionals to do more interesting and imaginative work. i.e., have more time for making decisions, planning, supervision, users' education etc	**0.561**
x)	The benefits of information technology are more important than its financial cost	**0.509**
xi)	Information technology has put incentive for the progress of library professionals	**0.358**

All the eleven items emphasized on the benefit of using of information technology in the library. Emphasis was given on library competence, time saving, satisfaction, ease of use better access and precision. This is the strongest factor. Competency represents the knowledge and skills required for performing and supporting the library services. It represented the basis for creating value in a library. The term competency is defined as ***the capability of information technology to facilitate library personnel to offer well-organized information services, by providing exact information to users at the shortest possible of time.***

4.1.2 Factor: Work performance

Five items were loaded on this factor (items no. 1, 6, 12, 13, and 24). The loadings ranged from 0.674 to 0.414. Eigenvalue of this factor was 3.663 having 11.366% of variance. The items loadings on this factor were:

i)	The induction of information technology to libraries have smoothen the way for library professionals to provide efficient services	**0.674**
ii)	Library professionals are now more satisfied with their job due to the impact of information technology	**0.658**
iii)	Resource sharing among different libraries has been notably enhanced by the application of information technology	**0.577**
iv)	Information technology may cause a feeling of personal inadequacy among the library professionals	**0.471**
v)	'Library is a social institution', this concept becomes meaningless with the application of information technology to libraries	**0.414**

This factor depicted the working performance, enthusiasm and commitment with information technologies. Work performance is based on real skills and facts a person can demonstrate in the place of work or in other appropriate contexts. Work performance is defined as ***the supremacy of information technology that encompasses those skills and abilities required organizing and prioritizing work of the library professionals, and inspire them to devote towards works more professionally.***

4.1.3 Factor: Anxiety

Here, nine items were loaded on this factor with the same criteria as done (items no. 3, 14, 15, 23, 25, 27, 28, 29 and 30). The loadings ranged from 0.690 to 0.121. The eigenvalue of factor is 5.544 and the variance is 14.022%. The items loadings on this factor were:

i)	Information technology can reduce the level and the quality of interpersonal communication	**0.690**
ii)	Information technology can change professional 'territorial' workplace to something uncomfortable or unfamiliar	**0.662**
iii)	Application of information technology would become obsolete in the moment it has completed installation, as it is a fast changing field	**0.514**
iv)	Information technology can force the library professionals to do other duties more difficult than the routine ones	**0.507**
v)	Library professionals who are not skilled in information technology have lost their job or position or displaced by the professionals who are skilled in information technology	**0.430**
vi)	Library professionals are anxious about the effect of information technology on their health, i.e., monitor radiation, eye strain, body posture, backache, stress on the fingers, etc.	**0.425**
vii)	Introduction of information technology in libraries may result in the reduction of the number of library professionals	**0.387**
viii)	The abilities of the library professional will not be properly utilized if information technology is used in the library	**0.153**
ix)	Libraries in Bangladesh are not ready for use of information technology and will not be ready for quite sometimes	**0.310**

The above items emphasised on personal shortfall, retaining, and displacement from position or jobs and health anxiety. Anxiety is defined as *the* ***uneasiness on the way to impending interaction with Information technology and inconsistent to the actual threat presented by the information technology.***

4.1.4 Factor: Acceptance

Again five items were loaded on this factor with the same criteria as done (items no. 4,7,8,9 and 16). The loadings ranged from 0.875 to 0.631. The eigenvalue of factor was 2.932 and the variance is 9.895%. The items loaded on this factor were:

i)	Information technology has helped in saving the time of the users and library professionals	**0.875**
ii)	Information technology has enabled users to have information at a shorter span of time	**0.778**
iii)	Information technology has eliminated the boring and repetitive routine work of the library professionals	**0.719**
iv)	Information technology has significantly improved the existing condition of library services	**0.657**
v)	Library professionals feel that their professional status has been improved as they use information technology in their workplace	**0.631**

The above items stressed the willingness to utilize information technology for the tasks it is designed to support and satisfy basic usability requirements. Acceptance is defined as the ***psychological adjustment and approval the atmosphere of the use and application of information technology, have the benefit of the new information technologies and like to apply the flexibility in the place of work.***

4.2 Inter-correlation among factors

A correlation is a single number that describes the degree of relationship between two variables. The most familiar measure of dependence between two quantities is the Pearson product-moment correlation coefficient, or "Pearson's correlation." The quantity is called the coefficient of correlation or briefly correlation coefficient. It is obtained by dividing the covariance of the two variables by the product of their standard deviations. The correlation coefficient ranges from +1, indicating a perfect positive linear relationship, to -1, indicating a perfect negative linear relationship (Spiegel and Stephens, 1998).

Pearson's coefficient of correlation was computed among the factors. Inter-correlations, mean scores, standard deviation other statistical information about these four factors is entered in the following table number six. This type of table is called correlation matrix:

Table 6: Inter-correlation among factors

		Competency	Work performance	Anxiety	Acceptance
Competency	*r*	x			
	Sig.	x			
Work performance	*r*	0.887(*)	x		
	Sig.	0.010	x		
Anxiety	*r*	- 0.831(**)	- 0.743(**)	x	
	Sig.	0.001	0.008	x	
Acceptance	*r*	0.783(**)	0.937(**)	- 0.542(**)	x
	Sig.	0.001	0.009	0.008	x
Number of items		11	5	9	5
Mean		0.631	0.558	0.432	0.732
Standard Deviation		0.133	0.114	0.196	0.098
Rank		2	3	4	1

Note: $n = 78$. * Correlation is significant at the 0.05 level, ** Correlation is significant at the 0.01 level.

The correlation matrix shows high correlation among four factors. Competency, work performance, anxiety and acceptance are highly inter-correlated. Acceptance is having positive significant relations with all factors, i.e., competency ($r = 0.783$), work performance ($r = 0.937$) other than anxiety ($r = -0.542$). Competency positively correlated with work performance ($r = 0.887$). Anxiety is negatively correlated with competency ($r = -0.831$), with work performance ($r = -0.743$). The well-built relationship is between work performance and acceptance ($r = 0.937$). The second highest relation is between acceptance and competency ($r = 0.783$) and the third one is in between competency and work performance ($r = 0.887$). The mean score from the table shows that acceptance ranks first followed by competency. Work performance and anxiety are positioned as the third and fourth respectively.

Four factors emerged after factor analysis of thirty items. These are competency, work performance, anxiety and acceptance. These four factors are highly inter-correlated. Among the four factors, acceptance tops the list, followed by competency, work performance and

anxiety respectively. It was seen that the factors were not overlapping. The highest positive correlation between work performance and acceptance give an idea that higher the acceptance, higher is the work performance on the job. The second highest positive correlation between acceptance and competency demonstrate that acceptance is reciprocally depends on competency, and work performance will strengthen with competency. Since anxiety is negatively correlated with all the other factors, the analysis optimistically inferred that competency, work performance and acceptance are lower if anxiety levels are higher towards information technology. Even the anxiety level does not allow acceptance of information technology as they are negatively correlated.

In the next chapter, socioeconomic variables and inter-correlations among the variables have been discussed.

CHAPTER – V: ATTITUDE TOWARDS INFORMATION TECHNOLOGY: SOCIOECONOMIC VARIABLES

Whenever a study is conducted with a sample of people of different socioeconomic status, it is certain that the socioeconomic variable may influence the findings of the study. Therefore, it is desirable to examine the socioeconomic variables as well in this study. In the light of above information, it is reasonable to expect that attitude of library professionals towards information technology will be influenced by socioeconomic variables in order to ascertain the ultimate attitude of library professionals, which will be one of the main factors for measuring attitude towards information technology. That is why socioeconomic variables have examined in this study.

5.1 Socioeconomic variables

Socioeconomic is the study of the relationship between economic activities and social life. The field is often considered multidisciplinary, using theories and methods from sociology, economics, history, psychology, and many others. In many cases, however, socio-economists focus on the social impact of some sort of economic change. The goal of socioeconomic study is generally to bring about socioeconomic development, usually in terms of improvements in metrics such as GDP (Gross Domestic Product), life expectancy, literacy, levels of employment, etc. Although harder to measure, changes in less-tangible factors are also considered.

In order to investigate socioeconomic variables, focused have been made on age, sex, marital status, level of management, educational qualifications at joining, highest professional qualification, additional degree, work experience in library, tenure in present library, organization served in career, promotion received since first job, age of first computer learning, work with computer at work place, work with computer at home, years of experience with computer, continuing education. Data were obtained by a self-administered questionnaire containing twenty items. Sections two of the questionnaire represent the socio-economic variables. These variables were measured in different scale points depending upon the type of variable. Details regarding socioeconomic variables are presented in the following tables:

5.1.1 Age

Age of the respondents is shown in table seven:

Table 7: Age of the respondents

Age group	Frequency	Percent	Cumulative percent
25 or below	5	6.4	6.4
26 - 30	35	44.9	51.3
31 - 35	22	28.2	79.5
36 - 40	9	11.5	91.0
41 - 45	4	5.1	96.2
46 - 50	1	1.3	97.4
51 - 55	1	1.3	98.7
56 and above	1	1.3	100.0
Total	**78**	**100.0**	

The above table clearly indicates that there was a small number (6.4%) of respondents under 25 years of age. Nearly half of the respondents (44.9%) were in the range of 26 – 30 years, whereas 28.2% and 11.5% of them were from the age group of 31-35 years and 36-40 years respectively.

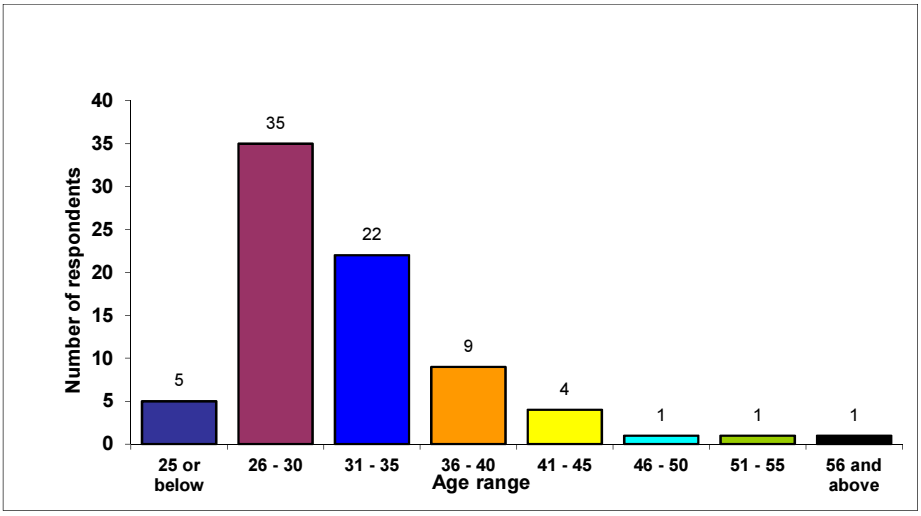

Figure 3. Age of the respondents, n = 78

This finding clearly shows that the majority of the respondents were young and only 3.9% of the respondents were above 46 years of age.

5.1.2 Age at the time of joining the library profession

Age of the respondents at the time of first joining in the library profession is shown in the following table:

Table 8: Age of the respondents at the time of first joining

Age group	Frequency	Percent	Cumulative percent
21 and below	----	----	----
22 - 25	42	53.8	53.8
26 - 29	30	38.5	92.3
30 - 33	5	6.4	98.7
34 and above	1	1.3	100.0

N = 78

The above table pointed out that more than half of the respondents (53.8%) joined at their first job in the library at the age range of 22-25 years, but there was nobody under 22 years. It also reflected that 38.5% of the respondents started their career between 26 – 29 years of age. The rest 7.7% were engaged in the library profession after their 30 years of age. So, it is evident that the joining age in the surveyed libraries is not less than 22 years.

5.1.3 Sex and marital status

The table number nine represented sex and marital status of the respondents that is elaborated below:

Table 9: Sex and marital status of the respondents

Sex	Frequency	Percent	Marital Status			
			Married	Percent	Unmarried	Percent
Male	53	67.95	29	54.72	24	45.28
Female	25	32.05	14	56	11	44
Total	**78**	**100.0**	**43**	**55.13**	**35**	**44.87**

It is observed that the majority of the respondents were male (67.95%) and the rest were females (32.05%). Therefore, it is apparent that there was no gender balance in the surveyed university libraries.

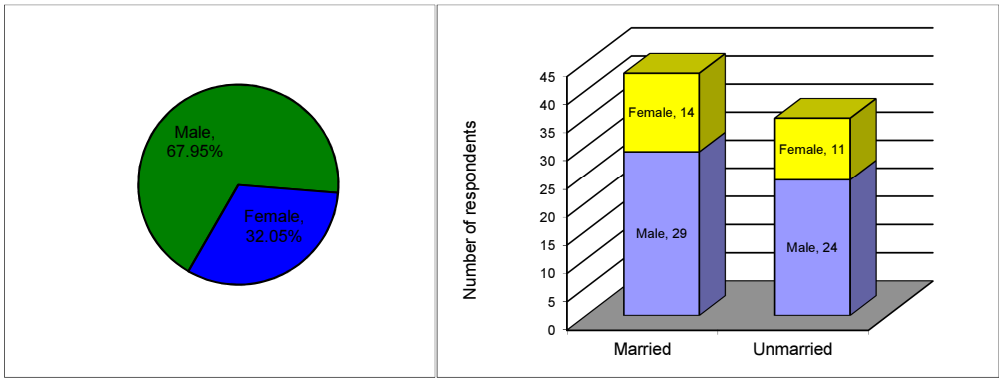

Figure 4. Distribution of Sex and marital status of the respondents

Among male respondents, 54.72% are married where 56% of female are married.

5.1.4 Level of management and official designation

The study identified the position of the respondent in the library management among their organizational Organogram. The following table shows the level of management of the respondent:

Table 10: Level of management of the respondents

Level of management	Frequency	Percent	Cumulative Percent
Top Management	9	11.54	11.54
Middle Management	16	20.51	32.51
Entry Level	53	67.95	100
Total	**78**	**100**	

The table indicates that most of the respondents worked in the entry level (67.95%) while there were only 9% positions for top management and 20.51% of middle management.

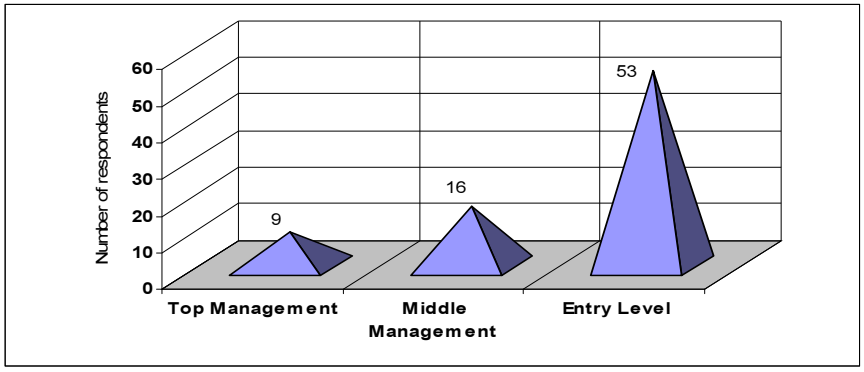

Figure 5. Level of management of the respondents

Altogether the top and middle management had been just one-third (32.51%) of the total respondents. It is normal chain of command that less people work with the top management, but it is marked that there was a shortage of manpower in the mid-level management of the surveyed libraries.

Respondents were requested to write down respective present designation in the library. It was an open ended question. The respondents get the highest flexibility to write their own designation as there was almost no standardization in the designations of the sample university libraries. The following table shows the official designation of the respondents:

Table 11: Official designation of the respondents

Level of Management	Designation	Frequency	Percent	Cumulative Percent
Top Management	University Librarian	1	1.3	1.3
	Librarian	2	2.6	3.9
	Joint Librarian	1	1.3	5.2
	Deputy Librarian	5	6.4	11.6
Middle Management	Senior Assistant Librarian	2	2.6	14.2
	Assistant Librarian	14	17.9	32.1
Entry Level	Junior Assistant Librarian	10	12.8	44.8
	Library Circulation Officer	5	6.4	51.2
	Officer (Circulation)	2	2.6	53.8
	Library Officer	9	11.5	65.3
	Executive (Library)	1	1.3	66.6
	Junior Officer	5	6.4	73.0
	Assistant Library Officer	11	14.1	87.1
	Cataloguer	2	2.6	89.7
	Library Assistant	8	10.3	100
	Total	**78**	**100.0**	

It is clear from the table given above that the majority of the respondents was working at entry level with different designations like Junior Assistant Librarian (12.8%), Library Circulation Officer (6.4%), Library Officer (11.5%), Assistant Library Officer (14.1%), Library Assistant (10.3%), etc. Two types of designations were recognized as middle management among them Assistant Librarian (17.4%) is significantly highest among all the levels. Four types of designations, for example, University librarian, Librarian, Joint Librarian and Deputy Librarian were seen in top management among them Deputy Librarian

(6.4%) were remarkably observed. It is notable that there was no similarity in designations among the sample university libraries.

5.1.5 Professional qualifications

Professional qualifications are the qualifications that the respondents have acquired in the field of library and information science. The study tried to find out the educational qualification of the respondents during their first entry in library job and present highest educational qualifications. The details of the respondents' qualifications are given in following table:

Table 12: Joining and highest professional qualifications of the respondents

Educational Qualification	Joining professional qualification			Highest professional qualifications		
	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent
Certificate course	4	5.13	5.13	2	2.6	2.6
Postgraduate Diploma	8	10.25	15.38	2	2.6	5.1
Bachelor	4	5.13	20.51	3	3.8	9.0
Master	62	79.49	100.0	68	87.2	96.2
MPhil	----	----	100.00	2	2.6	98.7
PhD	----	----	100.00	1	1.3	100.0

N = 78

It was observed that the largest part of the respondents have master degree (79.49%) while joining at first job in the library. Certificate course and bachelor degree were fixed with 5.13% each, where postgraduate diploma (10.25%) was the second largest group.

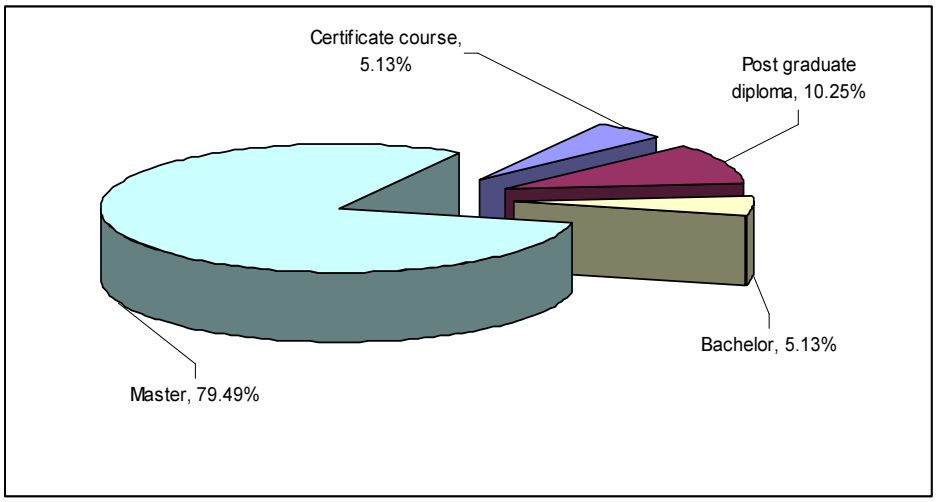

Figure 6. Joining professional qualification of the respondents

There were no respondents who have started his/her first job in the library with MPhil and/or PhD. It was marked that master degree was mandatory to get a job even at entry level in the sample libraries.

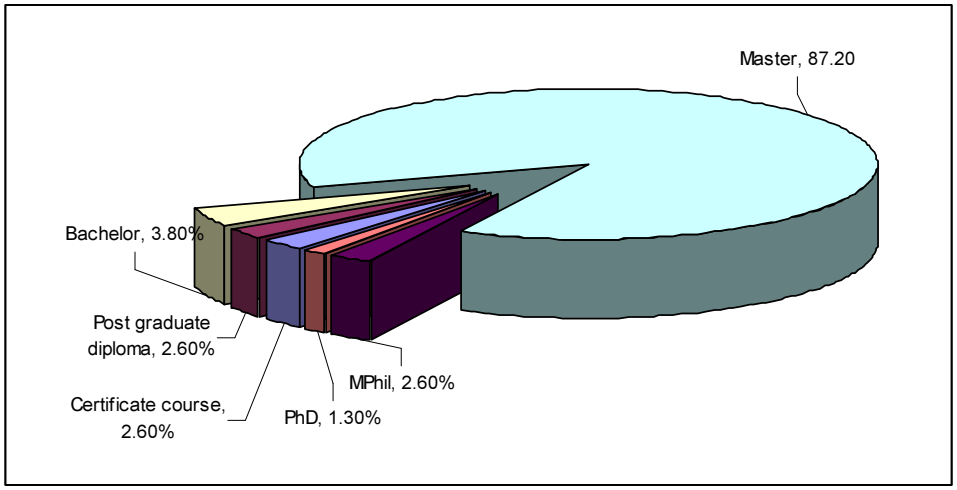

Figure 7. Highest professional qualification of the respondents

The study recognized the highest professional qualifications of the respondents. Some of them were achieved after joining in the job. Four persons joined in the first job with only the certificate course, and two out of them went for higher studies. Among post-graduate diploma holders' six persons out of eight went for bachelor and master degree. Two achieved MPhil (2.6%) and one obtained PhD (1.3%) in their professional life.

Moreover, the study also explored the educational nature of the respondents towards an additional degree other than library science. The objective of such education was to acquire knowledge of other disciplines and implement the same in the library profession for the betterment of the profession. Table 13 illustrated about the additional degrees of the respondents:

Table 13: Additional degree of the respondents

Name of Additional degree	Frequency	Percent	Cumulative Percent
Master degrees other than Library Science	12	15.4	15.4
Mphil/PhD degree other Library Science	--	--	15.4
No additional degree	66	84.6	100.0
Total	**78**	**100.0**	

It was found from the table given above that the majority of the respondents have no additional degree (84.6%). It was observed that only 12 respondents (15.4%) have master degree in addition to library science in other disciplines like computer science, development studies, business administration, Japanese studies etc.

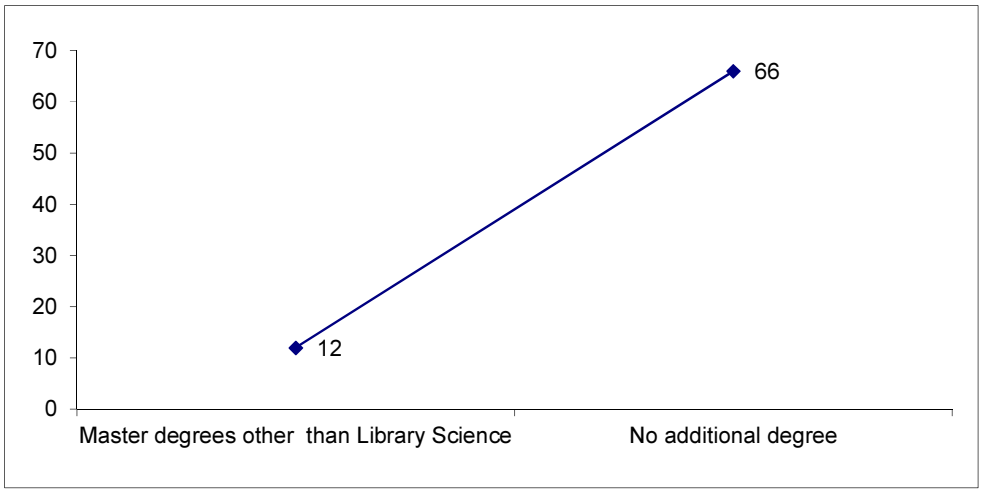

Figure 8. Additional degree of the respondents

The above results explained that there is a trend among library professionals for higher studies. However, none of the respondents have MPhil or PhD degree in a subject other than library and information science.

5.1.6 Work experiences

In order to scrutinize the relationship between the time-span of professional experience in library and attitude towards information technology, data on the years of experience in the current library and overall experience in libraries was collected as depicted in the following table:

Table 14: Work experience in libraries

	Tenure in the present library			Total work experience in libraries		
Years	**Frequency**	**Percent**	**Cumulative Percent**	**Frequency**	**Percent**	**Cumulative Percent**
1 - 4	46	59.0	59.0	37	47.4	47.4
5 - 8	22	28.2	87.2	22	28.2	75.6
9 - 12	6	7.7	94.9	8	10.3	85.9
13 - 16	4	5.1	100.0	8	10.3	96.2
17 - 20	--	--	100.0	1	1.3	97.4
21 - 24	--	--	100.0	1	1.3	98.7
25 - 28	--	--	100.0	--	--	98.7
29 - 32	--	--	100.0	--	--	98.7
33 and above	--	--	100.0	1	1.3	100.0
Total	**78**	**100.0**	**100.0**	**78**	**100.0**	**100.0**

The above table indicates that majority of library professionals have been working in the present library not more than 8 years (87.2%). Among them, 59% have experienced up to four years in present libraries.

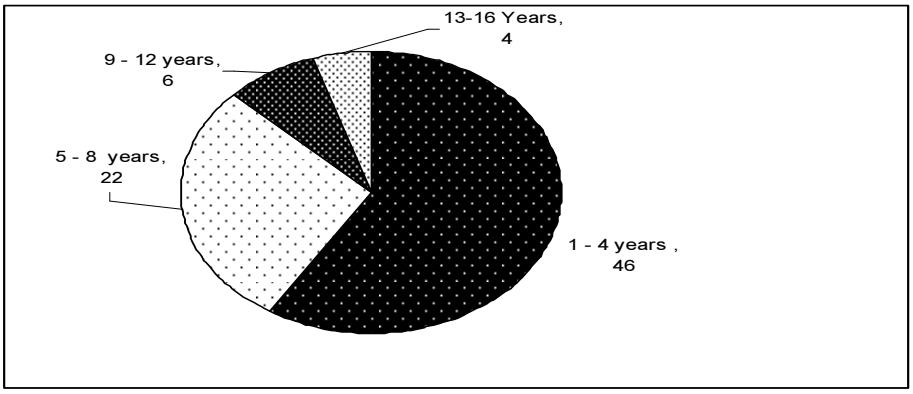

Figure 9. Tenure in present library

It was interesting that only one person has more than thirty-three years experience. It also indicated that 48.8 % of respondents have been working in the same organization for five to

sixteen years and only three (3.9%) of the respondents reported that they have been working in the same organization for more than sixteen years.

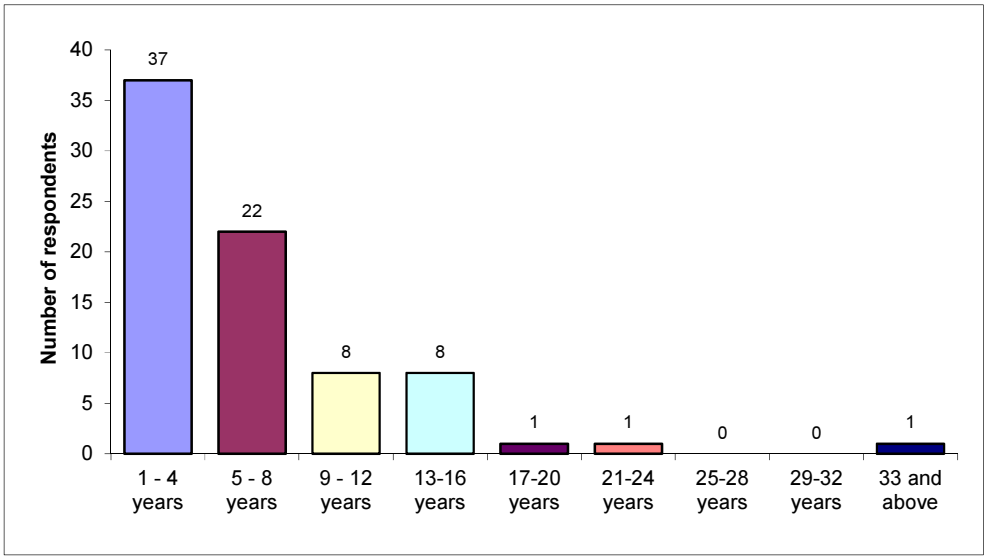

Figure 10. Total work experience in library profession

This indicated that mobility of respondents is moderately high and library professionals moved from one organization to another very often.

5.1.7 The Organizations served and promotion received

The respondents were asked about how many organizations the respondents served and how many promotions they got while being in the job. The received data in this regard are presented in the following table:

Table 15: Organization served in career and promotion received since first job

Years	Organization served in a career			Promotion has received since first job		
	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent
None	16	20.5	20.5	47	60.2	60.2
One	21	26.9	47.4	18	23.1	83.3
Two	26	33.3	80.8	7	9.0	92.3
Three	10	12.8	93.6	5	6.4	98.7
Four	4	5.1	98.7	1	1.3	100.0
Five	---	---	98.7	---	---	100.0
Six	---	---	98.7	---	---	100.0
Seven	---	---	98.7	---	---	100.0
Eight	1	1.3	100.0	---	---	100.0
Total	**78**	**100.0**		**78**	**100.0**	

The table clearly showed that the majority of respondents (79.2%) worked in one to four organizations. Only 20.5% of respondents' reported that they have not moved from anywhere. This result consistence that most of the respondents like to switch work place and hardly work for a single organization.

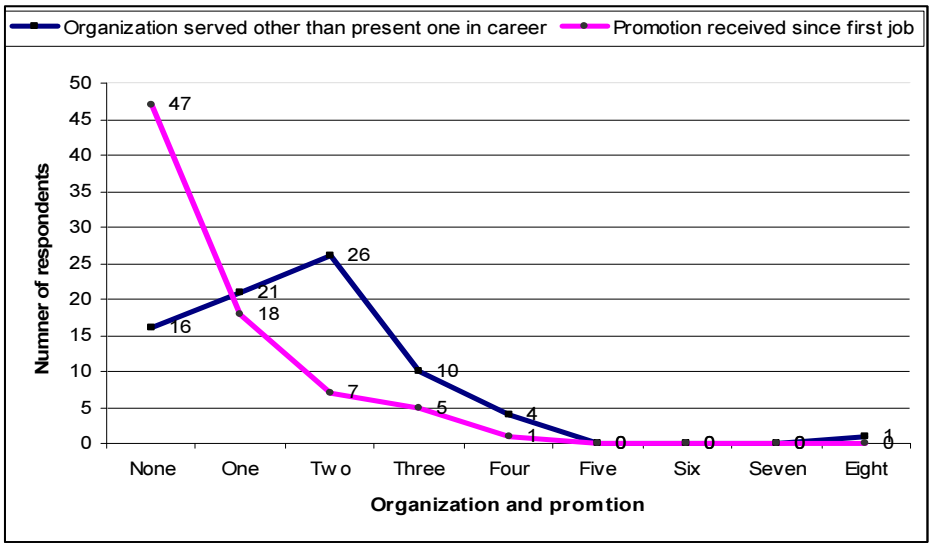

Figure 11. Organization served in career and promotion received since first job

Regarding promotions, the table reveals that the majority of the respondents (60.2%) never received any promotion despite the fact that 23.1% got one, and only 1.3% got four promotions since first job. Thus, it may be concluded that the maximum library professionals get one or two promotions in their working span. This is one of the main reasons why library professionals shifted from one library to another.

5.1.8 Working experience with computers

The data on the length of time the library professional has worked with a computer on the job was collected with two questions, e.g. At what age you first learn the application of computers?, and Total years of experience with computers were asked to test this relationship.

Table 16: Age when first learned the computer application

Years	Frequency	Percent	Cumulative Percent
Not learned	---	---	---
10 and less	---	---	---
11 - 15	---	---	---
16 - 20	28	35.9	35.9
21 - 25	33	42.3	78.2
26 - 30	14	17.9	96.2
31 - 35	2	2.6	98.7
35 and above	1	1.3	100.0
Total	**78**	**100.00**	

The table pointed out that 35.9% respondent has learned the computer application before their twenty years age and 42.3% before twenty-five years of age.

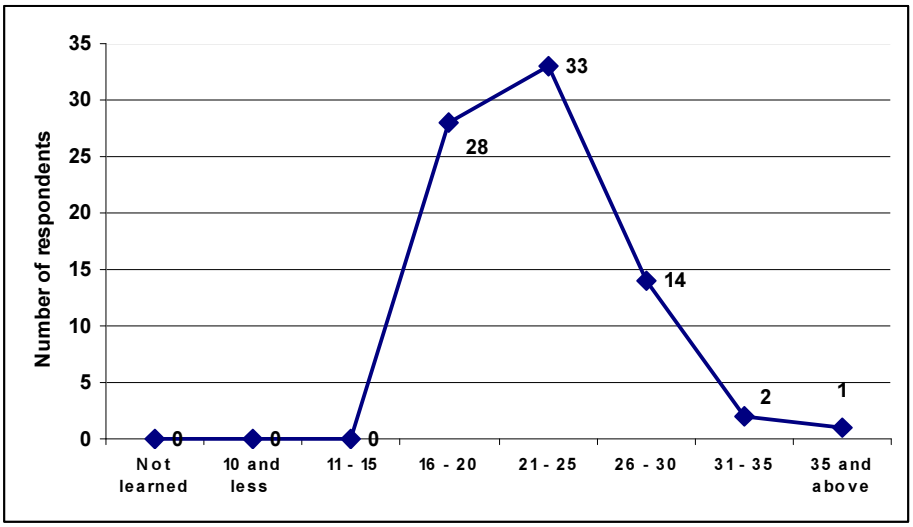

Figure 12. Age when first learned the computer application

Therefore, it is evident that the majority of the respondents were familiar with computer application on or before joining in their job as the table eight showed that 92.3% respondent join in their first job on or before 25 years of age.

Table 17: Experience with computer

Years	Frequency	Percent	Cumulative Percent
No experience	---	---	---
1 - 3	9	11.5	11.5
4 - 6	15	19.23	30.73
7 - 9	25	32.05	62.78
10 - 12	11	14.1	76.9
13 - 15	12	15.4	92.3
16 - 18	4	5.1	97.4
19 - 21	2	2.6	100.0
Total	**78**	**100.00**	

From the above table, it is observed that in terms of time-span of experience with computers, 62.78% of the respondents have computer experience ranging from 1 to 9 years and the rest have more than 9 years experience.

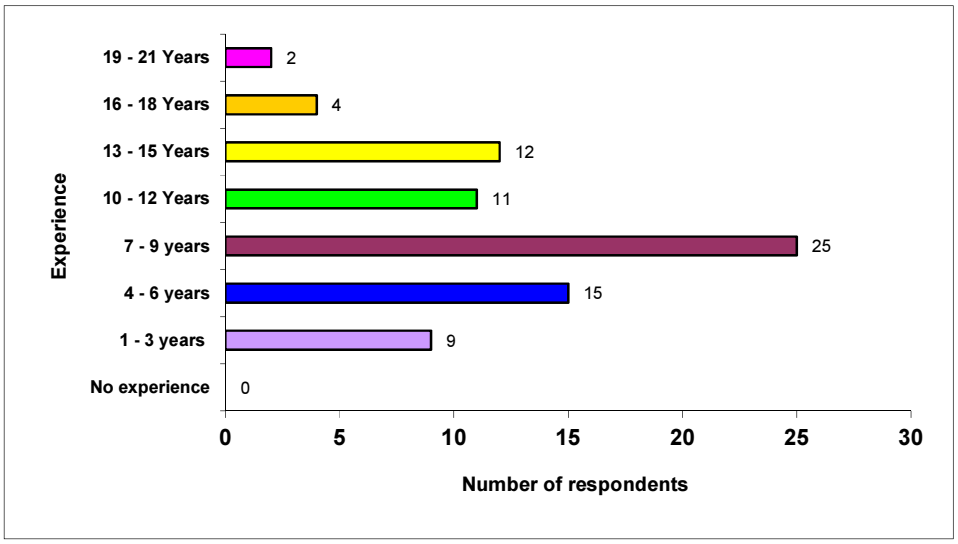

Figure 13. Experience with computer

There were no respondents who did not have any experience with computer in the sample libraries of this study.

5.1.9 Duration of use of information technologies in libraries

The following table shows the duration of installation of computers in libraries of the respondents:

Table 18: Duration of use of information technology in libraries

Years	Frequency	Percent	Cumulative Percent
1 - 4	---		
5 - 8	43	55.13	55.13
9- 12	24	30.77	85.90
13 and above	11	14.10	100.0
Total	**78**	**100.0**	

The table gives us an idea that 55.13% of the respondents were working in these libraries which have started the use of information technology not less than within last five to eight years. The result also shows that 30.77% of the respondents were working in those libraries where information technologies have been used for near about twelve years.

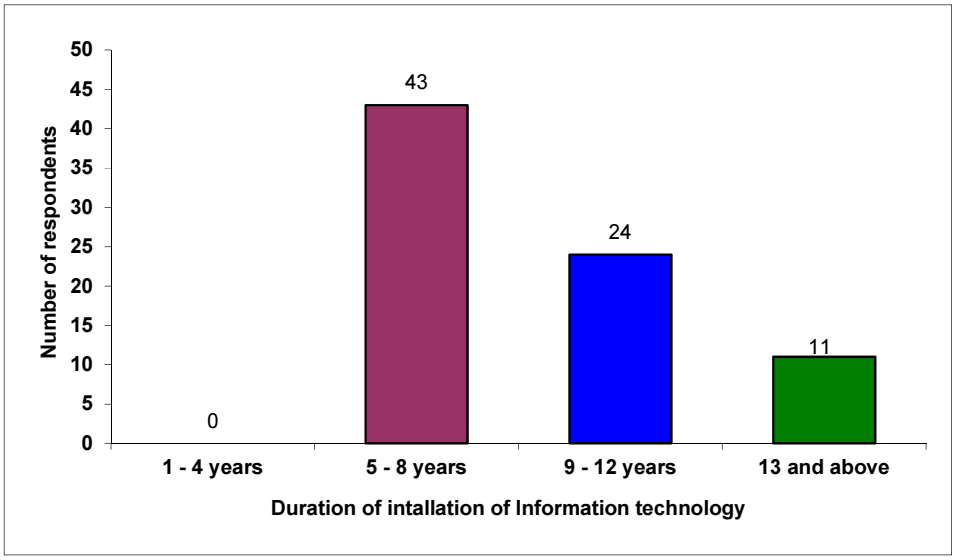

Figure 14. Duration of use of information technology in libraries

Only eleven respondents (14.1%) were working in libraries that had installed information technologies for more than a decade. This implies that the majority of library professionals has access to information technology for near a decade.

Table 19: Work with computer at work place and home

	Work with computer at office		Work with computer at home	
	Frequency	Percent	Frequency	Percent
YES	73	93.6	49	62.8
NO	05	6.4	29	37.2

The table above demonstrates that a very high percentage of the respondents were working in libraries that have installed computers. A total of 73 library professionals (93.67%) stated that they were working with computers in the library, while only 5 of them (6.4%) stated that they have not the opportunity to use computers in their workplace.

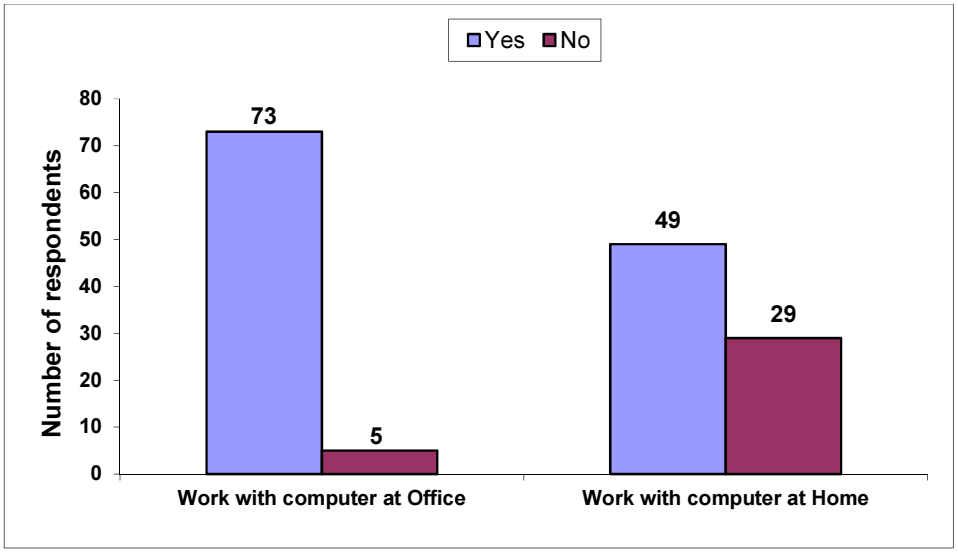

Figure 15. Work with computer at work place and home

This implies that the greater part of library professionals have access to computers in their library. Contrariwise, 49 respondents (62.8%) stated that they also used a computer in their home. Therefore, it is evident that the majority of the respondents were using computers both in their work place and home.

5.1.10 Continuing education

Library professionals have to continually adapt to the rapidly evolving technological society. Keeping up with today's dynamic change and modernism is a challenging task, but one has to undertake it to work successfully. The library personnel have a special responsibility to keep themselves up- to-date with developments in their field. Continuing education is vital for library professionals whether they remain in their present position or are preparing to move into a higher one. To know the status of the continuing education, respondents were asked about their participations in training on library software, in house/on the job training, workshop, seminar/symposium, training in computer application, training on library management. The following table shows the status of training attended by the respondents.

Table 20: Continuing education attended by the respondents

Type of continuing education	Frequency *	Percent
Training on Library Software	25	32.1
In house / on the job training	23	29.5
Workshop	40	51.3
Seminar/Symposium	43	55.1
Training on Computer Application	36	46.2
Training on Library Management	25	32.1

* in each case frequency (n) = 78

The table presented above shows that about half of the respondents (55.1%) attended seminar/symposium, and 51.3% attended workshop. However, 46.2% received training in computer application, whereas only 32.1% got training on library software's.

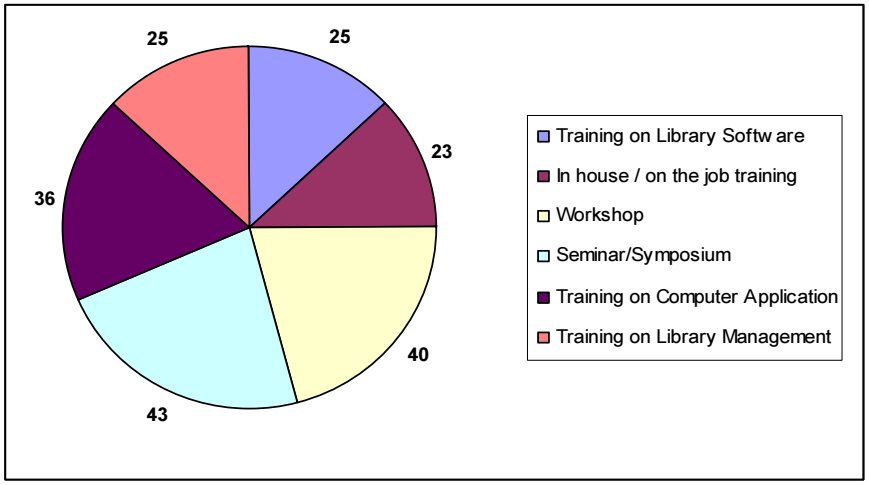

Figure 16. Continuing education attended by the respondents

The overall picture indicated that continuing education or in-service training is not widespread among the respondents.

5.2 Inter-correlation between socioeconomic variables

In order to find the relationship between the socioeconomic variables, Pearson's coefficient of correlation was computed among the socioeconomic variables. Table 21 displays the inter-correlation among the socioeconomic variables.

Table 21: Inter-correlation between socioeconomic variables

	Age	Sex	Marital Status	Level of Management	Professional qualifications at joining	Highest Professional Qualification	Additional Degree	Work experience in library	Tenure in present library	Organization served in career	Promotion received since first job	Age of first computer learning	Work with computer at work place	Work with computer at home	Years of experience with computer	Continuing education
Age	x															
Sex	- 0.083	x														
Marital status	- 0.199(*)	- 0.012	x													
Level of Management	- 0.515(**)	0.137	0.187	x												
Professional qualifications at joining	- 0.030	0.008	0.011	- 0.224(*)	x											
Highest Professional qualification	0.094	- 0.046	0.041	- 0.278(**)	0.678(**)	x										
Additional degree	- 0.180	0.064	0.242(*)	0.173	0.003	- 0.021	x									
Work experience in library	0.804(**)	-0.164	- 0.249(*)	- 0.707(**)	- 0.017	0.169	- 0.303(**)	x								
Tenure in present library	0.581(**)	-.188(*)	- 0.143	- 0.318(**)	0.015	0.007	- 0.124	0.587(**)	x							
Organization served in career	0.297(**)	- 0.119	- 0.136	- 0.524(**)	0.269(**)	0.230(*)	- 0.093	0.365(**)	0.094	x						
Promotion received since first job	- 0.364(**)	0.166	0.171	0.604(**)	- 0.130	- 0.208(*)	- 0.012	- 0.428(**)	- 0.447(**)	- 0.305(**)	x					
Age of first computer learning	0.611(**)	- 0.088	0.064	- 0.193(*)	- 0.117	0.117	0.038	0.427(**)	0.356(**)	0.105	- 0.061	x				
Work with computer at work place	-0.081	0.045	- 0.026	0.170	- 0.358(**)	- 0.430(**)	- 0.033	- 0.078	0.003	- 0.085	0.206(*)	0.027	x			
Work with computer at home	-0.126	- 0.187	0.059	0.164	-0.064	- 0.066	0.255(*)	- 0.217(*)	- 0.130	- 0.285(**)	0.039	0.080	0.124	x		
Years of experience with computer	0.494(**)	- 0.062	- 0.215(*)	- 0.454(**)	0.194(*)	0.243(*)	- 0.407(**)	0.637(**)	0.443(**)	0.399(**)	- 0.279(**)	- 0.034	- 0.141	-0.286(**)	x	
Continuing education	- 0.290(**)	0.085	0.266(**)	0.521(**)	- 0.230(*)	- 0.201(*)	0.0247(*)	- 0.454(**)	- 0.300(**)	- 0.455(**)	0.406(**)	0.023	0.032	0.446(**)	- 0.495(**)	x
Mean	2.79	1.32	1.54	2.54	3.59	3.88	1.85	2.01	1.59	1.63	4.27	4.91	1.06	1.37	4.22	1.54
Standard Deviation	1.283	0.470	0.501	0.715	0.874	0.664	0.363	1.400	0.844	1.330	2.214	.871	.247	.486	1.526	0.502
Rank	5	14	12	9	6	10	15	3	8	4	1	7	16	13	2	11

Note ; **n = 78, * Correlation is significant at the 0.05 level. ** Correlation is significant at the 0.01 level**

The correlation matrix illustrated that some of the socioeconomic variables were positive and highly correlated. The table showed that age is completely correlated with highest professional qualification (r = 0.094), work experience in library (r = 0.804), tenure in the present library (r = 0.581), the number of organization served in a career (r = 0.297), first computer learning (r = 0.611) and year of experience with computer (r = 0.494). This demonstrated that higher the age, the higher is the working experience in the present library, total working experience in the library field, the number of organization served in a career, year of experience with computer etc.

Sex has negative correlation with all the variables except additional degrees (r = 0.064), promotion has received since the first job (r = 0.166), and continuing education (r = 0.085). It indicated that there are sex differences in promotion received, further study and continuing education or participating in a training program. Marital statuses have only positive correlation with the level of management (r = 0.187), additional degree (r = 0.242) and continuing education (r = 0.266). It pointed out that marital status played a role for further professional development.

Level of management has encouraging correlation with additional degree (r = 0.173), promotion has received since the first job (r = 0.604), work with computer at workplace (r = 0.170), work with computers at home (r = 0.164) and continuing education (r = 0.521). It is a sign of having more orientation with technology, new knowledge through additional degrees and continuing education is getting higher positions in the library management.

Professional qualifications at the joining has positive correlation with highest professional qualification (r = 0.678), Organization served in a career (r = 0.269) and years of experience with computer (r = 0.194). It is an indication of possessing good professional qualifications e.g.: person having master degree in library education have more work experience with computer and served more organizations in career. Not only that, it has also reflected that persons having higher professional qualification at the beginning of the early career got better chances for more studies in library education.

Additional degree other than library science is encouraging correlation to work with computers at home (r = 0.255) and continuing education (r = 0.194). Work experience in the library has positive correlation with work experience in the present library (r = 0.587), organization served in career (r = 0.365), age of the first computer learning (r = 0.427) and years of experience with

computer (r = 0.637). Organization served in a career was positively correlated with age of first computer learning (r = 0.105), years of experience with computer (r = 0.399). Promotion received since first job was correlated to work with computer at workplace (r = 0.206), work with computers at home (r = 0.039) and continuing education (r = 0.406). Work with a computer at home was correlated to work with computer at workplace (r = 0.124). Continuing education was correlated with years of experience with a computer. It can be observed from the table presented above that most of the socioeconomic variables were significantly correlated with each other.

The analysis of socioeconomic variables showed that more than 79.5% of the respondents were up to the age of thirty-five and 67.95% of the respondents were male. This clearly explained that the majority of the respondents are younger. Among the respondents, 55.13% were married. Majorities (67.95%) of the respondents were working in the entry level, and 87.2% of the respondents have a master's degree. Among them, 15.4% have master degree of other discipline in addition to the professional degree. It is also observed that only 28.2% of the respondents have work experience up to 8 years and only 59% of the respondents have more than four years of working experience in the present library. It was found that 79.2% of the respondents have worked in up to four libraries in their career, but 60.2% of the respondents never got a promotion since their first job. In terms of years of experience with computers, 62.78% of the respondents have working experience from 1 to 9 years.

The Inter-correlation among socioeconomic variables showed that that higher the age, the higher is the total working experience in the library field, the number of organization served in a career, year of experience with computer, etc. It showed that sex has negative correlation with all the variables except additional degrees, promotion received since first job, and continuing education. It indicated that there were sex differences in promotion received, further study and continuing education or participating in a training program. It pointed out that marital status played a role for further professional development. Level of management has encouraging correlation with additional degree, promotion has received since first job, work with computers at work place, and work with computers at home and continuing education. It was a sign of having more orientation with technology, new knowledge through additional degrees and continuing education were getting higher positions in the library management. It has also reflected that persons having higher professional qualification at the beginning of the early career got better chances for more studies.

In the next chapter, testing of hypotheses has been discussed.

CHAPTER – VI: TEST OF HYPOTHESES

Hypothesis testing is one of the most important tools of application of statistics to real problems. Most often, decisions concerning populations are required to be made on the basis of sample information. The study needed to identify the influence of library professionals in fostering positive or negative attitudes towards information technologies as well as the effect of socioeconomic variables in library professionals' innovativeness.

In the chapter IV (Attitude towards information technology: factor analysis), four factors of attitude towards information technology have been identified after analysis of thirty items. In the Chapter V (Attitude towards information technology: Socioeconomic variables), socio-economic variables were examined, and identified pinpointed participation of percentages of the respondents. In order to find the relationship between the socioeconomic variables, Pearson's coefficient of correlation was computed among the socioeconomic variables. It was observed from the correlation matrix that most of the socioeconomic variables are significantly correlated with each other.

6.1 Hypothesis – I

On the basis of the findings, and general assumption that library professionals' attitudes will differ considerably on the basis of socioeconomic variables the following hypothesis is forwarded:

Hypothesis # I: *Attitude of library professionals towards information technology will differ based on socioeconomic variables*.

In order to test hypotheses-I of the study, ANalysis of VAriance (ANOVA) has been computed between socioeconomic variables likes age, sex, marital status, level of management, professional qualifications at joining, highest professional qualifications and attitudes towards information technology. ANOVA is a statistical method for making simultaneous comparisons between two or more means. It is an analysis of the variation present in an experiment. It is a test of the hypothesis that the variation in an experiment is no greater than that due to normal variation of individuals characteristics and error in their

measurement (Rutherford, 2001). The results of the ANOVA are presented in following table:

Table 22: Socioeconomic variables and attitude towards information technology: Hypothesis -I (ANOVA)

Socioeconomic variables		Attitude towards Information technology			
		Competency	Work performance	Anxiety	Acceptance
Age	*f*	1.585	3.444	2.067	**2.196**
	Sig	0.279	0.135	0.247	0.025
Sex	*f*	0.439	**0.746**	**2.287**	2.077
	Sig	0.523	0.042	0.044	0.223
Marital status	*f*	0.074	3.374	0.042	1.160
	Sig	0.791	0.126	0.845	0.342
Level of management	*f*	0.027	**2.781**	0.533	0.147
	Sig	0.974	0.016	0.617	0.721
Professional qualifications at joining	*f*	0.744	0.954	0.020	2.077
	Sig	0.409	0.374	0.893	0.223
Highest professional qualification	*f*	0.348	0.954	0.501	2.077
	Sig	0.715	0.374	0.633	0.223
Additional Degree	*f*	0.032	0.120	0.074	0.435
	Sig	0.861	0.743	0.794	0.546
Work experience in library field	*f*	1.459	0.003	0.923	**1.690**
	Sig	0.297	0.958	0.456	0.041
Tenure in present library	*f*	2.732	0.003	1.640	4.388
	Sig	0.114	0.958	0.248	0.539
Organization served in a career	*f*	0.888	1.048	**2.939**	**2.013**
	Sig	0.518	0.431	0.025	0.069
Promotion has received since first job	*f*	0.143	0.211	0.619	01.812
	Sig	0.931	0.666	0.575	0.250
Continuing education	*f*	**0.448**	0.954	0.802	2.077
	Sig	0.029	0.374	0.405	0.223

Note n = 78, * Correlation is significant at the 0.05 level. ** Correlation is significant at the 0.01 level

From the above table, it is evident that age has significance with acceptance (f = 2.196) of attitude towards information technology. This entailed that there were differences among library professionals with different ages in relation to acceptance of information technology. In the case of sex, significance was observed with work performance (f = 0.746) and anxiety (f = 2.287). This indicated that there were variations between male and female library professionals in relation to work performance and anxiety towards information technology. Levels of management, more specifically designation of library personnel showed significance with work performance (f = 2.781). This implied that there were variations among library professionals with different levels of management in respect to work performance towards information technology. Work experience in the library field (f = 1.690) contained significance with acceptance of the attitude towards information technology. This necessitated that there were differences among library professionals with different years of experience in relation to acceptance of information technology. Organizations served in career showed significance with anxiety (f = 2.939) and acceptance (f = 2.013) of information technology. This denoted that there was dissimilarity among library professionals with organization served in career with respect to anxiety and acceptance towards information technology. Continuing education had significance with competency (f = 0.448) towards information technology. This indicated that were a deviation among library professionals with continuing education in respect to competency towards information technology.

It was pragmatic from the above table that variables like marital status, professional qualifications at joining, highest professional qualification, additional degrees, work experience in library filed, tenure in present library and promotion received since first job do not show any significant with any component of attitude towards information technology. That is why it is apparent that these socioeconomic variables do not show any significant with attitude towards information technology.

From the above discussion, it is understandable that some socioeconomic variables do influence attitudes towards information technology. This study illustrated that only age, sex, level of management, total work experience in the library field, the organization served in career and continuing education make a little difference as far as attitudes towards information technology is concerned. Therefore, it can be safely concluded that

H_1: *Attitude of library professionals towards information technology will differ based on socioeconomic variables,* is partially accepted.

6.2 Hypothesis - II

Hypothesis # II: *Library professionals having experience with the computer will show positive attitudes comparing to the professionals without experience on computer as well as technological development*

In order to test hypothesis-II of the study, ANOVA has been computed between computer experience and attitudes towards information technology. The results of the ANOVA are shown below:

Table 23: Experience on computers and attitude towards Information technology: Hypothesis - II (ANOVA)

Experience with computers		Attitude towards Information technology			
		Competency	Work performance	Anxiety	Acceptance
Age of first computer learning	*f*	**0.784**	1.203	0.914	**0.797**
	Sig	0.048	0.390	0.459	0.048
Work with computer at work place	*f*	3.744	**0.954**	0.020	**2.077**
	Sig	0.009	0.037	0.893	0.022
Work with computer at home	*f*	0.189	1.582	1.679	**2.465**
	Sig	0.673	0.264	0.104	0.008
Years of experience with computer	*f*	**1.029**	**0.382**	**0.306**	**0.782**
	Sig	0.007	0.017	0.019	0.015

Note n = 78, * Correlation is significant at the 0.05 level. ** Correlation is significant at the 0.01 level

From the table above, it was clear that computer experience showed variations with attitudes towards information technology. Age of first computer learning showed significance with competency (*f* = 0.784) and acceptance (*f* = 0.797) towards information technology. This implied that there were variations among library professionals with age of first computer learning in relation to the competency and acceptance of information technology. Work with computer at workplace showed significance with work performance (*f* = 0.954) and acceptance (*f* = 2.077) towards information technology. Work with a computer at home showed a high significance with acceptance (*f* = 2.465) towards information technology. Years of experience with

computer were significant with competency (f = 1.029), work performance (*f* = 0.382) anxiety (*f* = 0.306), and acceptance (*f* = 0.782). This indicated that there is inconsistency among library professionals who have knowledge with computer in relation to competency, work performance, anxiety and acceptance respectively.

The above result has given an idea about that experience with computers definitely influences attitudes towards information technology. From the table 16 of the chapter V, it was observed that in terms of level of experience with computers, 62.78% of the respondents have computer experience ranging from one to nine years and the rest have more than nine years experience and there is none without experience with computer.So, It can be safely concluded that experience on computers and attitude towards Information technology's ANOVA result that, there is positive attitudes towards information technology among library professionals who have experience with computers. Therefore, on the basis of the analysis and discussions, the second hypothesis of the study:

***H*$_2$** *: Library professionals having experience with the computer will show a positive attitude compared to the professionals without experience in computer as well as technological development,* is accepted.

The ANOVA between socioeconomic variables and attitudes towards information technology illustrated that some socioeconomic variables do influence attitudes towards information technology. The present study shows that age, sex, level of management, total work experience in the library field, the number of organizations served in career and continuing education make a little difference as far as attitudes towards information technology is concerned. Contrariwise, other socioeconomic variables do not show any significant with attitudes towards information technology. So, the first hypothesis of the study is partially accepted.

The ANOVA between experience of computer and attitudes toward information technology shows variations in all the cases. There are variations among library professionals' age of first computer learning shows significance with competency and acceptance towards information technology. There are variations among library professionals' who have worked with computer at job place in relation to work performance and acceptance. Work with a computer at home has high significance with acceptance towards information technology. Years of experience with computer are significant with competency, work performance, anxiety, and acceptance.

These indicate that there are disparity among library professionals who have experience with computer in relation to competency, work performance, anxiety and acceptance respectively. Therefore, the second hypothesis of the study is totally accepted.

In the next chapter, Findings of this study and recommendations have been discussed.

CHAPTER – VII: FINDINGS AND RECOMMENDATIONS

In spite of significant investments for implementation of information technology in developing countries over recent decades, concern exists over the extent of the intended benefits. Least part of this concern is based around the issue of whether any information technology is accepted by its intended users. Professionals are interested to understand the determinants of acceptance and ensure new designs being built and implemented to minimize resistance. This concern has extended the traditional ergonomic concern with usability, or ability to use, to cover acceptance, or willingness to use (Dillon, 2001). Libraries have changed dramatically in the past two decades, some would argue more than ever before. Forces, bringing about such change have included political, economic, cultural, and technological developments that have affected libraries and information centers in a number of ways. Use of information technology has significantly improved library service to contemporary users - from the introduction of online databases to local wide-area networks of electronic reference resources.

The appearance of the Internet indicates a new era for libraries in terms of networking opportunities having a major impact on the library function. In fact, libraries have become increasingly vulnerable to this technological invasion. Nevertheless, the library professionals of Bangladesh are still unable to gear up themselves for this speedy and predictable change brought about by the advancement of information technologies. Moreover, the literature review fairly indicated that in Bangladesh, there has been no study carried out along this line, and no studies have been attempted. It is, therefore, against this background that the present study has been conducted as an attempt to investigate the attitude of library professionals towards information technology. The findings of the study have been summarized as below:

7.1 Summary of the findings

Competency, work performance, anxiety, and acceptance are the four factors that come into view after factor analysis of thirty items regarding attitudes towards information technologies. These four factors are inter-correlated enormously. Among the four factors, anxiety tops the list, followed by competency, work performance and acceptance respectively, and none of the factors were overlapping. The mean score from the factors showed that acceptance ranked first followed by competency. Work performance ranked the third and anxiety is ranked as the last factor.

The descriptive analysis of socioeconomic variables showed that majority of the respondents were in the age range of 26 – 30 years, a few of the respondents were under 25 years of age. While nearly two fifth of the respondents were in the group range of 31 – 40 years. Therefore, it is apparent that the majority of the respondents were young. More than half of the respondents joined in their first job in the library at the age of 22-25 years where as two fifth of the respondents started their career during 26–29 years of age. The Majority of the respondents were male. Thus, it is evident that there were no gender balances in the sample university libraries.

It is found that the majority of the respondents was working on the entry level while one fifth of the respondents were in middle management and one tenth in the top management. It is a normal hierarchy that less people work in the top management, however, it was marked that there was a huge shortage of manpower in the middle management level.

It is noted that the majority of the respondents have a master's degree qualification in library science where postgraduate diploma holders were the second largest group during first entry in the a library job. It is noticeable that master degree is mandatory to get a job even at entry level in the sample libraries.

It was observed that only twelve respondents have an additional master degree in disciplines like computer science, development studies, business administration, Japanese studies etc in addition to library science. It is clear that there is a good tendency among library professionals for higher studies as well as studies outside library science.

It is revealed that the majority of library professionals was working in their present library for the last eight years. Nearly half of the respondents were working in the same organization for more than five to sixteen years. Only one fifth of respondents reported that they have not moved from their first organization. This is consistent with the information that most of the respondents like to shift from one job place to another and hardly work for a single organization.

The majority of the respondents was never promoted despite of the fact that only one fifth of them got one promotion since first job. Thus, it is noticeable that library professionals do not often get promotion and maximum library professionals get one or two promotions in their

working span in the sample libraries. This is one of the main reasons why people shifted from one library to another.

It is pointed out that one third of the respondents have learned the computer application before their twenty years age and two fifth of the respondents did the same before their twenty-five years of age. Therefore, it is clear that the majority of the respondents were familiar with computer application on or before joining in their job.

The study gives us an idea that more than half of the respondents were working in the libraries that have started the use of information technology not less than last five years. It also demonstrated that a very high percentage of the respondents were working in libraries where computers were installed. Two third of the respondents stated that they were working with computers in the library, while only a few stated that they did not have the opportunity to use computers in their workplace. It indicated that the greater part of the respondents have access to computers in their library. At the same time, more than half of the respondents stated that they also used a computer in their home. Accordingly, it is understandable that the majority of the respondents were using computers both in their work place and in home.

The study pointed out that more than half of the respondents attended seminar/symposium, nearly half of them attended workshop. However, less than half of them received training in computer application, whereas only one third got training on library software. The overall picture indicates that continuing education or in-service training were not widespread among the respondents'.

It is significant that most of the socioeconomic variables were significantly correlated with each other. The correlation matrix illustrated that higher the age, the higher is the working experience in the present library as well as total working experience in the library field, the number of organization served in a career, year of experience with computer etc. There were sex differences for promotion received, further study and continuing education or participating in a training program.

It was pointed out that marital status played a role for further professional development. Having an orientation with technology, new knowledge through additional degrees and continuing education were getting higher positions in the library management. Persons

having higher professional qualification at the beginning of the early career got better chances for more studies in library education.

The ANOVA between socioeconomic variables and attitudes towards information technology illustrate that some socioeconomic variables like age, sex, level of management, total work experience in the library field, the number of organization served in career and continuing education influenced attitudes towards information technology. However, other socioeconomic variables have not any significant influence on attitudes towards information technology. So, the first hypothesis of the study *'Attitude of library professionals towards information technology will differ based on socioeconomic variables'* is partially accepted.

From ANOVA, it is also found that there were disparity among library professionals who have experience with computer, age of first computer learning, work with computer at job place, work with computers at home in relation to competency, work performance, anxiety and acceptance. As a result, the second hypothesis of the study *'Library professionals having experience with the computer will show a positive attitudes compared to the professionals without experience on the computer as well as technological development'* is accepted.

7.2 Recommendations

Given the shift in the attitudes by library professionals towards information technology from negative to positive, management should recognize that library professionals are suited for a full range of technology applications. To understand the contribution of technology to productivity improvement and to make them comfortable with technology, Library professionals should be encouraged to practice more technology-related functions in the libraries.

Top management should be encouraged to assign to the entry and middle management for technology assignments, training opportunities, and employee development activities. Their positive attitudes and comfort levels with technology will help the library professional in the mid and entry level to be skillful at creative applications of technology. User experience and training on information technology will influence acceptance levels as well as the manner in which the technology is implemented to contribute to organizational goals and working practices.

Library professionals have not received adequate opportunities for continuing education programs in information technology. The highest priority should be given on the continuing education to provide library professionals access to the latest knowledge about information technology. Library professionals in the entry and middle management positions should be motivated to attend more training, workshop, and seminars to be familiar with the latest development on information technologies.

Adequate information technology infrastructure should be made available for the trained library professionals in order to put their knowledge on information technology into practice. Sufficient time should be allotted to the library professionals in order to absorb and practice after the training. Library professionals should be encouraged to obtain an additional certificate or degree on computer application.

Libraries may have computers, but it has been observed that low priority is given for library automation. Now a days Free and Open Sources Software (FOSS) are available, these may be ideal for automation purpose.

7.3 Limitations of the study

It is important to note that this study was preliminary and exploratory in nature. All data collected was based entirely on the honesty and the perceptions of participants regarding their attitude towards information technology. Since many research and academic libraries in Bangladesh are yet to be automated, it may be that library professionals who were surveyed may have little or no knowledge of information technology at all, hence the resulting attitude towards information technology may be biased. Moreover, a study with a truly random sample may have presented a more realistic picture of the library professional attitude towards information technology.

A further limitation of this study was that it provided only a "snapshot" of the time when data was collected. It must be recognized that the respondents involved were library professionals working in universities and had volunteered to participate in this study. Drawing conclusions on seventy-eight users' observations are very small; a bigger population would have presented a better picture of the attitudes of library professionals towards information technology. In fact, a comparative study between the attitudes of library professionals of private and public universities towards information technology would have made the study

more interesting but this was not possible due to time constraint. Therefore, only ten private university libraries have been included for the purpose of the study. Continued research is needed to test the tentative relationships among the above-mentioned variables in different environment and situations considering large sample before arriving at a general conclusion.

7.4 Conclusion

This study measured the attitude of library professionals towards information technology. It identified the nature of the relationship between attitudes towards information technology with socioeconomic variables of library professionals and examined the extent to which attitudes towards information technology is related to the use of information technology by library professionals. Socioeconomic variables and attitude towards information technology illustrated that some socioeconomic variables influenced library professional attitude towards information technology. It is also found that there were disparity among library professionals who have experience to competency, work performance, anxiety and acceptance.

The results of this study have implications for both education and business, as well as for further research. This study was investigative in nature since in Bangladesh there was no previous research that studied the correlation between library professionals' attitudes towards information technology with socioeconomic variables.

This research did not study the way to find out whether there was an attitude change between, before, or after pursuing information science courses. Attitude may also be related to specific experiences with information technology, or the means of instruction in information science courses. For a better understanding of the underlying relations and dimensions of attitudes towards information technology, a more extensive study using the above-mentioned variables may be necessary. These factors could be taken up for further research in the future. Additional research on these and other topics will assist individuals responsible for training in either academic or work environments to plan effective, pertinent instruction about technology.

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Annexure

Cover Letter

Date:

To

.....

.....

Subject: Request for filling up of research questionnaire

Respected Sir/ Madam,

I have undertaken a research entitled, "Attitude of library professionals towards information technology of university libraries in Bangladesh" for Master of Philosophy (MPhil) under the supervision of Dr. Muhammad Mezbah- ul- Islam, Associate Professor, Dept. of Information Science and Library Management, University of Dhaka.

We have selected your university as one of the research sites. I would appreciate if you could kindly spare some of your valuable time to fill up the enclosed questionnaire. All responses will be pooled together so that individual cannot be identified; therefore, you are encouraged to answer each question as honestly as possible. Further, your response will be used only for research purpose and kept confidential. Please find herewith enclosed a structured questionnaire to use the feedback at your earliest convenience.

I trust, you will not mind to help in my academic venture, as without your valuable assistance, this study will remain inconclusive.

Best regards.

A.I. M. Jakaria Rahman
MPhil Student
Department of Information Science & Library Management
University of Dhaka
E-mail: jakaria@gmail.com

Researcher use only
CODE

SECTION - I

(ATTITUDES TOWARDS INFORMATION TECHNOLOGY)

The following statements are about attitudes towards information technology. There are no rights or wrong answers to this survey. All responses will be pooled together so that individual cannot be identified; therefore, you are encouraged to answer each question as honestly as possible.

Please indicate the extent to which you agree or disagree with each of the statements on the following pages by encircling the number that corresponds with your response.

Example: 1 2 (3) 4 5

			Strongly Disagreed	Disagreed	Undecided	Agreed	Strongly Agreed
1.	'Library is a social institution', this concept becomes meaningless with the application of information technology to libraries	:	1	2	3	4	5
2.	Library professionals will needed adequate training/knowledge to implement information technology in the library successfully	:	1	2	3	4	5
3.	Application of information technology would become obsolete in the moment it has completed installation, as it is a fast changing field	:	1	2	3	4	5
4.	Information technology has significantly improved the existing condition of library services	:	1	2	3	4	5
5.	Information technology has enabled users to have greater access to more accurate information in the libraries	:	1	2	3	4	5
6.	Resource sharing among different libraries has been notably enhanced by the application of information technology	:	1	2	3	4	5
7.	Information technology has helped in saving the time of the users and library professionals	:	1	2	3	4	5

			Strongly Disagreed	Disagreed	Undecided	Agreed	Strongly Agreed
8.	Information technology has eliminated the boring and repetitive routine work of the library professionals	**:**	1	2	3	4	5
9.	Information technology has enabled users to have information at a shorter span of time	**:**	1	2	3	4	5
10.	Information search and retrieval (eg. catalogue search) has become easy and fast because of information technology	**:**	1	2	3	4	5
11.	Library professionals have become more efficient in their work, and their performances have significantly improved because of the application of information technology	**:**	1	2	3	4	5
12.	Library professionals are now more satisfied with their jobs due to the impact of information technology	**:**	1	2	3	4	5
13.	The induction of information technology to libraries have smoothen the way of library professionals to provide efficient services	**:**	1	2	3	4	5
14.	Library professionals who are not skilled in information technology have lost their job or position or displaced by the professionals who are skilled in information technology	**:**	1	2	3	4	5
15.	Library professionals are anxious about the effect of information technology on their health, i.e., monitor radiation, eye strain, body posture, backache, stress on the fingers, etc.	**:**	1	2	3	4	5
16.	Library professionals feel that their professional status has been improved as they use information technology in their workplace	**:**	1	2	3	4	5
17.	Libraries having information technology facilities generate more interest and encourage users than libraries without information technologies	**:**	1	2	3	4	5
18.	Library having information technology facilities is considered more prestigious than libraries without Information Technology	**:**	1	2	3	4	5
19.	Information technology has improved the decision making process of the library management	**:**	1	2	3	4	5

			Strongly Disagreed	Disagreed	Undecided	Agreed	Strongly Agreed
20.	Information technology has not put any incentive for the progress of library professionals	**:**	1	2	3	4	5
21.	The benefits of information technology are more important than its financial cost	**:**	1	2	3	4	5
22.	Users can be served with more satisfaction by the use of information technology facilities in the library	**:**	1	2	3	4	5
23.	The abilities of library professionals will not be properly utilized if information technology is used in the library	**:**	1	2	3	4	5
24.	Information technology may cause a feeling of personal inadequacy among the library professionals	**:**	1	2	3	4	5
25.	Introduction of information technology in libraries may result in the reduction of the number of library professionals	**:**	1	2	3	4	5
26.	Information technology will enable library professionals to do more interesting and imaginative work. i.e., have more time for making decisions, planning, supervision, users education etc	**:**	1	2	3	4	5
27.	Information technology can force the library professionals to do other duties more difficult than the routine ones	**:**	1	2	3	4	5
28.	Information technology can reduce the level and the quality of interpersonal communication	**:**	1	2	3	4	5
29.	Information technology can change professional 'territorial' workplace to something uncomfortable or unfamiliar	**:**	1	2	3	4	5
30.	Libraries in Bangladesh are not ready for use of information technology and will not be ready for quite sometimes	**:**	1	2	3	4	5

Questionnaire Section - II

Researcher use only
CODE

SECTION II

(SOCIO-ECONOMIC VARIABLES)

All responses will be pooled together so that individual cannot be identified; therefore, you are encouraged to answer each question as honestly as possible.

Part A

Please write where space provided and put a tick (√) mark in the appropriate box:

1. Name of the employee university **:** .....

2. Sex ☐ Male ☐ Female

3. Marital Status ☐ Unmarried ☐ Married ☐ Divorce ☐ Others

4. Age ☐ 25 or below ☐ 26 – 30 ☐ 31 – 35 ☐ 36 – 40
☐ 41 – 45 ☐ 46 – 50 ☐ 51 – 55 ☐ 56 and above

5. Age at the time of joining the library profession:
☐ Below 22 ☐ 22 - 25 ☐ 26 – 29 ☐ 30 - 33 ☐ 34 and above

6. Present official designation **:** .....

7. Level of Management your work according to your university Organogram
☐ Top management ☐ Middle Management ☐ Entry Level

8. Please indicate all of your professional qualifications at the time of joining the library profession:

i) PhD in Library & Information Science ☐
ii) MPhil. in Library & Information Science ☐
iii) M.A/MSS in Library & Information Science ☐
iv) B.A/BSS (Hons) in Library & Information Science ☐
v) Postgraduate Diploma in Library Science ☐
vi) Certificate Course in Library Science ☐
vii) Any others**:** .....

9. Highest professional qualification you have received **:** .....

10. Name of other degrees in addition to Library Science (if any) **:** .....

11. Tenure in present library **:**

☐ 1 – 4 ☐ 5 – 8 ☐ 9 – 12 ☐ 13 - 16
☐ 17 – 20 ☐ 21 – 24 ☐ 25 - 28 ☐ 29 – 32 ☐ 33 and above

12. Total year of experiences in library management **:**

☐ 1 – 4 ☐ 5 – 8 ☐ 9 – 12 ☐ 13 - 16
☐ 17 – 20 ☐ 21 – 24 ☐ 25 - 28 ☐ 29 – 32 ☐ 33 and above

13. How many times have you received promotion since your first job? : ..... Times

14. How many other organizations have you worked in your career? : ..... Organizations

Part B

15. At what age you first learn the application of computers?

☐ 1 – 5 ☐ 6 – 10 ☐ 11 - 15 ☐ 16 – 20
☐ 21 – 25 ☐ 26 – 30 ☐ 31 – 35 ☐ 35 and above

16. Total year of experiences with computers:

☐ 0 ☐ 1 - 3 ☐ 4 – 6 ☐ 7 - 9
☐ 10 – 12 ☐ 13 – 15 ☐ 16 – 18 ☐ 19 – 21 ☐ 22 and above

17. How long your present library is using information technologies?

☐ Not using ☐ 1 – 4 ☐ 5 – 8 ☐ 9 – 12 ☐ 13 and above

18. Are you working with computers at your work place? ☐ Yes ☐ No

19. Are you working with computers at your home? ☐ Yes ☐ No

20. Have you ever participated in any of the following

i) Training on Library Software ☐ Yes ☐ No

ii) In house / on the job training ☐ Yes ☐ No

iii) Workshop ☐ Yes ☐ No

iv) Seminar/Symposium ☐ Yes ☐ No

v) Training on Computer Application ☐ Yes ☐ No

vi) Training on Library Management ☐ Yes ☐ No

Thank you for helping me in making this a meaningful study.