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Role of University Libraries in Enhancing Information Literacy Skills of Undergraduate Students in Bangladesh

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ROLE OF UNIVERSITY LIBRARIES IN ENHANCING INFORMATION LITERACY SKILLS OF UNDERGRADUATE STUDENTS IN BANGLADESH

PhD THESIS

Thesis Submitted to the Department of Information Science and Library Management, University of Rajshahi for the Degree of Doctor of Philosophy in Information Science and Library Management

By

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DEPARTMENT OF INFORMATION SCIENCE AND LIBRARY MANAGEMENT
UNIVERSITY OF RAJSHAHI
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BANGLADESH

March, 2021

Dedicated
to
My Beloved Parents

DECLARATION

I, the undersigned, hereby solemnly declare that this thesis titled "**ROLE OF UNIVERSITY LIBRARIES IN ENHANCING INFORMATION LITERACY SKILLS OF UNDERGRADUATE STUDENTS IN BANGLADESH**" submitted to the Department of Information Science and Library Management, University of Rajshahi for the Degree of Doctor of Philosophy in Information Science and Library Management. This is my original work and has not been submitted by me previously in part or in full for any degree to any university or institution. However, some quotations and material are used from different sources are duly acknowledged.

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ড. পার্থ বিপ্লব রায়
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CERTIFICATE

This is to certify that Purnima Banik, a PhD Research Fellow, Department of Information Science and Library Management, University of Rajshahi has carried out a PhD thesis titled "**ROLE OF UNIVERSITY LIBRARIES IN ENHANCING INFORMATION LITERACY SKILLS OF UNDERGRADUATE STUDENTS IN BANGLADESH**" under my supervision. To the best of my knowledge, the thesis is unique and has not been submitted previously in part or full for any degree to any university or institute. I hope that the findings of this thesis may generate a new window of thought, and may pave the way to solve many unsolved problems in the field of information science and library management.

Professor Dr. Partha Biplob Roy
Supervisor

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Purnima Banik   March, 2021
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ABSTRACT

This is the era of information. Without information, none can move ahead in todays' world. To make prosper in life, one has to be information literate. One can gather information from many sources; university library is one of them. Thus, this study mainly explores the impact of university library role on the level of information literacy skill of the undergraduate students in Bangladesh. Besides, this study examines the level of students' information literacy skill, and the level of university library role. This study also identifies the major constraints of achieving information literacy skill by the students, and the ways to eradicate those constraints. To achieve these objectives, this study uses primary data collected from 417 students and 26 library professionals from 13 universities of Bangladesh. To find out the level of students' information literacy skill, this study uses a newly constructed index named Information Literacy Skill Index (ILSI). On the other hand, to find out the level of university library role, this study uses a newly constructed index named Role of Library Index (RLI). Finally, a linear regression estimated through OLS method is used to find out the impact of university library role on students' information literacy skill. Besides, Kendall's Co-efficient of Concordance test is used to identify the major constraints of achieving information literacy skill by the students. This study finds that majority of the students (56.35 percent) had the upper semi-skilled level of information literacy skill while only 25.18 percent students had the higher level of information literacy skill. It is also found that the mean information literacy skill was higher of the private university students than public university students although this mean difference was statistically insignificant. This study also finds that majority of the students (47.48 percent) received the average level of university library role for enhancing their information literacy skill while only 11.27 percent students received the higher level of library role or services. The mean role of library reflects that libraries of private universities played a better role than that of public universities although this difference was not statistically significant. Age, gender, discipline of study, level of computer performance, level of Internet using skill, participation in any program, and role of library statistically significantly impacted on the level of information literacy skill of the undergraduate students in Bangladesh. More specifically, the level of information literacy skill of a student may be increased by

0.0558 if the role of library is increased by one. Analyzing the rating given by the students, "present structure of academic programs" was found as the top constraint of achieving information literacy skill by the students among the given 10 constraints while "lecture mode of class is not effective enough to help students to achieve practical information skills" as the bottom constraint. On the other hand, "introducing students with library and information use early through orientation program" was found as the top strategy to eradicate the constraints of achieving information literacy skill by the students among given nine strategies while "integrating IL as a course in the curriculum" as the bottom strategy. Therefore, the researcher of this study calls for the faculties, library professionals, policymakers, and government and non-government organizations to utilize the model planning suggested by the study in enhancing the level of information literacy skill of the undergraduate students in Bangladesh.

CONTENTS

LIST OF THE TABLES

LIST OF ABBREVIATIONS

%	Percentage
ACRL	Association of College and Research Libraries
AD	Anno Domini
ALA	American Literacy Association
ANOVA	Analysis of Variance
BBS	Bangladesh Bureau of Statistics
CD	Compact Disc
cof.	Coefficient
CU	City University
DIU	Daffodil International University
DU	University of Dhaka
DW	Durbin-Watson
E8	Empowering 8
e-books	Electronic Books
e-journals	Electronic Journals
e-library	Electronic Library
e-resources	Electronic Resources
et al.	and others
etc.	Etcetera
EWU	East West University
HIP	Health Information Professionals
HIPs	Health Information Professionals
HMDSTU	Hajee Mohammad Danesh Science and Technology University
i.e.	That is
ICT	Information and Communications Technology
IL	Information Literacy
ILCSHE	Information Literacy Competency Standards for Higher Education
ILS	Information Literacy Skill
ILSI	Information Literacy Skill Index
ISBN	International Standard Book Number

ISLM	Information Science and Library Management
KYAU	Khwaja Yunus Ali University
LIS	Library and Information Science
LP	Library Professionals
M.Phil	Master of Philosophy
Max.	Maximum
MBSTU	Mawlana Bhashani Science and Technology University
Min.	Minimum
MLISc	Masters in Library and Information Science
MS	Microsoft
MSE	Mean Square Error
OLS	Ordinary Least Squares
OPAC	Online Public Access Catalog
PhD	Doctor of Philosophy
Prob.	Probability
PUST	Pundra University Science and Technology
RII	Relative Importance Index
RL	Role of Library
RLI	Role of Library Index
ROM	Read Only Memory
RSTU	Rajshahi Science and Technology University
RU	University of Rajshahi
SCONUL	Society of College, National and University Libraries
SD	Standard Deviation
SD	Standard Deviation
SDGs	Sustainable Development Goals
SEU	Southeast University
Sig.	Significance
SMS	Short Massage Services
SPSS	Statistical Packages for Social Sciences
Std. Dev.	Standard Deviation
Std. Err.	Standard Error
SWOT	Strength, Weakness, Opportunities and Threats

ULAB	University of Liberal Arts Bangladesh
US	United States
VIF	Variance Inflation Factor
VU	Varendra University

CHAPTER ONE INTRODUCTION

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In today's world, information is one of the most important factors of development of a country like Bangladesh. Without accessing to and utilizing of information, no nations can develop. Those nations are developed in the world that have adequate availability of and free access to information. Development of a country cannot be ensured only with the availability of and free access to information, rather, proper utilization of information is highly required. To utilize information properly, one needs to follow some criteria like, identification of information gap, finding of information, evaluation of information, application and acknowledgement of information which represent information literacy (Ahmadpour, 2014; Chang et al., 2012; Mkandawire, 2015; OLUFUNKE, 2018; Serap Kurbanoglu, 2004). Accordingly, the person who avails information literacy is information literate (Daland & Walmann Hidle, 2016). Now, it is clear that without being skilled in information literacy, no nations can be developed.

Information literacy has become a new phenomenon of skills in today's world of advanced information and communication, and it is expected that it will be more influential in tomorrow's world. The phenomenon "information literacy" was first stated by Paul Zurkowski in 1974 (Abbasi, 2014; Daland & Walmann Hidle, 2016; Gross, 2009; Mkandawire, 2015; Serap Kurbanoglu, 2004; Shrestha, 2008; Yevelson-Shorsher & Bronstein, 2018). Zurkowski stated that people are trained in the uses of information resources to their work can be defined to as an information literate (Zurkowski, 1974). In 2004, the Society of College, National and University Libraries (SCONUL) proposed an information literacy model which is popularly known as the seven pillars of information literacy (Bruce, 1997). This model outlines the components of information literacy: identifying the need for information, distinguishing ways of addressing information gap, constructing strategies for locating information, locating and accessing information, evaluating information, applying information, and synthesizing and creating new information (Bruce, 1997; Zurkowski,

1974). People have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in modeling information-solutions to solve their problems (Dadzie, 2007). From this period, information literacy is gradually expressed as a major influencing and embracing tool from a problem-solving tool by the library sector and academia. Finally, the concept and idea of information literacy has been transformed into a main concept strongly attached to information technology, electronic database, and technical expertise (Fadil, 2016).

Information literacy has become a core and essential thing in every sphere of life. The field of higher education is not the exception; rather, the importance of information literacy skill in education especially in higher education is increasing rapidly which is really beyond questions (Basri & Yushiana, 2009; Michaud, 2000; Tuamsuk, 2013). Thus, information literacy has drawn a deep attention to the policy makers, thinkers, researchers, government authorities, development practitioners and so on who are related to policy making in higher education. Information literacy has been emerged as the critical literacy for the twenty-first century with the advent of information technologies and grown to become recognized (Aktas, 2016; Ali et al., 2010; Baro et al., 2013; Flywel & Jorosi, 2018; Lau, 2005; Yager et al., 2013). At present, learning process in an educational institution especially in a university should be based on the capacity to find and access information, to evaluate the information for accuracy, to organize information and finally apply the information in problem solving. It is possible only and only when a student or person will be information literate.

In higher education, especially at the university level, university library provides various facilities to the students which benefits students in many ways. University library avails books, magazines, journals, newspapers, computer, Internet, thesis papers, skilled and trained library professionals and so on which is facilitated to the students (AlTabbaa & Ankrah, 2016; Bundy, 2004; Dadzie, 2007; Daland & Walmann Hidle, 2016; Seneviratne & Wickramasinghe, 2010). It is not sure that these facilities enhance the level of undergraduate students' information literacy level. There are almost more than hundred universities in Bangladesh where thousands of students are studying, and all these universities have libraries. However, the role of these university libraries in enhancing the level of students' information literacy skill is yet to explore. This gap highly requires carrying out a depth study on this issue in

the context of Bangladesh with primary data. Thus, this study aims at exploring the impact of university library role in enhancing the level of information literacy skills of the undergraduate students in Bangladesh.

1.2 Statement of the Problem

This is the era of information. In this era, none can move ahead and can do anything perfectly without information. It is found that the availability of information has paved the modern societies to explore and develop new search skills by accessing to and using of information from different sources. These skills are known as information literacy skill (Uche & Imo, 2008). Information literacy has become one of the most vital sets of skills in the twenty-first century, and that is why everyone needs to gather information literacy skills adequately as a citizen of the community (Dadzie, 2007). With the shifting of this society from agrarian to information, the importance of information has been expanded. It is a graduate attribute for the learners to develop such skills that would enable him/her to understand information need, to open a better way of thinking about the world of information, to gather the exact information, and to use of information properly. Only information literacy can build up such skills. So in today's information society, "information literacy" should be put at the heart of education. The association of American Colleges and Universities identified information literacy as one of the essential learning outcomes that prepare students for 21st century challenges (Zurkowski, 1974). It is not possible for students to learn everything related to their disciplines. Therefore, the core mission of higher educational institutions is to develop independent and skilled learners.

The information literacy movement has grown dramatically over the past quarter of this century. The volume of information, technical aspects of information storage and retrieval, and the process of communication are constantly changing over time. This perspective has increased the amount of information available to users and also created an environment that is sometimes considered as information hallucination. This makes it more critical for users to find, access, select, evaluate and handle information (Nimon, 2001). On the other hand, over flow of information may raise question to the information seeker's mind about the validity, authenticity and reliability of information. So, students should be information literate because of

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having the skills to find and evaluate the information is useful or not, is good quality information or not, to understand of diverse information sources and relevant search skills, various information policies and standards concerning information access and use (Somi & De Jager, 2013). In this context, information literacy is more important.

During the period of rapid technological innovation, virtual learning, networked world, the unlimited proliferation of knowledge and diversity of information sources, a numerous challenges has thrown in every step of life. To cope with such situation, information literacy is assumed to be the knowledge and skills necessary to correctly identify information need to perform a specific task or solve a problem (Yager et al., 2013; Yevelson-Shorsher & Bronstein, 2018). Information literacy is stated as a key component of and contributor to lifelong learning in the Information Literacy Competency Standards for Higher Education (ILCSHE). Information literacy extends lifelong learning beyond formal classroom settings. It also provides the practice with self-directed investigations as individuals move into internships, first professional positions, and increasing responsibilities in all pitches of the life of human being (Aktas, 2016; Bakbak, 2019; Basri & Yushiana, 2009; Falkenberg, 2014; Foo et al., 2013; OLUFUNKE, 2018; Yager et al., 2013; Zinn, 2012). In today's world, information literacy has been considered as the heart of any higher academic institution (Michaud, 2000; Tuamsuk, 2013).

Information literacy has a direct linkage with critically thinking ability also. According to (Yalız Solmaz, 2017) "Information literacy supports critical thinking since it emphasizes assessing search results for quality and relevance, and evaluating information choices for reliability, validity, authority, and timeliness before making judgments based upon them". There is need to build information literacy skills of university students to meet their information needs for day-to-day academic environment, in their profession, as well as in their daily lives also. Information literacy have the ability to convert a student from user to sophisticated information finders and users by the time they reach college, university, their working field and family life also (Basri & Yushiana, 2009; Nimon, 2001; Uche & Imo, 2008).

Without information literacy skill, it is difficult for the students to gain success in their academic environment, not in workplace or not in family life. In this respect,

library can play a profound responsibility towards the students to make them information literate. From the earlier studies, it is found that he level of information literacy skills of the undergraduate students of public universities of Bangladesh is not satisfactory (Islam & Tsuji, 2010; Islam & Rahman, 2014). It is also found that the role of public university libraries in the development of students as information literacy is not good enough. Moreover, there are very few studies on the impact of university library role on the level of students' information literacy skill in Bangladesh. Some studies are found in the context of Bangladesh which are not exactly on the ongoing issue (Chowdhury et al., 2011; Z. Hossain, 2014; Islam & Tsuji, 2010; Islam & Rahman, 2014; Shuva, 2004; Siddike, 2010; Singh & Begum, 2012; Virkus, 1970). As arranging of the information literacy related programs are found scantly in the public university libraries for fostering students' information literacy skill, there is a gap to assess the information literacy skills of the undergraduate students in Bangladesh.

Information literacy is well practiced in the higher education institutions basically in developed countries. Being a developing country, it is highly needed to investigate this issue in the context of higher education in Bangladesh as there is no alternative to it for the development of higher education in the country. Otherwise, the country may fall in the ignorance of information literacy skills which may result the poor academic performance in their respective institutions as well as professional and personal field. A little awareness of practices to information literacy is found among the higher education institutions in Bangladesh. The level of information literacy skills of the undergraduate students of Bangladesh has not explored broadly yet (Chowdhury et al., 2011; T. Hossain, 2014; Z. Hossain, 2014; Islam & Tsuji, 2010; Islam & Rahman, 2014; Shuva, 2004; Siddike, 2010; Singh & Begum, 2012; Virkus, 1970). Thus, it is till now unclear their idea about information, information need, and information seeking behavior and how to identify, locate, evaluate, analyze, organize and apply information to meet their academic information need. Moreover, it is not clear that how much university libraries are providing services to the students for the enhancement of information literacy skill in Bangladesh. Besides, it is still unexplored the constraints to provide facilities to the students by the university libraries or library professionals.

Considering these situations regarding the impact of university library role on the level of undergraduate students' information literacy skill in Bangladesh, some research questions arise which are stated as follows:

i.   What are the overall scenarios regarding the demographic and information literacy related features of students and library professionals in the study area?

ii. What is the level of undergraduate students' information literacy skill in the study area?

iii. What is the level of the role of university library in the study area?

iv. What is the impact of the university library role on students' information literacy skill in the study area?

v.   What are the major constraints to achieve information literacy skill by the students in the study area?

vi. What policies should be suitable for enhancing the level of undergraduate students' information literacy skill in Bangladesh?

These questions are targeted to find out its solutions considering as objectives of the study employing different empirical methods, techniques and tools with collected data.

1.3 Objectives of the Study

The main objective of this study is to draw attention to the questions stated above and to investigate the impact of university library role on the level of undergraduate students' information literacy skill. To achieve this objective, this study targets to achieve the following specified objectives:

i.   To describe the overall scenarios regarding the demographic and information literacy related features of students and library professionals in the study area.

ii. To measure the level of undergraduate students' information literacy skill in the study area.

iii.   To measure the level of university library role for enhancing students' information literacy skill in the study area.

iv.   To explore the impact of university library role on students' information literacy skill in the study area.

v.   To identify the major constraints to achieve information literacy skill by the students in the study area.

vi.   To recommend policy through a model planning for enhancing students' information literacy skill in Bangladesh.

In order to achieve these objectives, mainly primary data and empirical methods like statistical tools are used in the study. Simple statistical tools and tests are used to achieve the first objective of this study. Information Literacy Skill Index is used to achieve the second objective of this study. In addition, Role of Library Index is applied to achieve third objective of the study. On the other hand, Ordinary Least Squares (OLS) method is applied to achieve the fourth objective of the study. Finally, Kendall's Coefficient of Concordance test is applied to achieve the fifth objective of this study. All these methods, techniques and tools are clearly described in methodology section of this study which is reflected in chapter three.

1.4 Justification of the Study

For developing a nation, development of education is a must. To achieve Sustainable Development Goals (SDGs) by ensuring quality education, the proper inclusion of information literacy in curriculum is inevitable. Because, none can contribute to the sustainable development of a country without being skilled in information literacy. Therefore, information literacy is really important and it induces to carry out a depth study. This study has been justified from three points of view which are stated below.

Firstly, although there are many studies regarding this issue, studies especially on the role of university libraries on the undergraduate students' information literacy skill in the context of whole Bangladesh is very scant (Chowdhury et al., 2011; Z. Hossain, 2014; Islam & Tsuji, 2010; Islam & Rahman, 2014; Shuva, 2004; Siddike, 2010) . Bangladesh is one of the most densely populated countries in the world. The country is now moving across the demographic dividend interval which implies that major

part of its population is young people. These young people are now having education which is reflected by the literacy rate of Bangladesh. These huge size of students need to be information literate. Otherwise, the actual goal of education may not be achieved. However, till now the level of students' information literacy skill, the role of university libraries on students' information literacy skill and the constraints to achieve information literacy skill by the students are unexplored. Therefore, a separate study is desired and it may give an effective and interesting finding.

Secondly, many studies are found with some methodological and analytical pitfalls. Majority of the previous literature have not used statistical and empirical methods and techniques properly (Aktas, 2016; Baro et al., 2013; Basri & Yushiana, 2009; Chang et al., 2012; Eskola, 2005; Fadil, 2016; Flywel & Jorosi, 2018; Foo et al., 2013; Gavsiddappa Anandhalli, 2018; Hobbs et al., 2015; Kousar & Mahmood, 2013; Lockhart, 2016; Michaud, 2000; Mitchell-kamalie, 2011; Nimon, 2001; Sasikala Prof. & Dhanraju, 2011; Somi & De Jager, 2013; Uche & Imo, 2008; Yager et al., 2013). Proper analytical techniques have not been employed. Therefore, it is required to investigate the role of university libraries on students' information skill using empirical methods.

Thirdly, this study may be a new addition to the existing literature as well as the findings can be the lessons for the students, faculty members, policy makers and development practitioners of different areas of the country and the other developing countries as well. This study may also be helpful to identify the constraints to achieve information literacy skill faced by the students and to suggest probable measure to alleviate these constraints so that students can achieve excellent level of information literacy skill.

This study is an effort to fill these existing gaps in previous literature to investigate the linkage between role of university libraries and information literacy skill of the undergraduate students. It is deeply expected that the findings of this study may also be helpful to those who are interested to carry out studies on this similar issue.

1.5 Organization of the Study

This dissertation contains six chapters in total. Besides, this study also contains some preliminary elements, references and appendices as well. The first chapter of this study describes introduction of the study including background, statement of the problem, scope, objectives and organization of the study. The second chapter describes the review of literature of the previous literature relevant to the objectives of this study. In chapter three, methodology of the study is described which includes research approach, empirical methods or techniques, study area and sample selection, and presentation of the results as well. Chapter four describes the demographic and information literacy related features of the students and library professionals. Chapter five represents the estimated results of this study including the level of students' information literacy skill, the level of the role of university library, the impact of university library role on the students' information literacy skill, and the major constraints to achieve students' information literacy skill. Finally, the chapter six reveals conclusion of the study including summary, recommendation of a model planning and limitations of the study.

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CHAPTER TWO   **REVIEW OF LITERATURE**

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Introduction

Literature review refers to the investigation of the literature that has been published earlier. This chapter provides an overall analysis of earlier literature focusing on various aspects of information literacy skill of undergraduate students and role of university libraries. Reviewing the relevant literature on various aspects of the ongoing study is the principal objective of this chapter. Review of literature helps researchers to be updated about the research topic as well as to understand the background of research problem, to construct a theoretical basis of the study, to find out gaps in existing literature, and to find out the way of solving the research problem that stresses to carry out further research. Thus, this chapter mainly reviews the earlier literature based on the research questions and objectives.

The chapter is organized into nine sections. Section 2.2 describes a brief review of main literature based on different aspects and issues of information literacy skill and role of university libraries. Section 2.3 describes the concept of information and literacy. In Section 2.4, concept on information literacy is described. Moreover, in Section 2.5, theories on information literacy are described. On the other hand, Section 2.6 describes the linkage between information literacy skill and university library. Section 2.7 describes the major findings of previous literature while Section 2.8 describes various gaps incurred with previous studies. Finally, Section 2.9, the last section, describes the concluding notes of this chapter.

2.2 A Brief Review of Main Literature

This section provides an overall idea about main literature which is reviewed for this study. A quite number of studies are reviewed on information literacy and the role of university library on the students' information literacy skill, namely, (Hobbs et al., 2015), (Serap Kurbanoglu, 2004), (Sasikala Prof. & Dhanraju, 2011), (Purzer et al., 2014), (Falkenberg, 2014), (Mbabu, 2007), (Oware, 2010), (Mesquita, 2010), (Zinn,

2012), (Bundy, 2004), (Karimi et al., 2015), (Basri & Yushiana, 2009), (Adeoye, 2018), (Franklin, 2005), (Eskola, 2005), (Williams & Evans, 2008), (Ayoub, 2016a). Moreover, this study reviewed the following literature that are used to find the literature gaps and selecting research methods (Alagu & Thanuskodi, 2019; Ayoub, 2016b; Basri & Yushiana, 2009; Birch, 2012; Chang et al., 2012; Dadzie, 2007; Daland & Walmann Hidle, 2016; Fadil, 2016; Flywel & Jorosi, 2018; Foo et al., 2013; Gavsiddappa Anandhalli, 2018; Hobbs et al., 2015; Kousar & Mahmood, 2013; Lau, 2005; Mahmood, 2013; Nimon, 2001; Omarsaib, 2015; Sadioğlu et al., 2009; Sasikala Prof. & Dhanraju, 2011; Seneviratne & Wickramasinghe, 2010; Somi & De Jager, 2013; Uche & Imo, 2008; ur Rehman & Alfaresi, 2009; Wooliscroft, 1995; Yevelson-Shorsher & Bronstein, 2018; Zapalska, 2016).

Following these studies, the research finds the literature gaps and based on that this paper sets up the research problem and objectives. Besides, this research fixes the research methods and estimation tools based on this deliberate review of these literatures.

2.3 Information, and Literacy

Information can be defined as news or knowledge received or given. For example, information is what's given to someone who asks for knowing background about something (Youthdictionary). On the other hand, information can also be defined as the organized or classified data, which has some meaningful values for the receiver. According to Tutorialpoint, information is the processed data on which decisions and actions are based. In addition, information is associated with data while data represent values attributed to parameters. Information is also related to knowledge as knowledge signifies understanding of an abstract or a concrete concept (Merriam Webstar).

The term 'information need' implies the desire of an individual or group to identify and obtain information from a reliable source to satisfy a conscious or unconscious need. Information needs are related to the following conditions, but distinct from information requirements:

i.   The explanation of observed phenomena of information use;

ii. The forecasting of instances of information uses;

iii. The control and thereby improvement of the uses of information manipulation of required conditions.

The need for information consists of two searches: Today's Web Search and Exploratory Search which are presented in the following flowchart.

Figure 2.1: Flowchart of the Need for Information
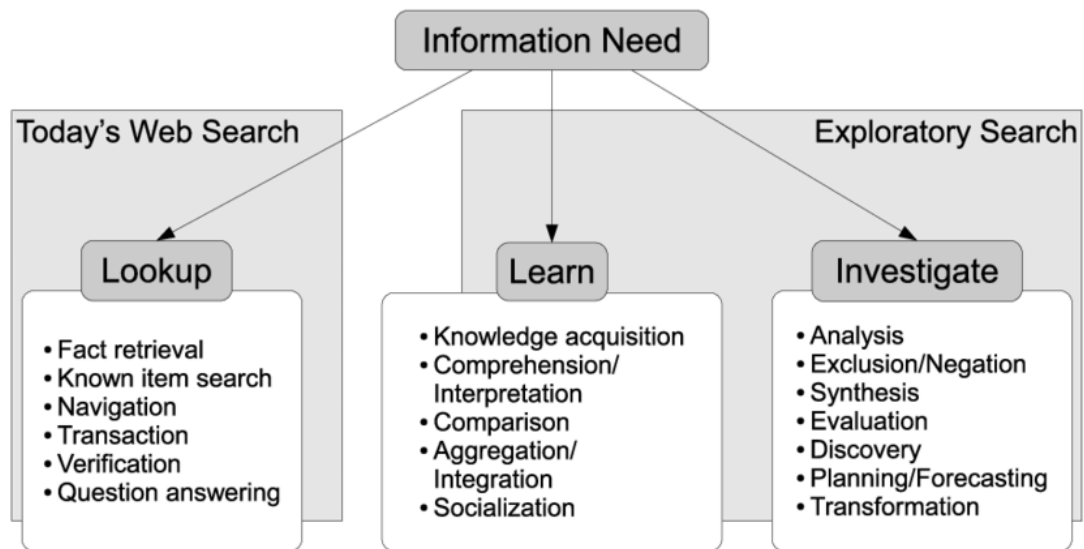
Source: (Marchionini, 2006)

From the above figure, it is found that information need is made up with two distinct searches: Today's Web Search and Exploratory Search. Today's Web Search implies lookup which deals fact retrieval, verification, question answering and so on. On the other hand, exploratory search deals with learning and investigation. Learning deals with knowledge acquisition, comprehension, socialization, aggregation and so on while investigation deals with analysis, synthesis, evaluation, discovery, transformation and so on.

Besides information, it is important to know about literacy as without being literate none can gather information. Contrarily, without information, none can be literate more about a concept. Therefore, information and literacy both are same important and they are inter-related. The description about literacy is presented below.

The proposition, 'literacy' is popularly known as the ability to read, write and use numeracy in at least one method of writing (Merriam Webstar). The term 'literacy' started in the early 1980s and now-a-days the importance of it is increasing rapidly. At present, literacy researchers have modified the definition of literacy as ability apart from any actual event of reading and writing ignores the complex ways reading and writing always happen in a specific context and in tandem with the values associated with that context (Franklin, 2005).

According to Foley (2010), literacy is the capacity to communicate using engraved, printed, or electronic symbols for representing language. On the other hand, typically contrasted with orality or oral tradition, literacy comprises a broad set of strategies for communicating through oral and aural media (Foley, 2010). However, literate and oral modes of communication concur and intermingle not only within the same culture but also within the very same individual in real world. The importance of literacy is too much in the present world as without being information literate no one can gain from this competitive situation. Therefore, everyone should be information literate to make a nation skilled and developed.

The term 'literacy' consists of a set of elements. If all these elements are available to a person, then the person is treated as literate. The elements of literacy are presented in the following figure.

Figure 2.2: Elements of Literacy
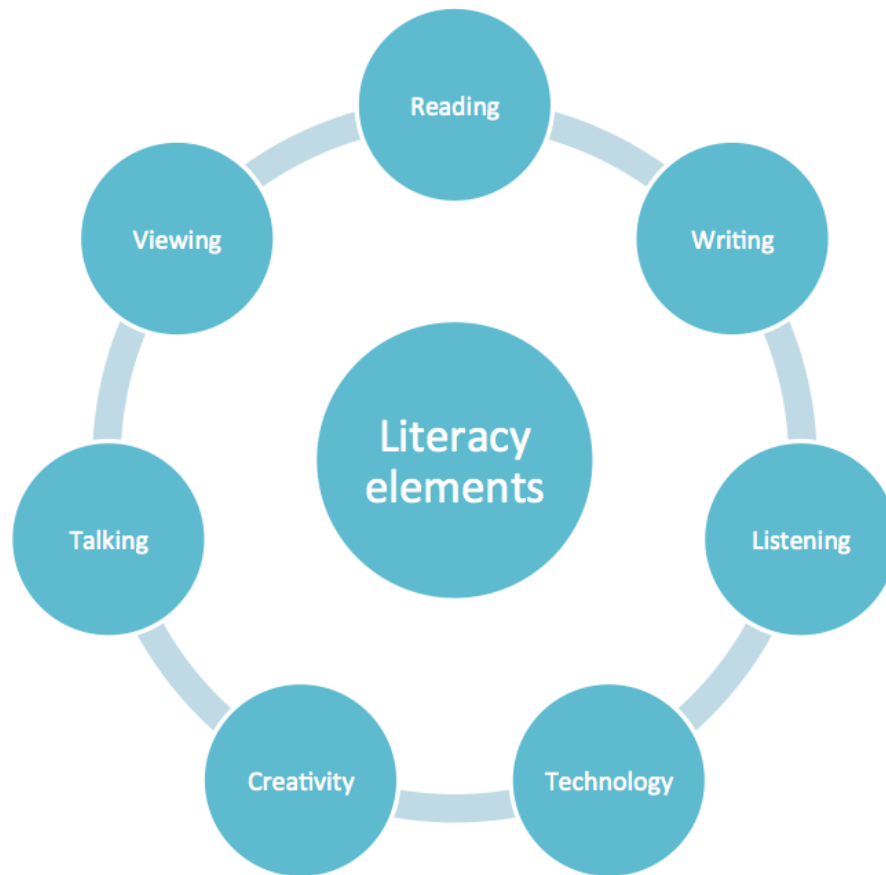
Source: Latch-On

From the above figure, it is found that literacy is the combination of reading, writing, listening, technology, creativity, talking, and viewing. Therefore, it can be said that a person can be treated as literate when and only when the person have the ability to read, write, listen, use technology, create, talk and view.

2.4 Information Literacy

Traditionally, literacy is meant by the ability of an individual to read and write for operating basic needs. There are several types of literacy: audiovisual literacy, computer literacy, prints literacy, technical literacy, media literacy, and functional literacy, web literacy, library literacy, information literacy and so on. Among all these types of literacy, nominal and active literacy too focus on making people aware to read and write in their daily activities. However, information literacy is quite different to all types of literacy stated the above. More specifically, it can be said that

information literacy is a combination of all these types of literacy, however, it goes beyond them.

According to The Association of College and Research Libraries (ACRL), information literacy is a set of assimilated abilities surrounding the insightful unearthing of information, the understanding of how information is produced and valued and the use of information in creating new knowledge and participating ethically in communities of learning, as for example, planning and searching (Boolean searching, searching for information, searching the web, and keywords) and evaluation (suitability and reliability of information source and currency of information) (Gregory, 2017).

Figure 2.3: Information Literacy Model
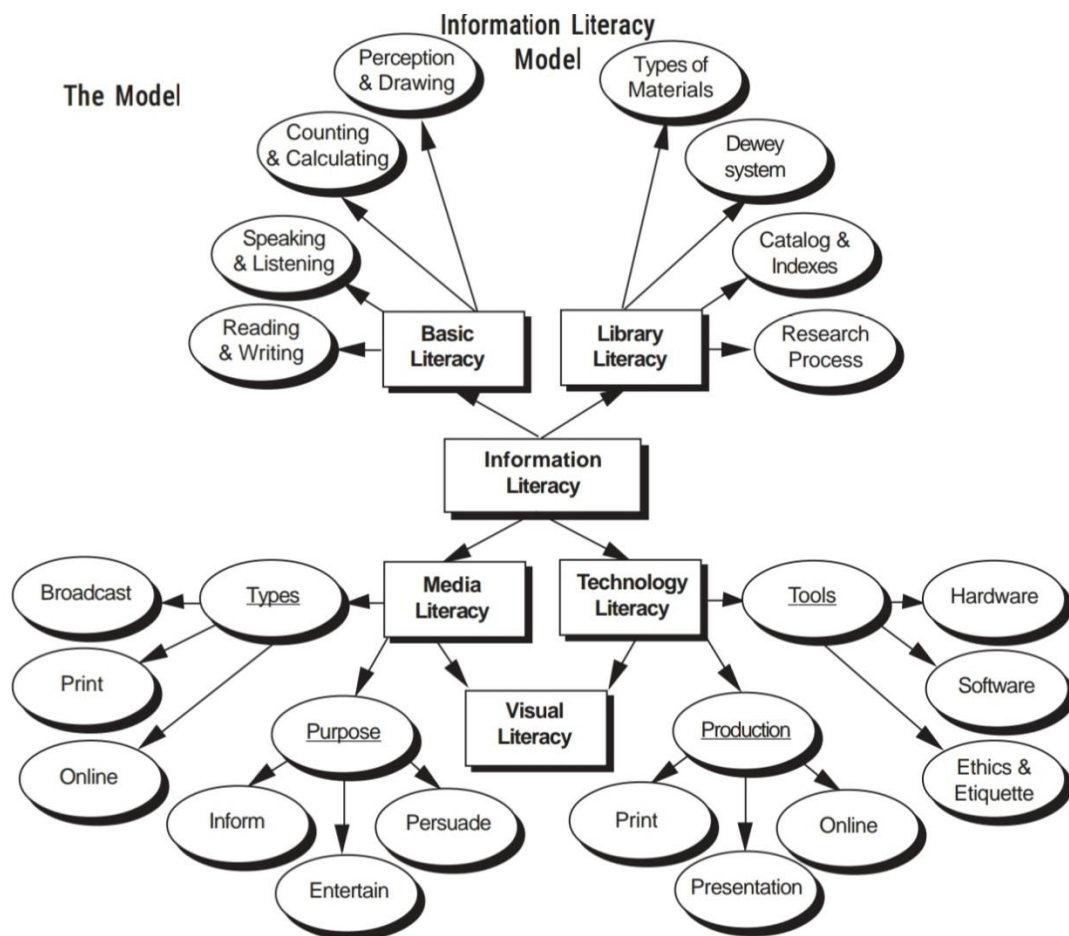
Source: (Basri & Yushiana, 2009)

A Professor of Oral Roberts University, Angela Sample, cited several conceptual waves of information literacy definitions since 1970 in a literature review published in an academic journal in 2020. Some of those broad conceptual approaches included: information literacy defined as a way of thinking; information literacy defined as a social practice, and information literacy defined as a set of skills (Behrens, 1994; Sample, 2020). In the academic world, the waves of these concepts led to the implementation of met literacy as an apparatus of information literacy concepts, and the creation of threshold concepts and knowledge temperaments, eventually leading to the creation of the ALA's Information Literacy Framework (Behrens, 1994; Sample, 2020).

Figure 2.4: The Concept of Information Literacy
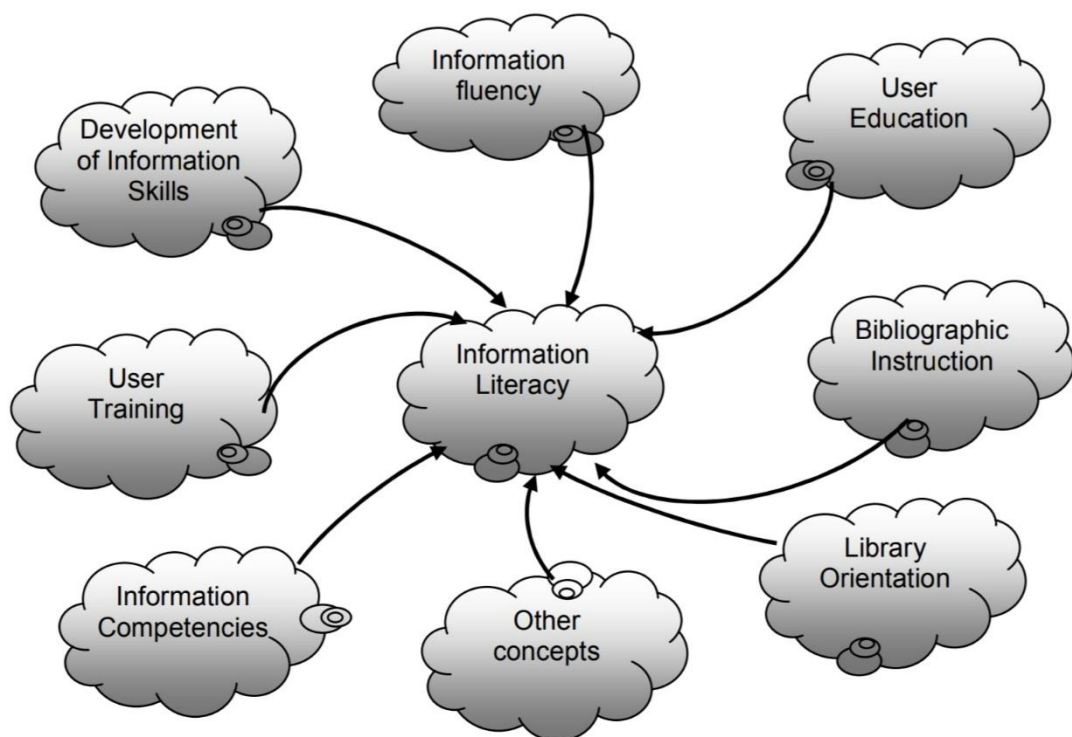
Source: (Lau, 2005)

In 1974, the phrase 'information literacy' first appeared by Paul G. Zurkowski, the then President of the Software and Information Industry Association, in a report written on behalf of the National Commission on Libraries and Information Science . In that report, Mr. Zurkowski used the phrase 'information literacy' to describe the 'techniques and skills' learned by an information literate person for utilizing tools and

sources of information in edging information solutions to their problems. With this term, he portrayed a relative firm line between the 'literates' and 'information illiterates' (Zurkowski, 1974).

Different researchers and scholars have defined information literacy skill differently. According to (Bundy, 2004), there are three main elements of information literacy which are stated in the following table.

Table 2.1: Elements of Information Literacy

Elements	Actions
Generic skills	• Problem solving • Collaboration • Team work • Communication • Critical thinking
Information skills	• Information seeking • Information use • Information technology fluency
Values and beliefs	• Using information wisely and ethically • Social responsibility and community participation

Source: (Bundy, 2004)

On the other hand, (Bruce, 1997) has defined several concepts influencing and coexisting with information literacy are as follows:

    i.   Computer literacy
   ii.   Library skills
  iii.   IT literacy
  iv.   Leaning to learn
   v.   Information skills

According to ALAIR, an information literate individual is able to:

- determine the extent to information needed;
- understand the economic, legal, and social issues surrounding the access to and use of information ethically and legally.
- access the needed information effectively and efficiently, and evaluate information and its sources critically;
- incorporate selected information into one's knowledge base and use information effectively to realize a specific purpose.

"Despite having the wider significance of information literacy within the educational environment, information literacy has developed from library education practices. From the review of literature, it is found that information literacy has developed to address the requirements engendered by the phenomena: information over load triggered by the prompt developments in digital technologies, by the needs of the information society for proficient information consumers, and to meet the necessities of the knowledge economy for a responsive and informed work force (Andretta, 2005).

On the other hand, (Doyle, 1994) has defined an information literate person as one who:

   i. recognizes that accurate and complete information is the basis for intelligent decision making;
   ii. formulates questions based on information needs;
   iii. recognizes the need for information;
   iv. develops effective search strategies;
   v. identifies potential sources of information;
   vi. accesses sources of information like computer-based and other technologies;
   vii. evaluates information;
   viii. organizes information for practical application, assimilates new information into an existing body of knowledge; and
   ix. uses of information in critical thinking and problem solving.

Figure 2.5: Components of Information Literacy Skill

The information literate person can:

Identify + Find + Evaluate + Apply + Acknowledge
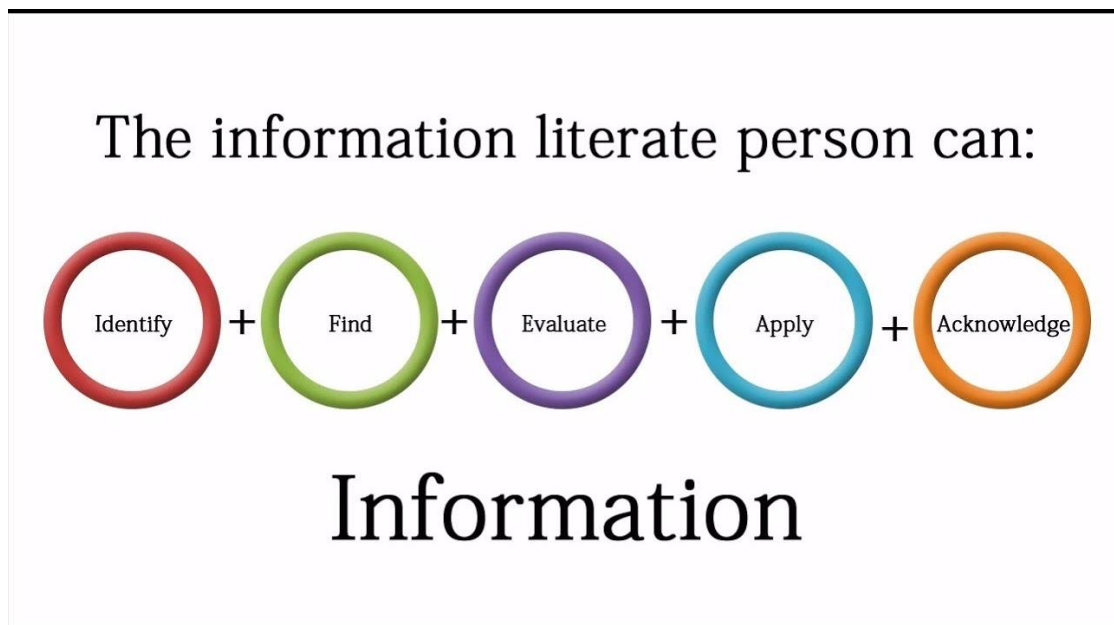
Information

Source: Lana

2.5 Theories on Information Literacy

Theories on information literacy stated by different information literacy scholars are briefly described in this section.

2.5.1 Big6 Model

This section describes the Big6 Model of information literacy briefly. This model is developed by Eisenberg (2003). The essence of this model is presented in Table 2.2.

Table 2.2: Big6^{TM} Model

Steps	Action
	Task definition
Step 1	- defining the information problem
	- identifying the need for information
	Information seeking strategies
Step 2	- determining all possible sources of information resources
	- selecting the best sources of information resources
	Location and access
Step 3	- locating the sources of information (intellectually and physically)
	- finding information within sources
	Use of information
Step 4	- engaging (read, hear, view, touch)
	- extracting relevant information
	Synthesis
Step 5	- organizing from multiple sources
	- presenting the information
	Evaluation
Step 6	- judging the product (effectiveness)
	- judging the process (efficiency)

Source: (Eisenberg, 2003)

This model contains 6 steps having several actions. These actions help to enhance the information literacy skill. The developer of the model again adjusted the technological capabilities which are presented in Table 2.3.

Table 2.3: Technological Capabilities and the Big6 Model

Step	Component	Description
1	Task definition	e-mail, brainstorming software, group discussions (list serves, online forums), video conferencing, groupware, chat
2	Information seeking strategies	online catalogs, information retrieval, digital reference services, online discussion groups, networked electronic resources, Intranet), Web resources, blogs, wikis
3	Location and Access	online catalogs, search engines, electronic indices, browsers
4	Use of information	upload/download, statistical packages copy-paste, outliners, word processing, spreadsheets, databases (for analysis of data)
5	Synthesis	word processing, desktop publishing, database management, presentation software, down/up load, e-journals, graphics, spreadsheets, blogs, wikis, web-authoring
6	Evaluation	e-mail, group discussions (list serves, online forums), brainstorming software, chat, video conferencing, groupware

Source: (Eisenberg, 2008)

2.5.2 The Empowering 8 Model

The Empowering 8 Model is also an important model related to information literacy which is stated by Wijetunge and Alahakoon (2009). The essence of this model is presented in Figure 2.6.

Figure 2.6: The Empowering 8 Model
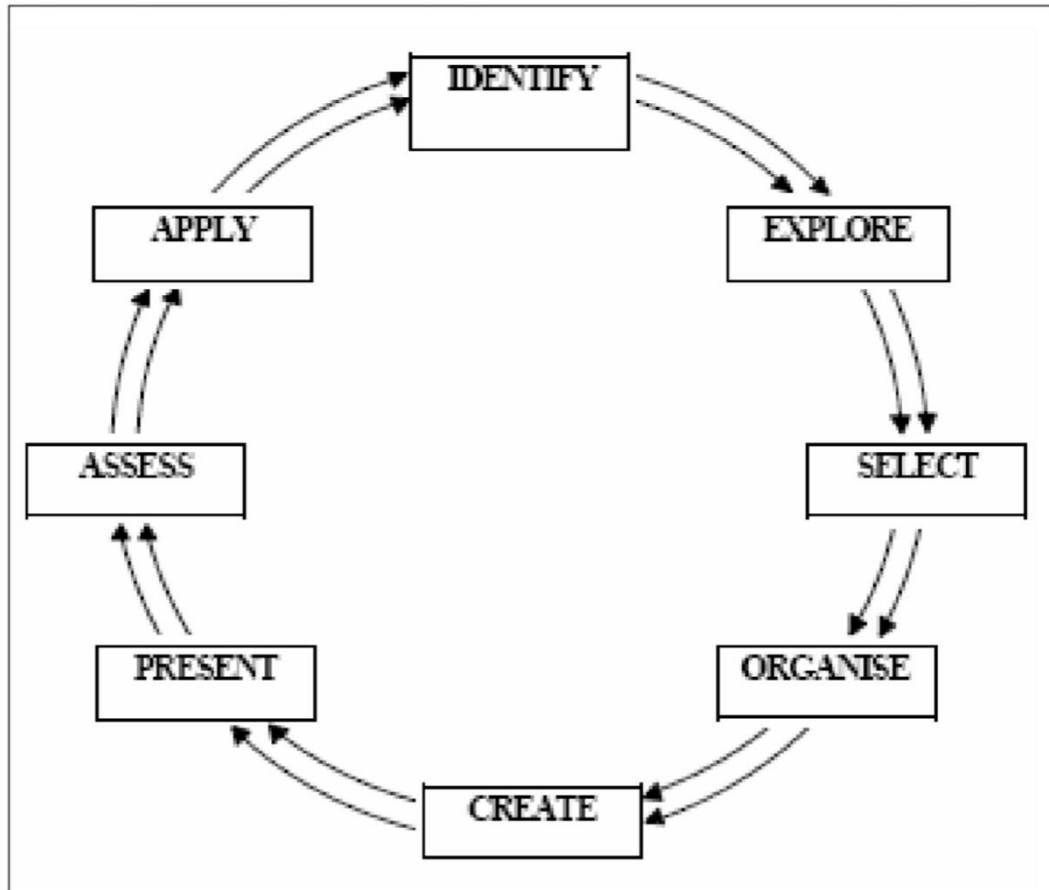
Source: Wijetunge and Alahakoon (2009)

This model uses 8 factors affecting information literacy. The learning outcomes of Empowering 8 Model are presented in Table 2.4.

Table 2.4: Learning Outcomes for E8 Model

E8 Components	Ability in:
Identify	• Defining the topic • Determining and understand the audience • Choosing the relevant format for the finished product • Identifying the keywords • Planning a search strategy • Identifying different types of resources where information may be found
Explore	• Locating resources appropriate to the chosen topic • Finding information appropriate to the chosen topic • Doing interviews, field trips or other outside research • Choosing relevant information • Determining which sources are too easy, too hard, or just right
Select	• Recording relevant information through note making or making a visual organizer such as a graph, or outline, chart, and so on. • Identifying the stages in the process • Collecting appropriate citations • Sorting the information • Distinguishing between fact, opinion, and fiction
Organize	• Checking for bias in the sources • Maintaining the sequence the information in a logical order • Using visual organizers to compare or contrast information • Preparing information in their own words in a meaningful way
Create	• Revising and editing alone or with a peer • Finalizing the bibliographic format • Practicing for presentation activity • Sharing the information with an appropriate audience
Present	• Displaying the information in an appropriate format to suit the audience • Setting up and use equipment properly • Accepting feedback from other students • Assessing one's performance in response to instructor's • Assessing of the work
Assess	• Reflecting on how well students have done • Determining if new skills were learned • Considering what could be done better next time • Reviewing the feedback and assessment provided • Using the feedback and assessment for the next learning activity/task
Apply	• Endeavoring to use the knowledge gained in a variety of new situations • Determining in what other subjects these skills can now be used • Adding product to a portfolio of productions

Source: Wijetunge and Alahakoon (2009)

2.5.3 Seven Pillars of Information Literacy

One of the most popular models of information literacy is Seven Pillars of Information Literacy which is stated by Bruce (1997). The essence of this model is stated in Table 2.5.

Table 2.5: Seven Pillars of Information Literacy

Pillars	Actions
Pillar 1	• Recognizing the need for information- knowing what is known, knowing what is unknown and identifying information gap
Pillar 2	• Distinguishing the ways of addressing gap- knowing which information sources are more relevant to satisfy the need for information
Pillar 3	• Constructing the strategies for locating- knowing how to develop and refine an effective search strategy
Pillar 4	• Locating and accessing- knowing to access the sources of information and search tools to access and retrieve information
Pillar 5	• Comparing and evaluating- knowing how to assess the relevance and quality of the retrieved information
Pillar 6	• Organizing, applying and communicating- knowing how to integrate information from different sources with a view to creating new knowledge
Pillar 7	• Synthesizing and creating

Source: (Bruce, 1997)

2.5.4 ILEARN Model

One of the most popular models of information literacy skill is ILEARN Model which is stated by Neuman (2011). The essence of this model is stated in Table 2.6.

Table 2.6: ILEARN Model

No.	Components	Actions
1	Identify	• Activation
		• Scanning
		• Formulating
2	Locate	• Focusing
		• Finding
		• Extracting
3	Evaluate	• Authorization
		• Relevance
		• Timelines
4	Apply	• Generating
		• Organizing
		• Communicating
5	Reflect	• Analyzing
		• Revising
		• Refining
6	Know	• Internalizing
		• Personalizing
		• Activities

Source: Neuman (2011)

2.5.5 Information Seeking Model

One of the most popular models of information literacy skill is Information Seeking Model which is stated by Kuhlthau (1991). The summary of this model is stated in Table 2.7.

Table 2.7: Information Seeking Model

Steps	Actions
Planning	• Initiating
Picking	• Selecting • Exploring investigating information on the general topic) • Formulating of focus • Collecting (gather information on the focused topic)
Processing	• Assessing (of process and outcome)
Presenting	• Presenting

Source: Kuhlthau (1991)

Information Seeking Model deals with four steps having several actions with which the behavior of seeking information by the information users.

2.6 Linkage between University Library and Information Literacy Skill

The library of a university is the storehouse of information resources such as books, journals, magazines, newspaper, online database, electronic journals, electronic books and other printed resources, and so on. Moreover, there are computer laboratories with Internet facilities including skilled library professionals in the library that are also the significant library resources. These resources are provided for the library users' learning and research activities. All these resources are the important sources of extracting information and knowledge of the library users, basically university students. In order to use these information resources effectively, students need to be skilled in information literacy. To make students skilled in information literacy, university library may play a vital role indeed. The way how university libraries make the students skilled in information literacy is presented as follows.

University libraries arrange different information literacy related programs like orientation session, training, workshop, informal class, and so on. Students participate to these programs and gather ideas and knowledge about how to identify the need for information, find the needed information, evaluate the searched information, apply the gathered information, and acknowledge the applied information. By this way, university library may help students to be skilled in information literacy.

In practice, many university libraries have already developed some kinds of programs for their library users. Through these programs, university libraries have been able to equip their users with information literacy skills needed to use the wide array of information resources available in the libraries (Hassan, 2003). Some Malaysian academic libraries have been using several terms to denote the activities of educating and training library users to use library resources- user education, information skills, information literacy and smart library skills (Basri & Yushiana, 2009).

2.7 Major Findings of Previous Literature

Different researchers have studied information literacy from different aspects using different tools and methods. Someone has used quantitative approach while someone

has used qualitative approach of research. These studies are reviewed rigorously and the major findings are presented briefly in this section.

In a study on digital literacy, (Adeoye, 2018) used a descriptive analysis having a questionnaire survey. In that study, they found majority of the students are confident on the level of information literacy especially in Plagiarism. The study also revealed that students are also confident in their level of information and communication technology literacy skills significantly at the time of writing online for private use. A study on the importance of information literacy had a sample of 74 doctoral students where the researcher used stepwise multiple regression to explore the effects of demographic characteristics of students, teaching and research experience, and their information seeking behavior on seven information literacy competencies (Franklin, 2005). Finally this paper found that the considered indicators or variables in the study influence the level of students' information literacy competencies from 5.8 to 21.3 percent.

Eskola (2005) revealed that student's information literacy is developed in two ways: first, through active use of information and sources in connection with real information needs and, second, through an educational context which offers opportunities to get different viewpoints on different concerning issues. The finding of this paper reflected against Bruce's seven faces of information literacy. Information literacy is defined as an umbrella term that incorporates all the following components: information seeking and gathering, evaluation of information resources, accurate and appropriate citing and referencing and critical thinking (Brage & Svensson, 2011).

Singh & Begum, (2012) explored a study on the impact of ICT on the life and work of people, and paradigm shift in libraries and found some interesting findings. Library consortia, open access archives, and institutional repositories are the strategic response to the enigmatic situation of growing digital documents and budget constraints of the library. Moreover, they found that more important than the name of a library is the mandate and the context of the library. Hasan (2003) conducted a research on the level of digital literacy of medical assistants where he reveals that the major findings of this paper are two folds: the awareness status of nurses and the role of HIPs. The roles are explored from five categories: educator, researcher,

administrative/managerial, service provider, and student/learner where four aspects are implanted in each role which is prototype roles, newly arisen roles, roles beyond prototype, and roles coming from socio-political context (Hasan, 2003).

Williams & Evans, (2008) carried out a research where they assess student learning of information literacy skills analyzing data collected from three semesters of the Introduction to Comparative Politics course. To identify the key patterns in successful information literacy learning among students, they used major discipline, class year, gender, and grades on several performance indicators as variable and found information literacy knowledge is content sensitive. Besides, they found that information literacy is not only significantly associated with several performance indicators but also appears to be discipline specific.

Karimi et al., (2015) found that information literate students use information resources effectively and they are strongly capable to take the critical decisions in using information. Information literate students are also able to identify the need for information and to address problems and questions in their own lives, and to apply and evaluate information in their communities.

A doctoral dissertation was conducted on information literacy of international graduate students where the research found that international graduate students have a relatively low level of information literacy skills (Ayoub, 2016a). The study also showed that US graduate students have a better information literacy level than the information literacy level of international graduate students. This dissertation presented some policy implications and recommendations for future planning and programming of outreach programs and library services for international students on campus which are helpful for the policymakers. In 2004, a paper was published on the role of university libraries on enhancement of students' information literacy skill which was conducted in the context of Turkey by (Serap Kurbanoglu, 2004). In that paper, the researcher showed that university libraries are the best candidates to develop and maintain information literacy programs in the country.

Providing library instruction to students increased their skills and knowledge in health information literacy is found in a study by (Hobbs et al., 2015). The finding of this

study also revealed that a significant increase in database selection skills and searching strategies increases the students' ability to access peer-reviewed journal articles and cite them properly. Besides, this paper also revealed that the library instruction affects students' learning and confirms that students are more confident about accessing research and feel more knowledgeable about citing in American Medical Association style and identifying the various components of a citation.

A thesis on students' information literacy skill and transfer based on a grounded theory. In this thesis, the researcher collected data through observation method and found that students who are information literate have the less probability of being transferred than as compared to the students who have no information literacy (Kumar, 1999).

Sasikala Prof. & Dhanraju, (2011) carried out a research on the information literacy skill among the science students of Andhra University where they revealed that there are different categories of students. Among them, some of the students visit library frequently, some students do not visit library and some students visit library only for taking the preparation of examination. This revealed that students get information from university library. A study on information literacy conducted by (Purzer et al., 2014) used multiple choice skill test by likert scale perception to diagnose engineering students' self-directed learning with a focus on information literacy skills and attitudes. The findings of the study revealed some promising validity and reliability evidence for these instruments, further evaluation is necessary prior to wider dissemination.

Falkenberg, (2014) stated in a study that there is a significant difference in the level of information literacy among four types of participants. Among them, one displays a higher level of information literacy than the three others as directed by sources of high credibility. However, this paper also found that all of the students visit many pertinent websites which are not related to their texts. Besides, the students also visit many websites that are not related to their academic lessons or assignments. Moreover, not a single student mentions the sources in their written work, which points to a lower level of information literacy. Finally, the researcher revealed that information literacy

should be given a greater emphasis, and that information literacy should be an integrated part of curriculum.

Mbabu, (2007) conducted a doctoral thesis on the information literacy skill of course in master's degree where the researcher showed that librarians are not effective to play the role in enhancing the students' information literacy skill. This paper also reveals that librarians required special training on information literacy skill. Oware, (2010) carried out an master's thesis aims at to examining the graduate students' views on information literacy with a view to understanding their opinions and experience about some aspects of information literacy as well as its importance in academic activities. The researcher used face to face interview and used mixed method to achieve the objectives. Finally, this paper finds that graduate students rely heavily on the internet for their academic works like assignments, dissertations or research. The study also revealed that students are agreed with a statement that is-information literacy is very important and helpful in academic works. That is why, this paper recommended embedding information literacy education in the curriculum and building collaboration between faculty and librarian to facilitate the implementation of information literacy programs.

In a doctoral thesis, Mesquita, (2010) identified the need for information of PhD students. In that thesis, the researcher collects data through individual interview methods from the targeted group and an interesting is found that is PhD students need information literacy. Shrestha, (2008) conducted a master's thesis where she attempts to explore whether the students of MLISc and the library professional are information literate or not after having network source literacy, computer literacy, library literacy, and tool literacy. She took 70 respondents from both students and library professionals as sample in the study and used simple descriptive analysis. The study finds that 99 percent respondents should be information literate. The study also revealed that 80 percent respondents from both MLISc students and professionals should have the qualities to detect various information resources, manipulate data and retrieve in required format, symbols and images, recognize visual, perfect in search strategies.

Zinn, (2012) investigated the level of teachers' information literacy competencies taking 29 participants in an information literacy education course as sample purposively. Using mixed method, the course taught participants that information literacy needs to be made explicit in the classroom as one of the biggest challenges was using web-based information. The findings of this paper revealed that teachers need to be familiar to and contented in the web environment and this alteration takes time and tenacious breaking down of barriers to attain information literacy skill.

An information literate person is able to acquire knowledge and use of information resources properly in absorbing knowledge from experience, and able to use the same information in generating wealth and welfare of the society. Information literacy skills help students to gain skill in searching, finding and utilizing information properly for their term paper project and research (Ghosh & Das, 2006).

(Kinengyere, 2007; Mitchell-kamalie, 2011) suggested integrating information literacy as a part of the curricula of all the discipline in the university level cause of emphasizing more on information literacy that may embolden the students to realize the essentiality of being information literate. The researcher also mentioned that the ability to judge the relevancy, quality, suitability of information is also essential to be information literate.

Information literacy exists between those who have the understanding, skills and knowledge to recognize their information need and to operate information in a proper way in the information based 21st century (Bundy, 2004). He also stated that the progress of information literacy is not only a responsibility of the library profession and library associations but also the whole society in the 21st century. However, librarians and library associations should emphasize more on the terminology, definition, standards and importance of information literacy at local, national and global level. Then, a significant success may be achieved in elevating the information literacy issue as universal concern.

(Ranaweera, 2010) carried out a research on information literacy programs in Sri Lankan universities where she found that information literacy skills depends on library skills and IT skills. The researcher found that among the seven faces of

information literacy information sources, information technology and information process have comprehensively covered by the literacy program while information control, knowledge construction, knowledge extension and wisdom have not been comprehensively covered by the Sri-Lankan universities. All the libraries procured satisfactory steps to pledge information literacy programs despite facing various problems- lack of resources, lack of trained staff, proper guidance, and so on. (Ranaweera, 2010) suggested designing and implementing plans to conduct more information literacy programs by incorporating information literacy into curricula and building Faculty-librarian joint collaboration, and applying an information literacy model.

(Bruce, 1997) recommended that information literacy education is not possible without collaboration. Students, information specialists, curriculum designers, community organizations, teachers and others should come forward to this collaboration. She also suggested involving government officials along with education sector in collaboration to build awareness of the value of information literacy among the students. To create a balanced vision of information literacy in schools, schools, educators, economists, information technologists and professional associations should work together.

Students who never attended the information literacy classes or never paid their attention have the poor performance in information literacy. Thus, the researchers suggested incorporating information literacy into the secondary and tertiary schools' curriculum for giving priority to the information literacy programs. The authors also recommended the participatory mode of lecture delivery through the faculty-librarian joint collaboration, and the engagement of library and information professionals in information literacy programs (Ilogho & Nkiko, 2014).

Mutula et al. (2004) studied information literacy in the context of the Department of Library and Information Studies of the University of Botswana and found that most of the students had difficulties not only in identifying, locating, reviewing, selecting, and applying information but also in using the relevant tools to locate information and in critically evaluating, analyzing, and examining the information needed for their study and in the workplace.

2.8 Gaps in Literature

In the era of Information and Communications Technology (ICT), information literacy skill has drawn a deep attention to the policymakers not only in the developed countries but also in the developing countries like Bangladesh. Thus, many researchers carried out research on this issue. Yet, some literature gaps are found in the earlier literature which seeks for further investigation to this issue to clarify the conceptual and methodological gaps.

Although there are many studies carried out on information literacy skill and role of university library in the global context, study on this issue in the context of Bangladesh is quite scant. Some studies found on this issue in the context of Bangladesh are not specific to measure the role of university libraries on the level of students' information literacy skill and those studies have not considered the whole Bangladesh as the study area (Chowdhury et al., 2011; Hossain, 2014; Islam & Tsuji, 2010; Islam & Rahman, 2014; Shuva, 2004; Siddike, 2010; Virkus, 1970). However, this study is conducted considering the whole Bangladesh as the study area. Moreover, this is an empirical research which was not found in previous researches (Alagu & Thanuskodi, 2019; Eskola, 2005; Fadil, 2016; Falkenberg, 2014; Flywel & Jorosi, 2018; Gavsiddappa Anandhalli, 2018; Kohout-Tailor, 2018; Lau, 2005; Nimon, 2001; Purzer et al., 2014; Repanovici, 2008; Sadioğlu et al., 2009; Seneviratne & Wickramasinghe, 2010; Somi & De Jager, 2013; Uche & Imo, 2008; Wooliscroft, 1995; Yager et al., 2013; Zinn, 2012). As this research is primary data based research, this research is able to identify the core problems of both the students and library professionals faced in achieving of and delivering to information literacy skill.

To the best of knowledge, no studies in the context of Bangladesh have examined the level of students' information literacy skill and the role of university libraries by using any index (Chowdhury et al., 2011; Hossain, 2014; Islam & Tsuji, 2010; Islam & Rahman, 2014; Siddike, 2010; Virkus, 1970). In addition, no empirical studies have been carried out on the role of libraries in enhancing the information literacy skill of university students and on the constraints of achieving information literacy skill in Bangladesh. Furthermore, it is found from the previous studies that very few studies

have used statistical tools in examining the role of university library on the level of students' information literacy skill in Bangladesh. Besides, it is found that most of the researchers have not clarified the reasons behind using a particular research method. Therefore, after reviewing the earlier literature, it is found that there exist a lot of research gaps which stress to conduct a further research using statistical tools to find out what is the level of undergraduate students' information literacy skill, what is the level of the role university library, what is the role of university libraries on the level of undergraduate students' information literacy skill and what are the major constraints to achieve information literacy skill by the students in the in the study area.

This study is an effort to overcome these gaps by selecting news research objectives mentioned in the section of objectives of the study in Chapter One using different relevant research methods and techniques.

2.9 Conclusion

A large number of literatures are reviewed for conducting this study which is presented in this chapter. From this chapter, it is found that different researchers have used different methods and techniques in measuring the impact of university library role on the level of undergraduate students' information literacy skill in the earlier literature. Both positive and negative findings are found from those studies. Besides, some research gaps are also found from those literature which stresses to carry out this study. Considering these gaps, researcher of this study sets four specific objective that are targeted to achieve using some research methods and techniques. These research methods and techniques are stated in the following chapter.

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CHAPTER THREE   **METHODOLOGY OF THE STUDY**

CHAPTER THREE

METHODOLOGY OF THE STUDY

3.1 Introduction

This chapter focuses on the methodology of the study. Research methodology refers to a way of systematic solution to the research problem considering the logic behind methods used by researchers in a study and why other methods are not using (Kothari, 2004). The methodology of this study includes quantitative techniques to analyze the demographic and information literacy related feature of students and library professionals, to measure the level of students' information literacy skill, the level of role of university library, the impact of role of university library on students' information literacy skill and the major constraints of achieving students' information literacy skill using statistical tools. In addition, this chapter also includes the techniques of data collection and analysis which makes the study reliable.

This chapter is organized into eight sections. Section 3.2 describes the research approach which is applied to achieve the objectives of the study. Section 3.3 describes the empirical methods including Information Literacy Skill Index, Role of Library Index (RLI), a linear regression estimated by OLS method and Kendall's Coefficient of Concordance test. Section 3.4 reveals the issues of estimation of several statistical methods. On the other hand, description about the study area and sample selection is presented in Section 3.5 while description about the study area is presented in Section 3.6. Presentation of results is shown in Section 3.7. Finally, this chapter ends with concluding note.

3.2 Research Approach

It is required to identify the research approach before carrying out a research as it is followed to achieve the research objectives. There are two types of research approaches: deductive approach and inductive approach (Kothari, 2004). Deductive approach is assumption based and inductive approach is empirical or data based. Inductive approach, often called quantitative approach, usually involves collecting,

sorting, coding, editing, and converting data into numerical form so that statistical calculations can be made and conclusion can be drawn (Kothari, 2004). This study exercised the inductive approach to achieve the objectives of the study. The distinct research approaches applied in this study are presented as follows:

Based on the research problem, this study specifies six distinct objectives. Among them, the first four objectives are achieved using the following research methods. First, Information Literacy Skill Index (ILSI) is used to measure the level of students' information literacy skill. With this method, the second objective of this study is achieved. Second, Role of Library Index (RLI) is used to measure the level of university library role or the services provided by the university library. With this method, the third objective of this study is achieved. Third, a linear regression estimated by OLS method is used to examine the impact of role of university library on students' information literacy skill. With this method, the fourth specific objective of the study is achieved. Finally, Kendall's Coefficient of Concordance test is used to identify the major constraints of achieving students' information literacy skill. With this method, the fifth specific objective of the study is achieved.

These research methods, belong to inductive research approach, are described below by turns.

3.3 Empirical Methods

This section provides all the empirical methods that are applied to achieve the objectives of this study. Firstly, Information Literacy Skill Index (ILSI) is used to measure the level of students' information literacy skill. Secondly, Role of Library Index (RLI) is used to measure the level of university library role or the services provided by the university library. Thirdly, a linear regression estimated by OLS method is used to examine the impact of role of university library on students' information literacy skill. Finally, Kendall's Coefficient of Concordance test is used to identify the major constraints of achieving students' information literacy skill. These methods are presented in this section respectively.

3.3.1 Information Literacy Skill Index

The need for information in this era of competition is too important especially for the students as they are considered as the future of a nation. If the students are being efficient in gathering and applying of information, their productivity will be increased and socio-economic development of a country will be accelerated. In this regard, it requires measuring how students are gathering, applying and acknowledging information. Therefore, the study measures the level of students' information literacy skill. In order to measure the students' information literacy skill, the study newly construct an index named Information Literacy Skill Index with five components having twenty distinct indicators following (Alagu & Thanuskodi, 2019; Brage & Svensson, 2011; Kousar & Mahmood, 2013; Yager et al., 2013; Al-Aufi et al., 2017; Baro et al., 2013; Basri & Yushiana, 2009; Birch, 2012; Bredenoort, 2013; Eskola, 2005; Flywel & Jorosi, 2018; Gavsiddappa Anandhalli, 2018; Hossain, 2014; Israel, 2018; Lockhart, 2016; Magliaro, 2013; Mitchell-kamalie, 2011; Munshi & Nagar, 2016; Nimon, 2001; Omarsaib, 2015; Somi & De Jager, 2013; Uche & Imo, 2008; Wooliscroft, 1995). These indicators are measured with 5 point likert scale such as strongly disagree = 0, disagree = 1, neither agree nor disagree = 2, agree = 3 and strongly agree = 4. The formula of measuring information literacy skill of a student is as follows:

$$ILSI = \frac{\sum_{i=1}^{n} P_i}{MN} \tag{1}$$

Where,

ILSI = Information Literacy Skill Index

P_i = Rating provided by the respondents to an individual indicator

M = Maximum rate of the likert scale (in this case it is 4)

N = Total number of indicators of the index (in this case it is 20)

The value of the Information Literacy Skill Index ranges from 0 to 1. In the ongoing study, the value of the index from 0 to 0.25 has been considered as unskilled. On the other hand, 0.26 to 0.50, 0.51 to 0.75 and 0.76 to 1.00 have been considered as lower

semi-skilled, upper semi-skilled and highly skilled, respectively. The components and indicators of the Information Literacy Skill Index are shown in the following table.

Table 3.1: Components and Indicators of Information Literacy Skill Index

Components	Indicators
Identification	Identifying the lack of knowledge in a subject area
	Deciding what information is needed, and how much
	Locating resources in the library
Searching	Finding relevant information within books
	Finding relevant information online
	Searching computerized catalog of library
	Searching online databases
Evaluation	Evaluating information sources according to the needs
Application	Using full text journals, books and e-resources
	Using reference collections in the library (dictionaries, encyclopedias, directories, and so on)
	Using index and abstract
	Using Computer
	Using MS Office
	Using of Internet and search engines
	Using of Email
	Sharing information through social media/SMS
	Making bibliography or references
	Making assignments and presentations
	Analyzing and presenting data appropriately
Acknowledgement	Understanding the concepts of fair use, copyright and plagiarism

3.3.2 Role of Library Index

Besides measuring the level of students' information literacy skill, the study also measures the level of library role as the university libraries are serving to the students to make them information literate. Therefore, it is essential to measure the role of

library which helps students to be skilled in information literacy. In order to measure the level of the role of library, the study newly construct an index named Role of Library Index with three components having ten distinct indicators following (Elizabeth & Uwem, 2016; Lau, 2005; Nimon, 2001; Somi & De Jager, 2013; Uche & Imo, 2008; Wooliscroft, 1995; Yevelson-Shorsher & Bronstein, 2018). These indicators are measured with 5 point likert scale such as strongly disagree = 0, disagree = 1, neither agree nor disagree = 2, agree = 3 and strongly agree = 4. The formula of measuring the role of a university library is stated as follows:

$$RLI = \frac{\sum_{i=1}^{v} W_i}{UV} \tag{2}$$

Where,

RLI = Role of Library Index

W_i = Rating provided by the respondents to an individual indicator

U = Maximum rate of the likert scale (in this case it is 4)

V = Total number of indicators of the index (in this case it is 10)

The range of the estimated value of the index is 0 to 1. This study assigns the value from 0 to 0.50 as the Lower Level, from 0.51 to 0.75 as Average Level, and from 0.76 to 1.00 as the Higher Level of library role, respectively. The components and indicators of the Role of Library Index are presented in Table 3.2.

Table 3.2: Components and Indicators of Role of Library Index

Components	Indicators
Environment and Resources	The university library's environment is friendly enough
	There are adequate resources in the library
	Most of the resources in the library are updated
Facilities	Library arranges seminar/conference for enhancing students' IL skill
	Library arranges training, workshop or informal class for enhancing students' IL skill
Services	Helping students in making assignment, presentation, synopsis, dissertation, and so on by the library professionals is enough
	Helping students in using computer and Internet by the library professionals is enough
	Helping students in finding books or other resources by the library professionals is enough
	Helping students in using OPAC or online resources or database by the library professionals is enough
	Getting helps by the students from friends/teachers is greater than that of library professionals in the library

3.3.3 Impact of University Library Role on Students' Information Literacy Skill

Information literacy skill is one of the vital characteristics to the students as it plays crucial role for developing academic qualification and performance. Information literacy skill is a composite skill which is generated not only from gathering knowledge but also from the identification of the need for information, application of information, and acknowledgement of information. This skill varies from student to student and place to place due to differentials in facilities given by libraries. However, there are number of demographic and information literacy related factors that affect students' information literacy skill. In this study, a relationship between students' information literacy skill and a set of demographic and information literacy related factors is formulated as follows:

$$ILS_i = f(X_i) \qquad (3)$$

Where, ILS_i = information literacy skill and X_i = a set of demographic information literacy related factors that affect students' information literacy skill. Since the dependent variable is continuous, the study employs a linear regression model estimated by OLS method to identify the factors affecting students' information literacy skill following (Alagu & Thanuskodi, 2019; Basri & Yushiana, 2009; Birch, 2012; Brage & Svensson, 2011; Chang et al., 2012; Eskola, 2005; Fadil, 2016; Flywel & Jorosi, 2018; Gavsiddappa Anandhalli, 2018; Israel, 2018; Karimi et al., 2015; Lockhart, 2016; Mitchell-kamalie, 2011; Munshi & Nagar, 2016; Nimon, 2001; Sadioğlu et al., 2009; Sasikala Prof. & Dhanraju, 2011; Somi & De Jager, 2013; Uche & Imo, 2008; Yalız Solmaz, 2017). On the basis of the above mentioned factors, the equation 3 can be written econometrically as follows:

$$ILS_i = \delta X_i + \varepsilon_i \tag{4}$$

The equation 4 can be written simply in matrix form as:

$$
\begin{bmatrix} ILS_1 \\ ILS_2 \\ \vdots \\ \vdots \\ ILS_n \end{bmatrix}_{n \times 1}
=
\begin{bmatrix}
1 & X_{11} & X_{21} & \ldots & \ldots & X_{n1} \\
1 & X_{12} & X_{22} & \ldots & \ldots & X_{n2} \\
\vdots & \vdots & \vdots & \ldots & \ldots & \vdots \\
\vdots & \vdots & \vdots & \ldots & \ldots & \vdots \\
1 & X_{1n} & X_{2n} & \ldots & \ldots & X_{nn}
\end{bmatrix}_{n \times k}
\begin{bmatrix} \delta_1 \\ \delta_2 \\ \vdots \\ \vdots \\ \delta_n \end{bmatrix}_{k \times 1}
+
\begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \vdots \\ \vdots \\ \varepsilon_n \end{bmatrix}_{n \times 1}
\tag{5}
$$

On the basis of equation 5, the equation of a specified regression model is formulated as follows:

$$
\begin{aligned}
ILS_i = {} & \delta_0 + \delta_1 AG + \delta_2 GE + \delta_3 DS + \delta_4 YS + \delta_5 CP + \delta_6 IU \\
& + \delta_7 LV + \delta_8 PP + \delta_9 RL + \varepsilon_i
\end{aligned}
\tag{6}
$$

Where, ILS is information literacy skill; $\delta_0 \ldots \delta_9$ are parameters to be estimated and ϵ_i is the stochastic disturbance term. The regression equation 6 shows a linear relationship between dependent variable and a set of nine explanatory variables. The equation 6 is estimated by OLS method. The explanatory variables used in the regression equation 6 are described in Table 3.3.

Table 3.3: Description of Explanatory Variables Used in Regression Model

Name of Variables	Type	Measurement	Expected Sign
Age (AG)	Continuous	Age of students (Years)	+
Gender (GE)	Dummy	1 if student is male, 0 otherwise	+
Discipline of study (DS)	Dummy	1 if students read in Information Science and Library Management discipline, otherwise 0	+
Years of study (YS)	Continuous	Students' current academic year	+
Level of Computer performance (CP)	Continuous	Measured value of computer performance level	+
Level of Internet using skill (IU)	Continuous	Measured value of Internet using skill	+
Duration of visiting library (LV)	Continuous	Total time (hours) spent at university library in a week	+
Participation in programs (PP)	Dummy	1 if a student participates in any program related to information literacy, otherwise 0	+
Role of library (RL)	Continuous	Measured value of role of library index	+

However, these variables are considered in investigating the factors triggering students' information literacy skill following earlier studies. The description of explanatory variables considered in the linear regression model is stated as follows:

Age: Age of the students is measured with years at birth which is a continuous variable. In the regression model, it is expected that age is positively related to the level of students' information literacy skill. The logical explanation behind this expectation is that age is an important characteristic of students in analyzing the level of students' information literacy skill. The higher the age of a student, the higher the possibility of identifying information gap, searching, acquiring

and applying information and knowledge. Hence, relatively more senior students are expected to be more skilled in information literacy.

Gender: Gender of the students is measured by category i.e 1 if the student is male and 0 otherwise. In the regression model, it is expected that gender is positively related to the level of students' information literacy skill. The logical explanation behind this expectation is that if the student is male, he has the higher the possibility of acquiring information and knowledge from different sources at any time. Hence, male students are expected to be more skilled in information literacy.

Discipline of Study: Discipline of study of the students is measured by category i.e 1 if the student reads in the Department of Information Science and Library Management and 0 if the student reads in other departments. In the regression model, it is expected that discipline of study is positively related to the level of students' information literacy skill. The logical explanation behind this expectation is that the student who reads in the Department of Information Science and Library Management are very familiar with the term 'Information Literacy' as this concept is integrated in their curriculum. That is why, these students know the identification, search, application and acknowledgement of information and knowledge academically. In addition, he or she is academically aware of the fair use and plagiarism, writing bibliography, search strategy, and so on which make them skilled in information literacy.

Year of Study: Year of study of the students is measured with years of studying currently at undergraduate level which is a continuous variable. In the regression model, it is expected that year of study is positively related to the level of students' information literacy skill. The logical explanation behind this expectation is that year of study is an important characteristic of students in analyzing the level of students' information literacy skill. The higher the year of study of a student, the higher the possibility of identifying information gap, searching, acquiring and applying information and knowledge. Hence, students studied in higher class are expected to be more skilled in information literacy.

Level of Computer Performance: Level of computer performance of students is an important variable in analyzing the level of students' information literacy skill. Level of computer performance is measured by the estimated value of an index which is positively related to the level of students' information literacy skill in the regression model. The logical interpretation may be that students who have good performance in computer are more advanced in searching, identifying, applying and acknowledging information. In addition, they are advanced in using electronic information, online database, and so on. Hence, students who have good performance in computer are more expected to be skilled in information literacy.

Level of Internet Using Skill: Level of Internet using skill of students is an important variable in analyzing the level of students' information literacy skill. Level of Internet using skill is measured by the estimated value of an index which is positively related to the level of students' information literacy skill in the regression model. The logical interpretation may be that students who are skilled in using Internet are more advanced in searching, identifying, applying and acknowledging information. Moreover, they are advanced in using electronic information, online database, website, and all other e-resources. Hence, students who are skilled in using Internet are expected to be more skilled in information literacy.

Duration of Visiting Library: Duration of visiting university library by the students is an influential factor that affects students' information literacy skill. Duration of library visit is measured by the total time (hours) spent in university library per week. This is a continuous variable which is positively related to the level of students' information literacy skill. The logical explanation may be that students who visit university library to read books and e-resources, magazine, newspaper, journals, use computer and Internet, visit website and OPAC, and so on. This enhances the level of students' information literacy skill. Therefore, students who visit university library are expected to be more skilled in information literacy.

Participation in Programs: Participation in programs related to information literacy enhancement plays an influential role in enhancing the level of students' information literacy skill. This is measured by category i.e. 1 if a student participates in a program and 0 if the student does not participate in programs. In the linear regression model, participation in programs is expected to have a positive relationship with the level of students' information literacy skill. The logical explanation may be that students who participate in program related to information literacy gather advanced information and knowledge from the identification of information gap to acknowledgment of information which enhances the level of students' information literacy skill. Therefore, students who participate in programs are expected to be more skilled in information literacy.

Role of Library: Role of university library plays a crucial influence on the level of students' information literacy skill. Role of library is defined as the services provided by the university library to the students for enhancing their information literacy skill. In this study, role of library is measured by an index. It is a continuous variable and this variable is expected to have a positive relationship with the level of students' information literacy skill. The logical explanation may be that if a university library plays significant role in providing services to the students and they receive it effectively, and they may acquire more advanced information and knowledge of searching technique, using computer, Internet, database, website and using all resources of university library. This may enhance the level of students' information literacy skill. Therefore, if university library plays a significant role, students are expected to be more skilled in information literacy.

3.3.4 Identification of Major Challenges of Enhancing Information Literacy Skill

Now-a-days, information literacy skill is very important issue to all the students as it enhances students' skills. Enhancement of information literacy skill depends on many factors and facilities provided by university libraries. However, students face many challenges in achieving information literacy skill. There are many methods in identifying the major challenges. Kendall's Coefficient of Concordance is one of the

most popular statistical techniques which is used to identify and rank a given set of challenges into the most pressing and then to measure the degree of agreement among the respondents. The identified factors are ranked from the most pressing to the least pressing using the numerals 1, 2, 3 …n, in order. The challenges with the lowest mean score is ranked as the most pressing while the challenges with the highest mean score is ranked as the least pressing. The computed total rank is then used to calculate the coefficient of concordance (W) which ranges between 0 and 1. A value of 1 indicates that the respondents are in perfect agreement over the ranking of the constraints and a value of 0 indicates perfect disagreement among respondents (Gearhart et al., 2013; Shaibu et al., 2018; Verbič & Kuzmin, 2009). Thus, to identify the major challenges of achieving information literacy skill of undergraduate university students in Bangladesh, the study applies the Kendall's Coefficient of Concordance test.

$$W = \frac{12 \left[\sum T^2 - \left(\sum T \right)^2 / n \right]}{nm^2(n^2 - 1)} \tag{7}$$

Where,

W = Kendall's coefficient of concordance;

T = sum of ranks for challenges being ranked;

m = number of respondents and

n = number of challenges being ranked.

3.3.5 Relative Importance Index

Relative Importance Index (RII) is an index which is used to determine the relative importance of quality factors involved in the particular analysis (Johnson & LeBreton, 2004). The point of likert scale used is equal to the value of W, weighting given to each factor by the respondent. The formula of Relative Importance Index is as follows:

$$RII = \frac{\sum W_i N_i}{MT} \tag{8}$$

Where,

RII = Relative Importance Index

W_i = Weight for an Individual Likert

N_i = Number of Responses for an Individual Likert

M = Maximum Point of Likert

T = Total Number of Respondents

Relative Importance Index is used in this study in analyzing several information literacy and library related features of the students which is reflected in Chapter Four.

3.4 Issues of Estimation

This study uses several statistical techniques in analyzing the collected data. Mean, standard deviation, two sample t-test, chi-square test, and one-way ANOVA test are used to summarize and interpret the data on demographic and information literacy related factors of students and library professionals. On the other hand, a linear regression estimated through OLS method that is applied to identify the factors affecting the level of students' information literacy skill. In the case of estimating these techniques, MS Excel 2010, SPSS 23 and Stata 14.2 software are used.

A linear regression estimated through Ordinary Least Squares (OLS) is applied to identify the factors affecting the level of students' information literacy skill that estimates a cause and effect relationship between dependent and independent variables. OLS method is a widely used method in the field of social science research which is far easier and simpler. Based on some assumptions, the Ordinary Least Squares have some attractive properties that have made OLS as a one of the most powerful and popular methods in regression analysis. However, some issues are found in the process of estimation that is stated as follows:

R^2, the coefficient of determination, is basically used to predict the future values on the basis of other related information. R^2 measures the proportion of variability in data and provides a measure of how future outcomes are predicted by the model. The coefficient of determination examines overall fitting of the model and determines the degree of fitness of data on both dependent and independent variables. R^2, goodness of fit, shows how sample regression fit the investigated data (Gujarati, 2004). The general formula of the coefficient of determination, R^2, can be written as:

$$R^2 = \frac{ESS}{RSS}$$

$$Or, \quad R^2 = 1 - \frac{RSS}{TSS}$$

Where, ESS= Explained Sum of Squares,

TSS= Total Sum of Squares and

RSS= Residual Sum of Squares.

A hypothesis is tested actually to check the significant influence of the explanatory variables on dependent variable (Gujarati, 2004). To test the significance of the coefficient of a variable, t-test is used in general. In this study, if δ_i is the general coefficient of an individual explanatory variable, the null and alternative hypothesis can be written as:

$$Null\ hypothesis\ (H_0): \delta_i = 0$$
$$Alternative\ hypothesis\ (H_1): \delta_i \neq 0$$

And the formula of t-test statistic for an individual coefficient can be written as:

$$t = \frac{\widehat{\delta_i} - \delta_i}{se(\widehat{\delta_i})}$$

$$= \frac{estimated\ parameter - population\ parameter}{standard\ error\ of\ estimator}$$

and, $\widehat{\delta_i} \pm t_{\alpha/2}, se(\widehat{\delta_i})$

where, $t_{\alpha/2}$ is the normal critical value for two-tailed test of size α.

In addition, the overall significance and fitness of the model has been checked by F statistic which indicates how much independent variables reliably predict the dependent variable.

Heteroscedasticity, one of the major problems of the classical linear regression model, is checked and taken robust action as remedial measurement. At the same time, another common problem of the classical linear regression model, Multicollinearity, is checked by the partial correlation matrix of variables and VIF test to find out whether

the model suffers from the problem of multicollinearity and incorrect specification. Variance Inflation Factor (VIF) measures how much the variance of the estimated coefficients is increased over the case of no correlation among explanatory variables. The formula of VIF can be written as:

$$VIF = \frac{1}{1 - R_j^{\,2}}$$

where, $R_j^{\,2}$ is the R^2 when one regresses X_j on the remaining independent variables; a rule of thumb indicates that if VIF >10, there is high collinearity.

3.5 Study Area and Sample Selection

Since this study is about the information literacy skill of the undergraduate students in Bangladesh, it is simply understood that the study area is universities of the country which offer undergraduate degrees. As the number of universities in Bangladesh is not so many as other countries, the whole Bangladesh is considered as the study area for conducting this study. According to the website of University Grant Commission of Bangladesh (UGC), there were 40 public universities and 104 private universities in Bangladesh. At the time of pilot survey, it is found that 40 public universities and 88 private universities were academically running and producing graduates. Therefore, this study considers those academically running universities for conducting this research.

Figure 3.1: Map of Bangladesh

Source: GIF Map Website

For selecting sample, the study applies stratified sampling technique. In doing so, universities are divided into two stratums like public universities and private universities. At this stage, this study selects 10 percent universities from each stratum using random number table. Therefore, the study gets 4 public universities and 9 private universities. Universities selected from public university stratum are as follows:

i) University of Dhaka
ii) University of Rajshahi
iii) Mawlana Bhashani Science and Technology University
iv) Hajee Mohammad Danesh Science and Technology University

On the other hand, universities selected from private university stratum are as follows:

i) City University
ii) Daffodil International University
iii) East West University
iv) Khwaja Yunus Ali University
v) Pundra University of Science and Technology
vi) Rajshahi Science and Technology University
vii) Southeast University
viii) University of Liberal Arts Bangladesh
ix) Varendra University

After selecting universities, the study selects 10 percent departments from each sampled university by using random number table. Selecting departments, undergraduate students of each department are arrayed by ascending order (first year to fourth year). In the next step, 5 percent students are selected using random number table for the study. In this stage, the survey questionnaire was sent to 426 students (5 percent of total students, 8311). However, 417 students successfully filled up the questionnaire and returned to the researcher. By this way, this study collects data from 417 students from 13 universities of the country. This size of sample is good enough as a sample size between 200 and 500 is often good enough (Israel, 2012). The details procedure of selecting sample is presented in ANNEX 7: Table 1 to 4.

Besides collecting data from students, this study also collects data from library professionals from the selected 13 universities. Two library professionals from each university are selected purposively. The rationale behind selecting two library professionals from each university is that all library professionals were not fully aware of the initiatives and activities of the respective university libraries, and were not well trained and experienced about information literacy. That is why, this study first met the head of each library and the two library professionals are selected as per the instructions of the head of each library. By this way, data are collected from 26 library professionals from the study area.

For collecting data, a well-structured questionnaire is used. Before finalizing the questionnaire, a pilot survey is carried out. At the time of doing pilot survey, some pitfalls are detected and they are corrected by this time and finalize the questionnaire. Questionnaire method is used to collect data from the students while questionnaire, observation, open discussion, and interview method are used to collect data from library professionals. The whole data of this study are collected from March to October, 2019. University wise sampling distribution is presented in Table 3.4.

Table 3.4: Sampling Framework of the Study

Category of University	Name of University	Population	Sample Drawn	Data Collected
Public	University of Dhaka	3644	185	180
	University of Rajshahi	1564	80	80
	Mawlana Bhashani Science and Technology University	545	28	28
	Hajee Mohammad Danesh Science and Technology University	564	29	26
Sub-Total		**6317**	**322**	**314**
Private	City University	112	6	6
	Daffodil International University	505	26	25
	East West University	240	12.00	12
	Khwaja Yunus Ali University	210	11.00	11
	Pundra University of Science and Technology	168	9.00	9
	Rajshahi Science and Technology University	108	6.00	6
	Southeast University	220	11.00	11
	University of Liberal Arts Bangladesh	230	12.00	12
	Varendra University	201	11.00	11
Sub-Total		**1994**	**104**	**103**
Total		**8311**	**426**	**417**

3.6 Description of the Study Area

Bangladesh is a developing country which became independent in 1971 from Pakistan. Before independence, this territory was ruled by many rulers, namely, Pala, Sen, Mughals, Nawab, British and Pakistan. The concept of university in the territory, now in Bangladesh, was developed in Pala regime situated at Paharpur under

Badalgachi Upazila of Naogaon district which is now known as Sompur Mahavihara. The second and the famous Pala emperor Dharma Pala founded this Buddhist Monestery (the institution of Buddhist scholars) in 8th Century AD (Dutt, 1988). The present form of university was founded in British period. For the first time in 1921, University of Dhaka founded in the present Bangladesh (UGC). Beyond the British period, 6 universities were founded in present Bangladesh in the Pakistan period. The rest universities were founded after the independence of Bangladesh. Till the time of data collection, October 2018, there were 40 public universities and 88 private universities were academically running in Bangladesh (UGC). This study has been carried out taking sample of 4 public universities and 9 private universities of Bangladesh. The brief description of those sampled universities is presented below.

Firstly the description of public universities is presented by turns.

i. **University of Dhaka:** University of Dhaka is the most ancient university of Bangladesh which was founded in 1921 at the time of British colonial rule. It is known as DU as abbreviated form. This university is situated at the capital of Bangladesh, Dhaka. The area of this university is 275.083 acres. This university is a general university which admits undergraduate students and produces graduates and post-graduates. Moreover, this university offers higher degrees like M.Phil and PhD. The university has 13 faculties and 83 departments which are currently producing graduates and post-graduates along with 12 institutes for research and higher studies and 56 Research Bureaus and Centres. Currently, the university has 37018 students, who are studying in graduation, post-graduation, M.Phil and PhD level (DU Website).

ii. **University of Rajshahi:** University of Rajshahi is the second largest university of Bangladesh which was founded in 1953 at the time of Pakistani rule. It is known as RU as abbreviated form. This university is situated at Rajshahi, the education city of Bangladesh, besides the river Padma. The area of this university is 753 acres. This university is a general university which admits undergraduate students and produces graduates and post-graduates. Moreover, this university offers higher degrees like M.Phil and PhD. The university has 9 faculties and 52 departments which are currently producing

graduates and post-graduates. Besides, the university has 6 institutes for research and higher studies. Currently, the university has 24000 students in graduation, post-graduation, M.Phil and PhD level (RU Website).

iii. **Mawlana Bhashani Science and Technology University:** Mawlana Bhashani Science and Technology University is a Science and Technology specialized university which was founded in 1999. The university is known as MBSTU as abbreviated form. This university is named after the name of the valiant struggler of independence of Bangladesh Majlum Jananeta Mawlana Abdul Hamid Khan Bhashani. It is situated at Tangail, a historical district of Bangladesh, and the area of this university is about 175 acres. The university has 6 faculties and 18 departments. Every year this university admits undergraduate students and produces graduate and post-graduates. Currently, the university has 2000 students, who are studying in graduation, and post-graduation level (MBSTU Website).

iv. **Hajee Mohammad Danesh Science and Technology University:** Haji Mohammad Danesh Science and Technology University is a Science and Technology specialized university which was founded in 1999. The university is known as HMDSTU as abbreviated form. This university is named after the name of the philanthropist, Hajee Mohammad Danesh. It is situated at Dinajpur, the northern district of Bangladesh, and the area of this university is about 135 acres. The university has 8 faculties and 45 departments. Every year this university admits undergraduate students and produces graduate and post-graduates. Currently, the university has 11000 students, who are studying in graduation, and post-graduation level (HMDSTU Website).

The short description of the sampled private universities is stated below by turns.

i. **City University:** City University was founded in 2002 which is known as CU as abbreviated form. This university is situated at Dhaka, the capital of Bangladesh. This university is a general university which admits undergraduate students and produces graduates and post-graduates. The

university has 4 faculties and 10 departments which are currently producing graduates and post-graduates (CU Website).

ii. **Daffodil International University:** Daffodil International University was founded in 2002 which is DIU as abbreviated form. This university is situated at Dhaka, the capital of Bangladesh. The area of this university is 100 acres approximately. This university is a general university which admits undergraduate students and produces graduates and post-graduates. The university has 5 faculties and 25 departments which are currently producing graduates and post-graduates. Besides, the university has 4 institutes for research and higher studies (DIU Website).

iii. **East West University:** East West University is one of the reputed private universities of Bangladesh which was founded in 1996. It is known as EWU as abbreviated form. This university is situated at Dhaka. This university is a general university which admits undergraduate students and produces graduates and post-graduates. The university has 3 faculties and 15 departments which are currently producing graduates and post-graduates (EWU Website).

iv. **Khwaja Yunus Ali University:** Khwaja Yunus Ali University is one of the reputed private universities of Bangladesh which was founded in 2010 and incepted in 2012. It is known as KYAU as abbreviated form. This university is situated at Sirajganj. This university is a general university which admits undergraduate students and produces graduates and post-graduates. The university has 6 schools and 12 departments which are currently producing graduates and post-graduates (KYAU Website).

v. **Pundra University of Science and Technology:** Pundra University of Science and Technology is a private university of Bangladesh which was founded in 2002. It is known as PUST as abbreviated form. This university is situated at the district of Bogura, Bangladesh. This university is a science and technology specialized university which admits undergraduate students and produces graduates and post-graduates. The university has 3 faculties and 9

departments which are currently producing graduates and post-graduates (PUST Website).

vi. **Rajshahi Science and Technology University:** Rajshahi Science and Technology University is one of the newly founded private universities of Bangladesh which was founded in 2013. It is known as RSTU as abbreviated form. This university is situated at the district of Natore, Bangladesh. This university is a science and technology specialized university which admits undergraduate students and produces graduates and post-graduates. The university has 3 schools and 10 departments which are currently producing graduates and post-graduates (RSTU Website).

vii. **Southeast University:** Southeast University is one of the reputed private universities of Bangladesh which was founded in 2002. It is known as SEU as abbreviated form. The area of this university is 56,700 square feet. This university is situated at Dhaka. This university is a general university which admits undergraduate students and produces graduates and post-graduates. The university has 3 faculties and 12 departments which are currently producing graduates and post-graduates (SEU Website).

viii. **University of Liberal Arts Bangladesh:** University of Liberal Arts Bangladesh is one of the reputed private universities of Bangladesh which was initiated in 2002 and finally launched in 2004. It is known as ULAB as abbreviated form. This university is situated at Dhaka. This university is a general university which admits undergraduate students and produces graduates and post-graduates. The university has 4 schools and 6 departments which are currently producing graduates and post-graduates (ULAB Website).

ix. **Varendra University:** Varendra University is one of the reputed private universities of Bangladesh which was founded in 2012. It is known as VU as abbreviated form. The area of this university is 18 acres. This university is situated at the district of Rajshahi, Bangladesh. This university is a general university which admits undergraduate students and produces graduates and

post-graduates. The university has 3 faculties and 12 departments which are currently producing graduates and post-graduates (VU Website).

3.7 Presentation of Results

Firstly, all the data collected from field are sorted, coded and edited carefully for correcting any kind of biasness and inconsistency in data so that the error can be minimized. After proper editing and coding data, the demographic and information literacy related features of students and library professionals are analyzed using various statistical tools and the estimated results are presented in both graphical and tabular form. Statistical software like MS Office 2010, SPSS 23, and Stata 14.1 are used for data analysis. Regression results are also presented in tabular form comparing the coefficient values along with their significance level. Moreover, coefficient of determination, t-statistic, and F-statistic are reported in the case of linear regression model. Finally, the explanation and interpretation of estimated results are presented carefully.

3.8 Conclusion

From this chapter, it is found that several methods and techniques are used in achieving the objectives of the study. For instance, Information Literacy Skill Index (ILSI) is used to achieve the second objective of this study, to measure the level of students' information literacy skill. On the other hand, Role of Library Index (RLI) is used to achieve the third objective of this study, to measure the level of university library role or the services provided by the university library. After being informed with the level of students' information literacy skill and role of library, this study applies a linear regression model estimated by OLS method to achieve the fourth specific objective of the study, to examine the impact of role of university library on students' information literacy skill. Besides, this study applies Kendall's Coefficient of Concordance test to identify the major constraints of achieving students' information literacy skill for achieving the fifth specific objective of the study. In addition, the technique of selecting study area, sample, and the description of collected data are presented in this chapter. Stratified sampling technique is used in this study. Following this sampling technique, this study finally collected data from

417 students, besides, 26 library professionals are selected purposively from sampled universities. This chapter also emanates the way of presenting estimated results.

Using the methods presented in this chapter, data are analyzed and the estimated results are presented in the following chapters.

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CHAPTER FOUR   **DEMOGRAPHIC AND INFORMATION LITERACY RELATED FEATURES OF STUDENTS AND LIBRARY PROFESSIONALS**

CHAPTER FOUR

DEMOGRAPHIC AND INFORMATION LITERACY RELATED FEATURES OF STUDENTS AND LIBRARY PROFESSIONALS

4.1 Introduction

This chapter is mainly concerned with the analysis of students' and library professionals' demographic and information literacy related features. Besides, this chapter describes the basic statistical analysis of the level of students' information literacy skill and the role of university library. In analyzing students' and library professionals' demographic and information literacy related features, some statistical tools: frequency, percentage, mean and standard deviation are used. The analyzed data are presented in graphical and tabular forms. In addition, statistical techniques such as two sample t-test, chi-square test and one-way ANOVA test are applied to explain the impact of various demographic and information literacy related factors on students' information literacy skill.

This chapter is organized into five sections. Section 4.2 discusses a brief description of collected data. In Section 4.3, the students' demographic and information literacy related features are described. Besides, the library professionals' demographic and information literacy features are described in Section 4.4. Finally, concluding notes are presented.

4.2 A Brief Description of Major Variables

In carrying out this study, the researcher collects data from 417 students and 26 library professionals from 4 public universities and 9 private universities of Bangladesh. Collected data are edited, sorted, coded and then analyzed to portray the relevant features of respondents. These features of each respondent are not same but significantly vary from student to student, and university to university. Variables included in the linear regression model are analyzed with descriptive statistics, and the findings are shown in the following table. This analysis reflects the description of

collected data for achieving the fourth objective of this study following Section 3.3.3 of the methodology of the study.

Table 4.1: A Brief Description of Data of Major Variables

Variables	Minimum	Maximum	Mean	Std. Dev.
Age	17.00	26.00	21.54	2.00
Gender	0.00	1.00	0.80	0.40
Discipline of study	0.00	1.00	0.07	0.25
Years of study	1.00	4.00	2.55	1.23
Level of computer performance	1.00	4.00	2.51	0.98
Level of Internet using skill	1.00	5.00	2.35	0.97
Duration of library visit	0.00	5.00	2.45	1.54
Participation in any programs	0.00	1.00	0.28	0.45
Role of library	0.05	1.00	0.56	0.18
Information literacy skill	0.03	1.00	0.65	0.16

Source: Field survey, 2019

Table 4.1 shows the minimum, maximum, mean and standard deviation of all the variables considered in the linear regression model. From this table, it is found that the mean age of the students is 21.54 years while the mean of gender reveals that most of the students are male in the study area. On the other hand, it is found that the mean level of students' computer performance and Internet using skill are 2.55 and 2.35, respectively, which reflects the average performance. It is also found that the mean duration of library visit of the students is 2.45 hours per week. Table 4.1 also reveals that very few students participate in any program related to information literacy skill enhancement which is represented by the lower mean value, 0.28. In addition, it is found that the mean level of library role is 0.56 while the mean level of students' information literacy skill is 0.65.

4.3 Demographic and Information Literacy Related Features of Students

The demographic and information literacy related features of all students are not same in the study area, rather, different students hold different characteristics. The

demographic and information literacy related features of students are described in this section. The objective of this section is to analyze the basic statistics of students' information literacy skill and the level of the role of university library which achieves the first objective of this study.

4.3.1 Age of the Students

The age of the students is an important factor which has significant influence on information literacy skill. Because, relatively more junior students cannot utilize his or her eagerness, dedication, consciousness and motivation towards adopting policies to gather and utilize information to enhance the information literacy skill. On the other hand, relatively more senior students can do this easily. The distribution of students according to their age is shown in Table 4.2.

Table 4.2: Distribution of Students by Age

Age Categories (Years)	Frequency	Percentage
17 to 19 Years	72	17.27
20 to 22 Years	199	47.72
23 to 25 Years	142	34.05
26 Years and above	4	0.96
Total	**417**	**100**

Source: Field survey, 2019

Table 4.2 reveals that most of the students belonged to the age group 20 to 22 years of old which is 199 students (47.72 percent) out of 417 students. On the other hand, about 17.27 percent students belonged to the age group 17 to 19 years. From the above analysis, it is also found that very few of the students belonged to 26 years and above and it is 0.96 percent of total. In a word, this analysis indicates that majority of the undergraduate students belonged to the age group of 20 to 22 years.

Among all the students, students who are highly aged have more possibility to be skilled in information literacy skill. This argument is examined by one-way ANOVA test. The result of one-way ANOVA test presents that there is a significant difference

in different age categories in term of the level of students' information literacy skill (Prob. > F = 0.000) is provided in ANNEX 2: Table 1 and 2.

4.3.2 Gender of the Students

Gender is also an important variable which significantly contributes to the enhancement of students' information literacy skill. In this regard, gender differs in the context of Bangladesh, i.e. female students are till now behind than male students in moving everywhere at any time for gathering knowledge. However, the distribution of students by gender is shown in Figure 4.1.

Figure 4.1: Distribution of Students by Gender
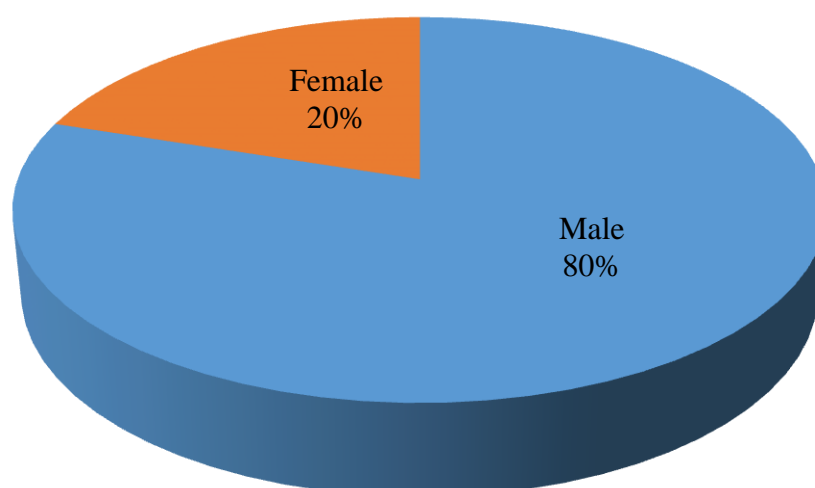
Source: Field survey, 2019

Figure 4.1 indicates that 80 percent students are male while only 20 percent students are female in the study area.

4.3.3 Distribution of Students by Study Year

Since this study is carried out considering only undergraduate students at the university level, here the study year are divided into four categories such as first, second, third and fourth year. Study year has a significant influence on the

enhancement of students' information literacy skill. The distribution of students by the study year is shown in the following figure.

Figure 4.2: Distribution of Students by Study Year
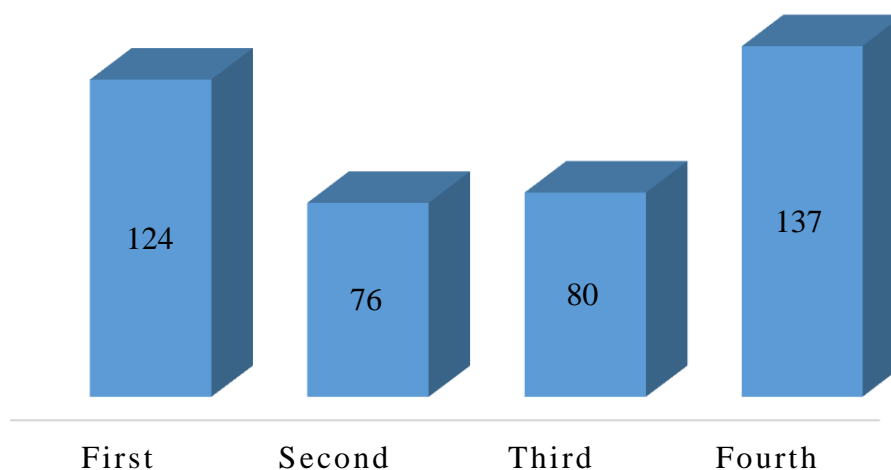
Source: Field survey, 2019

Figure 4.2 indicates that most of the students (137 out of 417 students) read in fourth year while the second highest category is first year (124 students). From the analysis, it is also found that the lowest number of students read in second year which is 76 students.

Among the students, students who read in higher class have the more possibility to be skilled in information literacy. This argument is examined by the one-way ANOVA test. The result of one-way ANOVA test presents that there is a significant difference among four categories of years of study in term of the level of students' information literacy skill (Prob. > F = 0.013) is provided in ANNEX 2: Table 3 and 4.

4.3.4 Distribution of Students by Discipline of Study

Discipline of study of the students is an important factor which has a notable influence in information literacy skill. In this study on the basis of discipline of study, students have been categorized into two parts: first, the students who read in the Department of Information Science and Library Management, and, second, the

students who read in other departments. The distribution of students in terms of discipline of study is portrayed in the following figure.

Figure 4.3: Distribution of Students by Discipline of Study
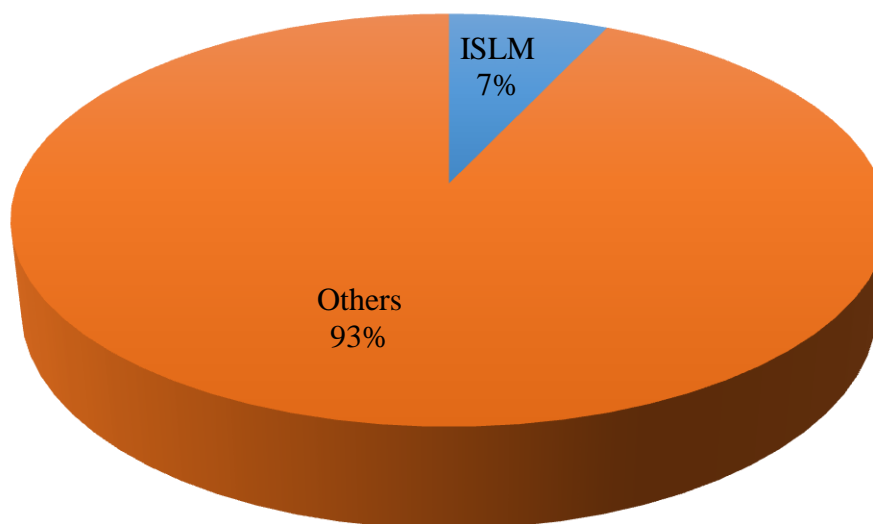
Source: Field survey, 2019

Figure 4.3 shows that only 7 percent students read in the Department of Information Science and Library Management (ISLM) while the majority of the students (93 percent) read in other departments.

Students who read in the Department of Information Science and Library Management have the more probability to be skilled in information literacy. This statement is tested with two sample t-test. The two sample t-test reveals that there is a significant difference between the discipline of study (Department of Information Science and Library Management and other departments) and the level of students' information literacy skill (Prob. > F = 0.10) mentioned in ANNEX 1: Table 1 and 2.

4.3.5 Distribution of Students by the Status of Hearing the Term IL

Although most of the students belong to Information Literacy (IL) intrinsically, everyone is not familiar with this term. The distribution of students by the status of hearing the term 'information literacy' is illustrated in the following table.

Table 4.3: Distribution of Students by Status of Hearing the Term IL

Categories	Frequency	Percentage
Yes	371	89
No	46	11
Total	**417**	**100**

Source: Field survey, 2019

Table 4.3 represents that majority of the students heard the term 'information literacy'. From the analysis, it is found that 89 percent of the students hear the term information literacy while only 11 percent of the students didn't hear the term ever before.

4.3.6 Students' Perception of the Definition of Information Literacy

After asking for the hearing status of the term information literacy, students were asked about the perception on the definition of information literacy from the given five distinct definitions. From those given definitions with don't know, they selected one which they preferred most. The distribution of students by perception of the definition of information literacy is presented in Table 4.4.

Table 4.4: Students' Perception of the Definition of Information Literacy

Definition	Response	Rank
The ability to identify, locate, apply, and evaluate information to meet the information need	277	1
The ability to use information effectively, regardless of format	140	2
The ability to apply information critically and ethically	122	3
The ability to identify the need for information	96	4
The ability to determine the meet of information need adequately	77	5
Don't Know	46	6

Source: Field survey, 2019

Table 4.4 indicates that majority of the students (277 out of 417 students) perceived "the ability to identify, locate, apply, and evaluate information to meet the information need" as the definition of information literacy. On the other hand, "the ability to determine the meet of information need adequately" is found as the lowest one definition of information literacy by the students' perception. Contrarily, 46 students reported that they did not know the definition of information literacy.

4.3.7 Distribution of Students by Using of Computer

Besides asking about the students' perception of the definition of information literacy, students were asked about their computer use. In this regard, students were asked about their computer using status, frequency of using and the level of performance in Microsoft Office in current academic year. The analyzed result is presented in the following table.

Table 4.5: Distribution of Students by Using of Computer

Variable	Indicators	Frequency	Percentage
Use of Computer	Yes	352	84.41
	No	65	15.59
Frequency of Using Computer	Everyday	129	30.94
	Sometimes	130	31.18
	Once a Week	25	6.00
	Once a Month	18	4.32
	Occasionally	50	11.99
	Never	65	15.59
Level of Computer Performance	Advanced	65	15.59
	Intermediate	157	37.65
	Beginner	113	27.10
	Poor	82	19.66

Source: Field survey, 2019

Table 4.5 reveals that among 417 students, 352 students used computer while only 65 students didn't use computer in current academic year. In addition, it is also found that most of the students (31.18 percent) used computer sometimes and the second highest frequency of using computer by the students is everyday. From the above table, it is also found that majority of the students (37.65 percent) had the

Intermediate level of performance in computer (Microsoft Office) while only 15.59 percent students had the advanced level of performance in Microsoft Office.

Among all the students, students who have the higher level of computer performance (Advanced Level) have more possibility to be skilled in information literacy. This argument is examined by one-way ANOVA test. The result of one-way ANOVA test presents that there is a significant difference in different levels of computer performance (Poor, Beginner, Intermediate, Advanced) in term of the level of students' information literacy skill (Prob. $> F = 0.000$) is provided in ANNEX 2: Table 5 and 6.

4.3.8 Distribution of Students by Using of Internet

Like using computer, students were asked about their Internet using status, frequency of using and the level of Internet using skill in current academic year. The results are analyzed through SPSS 23 and presented in the following table.

Table 4.6: Distribution of Students by Using of Internet

Variable	Indicators	Frequency	Percentage
Uses of Internet	Yes	407	97.6
	No	10	2.4
Frequency of Using Internet	Everyday	316	75.78
	Sometimes	71	17.03
	Once a Week	7	1.68
	Once a Month	1	0.24
	Occasionally	12	2.88
	Never	10	2.40
Level of Internet Using Skill	Advanced	6	1.44
	Higher	32	7.67
	Moderate	162	38.85
	Lower	121	29.02
	Poor	96	23.02

Source: Field survey, 2019

From the analysis, an interesting finding is found that about 97.6 percent students used Internet while only 2.4 percent students did not use Internet in current academic year. This scenario reveals that students are, in general, quite familiar to Internet.

Besides, an interesting result is found that almost all the students (75.78 percent) used Internet everyday while only 1 student use once a month. In addition, the level of using Internet of the majority students (38.85 percent) was moderate. Contrarily, only 23.02 percent students had the poor level of Internet using skill.

Among all the students, students who have the advanced level of Internet using skill have the more possibility to be skilled in information literacy skill. This argument is examined by one-way ANOVA test. The result of one-way ANOVA test presents that there is a significant difference in different levels of Internet using skill (Poor, Lower, Moderate, Higher, and Advanced) in term of the level of students' information literacy skill (Prob. $> F = 0.000$) is provided in ANNEX 2: Table 7 and 8.

4.3.9 Purpose of Using Internet by the Students

Besides asking for Internet using status and using frequency, they were also asked for purpose of using Internet. Students use Internet for different purposes like academic, Email, social media, part of curriculum, games, movies and songs, job searching, freelancing and daily life works. The distribution of students by purpose of using Internet in current academic year is presented in Table 4.7.

Table 4.7: Purpose of Using Internet by the Students

Categories	1	2	3	4	∑W*N	RII	Rank
Social media	34	66	47	270	1387	0.83	1
Academic	19	143	123	132	1202	0.72	2
Movies and songs	36	155	103	123	1147	0.69	3
Daily life works	54	136	89	138	1145	0.69	4
Email	54	174	77	112	1081	0.65	5
Part of curriculum	75	165	76	101	1037	0.62	6
Job searching	109	149	84	75	959	0.57	7
Games	144	150	51	72	885	0.53	8
Freelancing	266	76	39	36	679	0.41	9

Note: 1 = Never, 2 = Sometimes, 3 = Frequently, and 4 = Always

Source: Field survey, 2019

Table 4.7 emanates that majority of the students (270 students) always used Internet for social media purpose while majority of the students never used Internet in freelancing purpose. On the other hand, lowest number of students (36 students) always used Internet for freelancing purpose while lowest number of students never used Internet for academic purpose. From this analysis, it is found that use of Internet for academic purpose by the students was quite average while it was highest in the case of social media use.

4.3.10 Evaluation of Students' Internet Using Skill

It is important to know about the evaluation of Internet using skill of the students besides knowing about the status of using Internet by the students. Students were given four distinct statements regarding evaluation of Internet using skill and they have decided by true, false, and don't know option. The distribution of students by the evaluation of Internet using skill is presented in the following table.

Table 4.8: Evaluation of Students' Internet Using Skill

Evaluating sectors	True	False	Don't Know
The information on the websites of museums, recognized research organizations, scientific societies and government are the most reliable	309	98	10
Most of the information on the Internet is peer reviewed and so can be used as a reference in writing	258	149	10
One should only use information on the Web that is verified by a recognized authority	252	154	11
The accuracy of the most of the information on the Internet is unchecked, and so should not be used without proper review	248	158	11

Source: Field survey, 2019

Majority of the students (309 students) perceived "the information on the websites of museums, recognized research organizations, scientific societies and government are the most reliable" as true among four statements. On the other hand, most of the students (158 students) perceived "the accuracy of the most of the information on the Internet is unchecked, and so should not be used without proper review" as the false statement. From the above table, it is found that students had no specific direction on

the perception of evaluating Internet using skill, rather, they had the mixed level of perception.

4.3.11 Distribution of Students by Using of Electronic Information

For developing the level of students' information literacy skill, uses of electronic information play a vital role. Therefore, it is quite important to know about the using status of electronic information by the students. Figure 4.4 depicts the distribution of students' electronoic information using status.

Figure 4.4: Distribution of Students by Using of Electronic Information
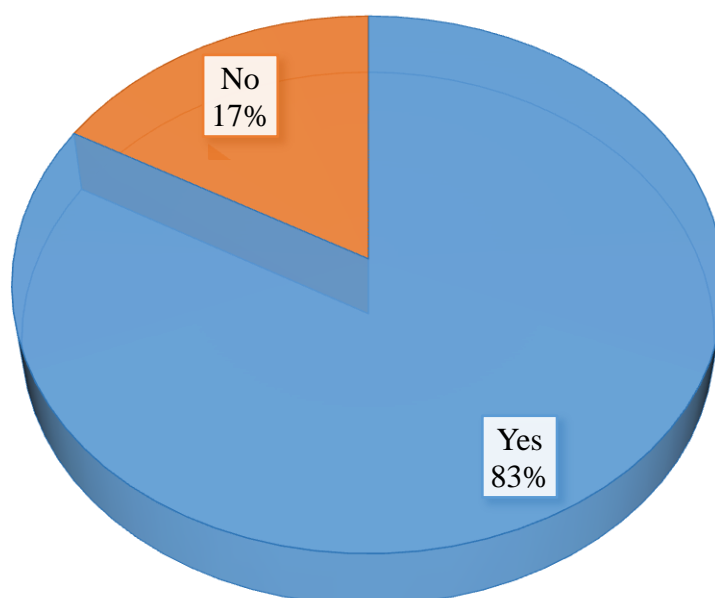
Source: Field survey, 2019

Figure 4.4 indicates that majority of the students used electronic information which is 83 percent of the total students. Contrarily, only 17 percent of the students did not use electronic information.

4.3.12 Distribution of Students by Ideas on Copyright

Students were asked whether they have ideas on copyright or not and they replied by Yes or No. The distribution of students by the ideas on copyright is presented in the following table.

Table 4.9: Distribution of Students by Ideas on Copyright

Categories	Frequency	Percentage
Yes	337	80.8
No	80	19.2
Total	**417**	**100**

Source: Field survey, 2019

Table 4.9 indicates an interesting finding that most of the students in the study area had ideas on copyright which is 80.8 percent of the total students. Contrarily, only 19.2 percent students had no ideas on copyright which emanates that they had a little bit skill in information literacy as ideas on copyright is an important factor in enhancing information literacy skill.

4.3.13 Distribution of Students by Ideas on Fair Use and Plagiarism

Like the ideas on copyright, it is also needed to know about the ideas on fair use and plagiarism of the students as it has notable influence on the enhancement of students' information literacy skill. The distribution of students by the ideas on fair use and plagiarism is presented in Table 4.10.

Table 4.10: Distribution of Students by Ideas on Fair Use and Plagiarism

Categories	Frequency	Percentage
Yes	308	73.86
No	109	26.14
Total	**417**	**100**

Source: Field survey, 2019

Table 4.10 reveals that most of the students in the study area had the ideas on fair use and plagiarism which is 73.86 percent of the total students. On the other hand, very few students had no ideas on fair use and plagiarism which was 26.14 percent of the total number of students in the study area.

4.3.14 Students' Perception on Fair Use and Plagiarism

It is quite important to know about the students' perception on fair use and plagiarism besides knowing the status of ideas on it. In this regard, students were given five statements and they marked tick if the statement is true, cross if the statement is false, star if they do not know the statement. The result is analyzed through frequency distribution and presented in the following table.

Table 4.11: Students' Perception on Fair Use and Plagiarism

Response	True	False	Don't know
Plagiarism means the copying other's writing and using it without reference	256	51	110
Plagiarism is the presentation of other's work as your own	218	89	110
Plagiarism is the using of other's audio/video/picture from the Internet without mentioning source	189	119	109
Fair use is the using of other's content for teaching, scholarship and research giving reference	186	120	111
Fair use refers to the reproduction of other's work for criticism and comment providing credit to the author	151	157	109

Source: Field survey, 2019

Table 4.11 reveals that most of the students (256 students out of 417 students) perceived "plagiarism means the copying other's writing and using it without reference" as the true idea on plagiarism. On the contrary, most of the students (119 students) falsely perceived "plagiarism is the using of other's audio/video/picture from the Internet without mentioning source" as the idea on plagiarism. Contrarily, majority of the students (110 students) did not know "plagiarism is the presentation of other's work as your own" as the definition of plagiarism. In addition, 186 students out of 417 perceived "fair use is the using of other's content for teaching, scholarship and research giving reference" as the ideas on fair use. Contrarily, 157 students falsely perceived "fair use refers to the reproduction of other's work for criticism and comment providing credit to the author" as the ideas on fair use. From this analysis, it

is found that students had no specific direction on the perception of fair use and plagiarism.

4.3.15 Distribution of Respondents by Status of Library Visit

Visiting library by the students has a crucial role on the enhancement of information literacy skill. Therefore, it is required to know about the status of visiting library by the students. The distribution of students by library visit in current academic year is presented in the following table.

Table 4.12: Distribution of Respondents by Status of Library Visit

Status of Visit	Frequency	Percentage
Yes	396	95
No	21	5
Total	**417**	**100**

Source: Field survey, 2019

Table 4.12 emanates that almost all the students visited university library in current academic year which is 95 percent of the total students. Contrarily, only 5 percent students did not visit university library in current academic year.

4.3.16 Distribution of Students by Frequency of Library Visit Per Week

Different students visit university library in different times for fulfilling their needs. The frequencies of visiting university library by the students are presented in Table 4.13.

From the Table 4.13, it is found that only 20.86 percent students always visited university library although majority of the students visited library sometimes which is 49.64 percent of the total. Contrarily, 5.04 percent students in the study area never visited library.

Table 4.13: Distribution of Students by Frequency of Library Visit Per Week

Frequency of Visit	Frequency	Percentage
Never	21	05.04
Sometimes	207	49.64
Frequently	102	24.46
Always	87	20.86
Total	417	100

Source: Field survey, 2019

4.3.17 Distribution of Students by Duration of Library Visit Per Week

Besides asking about the frequencies of library visit, students were also asked about the duration of library visit per week as it is quite important to know for ensuring the level of students' information literacy skill. Duration of visiting library per week is presented in Table 4.14.

Table 4.14: Distribution of Students by Duration of Library Visit Per Week

Duration	Frequency	Percentage
Never Visited	21	5.04
1 to 2 Hours	220	52.76
3 Hours and above	176	42.21
Total	**417**	**100**

Source: Field survey, 2019

Table 4.14 indicates that most of the students (220 students out of 417 students) visited university library by 1 to 2 hours per week which is 52.76 percent of the total students. On the other hand, 42.21 percent students visited library by 3 hours and above per week. This table also represents that very few students (5.04 percent of the total students) never visited library in their current academic year.

Among all the students, students who visit university library more frequently have the more possibility to be skilled in information literacy skill. This argument is examined by one-way ANOVA test. The result of one-way ANOVA test presents that there is a

significant difference in different frequencies of library visit (Never visited, 1 to 2 hours, and 3 hours and above) in term of the level of students' information literacy skill (Prob. > F = 0.000) is provided in ANNEX 2: Table 9 and 10.

4.3.18 Purposes of Library Visit

Students visit university library for many purposes. Henceforth, it is quite important to know about the main purposes of visiting library. In this regard, students were given some purposes and students rate each purpose through 4 point likert scale (Always = 4, Frequently = 3, Sometimes = 2 and Never = 1). Purposes of library visit by the students are measured through the Relative Importance Index and the estimated result presented in Table 4.15.

Table 4.15: Purposes of Library Visit

Purposes	1	2	3	4	∑W*N	RII	Rank
Reading text books	45	128	103	141	1174	0.70	1
Reading newspaper, magazine or literature	50	158	90	119	1112	0.67	2
Preparation for examination	70	127	98	122	1106	0.66	3
Education and research	74	150	108	85	1038	0.62	4
Borrowing and lending of books	96	145	110	66	980	0.59	5
Photocopying	152	139	70	56	864	0.52	6
Internet browsing	166	130	74	47	836	0.50	7

Note: Always = 4, Frequently = 3, Sometimes = 2 and Never = 1

Source: Field survey, 2019

Table 4.15 shows that majority of the students visited university library for reading text books which is highlighted by the highest value of the relative importance index (0.70) and rank 1. On the other hand, students visited university library for reading newspaper, magazine or literature as the second purpose. Among seven purposes, the last purpose for which students visit library was Internet browsing denoted by rank 7.

4.3.19 Sources of Information Used by the Students

Students use information from different sources to gather knowledge which helps them to for enhance their information literacy skill. Students were asked to give rate by 4 point likert scale (Always = 4, Frequently = 3, Sometimes = 2 and Never = 1) for each source. Sources of information used by the students is measured through Relative Importance Index and presented in the following table.

Table 4.16: Sources of Information Used by the Students

Sources of Information	1	2	3	4	∑W*N	RII	Rank
Book	34	64	106	213	1332	0.80	1
Internet	78	106	75	158	1147	0.69	2
Newspaper	59	134	102	122	1121	0.67	3
Periodicals	107	157	98	55	935	0.56	4
e-resources	133	134	72	78	929	0.56	5
Magazine	112	181	61	63	909	0.54	6
Audio/Video	151	129	74	63	883	0.53	7
Abstract and Index	156	148	62	51	842	0.50	8
OPAC	226	90	53	48	757	0.45	9

Note: Always = 4, Frequently = 3, Sometimes = 2 and Never = 1

Source: Field survey, 2019

Table 4.16 reveals that majority of the students used books which is represented by the highest value of the relative importance index, 0.80, and the rank 1. On the other hand, students used Internet, newspaper, periodicals that are found as the second, third and fourth sources, respectively. Among nine sources, students used information very least from OPAC which is represented by the rank 9.

4.3.20 Book Searching Strategy Used by the Students

Students use different strategies in searching for books in the university library. Students were asked to give rate to each searching strategies by 4 point likert scale (Always = 4, Frequently = 3, Sometimes = 2 and Never = 1). Students' book

searching strategies are measured through Relative Importance Index and the result is presented in Table 4.17.

Table 4.17: Book Searching Strategy Used by the Students

Searching Strategies	1	2	3	4	∑W*N	RII	Rank
By Author	45	86	98	188	1263	0.76	1
By Title	56	98	109	154	1195	0.72	2
By Subject	55	103	117	142	1180	0.71	3
By Publisher	124	128	90	75	950	0.57	4
By Call Number	155	112	87	63	892	0.53	5
By ISBN Number	161	120	86	50	859	0.51	6

Note: Always = 4, Frequently = 3, Sometimes = 2 and Never = 1

Source: Field survey, 2019

Table 4.17 reveals that majority of the students used "by author" as the top book searching strategy which is represented by the highest value of the Relative Importance Index, 0.76, and the rank 1. On the other hand, students used "by title", "by subject", and "by publisher" as the second, third and fourth book searching strategy, respectively. Among six strategies, students used "by ISBN number" as the last book searching strategy which is represented by the rank 6.

4.3.21 Techniques Used in Search for Online Information

Students use different techniques in searching for online information not only in the university library but also in e-library and other websites. It is important to know about the search techniques of the students. In this regard, students were asked to give rate to each search techniques by 4 point likert scale (Always = 4, Frequently = 3, Sometimes = 2 and Never = 1). Students' online information search techniques are measured through Relative Importance Index and the result is presented in Table 4.18.

Table 4.18: Techniques Used in Search for Online Information

Techniques	4	3	2	1	∑W*N	RII	Rank
Simple keywords	211	76	86	44	1288	0.77	1
Boolean operators	46	80	129	162	844	0.52	2
Field search	52	67	153	145	860	0.51	3

Note: Always = 4, Frequently = 3, Sometimes = 2 and Never = 1

Source: Field survey, 2019

Table 4.18 reveals that majority of the students used "simple keywords" as the top online information search technique which is represented by the highest value of the relative importance index, 0.77, and the rank 1. On the other hand, students used "Boolean operator" as the second online information search technique. Among three techniques, students used "Field search" as the third online information search technique which is represented by the rank 3.

4.3.22 Methods Used in Locating Information

Students use different methods in locating information not only in the university library but also in e-library and other websites. It is required to know about the methods used in locating information by the students. In this regard, students were asked to give rate to each method by 4 point likert scale (Always = 4, Frequently = 3, Sometimes = 2 and Never = 1). Methods used in locating information by the students are measured through relative importance index and the result is presented in Table 4.19.

Table 4.19: Methods Used in Locating Information

Methods	1	2	3	4	∑W*N	RII	Rank
Self-guided	61	91	102	163	1201	0.72	1
With the assistance of library staff	69	105	121	122	1130	0.68	2
With the assistance of friends	78	149	112	78	1024	0.61	3

Note: Always = 4, Frequently = 3, Sometimes = 2 and Never = 1

Source: Field survey,2019

Table 4.19 reveals that the majority of the students located information by "self-guided" which is represented by the highest value of the Relative Importance Index, 0.72, and the rank 1. On the other hand, students used "with the assistance of library staff" as the second method for locating information. Among three methods, students used "with the assistance of friends" as the last method for locating information which is represented by the rank 3.

4.3.23 Status of Participation in Programs on Information Literacy

University library or the individual department generally arranges different types of programs which contribute to the enhancement of students' information literacy skill. Therefore, it is quite important to know about the status of students' participation in these programs. The distribution of students by the participation status in information literacy skill development programs in current academic year are shown in Figure 4.5.

Figure 4.5: Status of Participation in Programs on Information Literacy
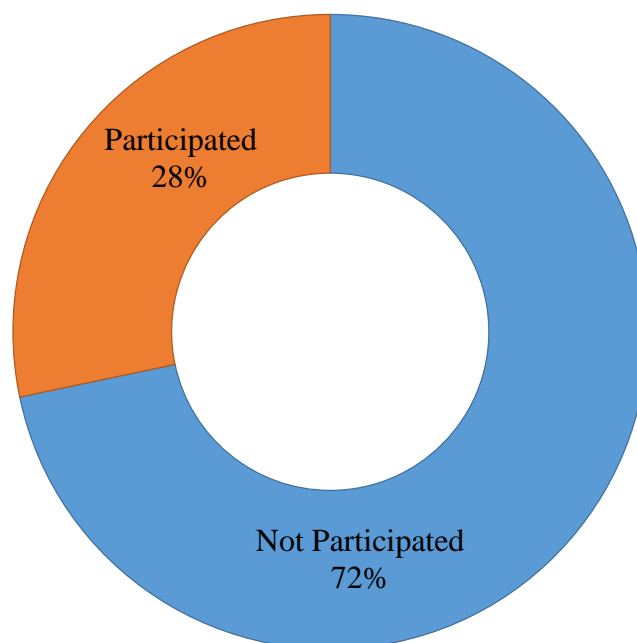
Source: Field survey, 2019

Figure 4.5 depicts that majority of the students (72 percent) did not participate in these programs. Contrarily, only 28 percent students participated in different

programs related to information literacy skill development. This finding reveals that either university in the study area arranges such programs very few or the students are not willing to participate.

Students who participated in programs have the more probability to be skilled in information literacy skill. This statement is investigated with two sample t-test. A two sample t-test reveals that there is a significant difference between participated and not participated in terms of the level of students' information literacy skill (Prob. > F = 0.00) mentioned in ANNEX 1: Table 3 and 4.

4.3.24 Duration of Program

Besides knowing about the status of participating in the programs, it is also important to know about the duration of programs students participated for enhancing their information literacy skill. Program duration-wise distributions of students are presented in the following table.

Table 4.20: Duration of Program

Duration of Program (Days)	Frequency	Percentage
Not participated	299	71.70
One day	31	7.43
Two days	48	11.51
Three Days	25	6.00
4 Days and Above	14	3.36
Total	**417**	**100**

Source: Field survey, 2019

From the above table, it is found that almost all the students did not participate in the programs, which is 71.70 percent of the total students. The rest 28.30 percent students participated in these information literacy skill development programs. Among the students of participated group, majority of the students (48 students out of 118 students) participated in program with the duration of two days. On the other hand, 31

students participated in only one day long program and 14 students participated in 4 days and above long programs.

4.3.25 Types of Program Students Participated

Although most of the students (82 percent) did not participate in programs, the rest of the students participated in different types of program for enhancing their information literacy skill. In Table 4.21, students' distribution by types of program participated is shown.

Table 4.21: Types of Program Students Participated

Types of Program	Frequency	Percentage
Not Participated	299	71.70
Fresher's Orientation	13	3.12
Educational Program	12	2.88
Introduction to Library Use	14	3.36
Information Literacy Class	17	4.08
Skill Development Workshop	20	4.80
Seminar on Library Services	42	10.07
Total	**417**	**100**

Source: Field survey, 2019

Table 4.21 represents that among 118 students, who participated in different programs, most of the students (42 students) participated in seminar on library services. On the other hand, 20 students participated in skill development workshop while 17 students participated in information literacy class.

4.3.26 Status of Getting Benefits from Programs

Getting benefits from these programs is more important than the number of participation. Therefore, it is also important to know about the status of getting benefits from these programs. Regarding this issue, students were asked to respond and they responded by yes or no. The distribution of students is shown in Table 4.22.

Table 4.22: Status of Getting Benefits from Programs

Categories	Frequency	Percentage
Not Participated	299	71.70
Yes	95	22.78
No	23	5.52
Total	**417**	**100**

Source: Field survey, 2019

From the Table 4.22, it is found that 299 students did not participate in any of the programs but the rest 118 students participated. Among the participated students, 95 students responded that they got benefits from these programs while 23 students responded that they did not get any benefits from these programs.

4.3.27 Status of Arranging Programs Regularly

Arranging such types of program for once will not provide any good outcome. To get sustainable outcomes, programs should be arranged regularly. In this study, students were also asked for replying regarding this issue by yes or no. The distribution of students by the status of arranging programs regularly is presented in the following table.

Table 4.23: Status of Arranging Programs Regularly

Categories	Frequency	Percentage
Not Participated	299	71.70
Yes	80	19.18
No	20	4.80
Don't Know	18	4.32
Total	**417**	**100**

Source: Field survey, 2019

Table 4.23 indicates that among 118 participated students, 80 students responded that university libraries or departments arranged these programs regularly. Contrarily, only 20 students responded that these programs were not arranged in their university

libraries or in departments regularly while 18 students did not know about the regularity of program arrangement.

4.3.28 Ways to Make Information Literacy More Understandable

Though every student follows the basic components and elements of information literacy, the term 'information literacy' is not equally familiar to each of the students. Therefore, university library should take initiatives regarding make information literacy more understandable. Students were asked to response about the ways to make information literacy more understandable and they responded by yes. According to the response, ways are estimated and ranked and finally presented in the following table.

Table 4.24: Ways to Make Information Literacy More Understandable

Ways	Response	Rank
Printed IL instructions	325	1
Integrating IL into course curriculum	301	2
Online IL instructional modules via university website	297	3
Online IL instructional modules via library website	293	4

Source: Field survey, 2019

Table 4.24 reveals that "printed information literacy instructions" as the prime way to make information literacy more understandable which is responded by 325 students and ranked by one. On the other hand, about 301 students responded "integrating IL into course curriculum" as the second, and "online IL instructional modules via library website" as the fourth way to make information literacy more understandable.

4.3.29 Services Needed to Enhance Information Literacy Skill

To enhance students' information literacy skill, services provided by the university libraries is quite useful. Students were asked to response about the services which may contribute to the enhancement of information literacy skill of the undergraduate students. The estimated result by response and rank is presented in Table 4.25.

Table 4.25: Services Needed to Enhance Information Literacy Skill

Name of Services	Response	Rank
Availability of computers	362	1
Online database	355	2
Use of electronic sources	345	3
Sufficient high speed Internet	342	4
Use of printed sources (library classification and catalog)	327	5
Specialized application software	305	6
Enough emailing facilities	288	7
Institutional repositories	261	8
CD-ROM database	229	9
OPAC	226	10

Source: Field survey, 2019

The above table indicates that among ten services "availability of computers" is the top service that is needed to be served by the universities. This is responded by 362 students and ranked by one. On the other hand, "online database" and "use of electronic sources" are the second and third services, respectively, that are needed to be facilitated by the university libraries. In addition, OPAC is the tenth ranked service which is responded by 226 students.

4.4 Demographic and Information Literacy Related Features of Library Professionals

The demographic and information literacy related features of library professionals are not same in the study area, rather, varies from library professional to library professional. The demographic and information literacy related features of library professionals are described from Section 4.4.1 to Section 4.4.17 which also reflects the first objective of the study. This analysis has been carried out for exploring the inherent characteristics of library professionals in the case of providing university library related services to the students which ultimately enhance the level of students' information literacy skill.

4.4.1 Age of the Library Professionals

Age is an important factor that affects the service quality of a library professional. Therefore, it is required to measure the age of the library professionals. Age of the library professionals is measured by years and the findings are presented in the following table.

Table 4.26: Distribution of Library Professionals by Age

Ranges of age	Frequency	Percentage
30 years and below	9	34.62
31 to 35 years	7	26.92
36 to 40 years	5	19.23
40 years and above	5	19.23
Total	**26**	**100**

Source: Field survey, 2019

Table 4.26 reveals that maximum library professionals were aged (30 years and below) which is 34.62 percent of the total. On the other hand, 26.92 percent library professionals were between 31 and 35 years of age. Similarly, 19.23 percent library professionals were 40 years and above.

4.4.2 Distribution of Library Professionals by Gender

Gender of the library professionals is also an important factor in enhancing the level of students' information literacy skill. The distribution of library professionals by gender is presented in the following table.

Table 4.27: Distribution of Library Professionals by Gender

Gender	Frequency	Percentage
Male	24	92.31
Female	2	7.69
Total	**26**	**100**

Source: Field survey, 2019

Table 4.27 reveals that majority of the library professionals were male which is 92.31 percent of the total library professionals. Contrarily, only 7.69 percent library professionals were female.

4.4.3 Distribution of Library Professionals by Education

Education of library professionals plays a crucial role in enhancing the level of their service providing quality. Higher educated library professionals provide high quality of services to the students which improve the quality of the students and enhance the level of information literacy skill. The distribution of library professionals by their education is presented in the following table.

Table 4.28: Distribution of Library Professionals by Education

Gender	Frequency	Percentage
Bachelor	4	15.38
Masters	22	84.62
Total	**26**	**100**

Source: Field survey, 2019

Table 4.28 represents that majority library professionals had post-graduation (Masters) level of education which was 84.62 percent of the total library professionals. On the other hand, only 15.38 percent library professionals had graduation (Bachelor) level of education.

4.4.4 Status of Training of Library Professionals

Training is an important characteristic of a library professional. If a library professional is trained, his or her service quality can be enhanced, and vice versa. The distribution of library professionals by their training status is presented in the following table.

Table 4.29: Status of Training of Library Professionals

Categories	Frequency	Percentage
Yes	21	80.8
No	5	19.2
Total	**26**	**100**

Source: Field survey, 2019

Table 4.29 shows that majority of the library professionals had received training either on library development or on information literacy skill development. From the above table, it is found that 80.8 percent library professionals had received training while only 19.2 percent library professionals did not receive training.

4.4.5 Status of Helping Students in Using Database

Students sometimes ask for help to library professionals about how to use database in the university library. Library professionals sometimes help students in using database and sometimes do not help. The distribution of library professionals by the status of helping students in using database is presented in the following table.

Table 4.30: Status of Helping Students in Using Database

Categories	Frequency	Percentage
Yes	19	73.1
No	7	26.9
Total	**26**	**100**

Source: Field survey, 2019

Table 4.30 shows that although majority of the library professionals (73.1 percent) helped students in using database of university library. Contrarily, few library professionals (26.9 percent) did not help in this regard.

4.4.6 Helping Students in Using Website

Students sometimes ask for help to library professionals about how to use website in the university library. Library professionals sometimes help students in using website and sometimes do not help. The distribution of library professionals by the status of helping students in using website is presented in the following table.

Table 4.31: Status of Helping Students in Using Website

Categories	Frequency	Percentage
Yes	20	76.9
No	6	23.1
Total	**26**	**100**

Source: Field survey, 2019

Table 4.31 shows that although majority of the library professionals (76.9 percent) helped students in using website of university library. On the other hand, few library professionals (23.1 percent) did not help in that case.

4.4.7 Status of Using Search Engine

Students sometimes ask for help to library professionals about how to use search engine in the university library. Library professionals sometimes help students in using database and sometimes do not help. The distribution of library professionals by the status of helping students in using search engine is presented in Table 4.32.

Table 4.32: Helping Students in Using Search Engine by Library Professionals

Categories	Frequency	Percentage
Yes	20	76.9
No	6	23.1
Total	**26**	**100**

Source: Field survey, 2019

Table 4.32 shows that although majority of the library professionals (76.9 percent) helped students in using search engine of university library, contrarily, few library professionals (23.1 percent) did not help.

4.4.8 Status of Helping Students in Learning Search Techniques

Students sometimes ask for help to Library Professionals (LP) about how to learn search technique in the university library. Library professionals sometimes help students in learning search technique and sometimes do not help. The distribution of library professionals by the status of helping students in learning search technique is presented in the following table.

Table 4.33: Helping Students in Learning Search Techniques by LP

Categories	Frequency	Percentage
Yes	19	73
No	7	27
Total	**26**	**100**

Source: Field survey, 2019

Table 4.33 shows that although majority library professionals (73 percent) helped students in learning search techniques while few library professionals (26 percent) did not help in that case.

4.4.9 Status of Arranging Orientation Program/Training/Workshop/Seminar

For enhancing the level of students' information skill, university library arranges orientation program/training/workshop/seminar. Library professionals were asked to know whether they arranged these programs in their universities or not. The distribution of library professionals by arranging orientation program/training/ workshop/seminar is presented in the following table.

Table 4.34: Status of Arranging Orientation Program/ Training/Workshop/ Seminar

Categories	Frequency	Percentage
Yes	18	69.2
No	8	30.8
Total	**26**	**100**

Source: Field survey, 2019

Maximum library professionals (69.2 percent) responded that they arranged orientation program/training/workshop/seminar in their university for enhancing the level of students' information literacy skill. Contrarily, some of the library professionals (30.8 percent) responded by no.

4.4.10 Status of Getting Benefits from Programs

Arranging orientation program/training/workshop/seminar is not the prime goal, rather, getting benefits by the students from these programs are more significant. Therefore, library professionals were asked for knowing about the status of getting benefits by the students from these programs. The response of library professionals regarding this issue is presented in the following table.

Table 4.35: Status of Getting Benefits from Programs

Categories	Frequency	Percentage
Yes	18	69.2
No	8	30.8
Total	**26**	**100**

Source: Field survey, 2019

Maximum library professionals (69.2 percent) responded that students got benefits from these programs which enhance the level of students' information literacy skill. Contrarily, 30.8 percent library professionals responded by no in this case.

4.4.11 Status of Regularity of Arranging Programs

Arranging orientation program/training/workshop/seminar is not the prime goal, rather, arranging these programs in regular basis are more important. Therefore, library professionals were asked for knowing the status of arranging these programs in regular basis. The response of library professionals is presented in the following table.

Table 4.36: Status of Regularity of Arranging Programs

Categories	Frequency	Percentage
Yes	18	69.2
No	8	30.8
Total	**26**	**100**

Source: Field survey, 2019

Maximum library professionals (69.2 percent) responded that they arranged these programs in regular basis which enhances the level of students' information literacy skill. Contrarily, 30.8 percent library professionals responded that university library was not regular in arranging such kind of programs.

4.4.12 Status of Arranging Informal Class

Arranging informal class is also an important factor for enhancing the level of students' information literacy skill. Therefore, library professionals were asked for knowing the status of arranging informal class in regular basis. The response of library professionals is presented in the following table.

Table 4.37: Status of Arranging Informal Class

Categories	Frequency	Percentage
Yes	10	38.5
No	16	61.5
Total	26	100

Source: Field survey, 2019

Maximum library professionals (61.5 percent) responded that they did not arrange informal class which enhances the level of students' information literacy skill. Contrarily, 38.5 percent library professionals responded that they arranged informal class in regular basis in their university.

4.4.13 Status of Faculty-Librarian Joint Collaboration

Collaboration between faculty and librarian is quite important for enhancing the level of students' information literacy skill. Thus, library professionals were asked to know the status of faculty-librarian collaboration in their universities. The findings are presented in the Table 4.38.

Table 4.38: Status of Faculty-Librarian Joint Collaboration

Categories	Frequency	Percentage
Yes	2	7.69
No	24	92.31
Total	**26**	**100**

Source: Field survey, 2019

Table 4.38 represents that only 2 library professionals (7.69 percent) reported that they collaborated with the faculty members, especially with the faculties of Information Science and Library Management. However, the depth of collaboration was not satisfactory with all other discipline's faculty member for developing their students' information literacy skill. Contrarily, majority library professionals (92.31 percent) reported that there was no faculty-librarian/library professionals' joint collaboration for enhancing the level of students' information literacy skill in their university library. However, there is general communication and relations, like, using of library resources, between librarian/library professionals and faculty members in the other universities which was assured from the open discussion with library professionals.

4.4.14 Contribution to any National Policy Making Regarding ILS Development

Contribution of a university library or library professionals in making national policy regarding information literacy skill development is quite important as it is directly related to the enhancement of the level of students' information literacy skill. Thus, library professionals were asked to know the status about the contribution of their university libraries or library professionals in making national policy regarding information literacy skill development. The findings are presented in the Table 4.39.

Table 4.39: Contribution to any National Policy Making Regarding ILS Development

Categories	Frequency	Percentage
Yes	2	7.69
No	24	92.31
Total	**26**	**100**

Source: Field survey, 2019

Table 4.39 reveals only 2 library professionals (7.69 percent) reported that they contributed to the making national policy regarding information literacy skill development for enhancing the level of students' information literacy skill by arranging international conference and seminars on information science and sustainable development. From these seminars and conferences, they disseminated numerous findings and policies which are published in national dailies and electronic Medias that may be attracted by the national policymakers.

Contrarily, majority library professionals (92.31 percent) reported that they did not contribute to the making national policy regarding information literacy skill development for enhancing the level of students' information literacy skill. However, faculty member of these universities do research on information science and suggests some policies which may attract to the policymakers and may be contribute to the national policy making partially.

4.4.15 Problems Faced in Enhancing Information Literacy Skill

Enhancing the level of students' information literacy skill is not an easy task. In doing so, some library professionals sometimes face different problems and some do not face. The distribution of library professionals on the basis of the response of facing problems in enhancing the level of students' information skill is presented in the following table.

Table 4.40: Problems Faced in Enhancing Information Literacy Skill

Categories	Frequency	Percentage
Yes	17	65.3
No	9	34.7
Total	**26**	**100**

Source: Field survey, 2019

Maximum library professionals (65.3 percent) responded that they faced problems in enhancing the level of students' information literacy skill. On the other hand, some portion of library professionals (34.7 percent) responded that they did not face any problems in enhancing the level of students' information literacy skill.

4.4.16 Types of Problems in Enhancing Information Literacy Skill

Library professionals face different types of problems at the time of providing services to the students for enhancing the level of their information literacy skill. These problems are ranked on the basis of mean measured by the rating given by the library professionals. The findings are presented in the following table.

Table 4.41 shows the types of problems in providing services to the students regarding enhancement of students' information literacy skill, which is perceived by the library professionals from given six statements. Among those problems, 'lack of good collaboration between administration and librarian' is the prime problem faced by the library professionals in providing services to the students which represented by highest mean, 3.26 and rank 1. In addition, 'lack of computer and Internet facilities'

and 'lack of trained and efficient manpower' are the second and third problems, respectively, faced by the library professionals. Similarly, 'students are not familiar with information literacy, thus, they are not interested in it' is the last problem faced by the library professionals in providing services to the students in order to enhancing the level of students' information literacy skill. This problem is ranked by 6 with mean 2.68.

Table 4.41: Types of Problems in Enhancing Information Literacy Skill

Types of Problems	Mean	Rank
Lack of good collaboration between administration and librarian	3.26	1
Lack of computer and Internet facilities	3.12	2
Lack of trained and efficient manpower	3.02	3
Lack of library resources (books, journals, e-books, database etc.)	2.88	4
Lack of sufficient space in library	2.76	5
Students are not familiar with information literacy, thus, they are not interested in it.	2.68	6

Source: Field survey, 2019

4.4.17 Ways of Mitigating Information Literacy Skill Enhancement Problems

Although there are some problems on the way to enhance the level of students' information literacy skill, they are solvable. The ways of mitigating information literacy skill enhancement problems are measured through mean on the basis of the rating given by library professionals. The findings are presented in the following table.

Table 4.42 shows the ways of mitigating the problems of information literacy skill enhancement. Among them, 'developing faculty-librarian joint collaboration' is the first way to mitigate these problems. In addition, 'providing more library resources' and 'recruiting sufficient trained and efficient manpower' are the second and third ways of mitigating these problems. Similarly, 'making students aware about information literacy' is the bottom, sixth, way of mitigating the problems of information literacy skill enhancement.

Table 4.42: Ways of Mitigating IL Skill Enhancement Problems

Mitigation Ways	Mean	Rank
Developing faculty-librarian joint collaboration	3.34	1
Providing more library resources	3.16	2
Recruiting sufficient trained and efficient manpower	3.02	3
Arranging more information literacy enhancement programs	2.78	4
Increasing space in library	2.68	5
Making students aware about information literacy	2.56	6

Source: Field survey, 2019

4.5 Conclusion

This chapter discusses about the demographic and information literacy related features of both the students and library professionals. From this chapter, age, gender, years of study, Internet using skill, computer using skill, duration of library visit, ideas about copyright, fair use and plagiarism, and so on features of the students are found that are crucial factors triggering the level of students' information literacy skill. On the other hand, age, gender, training, helping status in using website, database to the students, arranging seminar/workshop/conference/informal class, problems faced and mitigation ways and many other facilities provided to the students by the library professionals are presented in this chapter which helps in strengthening students' information literacy skill.

CHAPTER FIVE   **RESULTS AND DISCUSSION**

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1 Introduction

The empirical results of statistical analyses of main objectives are successively described in this chapter. The chapter also describes the effects of variables considered in the regression model. Moreover, this chapter describes various estimation tools to report the accuracy of the model. The estimated results are presented in tabular form and comparisons are made where needed.

This chapter is organized into seven sections. In Section 5.2, the estimated results of information literacy skill of the undergraduate students in Bangladesh are presented. Section 5.3 presents the estimated results of the role of university library in Bangladesh. The findings of the impact of the library role on the students' information literacy skill are described in Section 5.4. In addition, Section 5.5 provides the results of the major constraints of achieving information literacy skill by the undergraduate students in Bangladesh. In Section 5.6, the solutions to the constraints of achieving information literacy skill achievement are presented. Finally, this chapter is ended with the concluding notes.

5.2 Students' Information Literacy Skill

This section describes the estimated results regarding the level of students' information literacy skill which reflects the achievement of the second objective of this study. These findings have been emerged from the Information Literacy Skill Index which is stated in Section 3.3.1 in Chapter 3. In this section, the description of Information Literacy Skill Index is presented firstly. This section also analyzes the level of students' information literacy skill aggregately. A disaggregated analysis having all the sampled universities regarding the level of students' information literacy skill is presented here following a comparative analysis between public and private university regarding the level of students' information literacy skill.

5.2.1 Description of Information Literacy Skill Index

Information Literacy Skill Index is measured through 5 point likert scale on the basis of the perception of students. The indicators of this index are measured by mean and standard deviation and the estimated findings are presented on the basis of five components and twenty indicators in the following table.

Table 5.1: Components and Indicators of Information Literacy Skill Index

Components	Indicators	Mean	SD
Identification	Identifying the lack of knowledge in a subject area	3.50	1.15
	Deciding what information is needed, and how much	3.65	0.97
	Locating resources in the library	3.44	1.15
Searching	Finding relevant information within books	3.59	1.10
	Finding relevant information online	3.78	1.02
	Searching computerized catalog of library	3.27	1.16
	Searching online databases	3.58	1.16
Evaluation	Evaluating information sources according to the needs	3.63	1.03
Application	Using full text journals, books and e-resources	3.23	1.15
	Using reference collections in the library (dictionaries, encyclopedias, directories, and so on)	3.53	1.10
	Using index and abstract	3.23	1.20
	Using Computer	3.92	1.16
	Using MS Office	3.57	1.29
	Using of Internet and search engines	4.00	1.07
	Using of Email	3.85	1.13
	Sharing information through social media/SMS	4.02	1.04
	Making bibliography or references	3.47	1.07
	Making assignments and presentations	3.84	1.06
	Analyzing and presenting data appropriately	3.44	1.05
Acknowled-gement	Understanding the concepts of fair use, copyright and plagiarism	3.53	1.09

Source: Field survey, 2019

Table 5.1 shows that there are five components and twenty indicators of Information Literacy Skill Index. There are three indicators of the first component, identification. Among the three indicators, students were mostly skilled in "deciding what information is needed, and how much" which is shown by the highest mean, 3.65. On the other hand, there are four indicators of the second component, searching. Among those indicators, students were mostly skilled in "finding relevant information online" which is shown by the highest mean, 3.78. The third component of information literacy skill is evaluation which has one indicator; "evaluating information sources according to the needs". Students were average skilled in it which is shown by the mean, 3.63. Similarly, there are eleven indicators of the fourth component, application. Among those indicators, students were mostly skilled in "sharing information through social media/SMS" which is shown by the highest mean, 4.02. The last component of information literacy skill is acknowledgement which has one indicator, "understanding the concepts of the fair use, copyright and plagiarism". Students were lower-skilled in it which is shown by the very minimum mean, 1.09.

From this analysis, it is found that among the twenty indicators of five components, students are mostly skilled in "sharing information through social media/SMS" which is revealed by the highest mean among all indicators, 4.02.

5.2.2 Level of Students' Information Literacy Skill

Students' information literacy skill is important not only for their academic performance but also for their daily life activities. The level of students' information literacy skill is measured through the Information Literacy Skill Index by considering five components and twenty indicators of information literacy. The estimated value of Information Literacy Skill Index has been classified into four categories such as unskilled, lower semi-skilled, upper semi-skilled and highly skilled. After analyzing data through SPSS 23, the result is presented in Table 5.2.

Table 5.2: Level of Students' Information Literacy Skill

Level of Information Literacy Skill	Frequency	Percentage
Unskilled	7	1.68
Lower Semi-skilled	70	16.79
Upper Semi-skilled	235	56.35
Highly Skilled	105	25.18
Total	417	100

Source: Field survey, 2019

Table 5.2 shows the distribution of the level of information literacy skill of the undergraduate students in Bangladesh. This table reveals that the most of the students, 235 students out of 417 students, belonged to the upper semi-skilled level of information literacy skill which is 56.35 percent of the total students. On the other hand, about 25.18 percent students belonged to the highly skilled level of students' information literacy skill. From the above analysis, it is also found that only 7 students (1.68 percent of the total students) belonged to the unskilled level of information literacy skill. The findings reveal that the majority of the students in the study area were upper semi-skilled in information literacy.

5.2.3 Mean Comparison of ILS between the Students of Public and Private Universities

The mean comparison of students' information literacy skill (ILS) between public and private universities is analyzed through the independent sample t test. The estimated findings, presented in the following table, reveal the variation of mean of information literacy skill of the students of private and public universities.

Table 5.3: Mean Comparison of Students' ILS between Public and Private Universities

Types of University	Mean	Std. Dev.	F (Sig.)
Public Universities	0.64	0.16	
Private Universities	0.67	0.16	0.02 (0.90)

Source: Field survey, 2019

From the Table 5.3, it is found that the mean value of information literacy skill of the public university students was 0.64 while it was 0.67 for the private university students. Although there is found a very little difference in mean value of information literacy skill between public and private university students, the difference is not statistically insignificant which is reported by the level of significance, 0.90, this finding is provided in ANNEX 1: Table 5 and 6. The reason behind this difference may be that the number of private university students is less than that of public universities and that is why they usually receive more intensive nursing of building information literacy skill than as compared to the public university students.

5.2.4 Mean Comparison of Students' ILS among Universities

The mean comparison of students' information literacy skill (ILS) among universities is analyzed through one-way ANOVA test. The estimated findings, presented in the following table, reveal the variation of mean students' information literacy skill of the sampled universities.

From Table 5.4, it is found that the level of information literacy skill was higher of the students of East West University which is reflected by the highest mean value, 0.91. On the other hand, students of Southeast University and Varendra University had the second and third highest mean value of information literacy skill. From this analysis, it is found that Pundra University of Science and Technology had the lowest mean value (0.56) among the sampled universities. Although there is no statistically significant difference of mean information literacy skill among the students of private and public university students, there is statistically significant difference among the students of individual sampled universities. This is represented by the F statistic, 10.60, which is statistically significant at one percent level of significance. The finding of this analysis is provided in ANNEX 2: Table 13 and 14.

Table 5.4: Mean Comparison of Students' ILS among Universities

University	Min.	Max.	Mean	Std. Dev.	F (Sig.)
East West University	0.83	0.96	0.91	0.05	
Southeast University	0.68	0.88	0.78	0.07	
Varendra University	0.63	0.86	0.77	0.07	
University of Liberal Arts Bangladesh	0.63	0.89	0.76	0.09	
Hajee Mohammad Danesh Science and Technology University	0.61	0.91	0.73	0.09	
University of Rajshahi	0.13	0.94	0.71	0.15	
Mawlana Bhashani Science and Technology University	0.35	1.00	0.66	0.13	10.60
University of Dhaka	0.04	0.94	0.60	0.16	(0.00)
City University	0.48	0.7	0.59	0.12	
Rajshahi Science and Technology University	0.48	0.74	0.59	0.09	
Khwaja Yunus Ali University	0.5	0.65	0.57	0.05	
Daffodil International University	0.38	0.66	0.56	0.09	
Pundra University of Science and Technology	0.03	0.75	0.56	0.24	
All Universities	**0.03**	**1.00**	**0.65**	**0.16**	

Source: Field survey, 2019

5.3 Role of University Library

This section describes the estimated results regarding the role of university library which achieves the third objective of this study. These findings have been emerged from the Role of Library Index which is stated in Section 3.3.2 in Chapter 3. In this section, the description of Role of Library Index is presented firstly. This section also analyzes the role of library aggregately. A disaggregated analysis having all the sampled universities regarding the role of library is presented here following a comparative analysis between public and private university regarding the role of library.

5.3.1 Description of Role of Library Index

Role of library index is measured through 5 point likert scale on the basis of the perception of students. This index is measured by mean and standard deviation, and presented on the basis of three components and ten indicators in the following table.

Table 5.5: Components and Indicators of Role of Library Index

Components	Indicators	Mean	SD
Environment and Resources	The university library environment is friendly enough	2.50	1.19
	There are adequate resources in the library	2.29	1.12
	Most of the resources in the library are updated	2.18	1.08
Facilities	Library arranges seminar/conference for enhancing students' IL skill	1.93	1.21
	Library arranges training, workshop or informal class for enhancing students' IL skill	2.17	1.19
Services	Helping students in making assignment, presentation, synopsis, dissertation and so on by the library professionals is enough	2.23	1.12
	Helping students in using computer and internet by the library professionals is enough	2.18	1.10
	Helping students in finding books or other resources by the library professionals is enough	2.52	1.00
	Helping students in using OPAC or online resources or database by the library professionals is enough	2.04	1.16
	Getting helps by the students from friends/teachers is greater than that of library professionals in the library	2.39	1.15

Source: Field survey, 2019

Table 5.5 shows that there are three components and ten indicators of role of university library. Among the three components, environment and resources is the first component which has three indicators. Among the three indicators, university

library played the highest role in "the university library environment is friendly enough" which is revealed by the highest mean, 2.50. The second component of Role of Library Index is facilities which have two indicators. Between them, university library played significant role in "library arranges training, workshop or informal class for enhancing students' IL skill" which is indicated by the highest mean, 2.17. The last component of Role of Library Index is services which has five indicators. Among them, library played the most influential role in "helping students in finding books or other resources by the library professionals is enough" which is mentioned by the highest mean, 2.52.

From this analysis, it is found that among ten indicators of three components of role of library, university library played the most influential role in "helping students in finding books or other resources by the library professionals is enough" which is mentioned by the highest mean, 2.52.

5.3.2 Level of the Role of University Library

In enhancing students' information literacy skill, university library plays a significant role. In this study, role of university library is used as the dummy variable of services provided by the university library. In measuring the level of university library role, students were given ten indicators to rate by 5 point likert scale. Considering the rate, the level of university library role is measured through the Role of University Library Index. The estimated value of the index is divided into three categories presented in the following table.

Table 5.6: Level of the Role of University Library

Levels	Frequency	Percentage
Lower Level	172	41.25
Average Level	198	47.48
Higher Level	47	11.27
Total	417	100

Source: Field survey, 2019

Table 5.6 shows that most of the students in the study area, 198 students out of 417 students, received the average level of university role or services which is 47.48 percent of the total students. On the other hand, about 172 students received the lower level of role of university library while very few students (11.27 percent students) received the higher level of university library role.

5.3.3 Mean Comparison of the RL between Public and Private Universities

The mean comparison of the Role of Library (RL) between public and private universities is analyzed through the independent sample t test. The estimated finding is presented in the following table that reveals the variation of mean of role of library played by the library professionals of private and public universities.

Table 5.7: Mean Comparison of the RL between Public and Private Universities

Types of University	Mean	Std. Dev.	F (Sig.)
Public Universities	0.56	0.17	1.18 (0.28)
Private Universities	0.58	0.19	

Source: Field survey, 2019

From the Table 5.7, it is found that the mean value of the role of university library of the public university was 0.56 while it was 0.58 for the private university. Although there was found a very little difference in mean value of role of university library between public and private university, the difference was not statistically insignificant which is reported by the higher level of significance, 0.28, this finding is provided in ANNEX 1: Table 7 and 8. The reason behind this difference may be that the number of students and the area of university and library of the private university in Bangladesh are smaller than that of public university. As a result, private university authority becomes more able to train up their library professionals properly and to facilitate students with many modern amenities in the university library which may improve the service quality of the libraries.

5.3.4 Mean Comparison of Role of Library among Universities

The mean comparison of role of libraries among universities is analyzed through one-way ANOVA test. The estimated finding is presented in the following table that reveals the variation of mean of libraries of the sampled universities.

Table 5.8: Mean Comparison of Role of Libraries among Universities

University	Min.	Max.	Mean	Std. Dev.	F (Sig.)
East West University	0.53	1.00	0.81	0.13	
Khwaja Yunus Ali University	0.45	0.88	0.63	0.15	
Hajee Mohammad Danesh Science and Technology University	0.25	0.88	0.63	0.14	
Pundra University of Science and Technology	0.2	0.75	0.59	0.19	
University of Liberal Arts Bangladesh	0.15	0.85	0.58	0.21	
Southeast University	0.33	0.8	0.57	0.17	
Varendra University	0.18	0.88	0.57	0.18	3.57
University of Rajshahi	0.23	0.9	0.57	0.17	(0.00)
Mawlana Bhashani Science and Technology University	0.28	0.83	0.57	0.15	
University of Dhaka	0.05	0.9	0.54	0.17	
Daffodil International University	0.15	0.78	0.52	0.16	
Rajshahi Science and Technology University	0.25	0.63	0.51	0.15	
City University	0.23	0.58	0.43	0.14	
All Universities	**0.05**	**1.00**	**0.56**	**0.17**	

Source: Field survey, 2019

Table 5.8 represents that the mean value of the role of library of East West University was higher (0.81) among all the sampled universities. On the other hand, Khwaja Yunus Ali University had the second highest role of library. From the analysis, it is found that City University had the lowest mean value (0.43) of role of library.

Although there is no statistically significant mean difference in the role of library between public and private universities, there is statistically significant difference among individual universities. This is denoted by the F statistic, 3.57, which is statistically significant at 1 percent level of significance. The finding of this analysis is provided in ANNEX 2: Table 15 and 16.

5.4 Impact of University Library Role on Students' Information Literacy Skill

In this section, the result of the impact of university library role on the level of students' information literacy skill is presented which achieves the fourth objective of this study. This finding has been emerged from the linear regression analysis estimated through the Ordinary Least Squares (OLS) which is stated in Section 3.3.3 in Chapter 3. The results of linear regression model are presented in the following table.

Table 5.9: Estimated Result of Linear Regression Model

Variable	Coefficient	Robust Std. Err.	t	P
Age***	0.0308	0.0060	5.06	0.00
Gender***	0.0900	0.0121	7.42	0.00
Discipline of the study**	0.0103	0.0048	2.13	0.03
Years of study	0.0016	0.0023	0.69	0.49
Level of computer performance***	0.0290	0.0067	4.32	0.00
Level of Internet using skill***	0.0379	0.0091	4.15	0.00
Duration of library visit	- 0.0002	0.0014	- 0.16	0.88
Participation in any program*	0.0088	0.0047	1.87	0.06
Role of library***	0.0558	0.0181	3.07	0.00
Constant	- 0.2827	0.1033	- 2.73	0.00

F (9, 407) = 414.25; Prob > F = 0.00; R^2 = 0.90; Root MSE = 0.0504; DW = 1.94

Note: *, **, and *** means 10%, 5%, and 1% level of significance

Source: Field survey, 2019

Table 5.9 shows that about 90% of variations in the dependent variable is explained by the variation in explanatory variables incorporated in the model, which has been

shown by the value of R^2 ($R^2 = 0.90$). The overall significance and fitness of the model are checked by F-value (F = 414.25), accordingly, (Prob.>F=0.000) which indicates that the independent variables reliably predicted the dependent variable. Initially, the result of this model revealed that there was a problem of Heteroscedasticity. However, the robust action was taken as the remedial measurement for that problem. Moreover, VIF test and Partial correlation matrix were performed to report the Multicollinearity problem and incorrect specification. The result of both VIF and partial correlation matrix reveals that there was no such problem in the model. Besides, Durbin-Watson test was performed to check the Autocorrelation problem. The Durbin-Watson value (1.94) also reported that there was no Autocorrelation problem in the regression model. The result of VIF, Partial Correlation Matrix and Durbin-Watson test are presented in ANNEX 3, 5 and 6, respectively.

Table 5.9 shows that seven explanatory variables are statistically significant. Those significant variables are- Age (1%), Gender (1%), Discipline of the study (5%), Level of computer performance (1%), Internet using skill (1%), Participation in programs (10%) and Role of library (1%). On the other hand, Years of study and Duration of library visit are not statistically significant. All variables exhibited the hypothesized signs except 'duration of library visit'. The rational explanation behind finding the reverse expected sign of 'duration of library visit' may be that students in the study area visit university library for a very short period of time and at that time they cannot concentrate in acquiring knowledge neither in subjective concepts nor in other concepts.

The findings of OLS estimation stated in Table 5.9 shows that 'Age' has a significant and positive relationship (cof. = 0.0308, P = 0.00) with the dependent variable- level of students' information literacy skill. This reveals that if the age of a student is increased by one year, the level of information literacy skill of that student may be increased by 0.0308. This finding is statistically significant at 1% level of significance. The rational explanation behind this finding may be that the higher the age of a student, the higher the possibility of identifying information gap, searching, acquiring and applying information and knowledge. Hence, matured students are expected to be more skilled in information literacy.

The coefficient and p value of 'Gender' are cof. = 0.0900 and P= 0.00, respectively which shows that there is a significant and positive relationship between gender and the level of students' information literacy skill. This reveals that if the student is male, the level of information literacy skill of that student may be increased by 0.0900. This finding is significant at 1% level of significance. This finding can be explained by the fact that if the student is male, he may have the higher the possibility of acquiring information and knowledge from different sources at any time. Hence, male students are expected to be more skilled in information literacy.

The findings of OLS estimation show that 'Discipline of study' has a significant and positive relationship (cof. = 0.0048, P= 0.03) with the dependent variable- level of students' information literacy skill. This reveals that if the discipline of study of a student is Information Science and Library Management, the level of information literacy skill of that student may be increased by 0.0048. This finding is significant at 5% level of significance. The logical explanation behind this finding may be that the student who reads in the Department of Information and Library Management are very familiar with the term 'Information Literacy' as this concept is integrated to their curriculum and that is why he or she academically knows about identification, search, application and acknowledgement of information and knowledge. In addition, he or she is academically aware of fair use and plagiarism, writing bibliography, search strategy, and so on which make them skilled in information literacy.

The coefficient and p value of 'Level of computer performance' are cof. = 0.0290 and P= 0.00, respectively, which show that there is a significant and positive relationship with the dependent variable- level of students' information literacy skill. This reveals that if the level of computer performance of a student is increased by one unit, the level of information literacy skill of that student may be increased by 0.0290. This finding is significant at 1% level of significance. This finding can be interpreted by the fact that students who have good performance in computer are more advanced in searching, identifying, applying and acknowledging information. In addition, they may be advanced in using electronic information, online database and so on. Hence, students who have good performance in computer are more expected to be skilled in information literacy.

'Level of Internet using skill' has a significant and positive relationship (cof. = 0.0379, P= 0.00) with the dependent variable- level of students' information literacy skill. This reveals that if the level of Internet using skill of a student is increased by one unit, the level of information literacy skill of that student may be increased by 0.0379. This finding is significant at 1% level of significance. The rational explanation behind this finding may be that students who are skilled in using Internet may be more advanced in searching, identifying, applying and acknowledging information. Moreover, they may be advanced in using electronic information, online database, website and all other e-resources. Hence, students who are skilled in using Internet are expected to be more skilled in information literacy.

The coefficient and p value of 'Participation in programs' are cof. = 0.0088 and P= 0.06, respectively, which show that there is a significant and positive relationship with the dependent variable- level of students' information literacy skill. This reveals that if a student participates in any information literacy skill enhancement oriented programs, the level of information literacy skill of that student may be increased by 0.0088. This finding is significant at 10% level of significance. This finding may be interpreted by the fact that students who participate in program related to information literacy gather advanced information and knowledge from the identification of information gap to acknowledgment of information which enhances the level of students' information literacy skill. Therefore, students who participate in programs are expected to be more skilled in information literacy.

'Role of library' has a significant and positive relationship (cof. = 0.0558, P= 0.00) with the dependent variable- level of students' information literacy skill. This reveals that if the role of university library is increased by one unit, the level of information literacy skill of that student may be increased by 0.0558. This finding is significant at 1% level of significance. The rational explanation of this finding may be that if a university library plays a significant role in providing services to the students and students receive those services, students may acquire more advanced information and knowledge about search technique, using computer, Internet, database, website and using all resources of university library. This may enhance the level of students' information literacy skill. Therefore, if university library plays a significant role, students are expected to be more skilled in information literacy.

5.5 Major Constraints of Achieving Information Literacy Skill

This section shows the findings of identifying the major constraints achieving information literacy skill by the students which achieves the fifth objective of this study. This finding has been emerged from the Kendall's Coefficient of Concordance test which is stated in Section 3.3.4 in Chapter 3. In achieving information literacy skill, students face a number of constraints or challenges. Among those constraints, students were given major ten constraints to identify. After analysis, the finding is presented in the following table.

Table 5.10: Major Constraints of Achieving Information Literacy Skill

Constraints	Mean	Rank
Present structure of academic programs	6.25	1
Lack of cooperation between library professionals and faculties	5.93	2
Inadequacy of resources for learning in a problem-based context	5.90	3
Insufficient facilities in the library	5.81	4
Lack of skilled staff to train students in handling electronic information	5.51	5
Students are not supposed to search and apply information early in their educational career formally	5.47	6
The concept 'information literacy' seems hard to understand to the students	5.46	7
Lack of students' confidence in using information	5.24	8
Students rely mostly on hand-notes and textbooks	4.90	9
Lecture mode of class is not effective enough to help students to achieve practical information skills	4.52	10
Kendall's W = 0.76; Chi-square statistic = 108.63 (sig. = 0.00)		

Source: Field survey, 2019

From Table 5.10, it is found that the estimated value of Kendall's W is 0.76 which reveals that 76 percent students are agreed with this ranking. This finding is statistically significant at 1 percent level of significance. Table 5.10 shows that majority of the students (76 percent) agree that "present structure of academic programs" is the first constraint of achieving information literacy skill. This is denoted by the highest mean value, 6.25, and rank 1. On the other hand, "lack of cooperation between library professionals and faculties" and "inadequacy of resources

for learning in a problem-based context" is the second and third constraints, respectively. Among ten constraints, students reported "lecture mode of class is not effective enough to help students to achieve practical information skills" as the last constraint of achieving information literacy skill which is denoted by the lowest mean value, 4.52, and rank 10.

5.6 Strategies for Eradicating the Constraints of Achieving IL Skill

Since students of Bangladesh face many constraints of achieving information literacy skill, those constraints should be eradicated. Strategies for eradicating the constraints of achieving information literacy skill are identified by the perception of students. This is analyzed with descriptive statistics: frequency distribution (yes and no category), and mean. The estimated result is ranked and presented in the following table with rank.

Table 5.11: Strategies for Eradicating the Constraints of Achieving IL Skill

Strategies	Yes	No	Mean	Rank
Introducing students with library and information use early through orientation program	338	79	0.82	1
Making information literacy more easily understandable	337	80	0.81	2
Providing more facilities in the library	313	104	0.75	3
Involving students to problem-based learning for active participation in proper use of information	301	116	0.72	4
Giving students assignments/report-writing/thesis for evaluating the use of information	293	124	0.70	5
Building effective collaboration between faculties and library professionals	293	124	0.70	6
Evaluating students' IL skills by examination at the end of the course/seminar/training	275	142	0.66	7
Relating the course objectives to information needs	267	150	0.64	8
Integrating IL as a course in the curriculum	261	156	0.63	9

Source: Field survey, 2019

Table 5.11 shows that majority of the students responded "introducing students with library and information use early through orientation program" as the first strategy for eradicating the constraints of achieving information literacy skill which is denoted by the highest mean value and rank 1. On the other hand, "making information literacy more easily understandable" and "providing more facilities in the library" as the second and third strategy, respectively. Among nine strategies, students responded "integrating IL as a course in the curriculum" as the last strategy for eradicating the constraints of achieving information literacy skill which is denoted by the lowest mean value and rank 9.

5.7 Conclusion

This chapter reveals the highlighted and objective based findings of this study which are emerged from using several statistical methods. It is found that majority of the students (56.35 percent) had the upper semi-skilled level of information literacy skill while most of the students (47.48 percent) received the average level of university role or services. This study reveals that if the role of university library is increased by one unit, the level of information literacy skill of that student will be increased by 0.0558. From the analysis, it is found that 'present structure of academic programs' as the top one constraint faced by the students in achieving information literacy skill. Contrarily, 'introducing students with library and information use early through orientation program' is found as the top one strategy for eradicating the constraints of achieving information literacy skill.

Based on these findings of this study, some polices are recommended for the policymakers, students, teachers and the library professionals which are stated in the following chapter.

CHAPTER SIX   **SUMMARY, MAJOR FINDINGS AND POLICY RECOMMENDATIONS**

CHAPTER SIX

SUMMARY, MAJOR FINDINGS AND POLICY RECOMMENDATIONS

6.1 Introduction

This study investigates various aspects of students' information literacy skill and the role of university library in Bangladesh. The chapter describes summary and major findings based on the objectives of the study. Moreover, some policies are recommended on the basis of the findings of this study related to students, library professionals and institutions in the national level. Finally, limitations of the study are presented in this chapter. This chapter is organized into five sections. Section 6.2 provides the summary of the study while the major findings are presented in Section 6.3. Section 6.4 mentions some policy recommendations. In Section 6.5, limitations of the study are presented.

6.2 Summary of the Study

This is the era of information. In this era, the need for information is inevitable. To be information literate, one should know about information literacy properly. One can know information literacy in many ways. Library is one of the important sources of knowing about information literacy significantly as library provides books, journals, newspapers, Internet, computers, database and so on that enhances one's level of information literacy skill. In this context, this study investigates the impact of university library role on the level of students' information literacy skill in Bangladesh. The summary and major findings of the study obtained from statistical tests as well as the descriptive analysis are described in this section.

Firstly, the study is started with introductory discussion in the First Chapter. In this chapter, the scope of the study is tried to find out in the context of Bangladesh setting several research questions. Some fundamental problems based on university libraries and students' information literacy skill are identified. On the basis of these problems, research objectives are selected. The main objective of this study is to explore the impact of university library role on the level of the undergraduate students'

information literacy skill in Bangladesh. The study is tried to justify as well on the basis of literature gaps and study area. Finally, the chapter is ended with the organization of the study.

Secondly, the review of literature of this study is presented in Chapter Two. From this chapter, it is found that a large number of literatures are reviewed for conducting this study which are presented topic wise. It is also found that different researchers have used different methods and techniques in measuring the impact of university library role on the level of undergraduate students' information literacy skill in the earlier literature. Both positive and negative findings are found from those studies. Besides, some research gaps are also found from those literature which stresses to carry out this study. Considering these research gaps, this study tries to achieve some objectives using several research methods and techniques. These research methods and techniques are stated in the following chapter.

Thirdly, the methodology of the study is presented in Chapter Three. From this chapter, it is found that several methods and techniques are used in achieving the objectives of the study. For instance, Information Literacy Skill Index (ILSI) is used to measure the level of students' information literacy skill which achieves the second objective of this study. On the other hand, Role of Library Index (RLI) is used to measure the level of university library role or the services provided by the university library which achieves the third objective of this study. After being informed with the level of students' information literacy skill and role of library, this study applies a linear regression estimated by OLS method to achieve the fourth specific objective of the study, to examine the impact of university library role on students' information literacy skill.

Besides, this study applies the Kendall's Coefficient of Concordance test to identify the major constraints students faced to achieve information literacy skill, which achieves the fifth objective of this study. In addition, the technique of study area and sample selection, data collection is found from the chapter. Following Stratified sampling technique, this study finally collects data from 417 students from sampled universities of Bangladesh while data are collected from 26 library professionals from

the sampled universities purposively. This chapter also emanates the way of presenting estimated results.

Fourthly, the demographic and information literacy related features of both the students and library professionals are analyzed and presented in tabular and graphical forms in Chapter Four which achieves the first objective of the study. From this chapter, it is found that majority of the students were aged of 20 to 22 years. This study also indicates that 80 percent students were male while only 20 percent students were female in the study area. It is found that only 7 percent students read in the Department of Information Science and Library Management (ISLM) while majority students (93 percent) read in other departments.

From the analysis, it is found that 89 percent of the students heard the term information literacy while only 11 percent of the students didn't hear the term ever before. This paper reveals that among 84.41 percent students used computer while only 15.59 percent students didn't use computer in their current academic year. An interesting finding is found that about 97.6 percent students used Internet while only 2.4 percent students did not use Internet in their current academic year. From this analysis, it is found that uses of Internet for academic purpose by the students was quite average while it was higher for social media use. This study indicates that majority of the students (83 percent) used electronic information, contrarily, only 17 percent of the students did not use. This study finds that 80.8 percent students had ideas on copyright besides 73.86 percent had knowledge about fair use and plagiarism.

From the analysis, it is found that almost all the students (95 percent) visited university library and most of the students visited university library for reading text books. Majority of the students searched books in the university library by author while they used 'simple keywords' mostly in searching information online. This study depicts that majority of the students (72 percent) did not participate in information literacy skill enhancement related programs while only 28 percent students participated. This study also reveals that "printed IL instructions" as the main way to make information literacy more understandable which is responded by 325 students and ranked by one.

From the Chapter Four, it is also found that maximum library professionals (34.62 percent) were aged of 30 years and below, and they (92.31 percent) were male. The level of education of the majority of the library professionals (84.62 percent) was Masters. Majority of the library professionals (80.8 percent) received training either on library development or on information literacy skill development while only 19.2 percent library professionals did not receive. It is also found that 73.1 percent library professionals helped students in using database while 76.9 percent helped in using website and search engine, and 73 percent helped students in learning search technique. About 69.2 percent library professionals responded that they arranged orientation program/training/workshop/seminar in their universities for enhancing the level of students' information literacy skill. From the analysis, it is found that 7.69 percent library professionals reported that there was faculty-librarian joint collaboration in their universities and they contributed to the making of national policy regarding the development of information literacy skill of the students. At the time of serving the students, library professionals faced some problems. Among those, 'lack of good collaboration between administration and librarian' was the main problem. Besides, library professionals reported that 'developing faculty-librarian joint collaboration' was the main way to solve these problems.

Fifthly, the key findings of this study are found using several statistical tools have been presented in Chapter Five. From this chapter, it is found that among the twenty indicators of five components, students were mostly skilled in "sharing information through social media/SMS" which is revealed by the highest mean among all indicators, 4.02. This study finds that most of the students (56.35 percent) belonged to the upper semi-skilled level of information literacy skill while only 25.18 percent students were highly skilled in information literacy. The mean value of information literacy skill of the private university students (0.67) was greater than that of public university students (0.64). Among the sampled universities, the level of information literacy skill is higher of the students of East West University (0.91) while Pundra University of Science and Technology had the lowest mean value (0.56).

Analyzing the factors affecting the role of university library, it is found that among ten indicators of three components of Role of Library Index, university library played

the most influential role in "helping students in finding books or other resources by the library professionals is enough" which is mentioned by the highest mean, 2.52. It is found that most of the students (47.48 percent) in the study area received the average level of university library role or services provided by the university library and 41.25 percent students received the lower level of university library role, and 11.27 percent students received the higher level of role of university library. The mean value of the role of university library of the private university (0.58) was greater than that of public university (0.56). Among all the sampled universities, the mean value of the role of library of East West University (0.81) was the higher while it is lower of the City University (0.43).

This study also reveals that age, gender, discipline of the study, level of computer performance, Internet using skill, participation in any program and role of library significantly affects the level of students' information literacy skill. More specifically, this study reveals that if the role of university library is increased by one unit, the level of information literacy skill of that student will be increased by 0.0558.

Analyzing the constraints faced by the students in achieving information literacy skill, 'present structure of academic programs' is found as the top one constraint while 'lack of cooperation between library professionals and faculties' is found as second, and 'lecture mode of class is not effective enough to help students to achieve practical information skills' as the bottom constraint among ten constraints. Contrarily, analyzing the strategies for eradicating the constraints of achieving information literacy skill, this study finds that 'introducing students with library and information use early through orientation program' is found top one strategy while 'integrating IL as a course in the curriculum' as the bottom strategy.

6.3 Major Findings of the Study

Using primary data and various methods, this study has found several interesting findings which may be useful to the policymakers. These findings have been presented and described broadly in Chapter 4 and Chapter 5. However, for simplicity and easily understanding, these findings are stated below concisely.

i. This study finds that most of the students (56.35 percent) belonged to the upper semi-skilled level of information literacy skill while only 25.18 percent students were highly skilled in information literacy.

ii. The mean value of information literacy skill of the private university students (0.67) was greater than that of public university students (0.64).

iii. Among the sampled universities, the level of information literacy skill was the higher of the students of East West University (0.91) while Pundra University of Science and Technology had the lowest mean value (0.56).

iv. Majority students (47.48 percent) received the average level of university library role or services provided by the university library while only 11.27 percent students received the higher level of university role or services.

v. The mean value of the role of university library of the private university (0.58) was greater than that of public university (0.56).

vi. Among all the sampled universities, the mean value of the role of library of East West University (0.81) is higher while it is lower of the City University (0.43).

vii. Age, gender, discipline of the study, level of computer performance, Internet using skill, participation in any program, and role of library significantly affect the level of students' information literacy skill significantly. More specifically, the level of information literacy skill of that student will be increased by 0.0558 if the role of university library is increased by one unit.

viii. Majority of the students (76 percent) agreed that "present structure of academic programs" was the first constraint of achieving information literacy skill while "lecture mode of class is not effective enough to help students achieving practical information skills" as the last constraint among the ten given constraints.

ix. Majority of the students responded "introducing students with library and information use early through orientation program" as the first strategy for eradicating the constraints of achieving information literacy skill while "integrating IL as a course in the curriculum" as the last strategy among nine given strategies.

x. About 89 percent of the students heard the term information literacy while only 11 percent of the students didn't hear the term ever before.

xi. Majority of the students (84.41 percent) used computer and the level of performance of the majority students (37.65 percent) was intermediate.

xii. Almost all the students (97.6 percent) used Internet. However, the level of Internet using skill of the majority students (38.85 percent) was moderate and students used Internet for using social media mostly.

xiii. Most of the students (80.8 percent) had ideas on copyright while 73.86 percent students had the ideas on fair use and plagiarism.

xiv. Maximum students (95 percent) visited university library and they visited for reading text books mostly.

xv. Majority of the students searched books in the university library by author while they used 'simple keywords' mostly in searching information online.

xvi. Very few students (28 percent) participated in information literacy skill development related programs.

xvii. Majority of the library professionals (84.62 percent) had the Maters level of education and they (80.8 percent) received training on information literacy.

xviii. Majority library professionals helped students in using online database, website, search engine, and so on.

xix. About 69.2 percent library professionals reported that they arranged different programs like orientation session, training, workshop and so on.

xx. Very few library professionals (7.69 percent) reported that there was faculty-librarian/library professionals' joint collaboration for enhancing the level of students' information literacy skill in their university library.

xxi. Majority of the library professionals (92.31 percent) responded that they did not contribute to the making national policy regarding information literacy skill development for enhancing the level of students' information literacy skill.

xxii. Library professionals faced 'lack of good collaboration between administration and librarian' as the prime problem in providing services to the students, and they suggested 'developing faculty-librarian joint collaboration' as the top way to mitigate these problems.

6.4 Policy Recommendations

Based on the findings resulted from analyzing data collected from students and library professionals through questionnaire, and observation of university libraries, open discussion and interview with library professionals, this study recommends policies through a model planning for enhancing the level of information literacy skill of the undergraduate students in Bangladesh.

Figure 6.1: Information Literacy Skill Enhancement Model
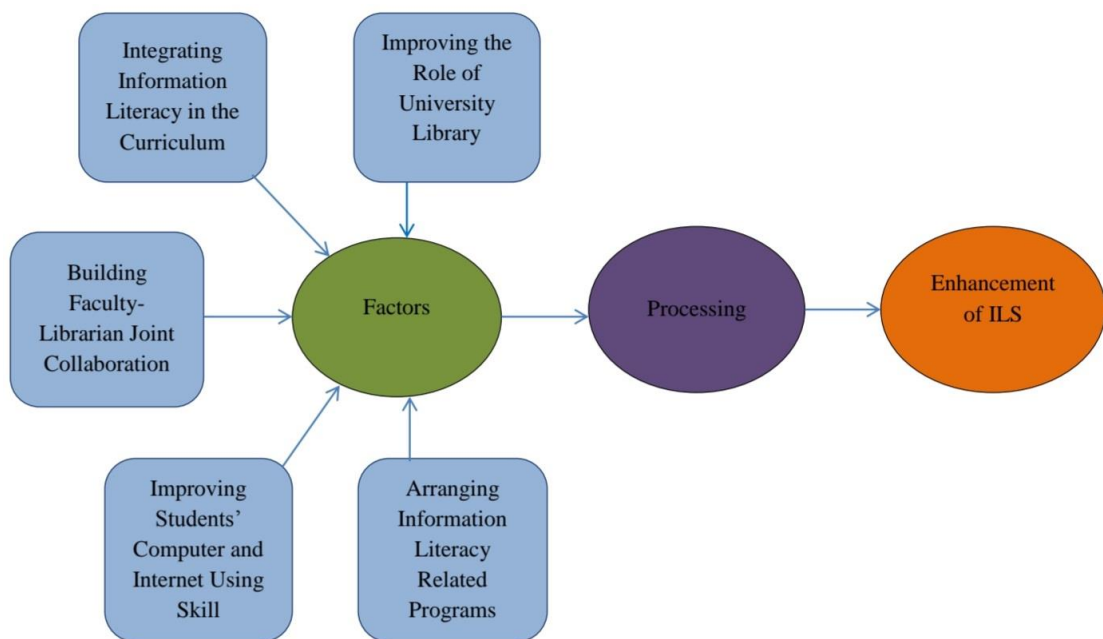
Source: Author's creation

Figure 6.1 depicts the model of planning for the enhancement of the level of information literacy skill of the undergraduate students. The model reveals that five factors trigger the level of information literacy skill of the undergraduate students in Bangladesh. These factors are stated as follows:

     i.   Integrating Information Literacy in the Curriculum

    ii.   Improving the Role of University Library

   iii.   Building Faculty-Librarian Joint Collaboration

   iv.   Improving Students' Computer and Internet Using Skill

    v.   Arranging Information Literacy Related Programs

i. **Integrating Information Literacy in the Curriculum**

The level of students' information literacy skill can be enhanced by integrating information literacy in the curriculum and making it compulsory for all the undergraduate level students in Bangladesh. The strength, weakness, opportunities and threats of integrating information literacy in the curriculum is stated in the following table.

Table 6.1: SWOT Analysis of Integrating IL in the Curriculum

Factors of SWOT	Statements
Strength	• Very few universities have already integrated IL in the curriculum and started getting benefits.
Weakness	• Majority universities have not integrated IL in the curriculum yet.
Opportunities	• Departments, institutes and universities are independent to integrate IL in the curriculum.
Threats	• Lacking of willingness and unity.

Source: Author's creation

Considering the SWOT regarding this issue, an effective guideline for integrating information literacy in the curriculum is stated below that may be implemented easily.

Objective:

The objective of integrating information literacy in the curriculum is to introduce students with the need for and use of information properly.

Structure:

In the undergraduate curriculum, information literacy can be integrated either as a particular course or as a part of a relevant course. It may be better if it is integrated in the beginning of the undergraduate level. In that course, all the important topics and concepts of information literacy should be integrated so that students can gather how to identify the need for, search for, apply of,

acknowledge to information properly. This course would be both the theoretical and practical.

Materials:

University authority including faculty and librarian/library professionals may form a distinguished syllabus on information literacy and integrate in the curriculum. Before starting the formal class of undergraduate level, the full syllabus should be given to the students as printed brochure or leaflet, or short-guideline book.

Outcomes:

Students may be able to identify the need for, search for, apply of, acknowledge to information properly. As a result, studying information literacy, students would be aware of selecting information sources, identifying correct or wrong information, using of information fairly, writing bibliography and citation, writing report and dissertation, and so on.

Evaluation:

Students can be evaluated at the time of semester final examination in both theoretical and practical aspects. In addition, the authority can arrange an open discussion among students regarding the course so that students can solve their queries with their own efforts. With the solving capacity to the students, the effectiveness of integrating information literacy in the curriculum can be evaluated.

ii.   **Improving the Role of University Library**

Role of university library is, here, referred to as the services provided by the library. By ensuring the best services, the role of university library can be improved which may enhance the information literacy skill of the undergraduate students of Bangladesh. The strength, weakness, opportunities and threats of improving the role of university library is stated in Table 6.2.

Considering the SWOT regarding this issue, an effective guideline for improving the role of university library is stated below.

Objective:

The objective of improving the role of university library is to facilitate students with the best services from the library related to information literacy.

Table 6.2: SWOT Analysis of Improving the Role of University Library

Factors of SWOT	Statements
Strength	• Most of the university libraries are semi-modern. • Latest facilities in the library are available partially. • Majority library professionals are semi-skilled.
Weakness	• Insufficient infrastructure in most of the libraries. • Students are not receiving better services in majority libraries.
Opportunities	• Libraries can build new infrastructures. • New skilled library professionals can be recruited and old library professionals can be trained up. • Modern facilities can be provided in the libraries.
Threats	• Insufficient financial support. • Lack of willingness.

Source: Author's creation

Structure:

Role of university library may not be improved only by providing the best facilities with amenities to the students or by the trained the library professionals sufficiently but by proving both simultaneously. Therefore, in one hand side, the infrastructure of the library should be developed and sufficient modern equipment should be provided, and the library professionals should be trained regularly in the other hand side. This may improve the service quality of the university library that would trigger the level of students' information literacy skill.

Materials:

University library administration or the planning division of the university library may design 5 year development plan where both the infrastructure and human capital development should be included efficiently. The design of the plan may be submitted to the university authority for seeking funds and the university authority will implement the plan effectively. By this way, the role of university library can be improved.

Outcomes:

From the improvement of the university library role, students may receive more friendly services from the library with which they can utilize the modern resources of the library. This utilization of resources by the students will ultimately generate their information literacy skill.

Evaluation:

Improvement of the role of university library can be evaluated by the combination of two approaches: evaluation by users (basically students) and by the recruited evaluation panel. University library authority may keep a commentary book or an online commentary book where users can drop their comments regarding the services of the library. Besides, a survey on the service quality and users' satisfaction can be carried out at end of the year with a comprehensive questionnaire. At the same time, the recruited evaluation panel may evaluate the improvement of the role of university library by observing the libraries' year-long services and its quality. By these ways, the improvement of the role of university library can be evaluated.

iii.   Building Faculty-Librarian Joint Collaboration

Improvement of the university library's service quality for enhancing students' information literacy skill can also be ensured by building faculty-librarian joint collaboration. University authority may play a crucial role for building faculty-librarian joint collaboration. The strength, weakness, opportunities and threats of building faculty-librarian joint collaboration is stated in the following table.

Table 6.3: SWOT Analysis of Building Faculty-Librarian Joint Collaboration

Factors of SWOT	Statements
Strength	• Very few faculty-librarian joint collaborations are found among the sampled universities.
Weakness	• Joint collaboration between faculty and librarian in majority universities are not found.
Opportunities	• Most of the faculties and library professionals have the scope to collaborate besides their main jobs.
Threats	• Lack of willingness and unity. • Financial crisis.

Source: Author's creation

Considering the SWOT regarding this issue, a guideline for building an effective faculty-librarian joint collaboration is stated below that may be implemented easily.

Objective:

The objective of the building faculty-librarian joint collaboration is to enhance the service quality of the university library for the students.

Structure:

University authority or the university library authority may call for the faculties to collaborate with the librarian in improving the library services for enhancing the level of students' information literacy skill. For building collaboration, library may arrange different seminars, workshops, training, view exchange programs, and so on with which library professionals and faculties can bring to light their views on improving the service quality of the university library. Besides, the chief of library should be a faculty of Information Science and Library Management because he/she has the specialization on the particular field.

Materials:

University library authority may offer the opportunity to participate in different seminars, workshops, training, research wings, and so on to the faculties which may act as the way to build an effective faculty-librarian joint collaboration.

Outcomes:

Distinguished plans may be come out from building faculty-librarian joint collaboration through different seminars, workshops, training, research wings which will help to improve the university library services. This will ultimately enhance the level of students' information literacy skill.

Evaluation:

Building faculty-librarian joint collaboration can be evaluated by the responses of the users and by the report of the evaluation panel. University library authority may keep a commentary book or an online commentary book where users can drop their comments about the improvement of service quality of the library as a result of building faculty-librarian joint collaboration. Besides, the recruited evaluation panel may evaluate the building of faculty-librarian joint collaboration by observing the libraries' year-long programs, activities, and quality of services. By these ways, faculty-librarian joint collaboration can be evaluated.

iv.   **Improving Students' Computer and Internet Using Skill**

Enhancement of students' digital literacy skill, a type of literacy that triggers information literacy skill, can be ensured by improving students' computer and Internet using skill. The strength, weakness, opportunities and threats of improving students' computer and Internet using skill is stated in the Table 6.4.

Table 6.4: SWOT Analysis of Improving Students' Computer and Internet Using Skill

Factors of SWOT	Statements
Strength	• Majority departments have a course on computer and Internet in the curriculum. • Majority libraries and departments have computer laboratory and operator.
Weakness	• Majority university libraries or departments have no sufficient computers. • Majority computer operator and trainers in the libraries are not well expert.
Opportunities	• Majority students have own computer or smartphone and Internet connections. • There are many computer training centers in different places of the country.
Threats	• Financial crisis. • Unavailability of high speed Internet connection.

Source: Author's creation

Considering the SWOT regarding this issue, a guideline for improving students' computer and Internet using skill is stated as follows.

Objective:

The objective of improving students' computer and Internet using skill is to enhance the level of students' digital literacy skill. .

Structure:

Student's computer and Internet using skill can be improved by three ways: by university library, by academic department or institute, and by self. The computer laboratory of the university library may arrange training on computer and Internet use with which students can gather knowledge how to use computer and Internet properly. In addition, academic department or institute can provide sufficient computer and Internet facilities to the students

and can conduct a course on the application of computer and Internet which can help students to use computer and Internet properly. Finally, students can learn the use of computer and Internet by their own efforts.

Materials:

University library, academic department or institute can provide sufficient computer with high speed Internet connection and can arrange training for the students. Besides, university authority can provide a computer to each student at the time of their admission or can give grants or loans for buying computer.

Outcomes:

From the improvement of students' computer and Internet using skill, students will understand how to use computer and Internet for academic purposes effectively which will ultimately generate their information literacy skill through digital literacy skill.

Evaluation:

Improvement of students' computer and Internet using skill can be evaluated by taking both the written and practical test. Both the university library and the department/institute can evaluate it by the preceding way.

v. **Arranging Information Literacy Related Programs**

Proper utilization of library resources by the students can be ensured by arranging information literacy related programs like informal class on information literacy, training, workshop, seminar, educational view exchange program, orientation program, and so on. University library may arrange these programs regularly for the students, basically for the newly enrolled students. As integrating information literacy have not integrated in curriculum of all disciplines yet and it is a time consuming and complex issue, informal class, training, workshop and seminar on information literacy cane be run intensively in enhancing the level of students' information literacy skill. The strength, weakness, opportunities and threats of arranging orientation program is stated in the following table.

Table 6.5: SWOT Analysis of Arranging Information Literacy Related Programs

Factors of SWOT	Statements
Strength	• Students are very willing to participate. • It is easy to arrange information literacy related programs by the university library at the beginning of a batch.
Weakness	• Lacking of skilled manpower. • Lacking of sufficient infrastructure and logistics.
Opportunities	• Students gather information regarding use of library resources from website, friends and seniors.
Threats	• Lack of willingness. • Financial crisis.

Source: Author's creation

Considering the SWOT regarding this issue, a guideline for effective information literacy related programs is stated below that may be implemented easily.

Objective:

The objective of the information literacy related programs is to introduce students with library resources and library environment and to make students efficient in identifying information need and optimal use of information.

Structure:

A two-day long orientation program can be arranged especially for the newly enrolled students where library professionals and faculties of Information Management and Library Science discipline can provide lectures, discussions, slide presentations on library services and environment. Seminar, workshop, and informal class on information literacy can be arranged for the other students. In addition, at the end of the programs, the authority may take tests regarding the programs. In addition, the authority may arrange a practical

program on library use and information literacy where students are supposed to visit the whole library and introduce with the use of each section of the library.

Materials:

Program authority can provide brochure, leaflet, short-guideline book, guideline link or slides as the material of the programs with which students can easily understand about the programs and access to the services of the university library.

Outcomes:

From these programs, students may know what are the services provided by the university library, which service is served from where, how to collect materials from library, how to use catalog, online database/OPAC, and all other facilities of the library, notably how to use information effectively. This will help students to utilize library resources effectively which will ultimately generate their information literacy skill.

Evaluation:

At the end of these programs, details of the programs can be reviewed with open discussion in front of the students with which all the queries of the students will be solved. In addition, to evaluate the effectiveness of the program, a questionnaire of short questions on the program can be distributed among the participants and collected after their filling up.

This study calls for the government, non-government organizations, policymakers, development practitioners, eminent library professionals, and distinguished faculties to utilize this suggested model planning for enhancing the level of information literacy skill of the undergraduate students in Bangladesh through improving the service quality of the university libraries. By implementing this model planning, quality education is expected to be ensured which is one of the goals of World Bank's global Agenda 2030, Sustainable Development Goals (SDGs).

6.5 Limitations of the Study

This study is mainly based on primary data are collected from students and library professionals. Although the research is tried to carry out accurately from the beginning to the end, still there may be some limitations which are needed to mention for the fairness of the study. The limitations of this study are stated as follows:

i. The researcher was constrained to budget and time; hence, it was not possible to cover all universities of Bangladesh as the study area, and all the students and library professionals as the respondents. Only 417 students and 26 library professionals were selected for this study. Therefore, the findings of this study may not represent the overall scenario of the role of university libraries and the level of students' information literacy skill in Bangladesh.

ii. At the time of data collection, it is also noticed that students had no proper document regarding the information they provided, at the same time, library professionals also had no proper document regarding their information related to providing services in the university library. Thus, both of them responded from their own perceptions. However, this study tried best to bring out the best possible information from the respondents' memories. Hence, the findings of this study may not represent the actual scenario of the role of university libraries and the level of students' information literacy skill in Bangladesh.

iii. The role of university library on the level of students' information literacy skill is estimated using statistical tools. However, there may be some common mistakes in the case of measurement. Thus, the findings of this study may not represent the actual scenario of the role of university libraries and the level of students' information literacy skill in Bangladesh.

Therefore, this study suggests the researchers carrying out a further deep study on the role of university libraries and the level of the undergraduate students' information literacy skill excluding these above mentioned limitations so that the findings may represent the actual scenario of the whole Bangladesh.

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APPENDICES

ANNEX 1: Independent Sample t Test Results

Table 1 and 2: Independent Sample t Test of Information literacy Skill and Discipline of Study.

Group Statistics

	Discipline.of.study	N	Mean	Std. Deviation	Std. Error Mean
Info_Lit_Skill	ISLM	29	.7555	.06423	.01193
	Others	388	.6443	.16253	.00825

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Info_Lit_Skill	Equal variances assumed	15.145	.000	3.661	415	.000	.11124	.03039	.05151	.17097
	Equal variances not assumed			7.670	60.217	.000	.11124	.01450	.08223	.14025

Table 3 and 4: Independent Sample t Test of Information literacy Skill and Participation in Programs

Group Statistics

	Participation_Program	N	Mean	Std. Deviation	Std. Error Mean
Info_Lit_Skill	Participated	118	.6736	.16244	.01495
	Not Participated	299	.6435	.15874	.00918

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
						Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.	t	df				Lower	Upper
Info_Lit_Skill	Equal variances assumed	2.062	.152	1.730	415	.084	.03005	.01737	-.00410	.06420
	Equal variances not assumed			1.712	210.091	.088	.03005	.01755	-.00454	.06464

Table 5 and 6: Independent Sample t Test of Information literacy Skill and Types of University (Public and Private)

Group Statistics

	public.private	N	Mean	Std. Deviation	Std. Error Mean
ILS	Private University	103	.6747	.16032	.01580
	Public University	314	.6446	.15968	.00901

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
ILS	Equal variances assumed	.016	.900	1.657	415	.098	.03007	.01815	-.00560	.06575
	Equal variances not assumed			1.654	173.207	.100	.03007	.01819	-.00582	.06597

Table 7 and 8: Independent Sample t Test of Role of Library and Types of University (Public and Private)

Group Statistics

	public.private	N	Mean	Std. Deviation	Std. Error Mean
RLI	Private University	103	.5835	.18713	.01844
	Public University	314	.5565	.16747	.00945

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
RLI	Equal variances assumed	1.182	.278	1.378	415	.169	.02700	.01959	-.01151	.06550
	Equal variances not assumed			1.303	159.059	.194	.02700	.02072	-.01392	.06792

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ANNEX 2: One-way ANOVA Test Results

Table 1 and 2: One Way ANOVA Test of Information Literacy Skill and Age of the Students

Descriptives

ILS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
17 to 19 Years	72	.4073	.11519	.01358	.3802	.4344	.03	.51
20 to 22 Years	199	.6284	.07076	.00502	.6185	.6383	.34	.73
23 to 25 Years	142	.7972	.08512	.00714	.7831	.8113	.38	1.00
26 Years and above	4	.9375	.01021	.00510	.9213	.9537	.93	.95
Total	417	.6507	.16035	.00785	.6352	.6661	.03	1.00

ANOVA

ILS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.741	3	2.580	360.557	.000
Within Groups	2.956	413	.007		
Total	10.696	416			

Table 3 and 4: One Way ANOVA Test of Information Literacy Skill and Study Year

Descriptives

ILS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
First	124	.6185	.16832	.01512	.5886	.6485	.04	.96
Second	76	.6745	.16608	.01905	.6366	.7125	.28	1.00
Third	80	.6863	.15616	.01746	.6515	.7210	.03	.96
Fourth	137	.6457	.14705	.01256	.6209	.6706	.13	.96
Total	417	.6507	.16035	.00785	.6352	.6661	.03	1.00

ANOVA

ILS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.276	3	.092	3.643	.013
Within Groups	10.421	413	.025		
Total	10.696	416			

Table 5 and 6: One Way ANOVA Test of Information Literacy Skill and Level of Performance in Computer

Descriptives

Info_Lit_Skill

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Advanced	65	.3912	.11111	.01378	.3637	.4188	.03	.49
Intermediate	157	.6073	.06924	.00553	.5964	.6182	.28	.78
Beginner	113	.7314	.05604	.00527	.7210	.7419	.44	.96
Poor	82	.8349	.08568	.00946	.8161	.8537	.48	1.00
Total	417	.6520	.16017	.00784	.6366	.6674	.03	1.00

ANOVA

Info_Lit_Skill

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.189	3	2.730	453.745	.000
Within Groups	2.484	413	.006		
Total	10.673	416			

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Table 7 and 8: One Way ANOVA Test of Information Literacy Skill and Level of Internet Using Skill

Descriptives

Info_Lit_Skill

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Poor	96	.4329	.11921	.01217	.4088	.4571	.03	.71
Lower	121	.6136	.03750	.00341	.6068	.6203	.54	.68
Moderate	162	.7530	.04816	.00378	.7455	.7604	.68	.85
Higher	32	.8850	.02286	.00404	.8768	.8932	.85	.94
Advanced	6	.9650	.01761	.00719	.9465	.9835	.95	1.00
Total	417	.6520	.16017	.00784	.6366	.6674	.03	1.00

ANOVA

Info_Lit_Skill

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.763	4	2.191	472.590	.000
Within Groups	1.910	412	.005		
Total	10.673	416			

Table 9 and 10: One Way ANOVA Test of Information Literacy Skill and Frequency of Library Visit per Week

Descriptives

Info_Lit_Skill

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Never Visited	21	.6067	.17419	.03801	.5274	.6860	.28	.89
1 to 2 Hours	220	.6479	.15311	.01032	.6276	.6683	.04	1.00
3 Hours and Above	176	.6626	.16675	.01257	.6378	.6874	.03	.96
Total	417	.6520	.16017	.00784	.6366	.6674	.03	1.00

ANOVA

Info_Lit_Skill

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.066	2	.033	1.297	.274
Within Groups	10.606	414	.026		
Total	10.673	416			

Table 11 and 12: One Way ANOVA Test of Information Literacy Skill and Level of the Role of University Libraries

Descriptives

Info_Lit_Skill

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Lower	172	.5912	.17286	.01318	.5651	.6172	.03	.90
Average	198	.6778	.12777	.00908	.6599	.6957	.13	1.00
Higher	47	.7662	.14494	.02114	.7236	.8087	.28	.96
Total	417	.6520	.16017	.00784	.6366	.6674	.03	1.00

ANOVA

Info_Lit_Skill

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.381	2	.690	30.760	.000
Within Groups	9.292	414	.022		
Total	10.673	416			

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Table 13 and 14: One Way ANOVA Test of Information Literacy Skill and Sampled
Universities

Descriptives

ILS

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	6	.5900	.11696	.04775	.4673	.7127	.48	.70
2.00	25	.5620	.09065	.01813	.5246	.5994	.38	.66
3.00	180	.6013	.16203	.01208	.5775	.6252	.04	.94
4.00	12	.9050	.05368	.01550	.8709	.9391	.83	.96
5.00	26	.7327	.08807	.01727	.6971	.7683	.61	.91
6.00	11	.5700	.04517	.01362	.5397	.6003	.50	.65
7.00	28	.6568	.12543	.02370	.6081	.7054	.35	1.00
8.00	9	.5567	.24418	.08139	.3690	.7444	.03	.75
9.00	6	.5867	.09004	.03676	.4922	.6812	.48	.74
10.00	80	.7090	.15044	.01682	.6755	.7425	.13	.94
11.00	11	.7791	.06564	.01979	.7350	.8232	.68	.88
12.00	12	.7625	.09006	.02600	.7053	.8197	.63	.89
13.00	11	.7745	.06532	.01970	.7307	.8184	.63	.86
Total	417	.6520	.16017	.00784	.6366	.6674	.03	1.00

ANOVA

ILS

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.556	12	.213	10.604	.000
Within Groups	8.117	404	.020		
Total	10.673	416			

Table 15 and 16: One Way ANOVA Test of Role of Library and Sampled Universities

Descriptives

RLI

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1.00	6	.4283	.13805	.05636	.2835	.5732	.23	.58
2.00	25	.5184	.16232	.03246	.4514	.5854	.15	.78
3.00	180	.5397	.17144	.01278	.5145	.5649	.05	.90
4.00	12	.8092	.13290	.03837	.7247	.8936	.53	1.00
5.00	26	.6319	.14344	.02813	.5740	.6899	.25	.88
6.00	11	.6336	.14548	.04386	.5359	.7314	.45	.88
7.00	28	.5661	.15363	.02903	.5065	.6256	.28	.83
8.00	9	.5878	.18687	.06229	.4441	.7314	.20	.75
9.00	6	.5117	.14784	.06036	.3565	.6668	.25	.63
10.00	80	.5665	.16523	.01847	.5297	.6033	.23	.90
11.00	11	.5736	.16931	.05105	.4599	.6874	.33	.80
12.00	12	.5800	.21405	.06179	.4440	.7160	.15	.85
13.00	11	.5691	.18311	.05521	.4461	.6921	.18	.88
Total	417	.5632	.17270	.00846	.5465	.5798	.05	1.00

ANOVA

RLI

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.190	12	.099	3.571	.000
Within Groups	11.218	404	.028		
Total	12.407	416			

ANNEX 3: Estimated Value of VIF

```
. vif

    Variable │      VIF       1/VIF
─────────────┼────────────────────────
    internet │     6.20    0.161400
         age │     5.38    0.185925
    computer │     4.14    0.241797
      gender │     2.06    0.484736
         rli │     1.26    0.796174
  discipline │     1.07    0.934868
 yearofstudy │     1.04    0.963169
  durationof~t │   1.04    0.965971
  participat~g │   1.03    0.974433
─────────────┼────────────────────────
    Mean VIF │     2.58
```

ANNEX 4: Estimated Result of Linear Regression

```
. *(10 variables, 417 observations pasted into data editor)

. regress ils age gender discipline yearofstudy computer internet durationoflibvisit participatio

Linear regression                               Number of obs   =        417
                                                F(9, 407)       =     414.25
                                                Prob > F        =     0.0000
                                                R-squared       =     0.9032
                                                Root MSE        =     .05039
```

ils	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
age	.0307558	.0060824	5.06	0.000	.018799	.0427126
gender	.0899838	.0121274	7.42	0.000	.0661437	.1138239
discipline	.0102906	.0048391	2.13	0.034	.000778	.0198033
yearofstudy	.0015828	.0023007	0.69	0.492	-.00294	.0061055
computer	.0290211	.0067176	4.32	0.000	.0158156	.0422266
internet	.0379409	.0091451	4.15	0.000	.0199633	.0559185
durationoflibvisit	-.0002218	.0014177	-0.16	0.876	-.0030088	.0025651
participationinprog	.0088212	.0047058	1.87	0.062	-.0004296	.0180719
rli	.0558433	.0181764	3.07	0.002	.020112	.0915746
_cons	-.2826845	.1033662	-2.73	0.007	-.4858829	-.0794862

ANNEX 5: Durbin-Watson Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.950[a]	.903	.901	.05039	1.945

a. Predictors: (Constant), RL, PP, DS, DLV, YS, GEN, AG, CP, IU

b. Dependent Variable: ILS

ANNEX 6: Partial Correlation Matrix

Correlations

Control Variables			AG	GEN	DS	YS	CP	IU	DLV	PP	RL
ILS	AG	Correlation	1.000	-.235[**]	.027	-.018	.331[**]	.352[**]	-.019	.003	-.048
	GEN	Correlation	-.235[**]	1.000	.008	.022	-.106[*]	.116[*]	-.043	-.120[*]	-.021
	DS	Correlation	.027	.008	1.000	.098[*]	.048	-.013	-.072	-.020	-.155[**]
	YS	Correlation	-.018	.022	.098[*]	1.000	.012	-.003	-.014	.024	-.160[**]
	CP	Correlation	.331[**]	-.106[*]	.048	.012	1.000	.265[**]	.029	-.035	.068
	IU	Correlation	.352[**]	.116[*]	-.013	-.003	.265[**]	1.000	.107[*]	.042	-.004
	DLV	Correlation	-.019	-.043	-.072	-.014	.029	.107[*]	1.000	.024	.087
	PP	Correlation	.003	-.120[*]	-.020	.024	-.035	.042	.024	1.000	.001
	RL	Correlation	-.048	-.021	-.155[**]	-.160[**]	.068	-.004	.087	.001	1.000

**. Correlation is significant at 0.01 level

*. Correlation is significant at 0.05 level

ANNEX 7: Framework of Selecting Sample

Table 1: Year-wise List of Public Universities

No	Name of All Public Universities	Year of Founding	Sampled Universities
1	University of Dhaka	1921	Yes
2	University of Rajshahi	1953	Yes
3	Bangladesh Agricultural University	1961	
4	Bangladesh University of Engineering & Technology	1962	
5	University of Chittagong	1966	
6	Jahangirnagar University	1970	
7	Islamic University, Bangladesh	1979	
8	Shahjalal University of Science and Technology	1986	
9	Khulna University	1991	
10	National University	1992	
11	Bangladesh Open University	1992	
12	Bangabandhu Sheikh Mujib Medical University	1998	
13	Bangabandhu Sheikh Mujibur Rahman Agricultural University	1998	
14	Mawlana Bhashani Science and Technology University	1999	Yes
15	Hajee Mohammad Danesh Science & Technology University	1999	Yes
16	Patuakhali Science and Technology University	2000	
17	Sher-e-Bangla Agricultural University	2001	
18	Dhaka University of Engineering & Technology	2003	
19	Chittagong University of Engineering & Technology	2003	
20	Khulna University of Engineering & Technology	2003	
21	Rajshahi University of Engineering & Technology	2003	

22	Jagannath University	2005	
23	Jatiya Kabi Kazi Nazrul Islam University	2005	
24	Chittagong Veterinary and Animal Sciences University	2006	
25	Comilla University	2006	
26	Noakhali Science and Technology University	2006	
27	Sylhet Agricultural University	2006	
28	Bangladesh University of Professionals	2008	
29	Jessore University of Science & Technology	2008	
30	Pabna University of Science and Technology	2008	
31	Begum Rokeya University	2008	
32	Bangladesh University of Textiles	2010	
33	Bangabandhu Sheikh Mujibur Rahman Science and Technology University	2011	
34	University of Barisal	2011	
35	Islamic Arabic University	2013	
36	Bangabandhu Sheikh Mujibur Rahman Maritime University	2014	
37	Rangamati Science and Technology University	2014	
38	Cittagong Medical University	2016	
39	Rajshahi Medical University	2016	
40	Rabindra University Bangladesh	2017	

Table 2: Year-wise List of Private Universities

No.	Name of All Private Universities	Year of Founding	Sampled Universities
1	International University of Business Agriculture and Technology	1991	
2	North South University	1992	
3	University of Science & Technology Chittagong	1992	
4	Independent University, Bangladesh	1993	
5	Central Women's University	1993	
6	American International University-Bangladesh	1994	
7	Ahsanullah University of Science and Technology]	1995	
8	Dhaka International University	1995	
9	International Islamic University, Chittagong	1995	
10	The University of Comilla, Bangladesh	1995	
11	East West University	1996	Yes
12	Gono Bishwabidyalay	1996	
13	Asian University of Bangladesh	1996	
14	People's University of Bangladesh	1996	
15	Queens University	1996	
16	University of Asia Pacific (Bangladesh)	1996	
17	Chittagong Independent University (CIU)	1999	
18	BGMEA University of Fashion & Technology	1999	
19	Bangladesh University	2001	
20	BGC Trust University Bangladesh	2001	
21	Sylhet International University	2001	
22	Southern University, Bangladesh	2001	
23	BRAC University	2001	
24	Manarat International University	2001	
25	Pundra University of Science and Technology	2001	Yes
26	Premier University, Chittagong	2001	
27	City University, Bangladesh	2002	Yes
28	Northern University, Bangladesh	2002	
29	Green University of Bangladesh	2002	
30	IBAIS University	2002	
31	Daffodil International University	2002	Yes
32	Prime University	2002	

33	Southeast University	2002	Yes
34	State University of Bangladesh	2002	
35	Stamford University Bangladesh	2002	
36	University of Development Alternative	2002	
37	Leading University	2002	
38	Eastern University, Bangladesh	2003	
39	Bangladesh University of Business and Technology	2003	
40	Millennium University	2003	
41	Presidency University	2003	
42	Primeasia University	2003	
43	Royal University of Dhaka	2003	
44	Shanto-Mariam University of Creative Technology	2003	
45	United International University	2003	
46	University of Information Technology and Sciences	2003	
47	University of South Asia, Bangladesh	2003	
48	Uttara University	2003	
49	Victoria University of Bangladesh	2003	
50	World University of Bangladesh	2003	
51	Metropolitan University	2003	
52	Atish Dipankar University of Science and Technology	2004	
53	University of Liberal Arts Bangladesh	2004	Yes
54	East Delta University	2006	
55	ASA University Bangladesh	2006	
56	Bangladesh Islami University	2006	
57	Britannia University	2010	
58	Feni University	2010	
59	Khwaja Yunus Ali University	2010	Yes
60	Hamdard University Bangladesh	2012	
61	Port City International University	2012	
62	Sonargaon University	2012	
63	North Western University, Bangladesh	2012	
64	European University of Bangladesh	2012	
65	North East University Bangladesh	2012	
66	Varendra University	2012	Yes
67	Z H Sikder University of Science & Technology	2012	

68	First Capital University of Bangladesh	2012	
69	Ishaka International University	2012	
70	Bangladesh University of Health Sciences	2012	
71	Exim Bank Agricultural University Bangladesh	2013	
72	Coxs Bazar International University	2013	
73	Notre Dame University Bangladesh	2013	
74	Rajshahi Science & Technology University	2013	Yes
75	Fareast International University	2013	
76	North Bengal International University	2013	
77	Ranada Prasad Shaha University	2013	
68	N.P.I University of Bangladesh	2015	
78	Bangladesh Army University of Science and Technology	2015	
79	Bangladesh Army International University of Science & Technology	2015	
80	CCN University of Science & Technology	2015	
81	Bangladesh Army University of Engineering & Technology	2015	
82	Global University Bangladesh	2015	
83	University of Creative Technology Chittagong	2015	
84	Canadian University of Bangladesh	2015	
85	Northern University of Business & Technology, Khulna	2015	
86	University of Global Village	2016	
87	Central University of Science and Technology	2016	
88	Rabindra Maitree University, Kushtia	2016	

Table 3: List of All Departments of the Sampled Universities

No.	Name of Department	Sampled Department
	UNIVERSITY OF DHAKA	
	Faculty of Arts	
1	Department of Bengali	
2	Department of English	
3	Department of Arabic	
4	Department of Persian Language and Literature	
5	Department of Urdu	
6	Department of Sanskrit	Yes
7	Department of Pali and Buddhist studies	
8	Department of History	
9	Department of Philosophy	
10	Department of Islamic Studies	
11	Department of Islamic History and Culture	Yes
12	Department of Information Science and Library Management	Yes
13	Department of Theatre and Performance Studies	
14	Department of Linguistics	Yes
15	Department of Music	
16	Department of World Religious and Culture	
17	Department of Dance	
	Faculty of Science	
18	Department of Physics	
19	Department of Mathematics	
20	Department of Chemistry	Yes
21	Department of Statistics	
22	Department of Theoretical Physics	
23	Department of Biomedical Physics and Technology	
24	Department of Applied Mathematics	
25	Department of Theoretical and Computational Chemistry	
	Faculty of Law	
26	Department of Law	Yes
	Faculty of Business	

27	Department of Management	
28	Department of Accounting and Information System	
29	Department of Marketing	
30	Department of Finance	
31	Department of Banking and Insurance	
32	Department of Management and Information System	Yes
33	Department of International Business	
34	Department of Tourism and Hospitality Management	
35	Department of Organization Strategy and Leadership	
	Faculty of Social Science	
36	Department of Economics	
37	Department of Political Science	
38	Department of International Relations	
39	Department of Sociology	
40	Department of Mass Communication and Journalism	
41	Department of Public Administration	
42	Department of Anthropology	
43	Department of Population Sciences	
44	Department of Peace and Conflict Studies	
45	Department of Women and Gender Studies	
46	Department of Development Studies	
47	Department of Television, Film and Photography	
48	Department of Criminology	
49	Department of Communication Disorders	
50	Department of Printing and Publication Studies	
51	Department of Japanese Studies	
	Faculty of Biological Science	
52	Department of Soil, Water and Environment	
53	Department of Botany	
54	Department of Zoology	
55	Department of Biochemistry and Molecular Biology	
56	Department of Psychology	Yes
57	Department of Microbiology	
58	Department of Fisheries	
59	Department of Clinical Psychology	
60	Department of Genetic Engineering and Biotechnology	
61	Department of Educational and Counselling Psychology	

	Faculty of Pharmacy	
62	Department of Pharmaceutical Chemistry	
63	Department of Clinical Pharmacy and Pharmacology	
64	Department of Pharmacy	
	Faculty of Earth and Environmental Sciences	
65	Department of Geography and Environment	
66	Department of Geology	
67	Department of Oceanology	
68	Department of Disaster Science and Management	
69	Department of Meteorology	
	Faculty of Engineering and Technology	
70	Department of Electrical and Electronic Engineering	
71	Department of Applied Chemistry and Chemical Engineering	
72	Department of Nuclear Engineering	
73	Department of Robotics and Mechatronics Engineering	
	Faculty of Fine Art	
74	Department of Drawing and Painting	
75	Department of Graphic Design	
76	Department of Printmaking	
77	Department of Oriental Art	
78	Department of Ceramics	
79	Department of Sculpture	
80	Department of Craft	
81	Department of History of Art	
	HAJEE MOHAMMAD DANESH SCIENCE AND TECHNOLOGY UNIVERSITY	
	Faculty of Agriculture	
1	Department of Agriculture	
	Faculty of Computer Science and Engineering	

2	Department of Computer Science and Engineering	
3	Department of Electronics and Communication Engineering	Yes
4	Department of Electrical and Electronic Engineering	
	Faculty of Fisheries	
5	Department of Fisheries	
	Faculty of Veterinary and Animal Science	
6	Doctor of Veterinary Medicine	
	Faculty of Business Studies	
7	Department of Accounting and Information System	
8	Department of Management	
9	Department of Marketing	
10	Department of Finance	
	Faculty of Engineering	
11	Department of Agriculture and Industrial Engineering	
12	Department of Food Processing and Preservation	
13	Department of Architecture	
14	Department of Civil Engineering	Yes
15	Department of Mechanical Engineering	
	Faculty of Science	
16	Department of Chemistry	
17	Department of Physics	
18	Department of Mathematics	
19	Department of Statistics	
	Faculty of Social Science and Humanities	
20	Department of Economics	
21	Department of English	
22	Department of Sociology	

	MAWLANA BHASHANI SCIENCE AND TECHNOLOGY UNIVERSITY	
	Faculty of Engineering	
1	Department of Computer Science and Engineering	
2	Department of Information and Communication Technology	Yes
3	Department of Textile Engineering	
	Faculty of Life Science	
4	Department of Environmental Science and Resource Management	
5	Department of Criminology and Police Science	
6	Department of Food Technology and Nutritional Science	
7	Department of Biotechnology and Genetic Engineering	
8	Department of Pharmacy	
9	Department of Biochemistry and Molecular Biology	
	Faculty of Science	
10	Department of Chemistry	
11	Department of Mathematics	Yes
12	Department of Physics	
13	Department of Statistics	
	Faculty of Business Studies	
14	Department of Accounting	
15	Department of Management	
	Faculty of Social Science	
16	Department of Economics	

	UNIVERSITY OF RAJSHAHI	
	Faculty of Arts	
1	Department of Philosophy	Yes
2	Department of History	Yes
3	Department of English	
4	Department of Bangla	
5	Department of Islamic History & Culture	
6	Department of Arabic	
7	Department of Islamic Studies	
8	Department of Theatre	
9	Department of Music	
10	Department of Persian Language & Literature	
11	Department of Sanskrit	
12	Department of Urdu	Yes
	Faculty of Law	
13	Department of Law	
14	Department of Law & Land Administration	Yes
	Faculty of Science	
15	Department of Mathematics	
16	Department of Physics	
17	Department of Chemistry	
19	Department of Statistics	
20	Department of Biochemistry & Molecular Biology	
21	Department of Pharmacy	
22	Department of Population Science & Human Resources Development	

23	Department of Applied Mathematics	
24	Department of Physical Education & Sports Sciences	
	Faculty of Business Studies	
25	Department of Accounting & Information Systems	
26	Department of Management Studies	
27	Department of Marketing	
28	Department of Finance	
29	Department of Banking & Insurance	
	Faculty of Social Sciences	
30	Department of Economics	
31	Department of Political Science	
32	Department of Social Work	
33	Department of Sociology	
34	Department of Mass Communication & Journalism	
35	Department of Information Science & Library Management	Yes
36	Department of Public Administration	
37	Department of Anthropology	
38	Department of Folklore	
39	Department of International Relations	
	Faculty of Agriculture	
40	Department of Agronomy &Agricultural Extension	
41	Department of Crop Science & Technology	
42	Department of Veterinary & Animal Sciences	
43	Department of Fisheries	
	Faculty of Biological and Environmental Sciences	

44	Department of Psychology	
45	Department of Botany	
46	Department of Zoology	
47	Department of Genetic Engineering & Biotechnology	
48	Department of Clinical Psychology	
49	Department of Geography & Environmental Studies	
50	Department of Geology & Mining	
	Faculty of Engineering	
51	Department of Applied Chemistry & Chemical Engineering	
52	Department of Computer Science & Engineering	
53	Department of Information & Communication Engineering	
54	Department of Materials Science & Engineering	
55	Department of Electrical & Electronic Engineering	
	Faculty of Fine Arts	
56	Department of Painting, Oriental Art & Printmaking	
57	Department of Ceramics & Sculpture	
58	Department of Graphic Design, Crafts & History of Art	
	CITY UNIVERSITY	
	Faculty of Science & Engineering	
1	Department of Computer Science & Engineering	
2	Department of Electrical & Electronic Engineering	
3	Department of Mechanical Engineering	
4	Department of Civil Engineering	
5	Department of Textile Engineering	

6	Department of Pharmacy	Yes
	Faculty of Business & Economics	
7	Department of Business Administration	
	Faculty of Arts & Social Science	
8	Department of English	
9	Department of Law	
	Faculty of Agriculture	
10	Department of Agriculture	
	DAFFODIL INTERNATIONAL UNIVERSITY	
	Faculty of Business and Entrepreneurship	
1	Department of Business Administration	
2	Department of Business Studies	
3	Department of Real Estate	
4	Department of Tourism & Hospitality Management	Yes
5	Department of Innovation & Entrepreneurship	
	Faculty Of Science and Information Technology	
6	Department of Computer Science & Engineering	
7	Department of Computing & Information System	
8	Department of Software Engineering	
9	Department of Environmental Science & Disaster Management	

10	Department of Multimedia & Creative Technology	Yes
11	Department of General Educational Development	
12	Department of Information Technology & Management	
	Faculty of Engineering	
13	Department of Electronics & Telecommunication Engineering	
14	Department of Textile Engineering	
15	Department of Electrical & Electronic Engineering	
16	Department of Architecture	
17	Department of Civil Engineering	
	Faculty of Allied Health Science	
18	Department of Pharmacy	
19	Department of Public Health	
20	Department of Nutrition & Food Engineering	
	Faculty Of Humanities and Social Science	
21	Department of English	
22	Department of Law	
23	Department of Journalism & Mass Communication	
24	Department of Development Studies	
25	Department of Information Science & Library Management	
	EAST WEST UNIVERSITY	
	Faculty of Business & Economics	
1	Department of Business Administration	
2	Department of Economics	

	Faculty of Liberal Arts & Social Sciences	
3	Department of English	Yes
4	Department of Law	
5	Department of Sociology	
6	Department of Information Studies & Library Sciences	
7	Department of Social Relations	
	Faculty of Sciences & Engineering	
8	Department of Applied Statistics	
9	Department of Civil Engineering	
10	Department of Computer Science & Engineering	
11	Department of Electrical & Electronic Engineering	
12	Department of Electronics & Communications Engineering	
13	Department of Genetic Engineering & Biotechnology	
14	Department of Mathematics & Physical Science	
15	Department of Pharmacy	
	KHWAJA YUNUS ALI UNIVERSITY	
	School of Law	
1	Department of Law	
	School of Science & Engineering	
2	Department of Mechatronic Engineering	
3	Department of Medical Physics	
4	Department of Textile Engineering	
5	Department of Computer Science & Engineering	

6	Department of Electrical & Electronics Engineering	
	School of Business	
7	Department of Business Administration	Yes
8	Department of Management Information Systems	
	School of Human Science	
9	Department of Library & Information Science	
10	Department of Islamic Studies	
11	Department of English	
	School of Biomedical Science	
12	Department of Microbiology	
13	Department of Pharmacy	
14	Department of Biochemistry & Biotechnology	
	PUNDRA UNIVERSITY OF SCIENCE & TECHNOLOGY	
	Faculty of Business studies	
1	Department of Business Administration	
	Faculty of Science & Engineering	
2	Department of Computer Science & Engineering	
3	Department of Electrical & Electronic Engineering	
4	Department of Public Health	
5	Department of Civil Engineering	

	Faculty of Humanities & Social Sciences	
6	Department of Islamic Studies	
7	Department of English	Yes
8	Department of education	
	RAJSHAHI SCIENCE & TECHNOLOGY UNIVERSITY	
	School of Science & Engineering	
1	Department of Computer Science & Engineering	
2	Department of Electrical & Electronic Engineering	Yes
3	Department of civil Engineering	
4	Department of Textile	
5	Department of Pharmacy	
	School of Business	
6	Department of Business Administration	
	School of Arts	
7	Department of Law	
8	Department of Sociology	
9	Department of Economics	
10	Department of Journalism	
	SOUTHEAST UNIVERSITY	
	School of Science & Engineering	
1	Department of Pharmacy	

2	Department of Textile Engineering	
3	Department of Architecture	
4	Department of Computer Science & Engineering	
5	Department of Information & Communication Engineering	
6	Department of Electrical & Electronic Engineering	
	School of Business Studies	
7	Department of Business Administration	
	School of Arts & Social Sciences	
8	Department of Law & Justice	
9	Department of English	
10	Department of Bangla Language & Literature	Yes
11	Department of Economics	
	UNIVERSITY OF LIBERAL ARTS BANGLADESH	
	School of Arts & Humanities	
1	Department of English & Humanities	
	School of Business	
2	Department of Business Administration	
	School of Social Sciences	
3	Department of Media Studies & Journalism	Yes
	School of Science & Engineering	

4	Department of Computer Science & Engineering	
5	Department of Electronics & Telecommunication Engineering	
6	Department of Electrical & Electronic Engineering	
	VARENDRA UNIVERSITY	
	Faculty of Business & Law	
1	Department of Business Administration	
2	Department of Law & Human Rights	
	Faculty of Science & Engineering	
3	Department of Computer Science & Engineering	
4	Department of Electrical & Electronic Engineering	
5	Department of Pharmacy	
	Faculty of Arts & Social Science	
6	Department of Economics	Yes
7	Department of English	
8	Department of Sociology	
9	Department of Political Science	
10	Department of Journalism	

Table 4: Distribution of Population and Sample

Name of Sampled University	Total no. of Depts.	Name of Sampled Department	Total no. of Students	Sampled Students
Dhaka University	81	Department of Sanskrit	320	16.00
		Department of Islamic History and Culture	700	35.00
		Department of Information Science and Library Management	284	15.00
		Department of Linguistics	325	17.00
		Department of Chemistry	400	20.00
		Department of Law	603	31.00
		Department of Management and Information System	500	25.00
		Department of Psychology	512	26.00
Hajee Mohammad Danesh Science and Technology University	22	Department of Electrical and Electronic Engineering	295	15.00
		Department of Civil Engineering	269	14.00
Mawlana Bhashani Science and Technology University	16	Department of Mathematics	259	13.00
		Department of Information and Communication Technology	286	15.00
Rajshahi University	58	Department of Philosophy	469	24.00
		Department of History	497	25.00
		Department of Urdu	118	6.00
		Department of Law and Land Administration	215	11.00
		Department of Information Science and Library Management	265	14.00
Sub-Total: 4	**177**	**17**	**6317**	**322.00**
City University	10	Department of Pharmacy	112	6.00
Daffodil International University	25	Department of Tourism and Hospitality	195	10.00
		Department of Multimedia and Creative technology	310	16.00
East West University	15	Department of English	240	12.00

Khwaja Yunus Ali University	14	Department of Business Administration	210	11.00
Pundra Science and Technology University	8	Department of English	168	9.00
Rajshahi Science and Technology University	10	Department of Electrical and Electronic Engineering	108	6.00
Southeast University	11	Department of Bangla Language and Literature	220	11.00
University of Liberal Arts of Bangladesh	6	Department of Media Studies and Journalism	230	12.00
Varendra University	10	Department of Economics	203	11.00
Sub-Total = 9	**109**	**10**	**1994**	**104.00**
Total = 13	**286**	**27**	**8311**	**426**

ANNEX 8: Survey Questionnaire

ROLE OF UNIVERSITY LIBRARIES IN ENHANCING INFORMATION LITERACY SKILLS OF UNDERGRADUATE STUDENTS IN BANGLADESH

Research Questionnaire

PART A

(Information about the Students)

a) Demographic Information of the Students

1. Name:…………………………………………………………………...
2. Age:………………………….……… years.
3. Gender: (i) Male   (ii) Female
4. Name of University:………………………………………………………….
5. Department: (i) ISLM   (ii) Others
6. Year of study: (i) First   (ii) Second   (iii) Third   (iv) Fourth

b) Information Literacy Related Information

7. Have you ever heard the term "information literacy"?   (i) Yes   (ii) No
8. What is information literacy? Give tick. One more answer is applicable.

    i.   The ability to identify the need for information

    ii.   The ability to identify, locate, apply, and evaluate information to meet the information need

   iii.   The ability to use information effectively, regardless of format

    iv.   The ability to apply information critically and ethically

    v.   The ability to determine the meet of information need adequately

   vi.   Don't know

9. Information literacy skill: (give tick)

Strongly Disagree = 0, Disagree = 1, Neither Agree nor Disagree = 2, Agree = 3 and Strongly Agree = 4						
No	Categories	Give tick				
Identification						
1	Identifying the lack of knowledge in a subject area	0	1	2	3	4
2	Deciding what information is needed, and how much	0	1	2	3	4
3	Locating resources in the library	0	1	2	3	4
Searching						
4	Finding relevant information within books	0	1	2	3	4
5	Finding relevant information online	0	1	2	3	4
6	Searching computerized catalog of library	0	1	2	3	4
7	Searching online databases	0	1	2	3	4
Evaluation						
8	Evaluating information sources according to the needs	0	1	2	3	4
Application						
9	Using full text journals, books and e-resources	0	1	2	3	4
10	Using reference collections in the library (dictionaries, encyclopedias, directories, and so on)	0	1	2	3	4
11	Using index and abstract	0	1	2	3	4
12	Using computer	0	1	2	3	4
13	Using MS Office	0	1	2	3	4
14	Using of Internet and search engines	0	1	2	3	4
15	Using of Email	0	1	2	3	4
16	Sharing information through social media/SMS	0	1	2	3	4
17	Making bibliography or references	0	1	2	3	4
18	Making assignments and presentations	0	1	2	3	4
19	Analyzing and presenting data appropriately	0	1	2	3	4
Acknowledgement						
20	Understanding the concepts of fair use, copyright and plagiarism	0	1	2	3	4

10. Did you use computer in current academic year?　　(i) Yes　　　　(ii) No

11. Frequency of uses: (i) Everyday　　(ii) Sometimes　　　(iii) Once a week

　　　　　　　　(iv) Once a month　　(v) Occasionally　　　(vi) Never

12. Level of performance in MS Office:

      (i) Poor   (ii) Beginner   (iii)Intermediate (iv) Advanced

13. Did you use Internet in current academic year?   (i) Yes   (ii) No

14. Frequency of uses: (i) Everyday   (ii) Sometimes   (iii) Once a week

                    (iv) Once a month   (v) Occasionally   (vi) Never

15. Level of skills of using Internet: (i) Poor   (ii) Lower   (iii) Moderate

                       (iv) Higher   (v) Advanced

16. Purposes of using Internet:

No	Categories	Always 4	Frequently 3	Sometimes 2	Never 1
(i)	Part of curriculum				
(ii)	Academic				
(iii)	Email				
(iv)	Social media				
(v)	Games				
(vi)	Movies and songs				
(vii)	Job searching				
(viii)	Freelancing				
(ix)	Daily life works				

17. Evaluation of Internet skills: (mark tick for true, cross for false, and start for don't know)

No	Evaluating sectors	Mark
1	The information on the websites of museums, recognized research organizations, scientific societies and government are the most reliable	
2	Most of the information on the Internet is peer reviewed and so can be used as a reference in writing	
3	The accuracy of the most of the information on the Internet is unchecked, and so should not be used without proper review	
4	One should only use information on the Web that is verified by a recognized authority	

18. Do you use electronic information?   (i) Yes   (ii) No

19. Uses of search technique:

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No	Techniques	Always 4	Frequently 3	Sometimes 2	Never 1
1	Simple key words				
2	Boolean Operators (and, but, or)				
3	Field search				
4	Others				

20. Do you have any idea about copyright?   (i) Yes   (ii) No

21. Do you have any idea about fair use and plagiarism: (i) Yes   (ii) No

22. What do you mean by plagiarism and fair use? (mark tick for true, cross for false, and start for don't know)

No	Response	Remarks
1	Plagiarism is the presentation of other's work as your own	
2	Plagiarism means the copying other's writing and using it without reference	
3	Plagiarism is the using of other's audio/video/picture from the Internet without mentioning source	
4	Fair use is the using of other's content for teaching, scholarship and research giving reference	
5	Fair use refers to the reproduction of other's work for criticism and comment providing credit to the author	
6	Others……………………………..	

c) University Library Related Information

23. Did you visit university library in your current academic year?

    (i) Yes   (ii) No

24. Duration (hours) of staying at library per week: (i) One   (ii) Two
    (iii) Three   (iv) Five (v) Six and above

25. What parts of book do you know?   (i) The glossary   (ii) The Index
    (iii) The bibliography   (iv) The content (v) All parts   (vi) None

26. Some questions related to library: (Give tick)

No	Categories	Always 4	Frequently 3	Sometimes 2	Never 1
a	**Frequency of visit per week**				
b	**Purpose of visit**				
	(i) Reading newspaper, magazine or literature				
	(ii) Borrowing and lending of books				
	(iii) Education and research				
	(iv) Photocopying				
	(v) Reading text books				
	(vi) Preparation for examination				
	(vii) Internet browsing				
c	**Sources of information gathered**				
	(i) Book				
	(ii) Periodicals				
	(iii) Newspaper				
	(iv) Internet				
	(v) e-resources				
	(vi) OPAC				
	(vii) Magazine				
	(viii) Audio/Video				
	(ix) Abstract and Index				
d	**Book search strategy**				
	(i) By author				
	(ii) By ISBN number				
	(iii) By Title				
	(iv) By Call Number				
	(v) By Subject				
	(vi) By Publisher				
e	**Book finding method**				
	(i) Searching book shelves personally				
	(ii) Self-guided				
	(iii) With the assistance of library staff				
	(iv) With the assistance of friends				
	(v) Others………..				

27. Role of library: (Give tick mark)

		Give tick				
	Strongly Disagree = 0, Disagree = 1, Neither Agree nor Disagree = 2, Agree = 3 and Strongly Disagree = 4					
No	Categories			Give tick		
i	The university library's environment is friendly enough	0	1	2	3	4
ii	There are adequate resources in the library	0	1	2	3	4
iii	Most of the resources in the library are updated	0	1	2	3	4
iv	Library arranges seminar/conference for enhancing students' IL skill	0	1	2	3	4
v	Library arranges training, workshop or informal class for enhancing students' IL skill	0	1	2	3	4
vi	Helping students in making assignment, presentation, synopsis, dissertation and so on by the library professionals is enough	0	1	2	3	4
vii	Helping students in using computer and Internet by the library professionals is enough	0	1	2	3	4
viii	Helping students in finding books or other resources by the library professionals is enough	0	1	2	3	4
ix	Helping students in using OPAC or online resources or database by the library professionals is enough	0	1	2	3	4
x	Getting helps by the students from friends/teachers is greater than that of library professionals in the library	0	1	2	3	4

28. Did you participate in any program related to information literacy skill arranged by the university library in current academic year?   (i) Yes   (ii) No

29. Duration of that program was: …………………………… days.

30. What type of program was arranged by the library?

    Ans…………………………………………………………..

    ………………………………………………………….....

    ………………………………………………………….....

31. Did you get benefits from it?

    (i) Yes   (ii) No

32. Does library arrange this type of program regularly?

    (i) Yes   (ii) No

d) Constraints and Suggestions of Achieving Information Literacy

33. Constraints of achieving Information Literacy:

No	Problems	Give rank
1	The concept 'information literacy' seems hard to understand	
2	Students are not supposed to search and apply information early in their educational career formally	
3	Students mostly rely on hand notes and textbooks	
4	Lack of students' confidence in using information	
5	Lecture mode of class is not effective enough to help students to achieve practical information skills	
6	Inadequacy of resources for learning in a problem-based context	
7	Lack of cooperation between library professionals and faculties	
8	Lack of skilled staff to train students in handling electronic information	
9	Insufficient facilities in the library	
10	Present structure of academic programs	

34. Strategies for eradicating information literacy achieving constraints.

No	Strategies	Give tick
1	Making information literacy more easily understandable	
2	Introducing students with library and information use early through orientation program	
3	Involving students to problem-based learning for active participation in proper use of information	
4	Giving students assignments/report-writing/thesis for evaluating the use of information	
5	Relating the course objectives to information needs	
6	Building effective collaboration between faculties and library professionals	
7	Integrating IL as a course in the curriculum	
8	Evaluating students' IL skills by examination at the end of the course/seminar/training	
9	Providing more facilities in the library	
10	Others…………………………….	

35. How to make 'information literacy' more understandable?

No	Modes	Give tick
1	Printed IL instructions	
2	Integrating IL into course curriculum	
3	Online IL instructional modules via university website	
4	Online IL instructional modules via library website	
5	Others ………………….	

36. What facilities need to be covered by library to enhance your information literacy skill?

No	Facilities	Give tick
1	Use of printed sources (library classification and catalog)	
2	Use of electronic sources	
3	Availability of computers	
4	Specialized application software	
5	Online database	
6	Enough and high speed Internet	
7	Enough emailing facilities	
8	OPAC	
9	Institutional repositories	
10	CD-ROM database	
11	Others……..	

Thank you for your response.

PART B

(Information about Library Professionals)

a. Demographic and Institutional Information about Library Professionals

37. Name:…………………………………………………………….

38. Age:……………………………………………………………years

39. Gender: (i) Male   (ii) Female

40. Education:………………………………..years

41. Describe your information technology skills (one more options are applicable):

    i. Operating system   ii. MS Office   iii. Troubleshooting

    iv. Database management   v. Email and web browsing   vi. Web design

    vii. Desktop publishing   viii. Graphics   ix. Computer Programming

    x. Networking   xi. Others: ....

42. Total job experience:…………………………………years

43. Experience in present position:…………………………………. years

44. What role are you playing in promoting students' information literacy skill?

    (i) Service provider   (ii) Administrator   (iii) Educator   (iv) Researcher

45. What problems are you facing in performing this role?

    (i) ……………………………………………………………………….

    (ii)……………………………………………………………………….

    (iii) ……………………………………………………………………….

    (iv) ……………………………………………………………………….

46. Mention some prospects of Library professionals in promoting students' information literacy skill:

    (i) ……………………………………………………………………….

    (ii)……………………………………………………………………….

    (iii) ……………………………………………………………………….

47. Have you taken any training related to your profession? (i) Yes   (ii) No

48. No. of the days of training:……………………..

49. The university authority helps you good:

    (i) Strongly agreed   (ii) Agreed   (iii) Neutral   (iv) Disagreed

    (v) Strongly disagreed

50. The infrastructure of your library is good:

    (i) Strongly agreed   (ii) Agreed   (iii) Neutral   (iv) Disagreed

    (v) Strongly disagreed

51. How do you arrange book shelves:

    (i) By author   (ii) By ISBN number   (iii) By Title of books

    (iv) By call number   (v) Don't know

52. Tools used to locate information:

    (i) Library catalogue   (ii) Bibliography   (iii) Union Catalogue

    (iv) Abstract and Index   (v) OPAC   (vi) Others   (vii) None

53. Extent of using tools: (i) Always   (ii) Most of the time   (iii) Sometimes

    (iv) Occasionally (v) Rarely   (vi) Never

54. What type of online search technique do you use:

    (i) Using Keywords   (ii) Boolean Search   (iii) Truncation

    (iv) Field search   (v) Phrase search

55. Do you have any role in this digital era?

    (i) Yes   (ii) No

56. What is the role?:……………………………………………………………

57. Was this digital era challenging in playing your administrative or managerial role?

    (i) Yes   (ii) No

58. Do you have any role regarding budgetary allocation?

    (i) Yes   (ii) No

59. Do you have any role regarding administrative role?

    (i) Yes   (ii) No

60. What kind of problems in performing administrative role?

    (i) Yes   (ii) No

61. Do you think that librarians are bit behind in pedagogical skills?

    (i) Yes   (ii) No

62. Do you have drop-in service?

    (i) Yes   (ii) No

63. Do you have any other activities from service provider point of view?

    (i) Yes   (ii) No

64. Are you providing any database services to different institutes/departments/ libraries?

       (i) Yes   (ii) No

b. Information Literacy Skill Development Related Questions

65. What is the status of your library: (i) Online based   (ii) Analog   (iii) Both

66. What services does your library provide for the students' information literacy skill development?

No	Help students to	Helping status (Yes=1/ No=0)	Helping ways	Facing problem (Yes=1/ No=0)	Problems	Solving paths
1	find out books, journals, newspapers and so on					
2	make their assignments, dissertation and thesis					
3	learn basic computing					
4	learn office computing					
5	use Internet and email					
6	use digital devices					
7	develop their communication skill					
8	learn search technique					
9	locate books on shelves					
10	find information on books, journals and other electronic resources					
11	write indexing and bibliography appropriately					
12	apply information perfectly					
13	acknowledge information					
14	understand fair use and plagiarism of information					

67. Do you help students to learn using database?   (i) Yes   (ii) No

68. How? …………………………………………………………………………

69. Do you help students to use website?   (i) Yes   (ii) No

70. How? ……………………………………………………………………

71. Do you help students to learn to compare available information?

     (i) Yes   (ii) No

72. How? ……………………………………………………………………….

73. Do you help students to use search engines?   (i) Yes   (ii) No

74. How? …………………………………………………………………

75. Do you help students to learn search techniques?   (i) Yes   (ii) No

76. How? ………………………………………………………………………

77. Do you arrange any orientation program for the first year students:

     (i) Yes   (ii) No

78. How long the program held? :………………………………………….days

79. What types of instructions do you provide by the orientation program?

     …………………………………………………………………

80. Do you think students get benefit from this?   (i) Yes   (ii) No

81. How   do   you   evaluate   that   students   are   getting   benefits?

     …………………………………………………………………………

82. Do you arrange any training, seminar and workshop for the students:

     (i) Yes   (ii) No

83. Length of the program:………………………………………….days

84. What   materials   or   guidelines   do   you   provide   from   these?

     …………………………………………………………………………

85. Do you think students get benefit from this?   (i) Yes   (ii) No

86. How   do   you   evaluate   that   students   are   getting   benefits?

     …………………………………………………………………………

87. Do you continue this program regularly: (i) Yes   (ii) No

88. Do you arrange informal class lectures for improving students IL skill:

     (i) Yes   (ii) No

89. Mode of class: (i) Theoretical   (ii) Practical   (iii) Both

90. Content of class: (i) Softcopy   (ii) Hardcopy   (iii) Online   (iv) Both

91. Do you evaluate the learning of class: (i) Yes   (ii) No

92. How do you evaluate:

     (i) By taking written exam   (ii) By taking practical   (iii) Both

93. The relationship between you and students is good:

(i) Strongly agreed   (ii) Agreed   (iii) Neutral   (iv) Disagreed

(v) Strongly disagreed

94. Do you have any faculty librarian joint collaboration teaching programs?

   (i) Yes   (ii) No

95. Did you find any problem regarding the collaboration with faculty?

   (i) Yes   (ii) No

96. What types of problems:

(i) ……………………………………………………………………….

(ii)……………………………………………………………………….

(iii) …………………………………………………………………………

97. How do you help students:

(i)…………………………………………………....

(ii)…………………………………………………...

(iii)………………………………………………..

(iv)…………………………………………………...

98. Do you have any collaborative initiatives on the enhancement of information literacy skill network, which will facilitate the teaching-learning process of education sector?

   (i) Yes   (ii) No

99. Do you contribute in formulating any national policy regarding the IL literacy in different sectors'?

   (i) Yes   (ii) No

100. Do you have any contribution and activities (teaching) related to the integration of IL in education curricula and instruction as per the curricula focusing on the usage of electronic resources of the library?

   (i) Yes   (ii) No

101. Do you think any kind of problems have been existing in promoting IL among students?

   (i) Yes   (ii) No

102. What types of problems:

(i) ……………………………………………………………………….

(ii)……………………………………………………………………….

(iii) ……………………………………………………………………….

103. How to solve this problem?:

(i) ………………………………………………………………………….

(ii)………………………………………………………………………….

(iii) ……………………………………………………………………….

Thank you for your response.

PART C
(Questions for Interview with Library Professionals)

1. Name:………………………………………………………..
2. University:………………………………………………….
3. What initiatives did your library take in enhancing students' information literacy skill?
4. What were the strengths at your library regarding those initiatives?
5. What were the weaknesses at your library regarding those initiatives?
6. What were the opportunities at your library regarding those initiatives?
7. What were the threats at your library regarding those initiatives?
8. How did the university authority help your library to implement those initiatives?
9. How did faculty members help you to implement those initiatives?

Thank you so much for your time.